Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 945 on Plan 111290, 246 Cassia Road		
Suburb: Southampton	**State:** WA	**P/code:** 6239
Local government area: Shire of Donnybrook-Balingup		
Description of the planning proposal: Development Application		
BMP Plan / Reference Number: 230072	**Version:** v1.0	**Date of Issue:** 11/01/2024
Client / Business Name: Talitha Eaton		

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☒	☐
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	☐	☒
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	☐	☒
Strategic planning proposal (including rezoning applications)	☐	☒
Minor development (in BAL-40 or BAL-FZ)	☐	☒
High risk land-use	☐	☒
Vulnerable land-use	☒	☐

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

The site is considered as Vulnerable Use as the property is short stay accommodation for tourists.
A Method 2 calculation has calculated the capacity of an onsite open air shelter as a last resort for patrons and guests in a bushfire emergency.

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

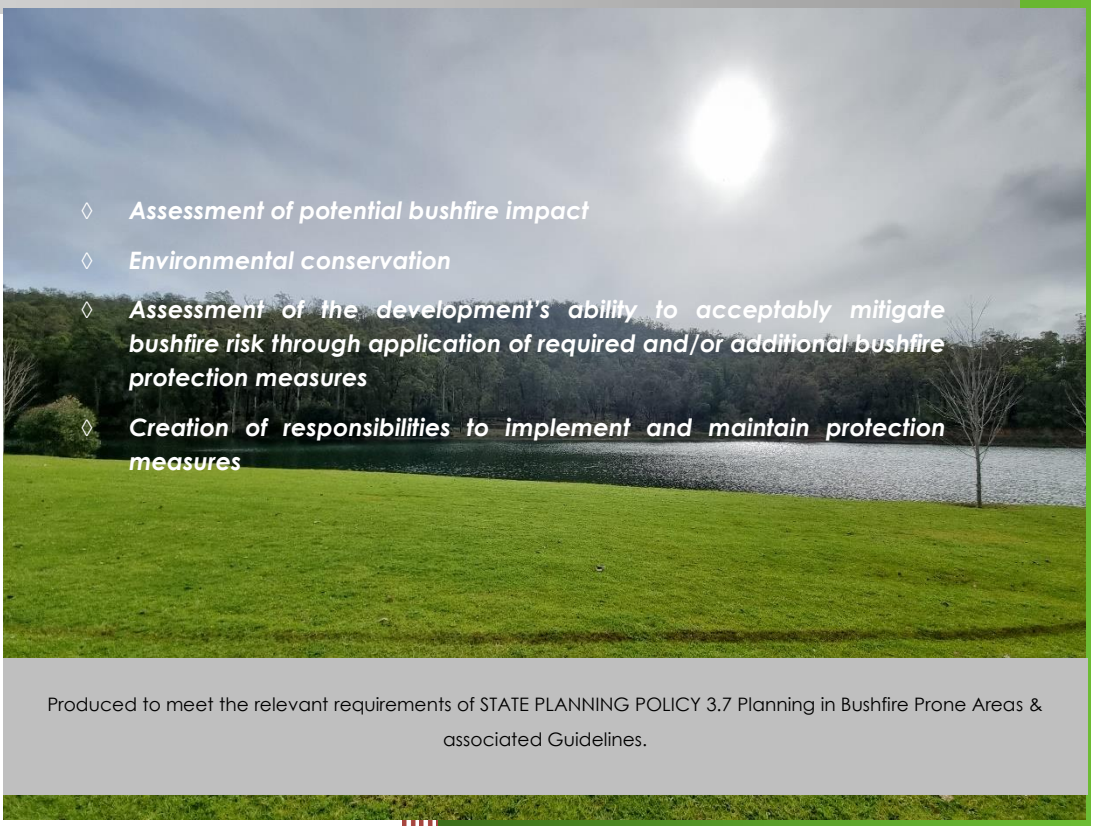
Name Kathy Nastov	**Accreditation Level** Level 3	**Accreditation No.** BPAD27794	**Accreditation Expiry** 01/08/2024
Company Bushfire Prone Planning		**Contact No.** 64771144	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner  **Date** 11/01/2024

BUSHFIRE PRONE PLANNING

Bushfire Management Plan (BMP)



Produced to meet the relevant requirements of STATE PLANNING POLICY 3.7 Planning in Bushfire Prone Areas & associated Guidelines.

246 Cassia Road Southampton

Shire of Donnybrook Balingup

Development Application - Vulnerable Tourism Land Use

11 January 2024

Job Reference No: 230072

BPP GROUP PTY LTD T/A BUSHFIRE PRONE PLANNING

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VERSION HISTORY		
Version	Details	Date
1.0	Original	11 January 2024
-	-	

BMP (Master) Template v9.1

DISTRIBUTION					
Destination		Version	No. Copies	Hard Copy	Electronic Copy
Person	Email				
Talitha Eaton	info@lingalongaestate.com	1.0	1	☐	☒

Limitations: *The protection measures contained in this Bushfire Management Plan are minimum requirements and they do not guarantee that buildings or infrastructure will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating. This is substantially due to the unpredictable nature and behaviour of fire and fire weather conditions. Additionally, the correct implementation of the recommended protection measures will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.*

All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

Notwithstanding anything contained therein, Bushfire Prone Planning will not, except as the law may require, be liable for any loss or other consequences whether or not due to the negligence of their consultants, their servants or agents, arising out of the services provided by their consultants.

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SUMMARY STATEMENTS

THIS DOCUMENT – STATEMENT OF PURPOSE

The Bushfire Management Plan (BMP)

The BMP sets out the required package of bushfire protection measures to lessen the risks associated with a bushfire event. It establishes the responsibilities to implement and maintain these measures.

The BMP also identifies the potential for any negative impact on any environmental, biodiversity and conservation values that may result from the application of bushfire protection measures or that may limit their implementation.

Risks Associated with Bushfire Events

The relevant risks are the potential for loss of life, injury, or destroyed or damaged assets which results in personal loss and economic loss. For a given site, the level of that risk to persons and assets (the exposed elements) is a function of the potential threat levels generated by the bushfire hazard, and the level of exposure and vulnerability of the at risk elements to the threats.

Bushfire Protection Measures

The required package of protection measures is established by *State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7)*, its associated *Guidelines* and any other relevant guidelines or position statements published by the Department of Planning, Lands and Heritage. These measures are limited to those considered by the WA planning authorities as necessary to be addressed for the purpose of land use planning. They do not encompass all available bushfire protection measures as many are not directly relevant to the planning approval stage. For example:

- Protection measures to reduce the vulnerability of buildings to bushfire threats is primarily dealt with at the building application stage. They are implemented through the process of applying the Building Code of Australia in accordance with WA building legislation and the application of construction requirements based on a building's level of exposure - determined as a Bushfire Attack Level (BAL) rating); or
- Protection measures to reduce the threat levels of consequential fire (ignited by bushfire and involving combustible materials surrounding and within buildings) and measures to reduce the exposure and vulnerability of elements at risk exposed to consequential fire, are not specifically considered.

The package of required bushfire protection measures established by the Guidelines includes:

- The requirements of the bushfire protection criteria which consist of:
    - Element 1: Location (addresses threat levels).
    - Element 2: Siting and Design of Development (addresses exposure levels of buildings).
    - Element 3: Vehicular Access (addresses exposure and vulnerability levels of persons).
    - Element 4: Water (addresses vulnerability levels of buildings).
    - Element 5: Vulnerable Tourism Land Uses (addresses exposure and vulnerability as per Elements 1-4 but in use specific ways and with additional considerations of persons exposure and vulnerability).
- The requirement to develop Bushfire Emergency Plans / Information for 'vulnerable' land uses for persons to prepare, respond and recover from a bushfire event (this addresses vulnerability levels).
- The requirement to assess bushfire risk and incorporate relevant protection measures into the site emergency plans for 'high risk' land uses (this addresses threat, exposure and vulnerability levels).

Compliance of the Proposed Development or Use with SPP 3.7 Requirements

The BMP assesses the capacity of the proposed development or use to implement and maintain the required 'acceptable' solutions and any additionally recommended bushfire protection measures - or its capacity to satisfy the policy intent through the justified application of additional bushfire protection measures as supportable 'alternative' solutions.

THE PROPOSED DEVELOPMENT/USE – BUSHFIRE PLANNING COMPLIANCE SUMMARY		
Environmental Considerations		**Assessment Outcome**
Will identified environmental, biodiversity and conservation values limit the full application of the required bushfire protection measures?		No
Will identified environmental, biodiversity and conservation values need to be managed in the implementation and maintenance of the bushfire protection measures - but not limit their application?		No
Required Bushfire Protection Measures The Acceptable Solutions of the Bushfire Protection Criteria (Guidelines)		**Assessment Outcome**
Element	The Acceptable Solutions	
Other Short Term Accommodation	A5.7a Siting and design – APZ – caravan park	N/A
	A5.7b Siting and design – APZ – certain accommodation	N/A
	A5.7c Siting and design – APZ – all other accommodation	Fully Compliant
	A5.7d Siting and design – APZ – landscape management	N/A
	A5.7e Siting and design – onsite shelter – pedestrian paths	Fully Compliant
	A5.7f Siting and design – onsite shelter – exposure to hazard	Fully Compliant
	A5.7g Siting and design – onsite shelter – construction requirements.	N/A
	A5.8.1a Vehicular access – internal access/private driveway - availability	Fully Compliant
	A5.8.1b Vehicular access – internal access/private driveway – tech. req.	Fully Compliant
	A5.8.1c Vehicular access – signage	Fully Compliant
	A5.8.2a Vehicular access – multiple access routes	Fully Compliant
	A5.8.2b Vehicular access – no-through roads – maximum length	Fully Compliant
	A5.8.2c Vehicular access – EAW – alternative access option	N/A
	A5.8.2d Vehicular access – public roads - technical requirements	Fully Compliant
	A5.8.2e Vehicular access – access limitations - onsite shelter option	Fully Compliant
	A5.9a Provision of water - reticulated	N/A
	A5.9b Provision of water – non-reticulated	Fully Compliant

Camping Ground Only (remote) or Nature-Based Park	A5.10a Siting and design – reduce exposure to radiant heat (separation)	Fully Compliant
	A5.10b Siting and design – fire pits	Fully Compliant
	A5.10c Siting and design – onsite shelter – pedestrian paths	Fully Compliant
	A5.10d Siting and design – onsite shelter – open area	Fully Compliant
	A5.11a Vehicular access – multiple access routes	Fully Compliant
	A5.11b Vehicular access – no-through roads – maximum length	Fully Compliant
	A5.11c Vehicular access – EAW – alternative access option	N/A
	A511d Vehicular access – access limitations - onsite shelter option	Fully Compliant
	A5.11e.1a Vehicular access – internal access/private driveway - availability	Fully Compliant
	A5.11f Vehicular access – internal access/private driveway – tech. req.	Fully Compliant
	A5.11g Vehicular access – signage	Fully Compliant
	A5.12a Provision of water – no supply required	N/A
	A5.12b Provision of water – non-reticulated	Fully Compliant
	A5.12c Provision of water – non-reticulated technical requirements	Fully Compliant
Events (day use only)	A5.13a Siting and design – APZ	Fully Compliant
	A5.13b Siting and design – onsite shelter – pedestrian paths	Fully Compliant
	A5.13c Siting and design – onsite shelter – exposure to hazard	Fully Compliant
	A5.13d Siting and design – onsite shelter – construction requirements.	N/A
	A5.14a Vehicular access – multiple access routes	Fully Compliant
	A5.14b Vehicular access – no-through roads – maximum length	Fully Compliant
	A5.14c Vehicular access – EAW – alternative access option	N/A
	A514d Vehicular access – access limitations - onsite shelter option	Fully Compliant
	A5.14e Vehicular access – public roads - technical requirements	Fully Compliant
	A5.14f Vehicular access – internal access/private driveway – tech. req.	Fully Compliant

	A5.14g Vehicular access – internal access/private driveway - availability	Fully Compliant
	A5.14h Vehicular access – signage	Fully Compliant
	A5.15a Provision of water – reticulated	N/A
	A5.15b Provision of water – non-reticulated – tank capacity	Fully Compliant
	A5.15c Provision of water – non-reticulated technical requirements	Fully Compliant

1 PROPOSAL DETAILS AND THE BUSHFIRE MANAGEMENT PLAN

1.1 The Proposed Development/Use Details, Plans and Maps

Planning Stage:	Development Application
The stated bushfire planning land use for which additional assessments and documents are required, will apply.	Vulnerable Tourism Land Use
Factors that have identified the proposal's bushfire planning land use classification:	The proposed development is a land use that can be categorised as a: Short term accommodation (other than B&B/Holiday House) including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds). Camping ground only (remote) or nature-based park. Day uses (with no overnight accommodation) including art gallery, brewery, exhibition centre, hotel, reception centre, restaurant/cafe, small bar, tavern, winery. The proposed land use for tourism or recreation involves visitors who are unfamiliar with the surroundings and/or presents evacuation challenges.
Subject lot/site total area:	107.87 ha
Number of additional lots being created:	N/A

Description of the proposed development/use:

This Bushfire Management Plan is being developed for Linga Longa, a recreation and functions/event destination. Enduro and gravity mountain bike events are hosted including open ride days and WAGE competitions. The main activities are weddings, with infrastructure established to support this. Two Workers Cottages are constructed on the property, with the aim to convert these to short stay accommodation and to construct a further eight short stay cottages on the western boundary of the property. The proprietors are seeking to construct a shed and to establish a nature-based camp ground to support the events hosted throughout the year.

Currently events are permitted based on individual application to the Local Government (30 per year). The property owners in conjunction with the Council are seeking to host events throughout the year, once the required documentation is in place.

This application incorporates:

- Change of use of Workers Cottages to short stay accommodation
- Function Centre Marquee BAL
- New shed BAL
- Nature stay campground compliance
- Events 100-400 people
- Western chalets (8 in total)

The property is located in an area of Extreme fire danger, with Forest vegetation surrounding the development site on all sides. As a Tourism Land Use the proposed development is by default also considered a Vulnerable Land Use and the emphasis will be on early evacuation as the primary emergency procedure.

Evacuation information for the site, with specific consideration to the management of a bushfire emergency has been prepared in support of this proposal and the content reflects the nature and scale of the development. The bushfire emergency plan has given due consideration to the vehicle access/egress options in the area and precautionary and contingency measures have been applied to minimise risk to persons attending the planned events.

A Method 2 calculation has been completed to ensure an open-air space of safer refuge can be achieved should there be a fire incident on the property or in the immediate vicinity. As the road network is through extreme fire danger vegetation, offering an option to shelter on site is seen as a practical solution for the property.

Consultation has been undertaken with Emergency Services agencies to ensure that all first responders, neighbouring land owners, and Government bodies are in support of this.

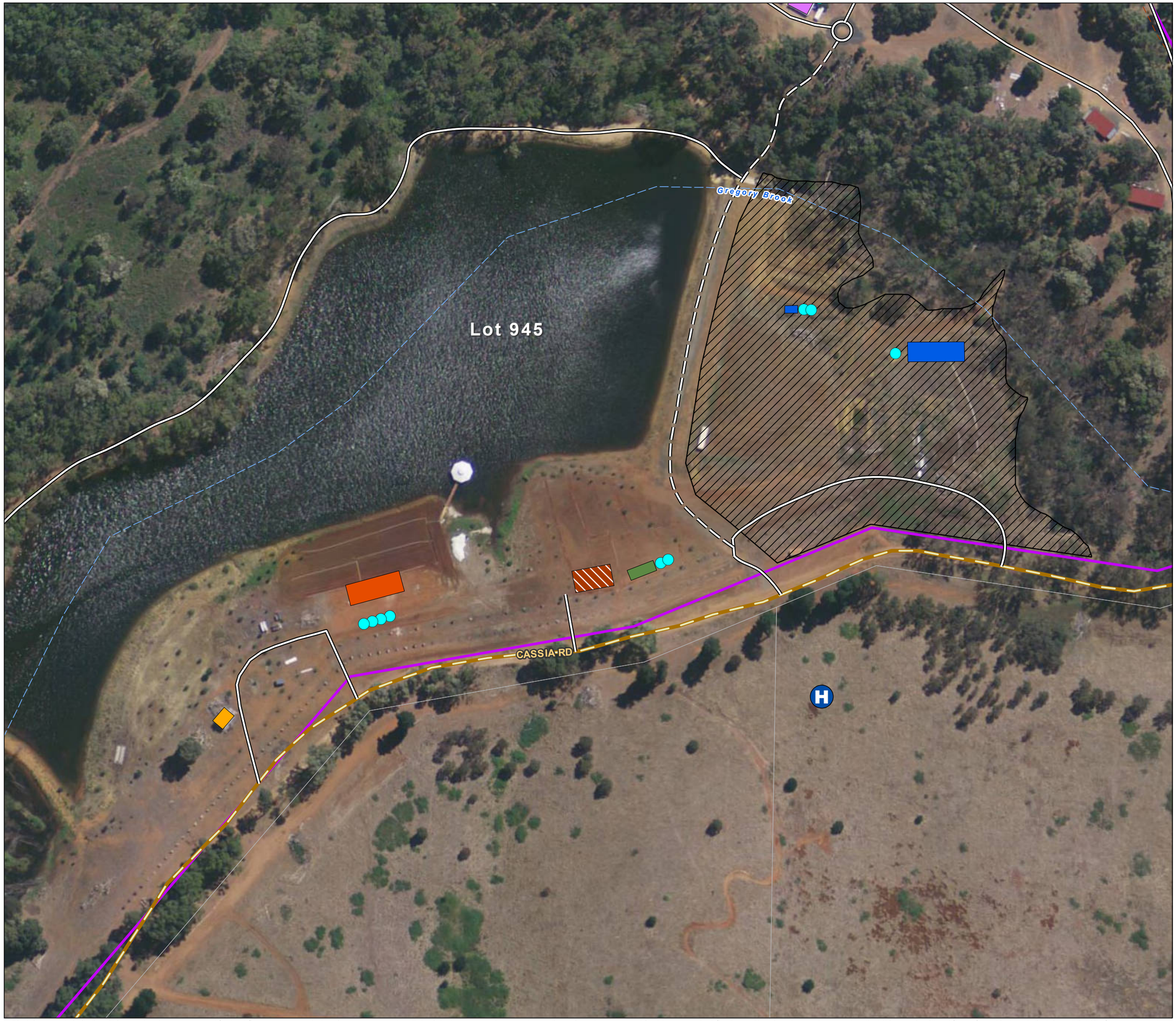
The proposal requires the application of State Planning Policy No. 3.7: Planning in Bushfire Prone Areas (SPP 3.7). The assessed bushfire risk is manageable and will be achieved by the identified stakeholders implementing and maintaining the bushfire risk management measures that are presented in this Plan.

Development and management of potential bushfire hazard issues:
Linga Longa is located along the Cassia and Southampton Road, within an Extreme fire danger area. The risk during the bushfire season comes from the Pine Plantation vegetation and harvesting activities surrounding the property, and across the broader landscape. Due to the terrain itself it is difficult for responding equipment to access the site and to defend/respond to fire incidents. Significant work has been undertaken to mitigate radiant heat impacts on the property itself. The entire property is off grid and prepared to actively defend fire, should the property be at risk. Deciduous trees are planted throughout the property. On the western boundary there are four hydrant points. At the central location there are two hydrant points and there are two header tanks at the Workers Cottages. There are multiple tanks around the property and a large dam central to the site. Potential bushfire hazards identified include the remote location within a bushfire area. There are vast tracts of bushfire prone vegetation within 150 metre of the site boundary which represents an extreme bushfire risk. Visitors may not be familiar with the terrain and speed at which a bushfire can travel through the region, due to the vegetation type.

Figure 1.1

Proposed Development

CAMPGROUND, FUNCTION MARQUEE
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP



------ LEGEND ------

- Subject Site
- Other Lots
- Driveway
- Proposed Driveway
- Camp Grounds
- Helicopter Pad
- Water Tank

Existing Building

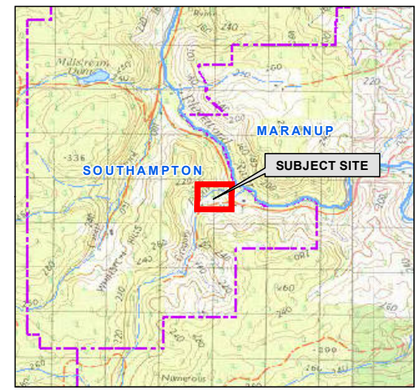
- Dwelling
- Cafe
- Shed
- Cabins
- Function Marquee

Proposed Building

- Shed

0 20 40 60 80 100
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 18/12/2023
Map updated by: Ian Ross 18/12/2023
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BUSHFIRE PRONE PLANNING

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Figure 1.2

Proposed Development

WESTERN CHALETS
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

Lot 945

Gregory Brook

CASSIA RD

------ LEGEND ------

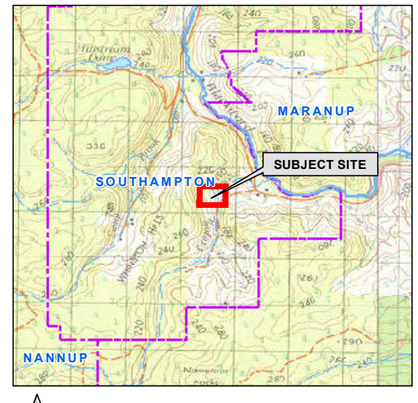
- Subject Site
- Other Lots
- Driveway
- Proposed Driveway

Proposed Building

- Chalets

0 20 40 60 80 100
Metres

------ LOCALITY ------



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Aerial Imagery : Landgate/SLIP
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BUSHFIRE PRONE PLANNING

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WHERE SPP 3.7 AND THE GUIDELINES ARE TO APPLY – DESIGNATED BUSHFIRE PRONE AREAS

All higher order strategic planning documents, strategic planning proposals, subdivisions and development applications located in designated bushfire prone areas need to address SPP 3.7 and its supporting Guidelines. This also applies where an area is not yet designated as bushfire prone but is proposed to be developed in a way that introduces a bushfire hazard.

For development applications where only part of a lot is designated as bushfire prone and the proposed development footprint is wholly outside of the designated area, the development application will not need to address SPP 3.7 or the Guidelines. (Guidelines DPLH 2021 v1.4, s1.2).

For subdivision applications, if all the proposed lots have a BAL-LOW indicated, a BMP is not required. (Guidelines DPLH 2021 v1.4, s5.3.1).

Figure 1.3

Location Plan

Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

------ LEGEND ------

- Subject Site
- Local Government Authority
- Locality / Suburb
- Bush Fire Brigade
- State Emergency Service Unit
- Volunteer Fire & Rescue Service

Reserves

- Reserves

Legislated Lands and Waters

- Section 34A Freehold
- Timber Reserve
- Nature Reserve
- Conservation Park
- National Park
- Section 5(1)(g) Reserve
- State Forest

DBCA Lands of Interest

- Crown Freehold - Dept Interest

0 1 2 3 4 5
Kilometres

------ LOCALITY ------

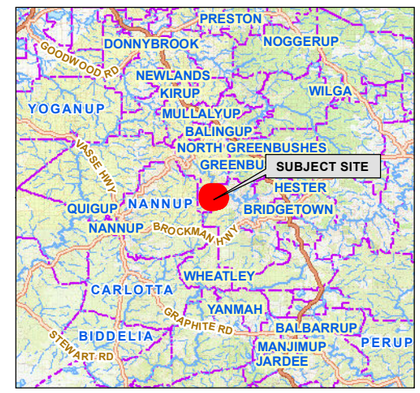

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Figure 1.4

Bushfire Prone Area

COTTAGES
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

------ LEGEND ------

- Subject Site
- Other Lots
- Driveway
- Proposed Driveway
- Helicopter Pad
- Water Tank

Existing Building

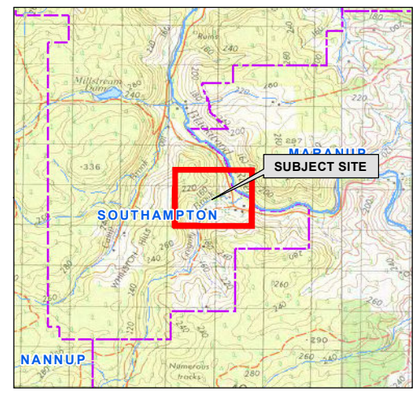
- Water Tank
- Cabins

Bush Fire Prone Areas

- Bushfire Prone Areas (2021)

0 50 100 150 200
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 22/10/2023
Map updated by: Ian 22/10/2023
A3 Scale 1:5,000

BUSHFIRE PRONE PLANNING

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1.2 The Bushfire Management Plan (BMP)

1.2.1 Commissioning and Purpose

Landowner / proponent:	Talitha Eaton
Bushfire Prone Planning commissioned to produce the BMP by:	info@lingalongaestate.com
Purpose of the BMP:	To apply the requirements established by State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) and accompany the development application.
BMP to be submitted to:	Shire of Balingup- Donnybrook

1.2.2 Other Relevant Documentation - Existing or Concurrently Developed

This section identifies any known assessments, reports or plans that have been conducted and prepared previously, or are being prepared concurrently, and are relevant to the subject site and the proposal/application. They potentially have implications for the assessment of bushfire threats and the implementation of the protection measures that are dealt with in the Bushfire Management Plan.

Table 1.1: Existing or concurrently developed relevant documentation.

RELEVANT DOCUMENTS			
Existing Document	Relevant to the Proposal and the BMP	Copy Provided by Proponent / Developer	Title
Structure Plan	No	N/A	-
Bushfire Management Plan	No	N/A	
Bushfire Emergency Plan or Information	No	N/A	
Bushfire Emergency Plan Supporting Information	Yes	-	To be developed in conjunction with this BMP
Bushfire Risk – Assessment and Management Report	No	N/A	
Environmental Asset or Vegetation Survey	No	N/A	-
Landscaping (Revegetation) Plan	No	N/A	-
DPLH BMP Guidance 'Regions & Uses'	No	N/A	-

2 ENVIRONMENTAL CONSERVATION (DESKTOP ASSESSMENT)

Important: *This 'desktop' assessment must not be considered as a replacement for a full Environmental Impact Assessment. It is a summary of potential environmental values at the subject site, inferred from information contained in listed datasets and/or reports, which are only current to the date of last modification.*

These data sources must be considered indicative where the subject site has not previously received a site-specific environmental assessment by an appropriate professional.

Many bushfire prone areas also have high biodiversity values. Consideration of environmental priorities within the boundaries of the land being developed can avoid excessive or unnecessary modification or clearing of vegetation. Approval processes (and exemptions) apply at both Commonwealth and State levels.

Any 'modification' or 'clearing' of vegetation to reduce bushfire risk is considered 'clearing' under the ***Environmental Protection Act 1986*** (EP Act) and requires a clearing permit under the ***Environmental Protection (Clearing of Native Vegetation) Regulations 2004*** (Clearing Regulations) – unless for an exempt purpose.

Clearing native vegetation is an offence, unless done under a clearing permit or the clearing is for an exempt purpose. Exemptions are contained in the EP Act or are prescribed in the Clearing Regulations (note: these do not apply in environmentally sensitive areas).

The ***Department of Water and Environmental Regulation*** (DWER) is responsible for issuing 'clearing' permits and the framework for the regulation of clearing. Approvals under other legislation, from other agencies, may also be required, dependent on the type of flora or fauna present.

Local Planning Policy or Local Biodiversity Strategy: Natural areas that are not protected by the above Act and Regulations (or any other National or State Acts) may be protected by a local planning policy or local biodiversity strategy. Permission from the local government will be required for any modification or removal of native vegetation in these Local Natural Areas (LNA's). Refer to the relevant local government for detail.

For further Information refer to Guidelines v1.4, the Bushfire and Vegetation Factsheet - WAPC, Dec 2021 and https://www.der.wa.gov.au/our-work/clearing-permits

2.1 Existing Vegetation on Private Land

2.1.1 Declared Environmentally Sensitive Areas (ESA)

Table 2.1: Identification of relevant ESA.

IDENTIFICATION OF ESA							
ESA Class	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Wetlands and their 50m Buffer (Ramsar, conservation category and nationally important)	No	N/A	DBCA-010 and 011, 019, 040, 043, 044	☒	☐	☐	None
Bush Forever	No	N/A	DPLH-022, SPP 2.8	☒	☐	☐	None

Threatened and Priority Flora + 50m Continuous Buffer	No	No	DBCA-036	Restricted Scale of Data Available (security)	☐	☐	Confirm with relevant agency
Threatened Ecological Community	No	No	DBCA-038		☐	☐	Data not available - confirm with relevant agency
Heritage Areas National / World	No	No	Relevant register or mapping	☒	☐	☐	N/A
Environmental Protection (Western Swamp Tortoise) Policy 2002	No	No	DWER-062	☒	☐	☐	N/A

DESCRIPTION OF THE IDENTIFIED AREA(S) OF VEGETATION

The relevant State agencies should be further consulted, and details confirmed as part of due diligence for the proposal.

2.2 Post Development Vegetation - Planned Landscaping and/or Re-vegetation

Table 2.2: Identification of land subject to planned vegetation modification.

AREAS OF LAND PLANNED FOR RE-VEGETATION OR LANDSCAPING			
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Planned Vegetation Modification	Description
Riparian Zones	No	N/A	
Foreshore Areas	No	N/A	-
Wetland Buffers	No	N/A	-
Legislated Lands	No	N/A	-
Public Open Space	No	N/A	-
Road Verges	No	N/A	-

2.3 Identified Requirement for Onsite Vegetation Modification or Removal

IDENTIFICATION OF POTENTIAL NATIVE VEGETATION MODIFICATION OR REMOVAL	
Has a requirement to modify or remove native vegetation to establish the required bushfire protection measures on the subject site been identified?	Yes
Is evidence provided (from relevant agencies, the environmental or planning consultant and/or the local government), that the required modification or removal of the vegetation can be achieved?	No

2.4 Cultural Heritage

IDENTIFIED AREAS OF LAND HERITAGE VALUE		
Land with Heritage Value	Relevant to Proposal	Description and Potential Impact on Implementation of Bushfire Protection Measures
Aboriginal Heritage Places (DPLH)	No	
National Heritage List (Dept. of Agriculture, water and the Environment)	No	

Figure 2.1

Environmental Considerations

CAMPGROUND
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

------ LEGEND ------

- Subject Site
- Other Lots
- Driveway
- Proposed Driveway
- Camp Grounds
- Helicopter Pad
- Water Tank

Existing Building

- Dwelling
- Cafe
- Shed
- Cabins
- Function Marquee

Proposed Building

- Shed
- Tent

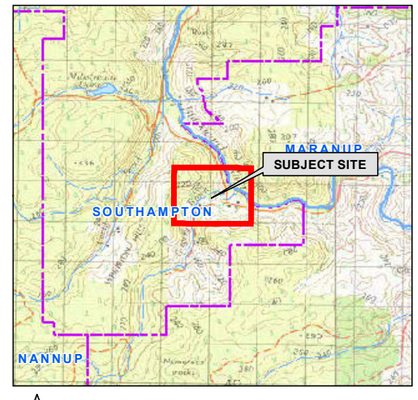
Legislated Lands and Waters

- Section 34A Freehold

Lot 945
Gregory Brook
Blackwood River
CASSIA RD
SOUTHAMPTON RD

0 50 100 150 200
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 18/12/2023
Map updated by: Ian Ross 18/12/2023
A3 Scale 1:5,000

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2023\230072 - 246 Cassia Road Southampton (Linga Longa) (SV BAB)\Mapping\MXD\Campground\230072_CMP_Fig2-1_ENV_Linga_Longa.mxd

3 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

BUSHFIRE ATTACK LEVELS (BAL) - UNDERSTANDING THE RESULTS

The transfer (flux/flow) of radiant heat from the bushfire to a receiving object is measured in kW/m^2. The AS 3959:2018 BAL determination methodology establishes the ranges of radiant heat flux that correspond to each bushfire attack level. These are identified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

The bushfire performance requirements for certain classes of buildings are established by the Building Code of Australia (Vol. 1 & 2 of the NCC). The BAL will establish the bushfire resistant construction requirements that are to apply in accordance with AS 3959:2018 - Construction *of buildings in bushfire prone areas* and the NASH Standard – *Steel framed construction in bushfire areas (NS 300 2021),* whose solutions are deemed to satisfy the NCC bushfire performance requirements.

DETERMINED BAL RATINGS

A BAL Certificate can be issued for a determined BAL. A BAL can only be classed as 'determined' for an existing or future building/structure when:

1. It's final design and position on the lot are known and the stated separation distance from classified bushfire prone vegetation exists and can justifiably be expected to remain in perpetuity; or

2. It will always remain subject to the same BAL regardless of its design or position on the lot after accounting for any regulatory or enforceable building setbacks from lot boundaries as relevant and necessary (e.g., R-codes, restrictive covenants, defined building envelopes) or the retention of any existing classified vegetation either onsite or offsite.

If the BMP derives determined BAL(s), the BAL Certificate(s) required for submission with building applications can be provided, using the BMP as the assessment evidence.

INDICATIVE BAL RATINGS

A BAL Certificate cannot be issued for an indicative BAL. A BAL will be classed as 'indicative' for an existing or future building/structure when the required conditions to derive a determined BAL are not met.

This class of BAL rating indicates what BAL(s) could be achieved and the conditions that need to be met are stated.

Converting the indicative BAL into a determined BAL is conditional upon the currently unconfirmed variable(s) being confirmed by a subsequent assessment and evidential documentation. These variables will include the future building(s) location(s) being established (or changed) and/or classified vegetation being modified or removed to establish the necessary vegetation separation distance. This may also be dependent on receiving approval from the relevant authority for that modification/removal.

BAL RATING APPLICATION – PLANNING APPROVAL VERSUS BUILDING APPROVAL

1. **Planning Approval**: SPP.3.7 establishes that where BAL- LOW to BAL-29 will apply to relevant future construction (or existing structures for proposed uses), the proposed development may be considered for approval (dependent on the other requirements of the relevant policy measures being met). That is, BAL40 or BAL-FZ are not acceptable on planning grounds (except for certain limited exceptions).

   Because planning is looking forward at what can be achieved, as well as looking at what may currently exist, both determined and indicative BAL ratings are acceptable assessment outcomes on which planning decisions can be made (including conditional approvals).

2. **Building Approval:** The Building Code of Australia (Vol. 1 & 2 of the NCC) establishes that relevant buildings in bushfire prone areas must be constructed to the bushfire resistant requirements corresponding to the BAL rating that is to apply to that building. Consequently, a determined BAL rating and the BAL Certificate is required for a building permit to be issued - an indicative BAL rating is not acceptable.

3.1 BAL Assessment Summary (Contour Map Format)

INTERPRETATION OF THE BAL CONTOUR MAP

The BAL contour map is a diagrammatic representation of the results of the bushfire attack level assessment.

The map presents different coloured contours extending out from the areas of classified vegetation. Each contour represents a set range of radiant heat flux that potentially will transfer to an exposed element (building, person or other defined element), when it is located within that contour.

Each of the set ranges of radiant heat flux corresponds to a different BAL rating as defined by the AS 3959:2018 BAL determination methodology.

The width of each shaded BAL contour will vary dependant on both the BAL rating and the relevant parameters (calculation inputs) for the subject site. Their width represents the minimum and maximum vegetation separation distances that correspond to each BAL rating (refer to the relevant table below for these distances).

The areas of classified vegetation to be considered in developing the BAL contours, are those that will remain at the intended end state of the subject development once earthworks, clearing and/or landscaping and re-vegetation have been completed. Variations to this statement that may apply include:

- Both pre and post development BAL contour maps are produced; and/or
- Each stage of a development is assessed independently.

3.1.1 BAL Determination Methodology and Location of Data and Results

LOCATION OF DATA & RESULTS					
BAL Determination Methodology		Location of the Site Assessment Data			Location of the Results
AS 3959:2018	Applied to Assessment	Classified Vegetation and Topography Map(s)	Calculation Input Variables		Assessed Bushfire Attack Levels and/or Radiant Heat Levels
			Summary Data	Detailed Data with Explanatory and Supporting Information	
Method 1 (Simplified)	Yes	Figure 3.1	Table 3.2	Appendix A1	Table 3.1 Table 3.3 / BAL Contour Map
Method 2 (Detailed)	Yes	Figure 3.1	Table 3.2	Appendix A1	

Reasons for the Application of the Method 2 Procedure
To apply the requirement to assume a higher flame temperature of 1200K when determining the availability of suitable onsite sheltering options for tourism vulnerable land uses (Guidelines v1.4 s5.5.3.1.3). This ensures the margin of safety is increased.
Identification of the specific issues associated with the site and/or proposed development that have necessitated the use of the Method 2 procedure: Due to the remote location an onsite open-air shelter is proposed as a place of last resort for guests and visitors who may be onsite during a fire incident that is either on the property or within the local vicinity.

3.1.2 BAL Ratings Derived from the Contour Map

Table 3.1: Indicative and determined BAL(s) for future buildings/structures on the proposed lots.

BUSHFIRE ATTACK LEVEL FOR FUTURE BUILDINGS / STRUCTURES ON STATED LOT [1]		
Assessment	Future Buildings / Structure	
	Indicative BAL [2]	Determined BAL [2]
Workers Cottages	BAL-29	Not Determined
Campsites	BAL-29	BAL-29
Function centre	BAL-29	BAL-LOW
Western Chalets	BAL-29	Not Determined
[1] The assessment data used to derive the BAL ratings is sourced from Table 3.1 and Figure 3.3 'BAL Contour Map'. [2] Refer to the start of Section 3 for an explanation of indicative versus determined BAL ratings.		

3.1.3 Site Assessment Data Applied to Construction of the BAL Contour Map(s)

RELEVANT CLASSIFIED VEGETATION	
Identification of Classified Vegetation that is Relevant to the Production of the BAL Contour Map(s)	Relevant Vegetation Map
The relevant vegetation will be all areas of classified vegetation that exist at the time of the site assessment – both within the subject site (onsite) and external to the subject site (offsite).	Figures No 3.1, 3.1.1, 3.1.2
The relevant vegetation for the pre-development BAL contour map will be all areas of classified vegetation that exist at the time of the site assessment – both within the subject site (onsite) and external to the subject site (offsite).	Figures No 3.2, 3.2.1
The relevant vegetation for the post-development BAL contour map will be any area of classified vegetation - both within the subject site (onsite) and external to the subject site (offsite) - that will remain at the intended end state of the subject development once earthworks, any clearing and/or landscaping and re-vegetation have been completed.	Figure No 3.3.1
Supporting Assessment Details: None required	

Table 3.2: The calculation inputs applied to determining the site specific separation distances corresponding to levels of potential radiant heat transfer (including BAL's).

WORKERS COTTAGES SUMMARY OF CALCULATION INPUT VARIABLES APPLIED TO THE DETERMINATION OF SEPARATION DISTANCES CORRESPONDING TO RADIANT HEAT LEVELS [1]												
Applied BAL Determination Method		METHOD 1 - SIMPLIFIED PROCEDURE (AS 3959:2018 CLAUSE 2.2)										
The Calculation Variables Corresponding to the BAL Determination Method Applied												
Methods 1 and 2		Method 1	Method 2									
Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor
			Applied Range	Measured								
Area	Class		degree range	degrees	degrees		K	metres	metres	kW/m	metres	% Reduction
1	(A) Forest	80	Downslope >15-20	d/slope 17								
2	(G) Grassland	80	Downslope >5-10	d/slope 7.8								
3	(A) Forest	80	Downslope >5-10	d/slope 7.8								
4	Excluded cl 2.2.3.2(e & f)	-	-	-								

[1] All data and information supporting the determination of the classifications and values stated in this table and any associated justification, is presented in Appendix A.

Where the values are stated as 'default' these are either the values stated in AS 3959:2018, Table B1 or the values calculated as intermediate or final outputs through application of the equations of the AS 3959:2018 BAL determination methodology. They are not values derived by the assessor.

CAMPGROUNDS, SHED & FUNCTION CENTRE SUMMARY OF CALCULATION INPUT VARIABLES APPLIED TO THE DETERMINATION OF SEPARATION DISTANCES CORRESPONDING TO RADIANT HEAT LEVELS [1]												
Applied BAL Determination Method		METHOD 1 - SIMPLIFIED PROCEDURE (AS 3959:2018 CLAUSE 2.2)										
The Calculation Variables Corresponding to the BAL Determination Method Applied												
Methods 1 and 2		Method 1	Method 2									
Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor
			Applied Range	Measured								
Area	Class		degree range	degrees	degrees		K	metres	metres	kW/m	metres	% Reduction
1	(A) Forest	80	Upslope or flat 0	flat 0								
2	(G) Grassland	80	Upslope or flat 0	flat 0								
3	Excluded cl 2.2.3.2(e & f)	-	-	-								

[1] All data and information supporting the determination of the classifications and values stated in this table and any associated justification, is presented in Appendix A.

Where the values are stated as 'default' these are either the values stated in AS 3959:2018, Table B1 or the values calculated as intermediate or final outputs through application of the equations of the AS 3959:2018 BAL determination methodology. They are not values derived by the assessor.

WESTERN CHALETS SUMMARY OF CALCULATION INPUT VARIABLES APPLIED TO THE DETERMINATION OF SEPARATION DISTANCES CORRESPONDING TO RADIANT HEAT LEVELS [1]												
Applied BAL Determination Method		METHOD 1 - SIMPLIFIED PROCEDURE (AS 3959:2018 CLAUSE 2.2)										
The Calculation Variables Corresponding to the BAL Determination Method Applied												
Methods 1 and 2		Method 1	Method 2									
Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor
			Applied Range	Measured								
Area	Class		degree range	degrees	degrees		K	metres	metres	kW/m	metres	% Reduction
1	(A) Forest	80	Upslope or flat 0	flat 0								
2	(A) Forest	80	Upslope or flat 0	flat 0								
3	(A) Forest	80	Downslope >0-5	d/slope 2.4								
4	(A) Forest	80	Downslope >5-10	d/slope 7.8								
5	(G) Grassland	80	Upslope or flat 0	Flat 0								
6	Excluded cl 2.2.3.2(e & f)	-	-	-								

[1] All data and information supporting the determination of the classifications and values stated in this table and any associated justification, is presented in Appendix A.

Where the values are stated as 'default' these are either the values stated in AS 3959:2018, Table B1 or the values calculated as intermediate or final outputs through application of the equations of the AS 3959:2018 BAL determination methodology. They are not values derived by the assessor.

OPEN AIR SHELTER SUMMARY OF CALCULATION INPUT VARIABLES APPLIED TO THE DETERMINATION OF SEPARATION DISTANCES CORRESPONDING TO RADIANT HEAT LEVELS [1]												
Applied BAL Determination Method		METHOD 2 - DETAILED PROCEDURE (AS 3959:2018 APPENDIX B)										
The Calculation Variables Corresponding to the BAL Determination Method Applied												
Methods 1 and 2		Method 1	Method 2									
Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor
			Applied Range	Measured								
Area	Class		degree range	degrees	degrees		K	metres	metres	kW/m	metres	% Reduction
1	(A) Forest	-	Upslope or flat 0	Flat 0		80	Default	Default	Default	Default	Default	Default
2	(G) Grassland	-	Upslope or flat 0	Flat 0		110	Default	Default	Default	Default	Default	Default
3	Excluded cl 2.2.3.2(e & f)	-	-	-								

[1] All data and information supporting the determination of the classifications and values stated in this table and any associated justification, is presented in Appendix A.

Where the values are stated as 'default' these are either the values stated in AS 3959:2018, Table B1 or the values calculated as intermediate or final outputs through application of the equations of the AS 3959:2018 BAL determination methodology. They are not values derived by the assessor.

Table 3.3: Vegetation separation distances corresponding to the radiant heat levels illustrated as BAL contours in Figure 3.2.

COTTAGES CALCULATED VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF RADIANT HEAT [1]									
Vegetation Classification		Separation Distances Corresponding to Stated Level of Radiant Heat (metres)							
		Bushfire Attack Level						Maximum Radiant Heat Flux	
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW	10 kW/m^2	2 kW/m^2
1	(A) Forest	<42	42-<52	52-<68	68-<87	87<100	>100		
2	(G) Grassland	<8	8-<10	10-<16	16-<23	23 -<50	>50		
3	(A) Forest	<26	26-<33	33-<46	46-<61	61-<100	>100		
4	Excluded cl 2.2.3.2(e & f)	-	-	-	-	-	-		
[1] All calculation input variables are presented in Table 3.2. A copy of radiant heat calculator output for each area of classified vegetation are presented in Appendix A3.									

CAMPGROUNDS, SHED & FUNCTION CENTRE CALCULATED VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF RADIANT HEAT [1]									
Vegetation Classification		Separation Distances Corresponding to Stated Level of Radiant Heat (metres)							
		Bushfire Attack Level						Maximum Radiant Heat Flux	
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW	10 kW/m^2	2 kW/m^2
1	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100		160m
2	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50		90m
3	Excluded cl 2.2.3.2(e & f)	-	-	-	-	-	-		

WESTERN CHALETS CALCULATED VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF RADIANT HEAT [1]									
Vegetation Classification		Separation Distances Corresponding to Stated Level of Radiant Heat (metres)							
		Bushfire Attack Level						Maximum Radiant Heat Flux	
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW	10 kW/m^2	2 kW/m^2
1	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100		
2	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100		
3	(A) Forest	<20	20-<27	27-<37	37-<50	50-<100	>100		
4	(A) Forest	<26	26-<33	33-<46	46-<61	61-<100	>100		
5	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50		
6	Excluded cl 2.2.3.2(e & f)	-	-	-	-	-	-		
[1] All calculation input variables are presented in Table 3.2. A copy of radiant heat calculator output for each area of classified vegetation are presented in Appendix A3.									

OPEN AIR SHELTER CALCULATED VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF RADIANT HEAT [1]									
Vegetation Classification		Separation Distances Corresponding to Stated Level of Radiant Heat (metres)							
		Bushfire Attack Level						Maximum Radiant Heat Flux	
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW	10 kW/m^2	2 kW/m^2
1	(A) Forest								160m
2	(G) Grassland								90m

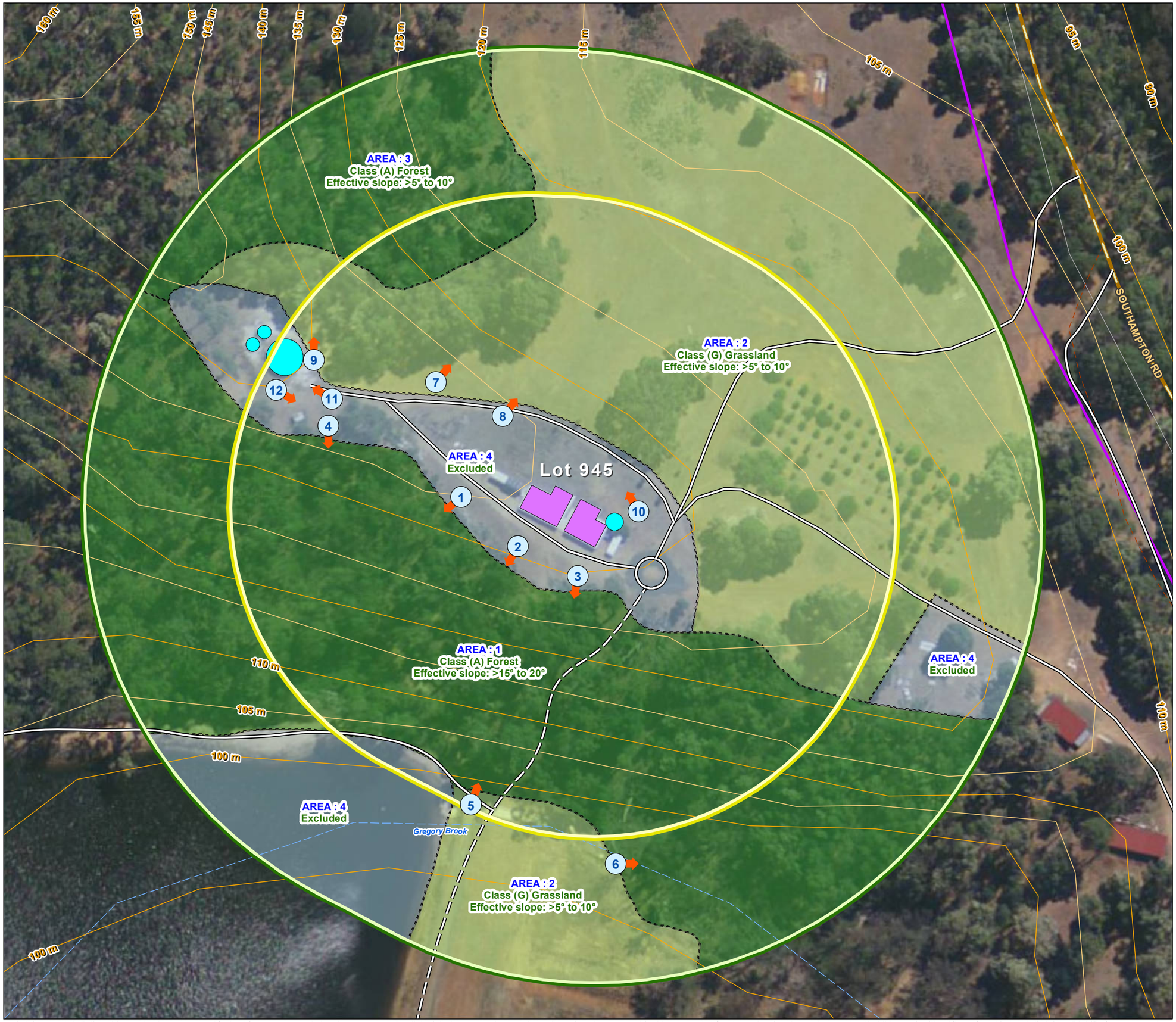


Figure 3.1

Classified Vegetation & Topography

COTTAGES
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

------ LEGEND ------

- Subject Site
- Other Lots
- Photo & Direction
- Driveway
- Proposed Driveway

Existing Building
- Water Tank
- Cabins

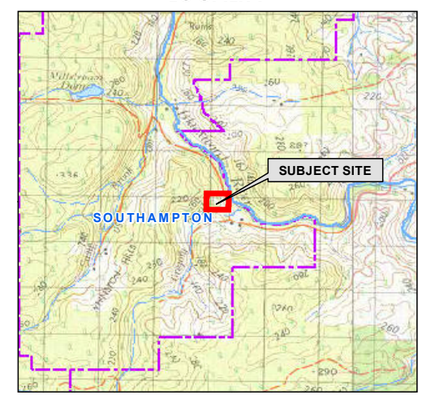
150m Vegetation Assessment Area
- 150m from Subject Site

100m Vegetation Assessment Area
- 100m from Subject Site

Classified Vegetation
- Class (A) Forest
- Class (G) Grassland
- Exclusion 2.2.3.2

0 20 40 60 80
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 18/12/2023
Map updated by: Ian Ross 18/12/2023
A3 Scale 1:1,250

BUSHFIRE PRONE PLANNING

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Figure 3.1.1

Classified Vegetation & Topography

CAMPGROUND
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

------ LEGEND ------

- Subject Site
- Other Lots
- Photo & Direction
- Driveway
- Proposed Driveway
- Camp Grounds
- Helicopter Pad
- Water Tank

Existing Building

- Dwelling
- Cafe
- Shed
- Function Marquee

Proposed Building

- Shed

150m Vegetation Assessment Area

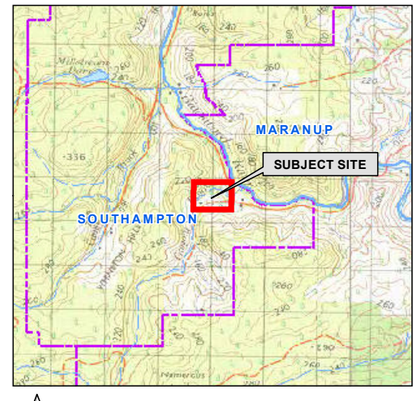
- 150m from Subject Site

Classified Vegetation

- Class (A) Forest
- Class (G) Grassland
- Exclusion 2.2.3.2

0 25 50 75 100 125 150
Metres

------ LOCALITY ------



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BUSHFIRE PRONE PLANNING

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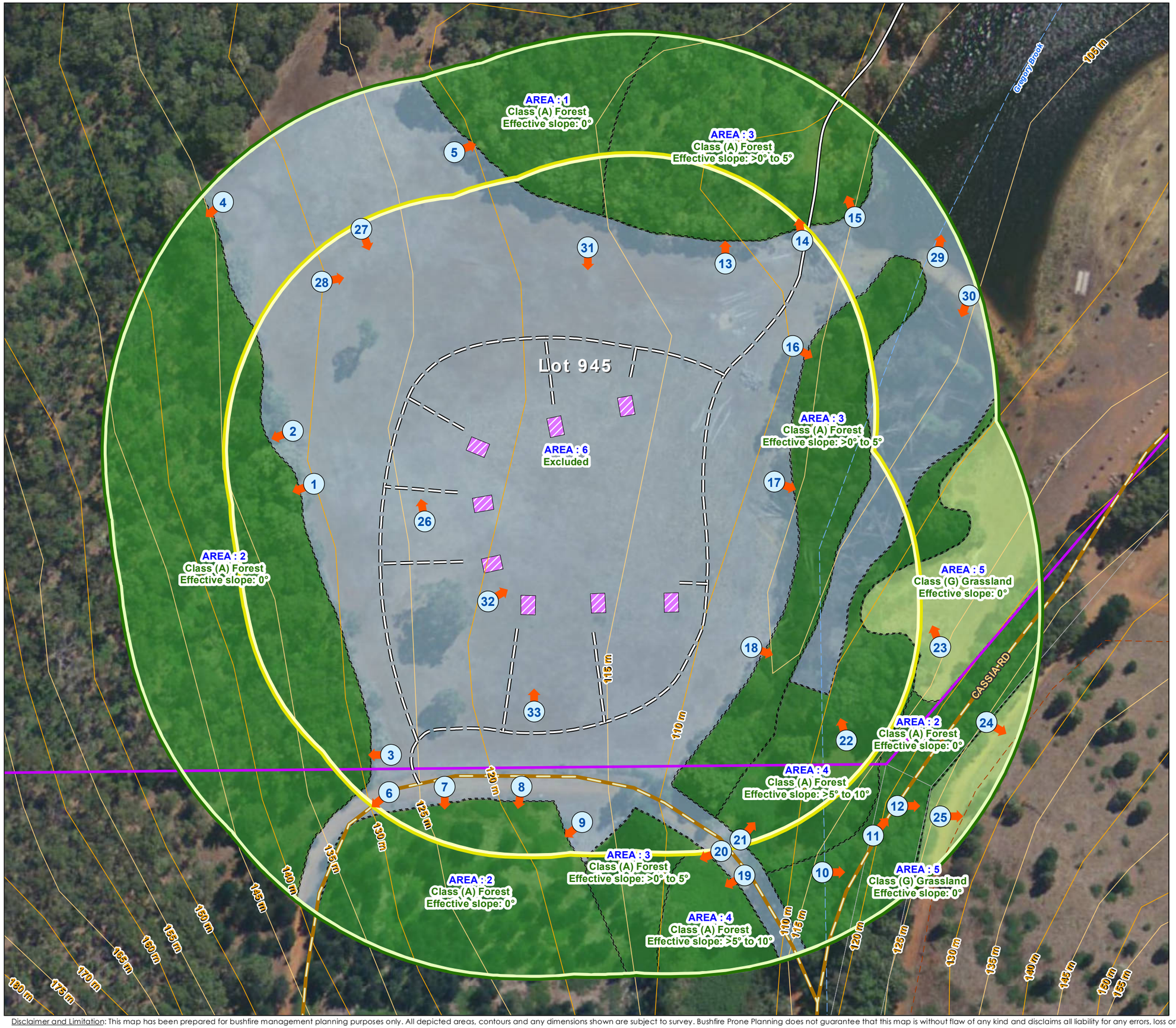
Figure 3.1.2

Classified Vegetation & Topography

WESTERN CHALETS
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP



------ LEGEND ------

- Subject Site
- Other Lots
- Photo & Direction
- Driveway
- Proposed Driveway

Proposed Building
- Chalets

150m Vegetation Assessment Area
- 150m from Subject Site

100m Vegetation Assessment Area
- 100m from Subject Site

Classified Vegetation
- Class (A) Forest
- Class (G) Grassland
- Exclusion 2.2.3.2

0 20 40 60 80 100
Metres

------ LOCALITY ------

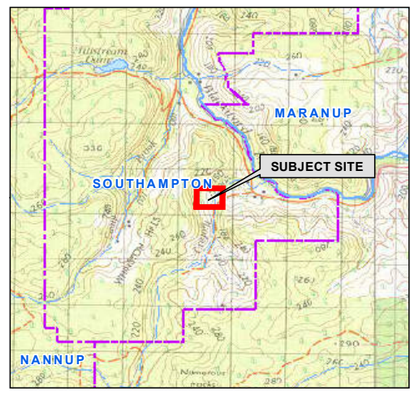


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Image Date : Feb 2017

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BUSHFIRE PRONE PLANNING

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Figure 3.2

Classified Vegetation & Topography (Post Development)

COTTAGES
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

AREA : 3
Class (A) Forest
Effective slope: >5° to 10°

AREA : 2
Class (G) Grassland
Effective slope: >5° to 10°

AREA : 4
Excluded

AREA : 1
Class (A) Forest
Effective slope: >15° to 20°

AREA : 4
Excluded

AREA : 4
Excluded

AREA : 2
Class (G) Grassland
Effective slope: >5° to 10°

10 m
52 m
52 m
Gregory Brook
SOUTHAMPTON RD
160 m
155 m
150 m
145 m
140 m
135 m
130 m
125 m
120 m
115 m
110 m
105 m
100 m
100 m
105 m
110 m
93 m
90 m

------ LEGEND ------

- Subject Site
- Other Lots

Asset Protection
- APZ - Proposed (BAL 29)
- Driveway
- Proposed Driveway

Existing Building
- Water Tank
- Cabins

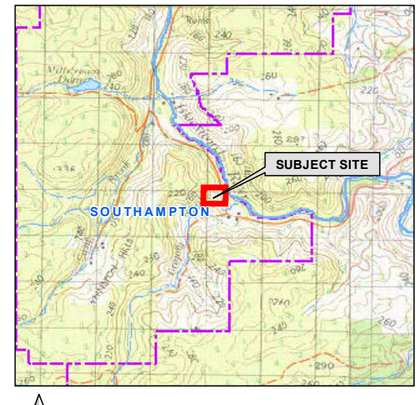
150m Vegetation Assessment Area
- 150m from Subject Site

100m Vegetation Assessment Area
- 100m from Subject Site

Classified Vegetation
- Class (A) Forest
- Class (G) Grassland
- Exclusion 2.2.3.2
- APZ Distance

0 20 40 60 80
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 18/12/2023
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BUSHFIRE PRONE PLANNING

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Figure 3.2.1

Classified Vegetation & Topography (Post Development)

CAMPGROUND
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

------ LEGEND ------

- Subject Site
- Other Lots
- Camp Grounds
- Driveway
- Proposed Driveway
- Helicopter Pad
- Water Tank

Existing Building

- Dwelling
- Cafe
- Shed
- Cabins
- Function Marquee

Proposed Building

- Shed

150m Vegetation Assessment Area

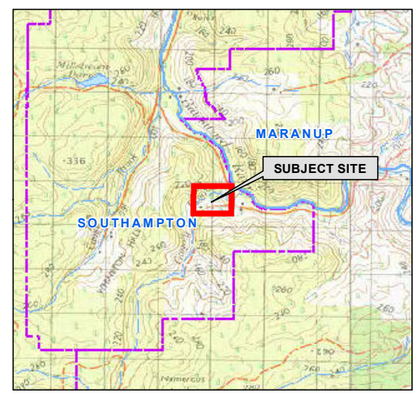
- 150m from Subject Site

Classified Vegetation

- Class (A) Forest
- Class (G) Grassland
- Exclusion 2.2.3.2

0 25 50 75 100 125 150
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 18/12/2023
Map updated by: Ian Ross 18/12/2023
A3 Scale 1:2,250

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2023\230072 - 246 Cassia Road Southampton (Linga Longa) (SV BAB)\Mapping\MXD\Campground\230072_CMP_Fig3-1-1_VEG_POST_Linga_Longa.mxd

Figure 3.3

BAL Contour Map

COTTAGES
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

AREA 2
AREA 4
AREA 1
AREA 4
AREA 2
10 m
52 m
52 m
Gregory Brook

------ LEGEND ------

- Subject Site
- Other Lots

Asset Protection

- APZ - Proposed (BAL 29)
- Driveway
- Proposed Driveway

Existing Building

- Water Tank
- Cabins

100m Vegetation Assessment Area

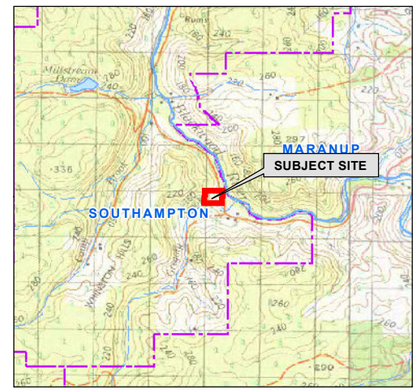
- 100m from Subject Site

Indicative Bushfire Attack Levels

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- Classified Vegetation Boundary
- APZ Distance

0 10 20 30 40 50
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 22/10/2023
Map updated by: Ian 22/10/2023
A3 Scale 1:1,000

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2023\230072 - 246 Cassia Road Southampton (Linga Longa) (SV BAB)\Mapping\MXD\Cottages\230072_COT_Fig3-2_BAL_Linga_Longa.mxd

Figure 3.3.1

BAL Contour Map

CAMPGROUND
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

------ LEGEND ------

- Subject Site
- Other Lots

Radiant Heat Flux

- <2kw Zone (Within Subject Site)
- Driveway
- Proposed Driveway
- Helicopter Pad
- Water Tank

Existing Building

- Dwelling
- Building
- Shed

Proposed Building

- Shed

100m Vegetation Assessment Area

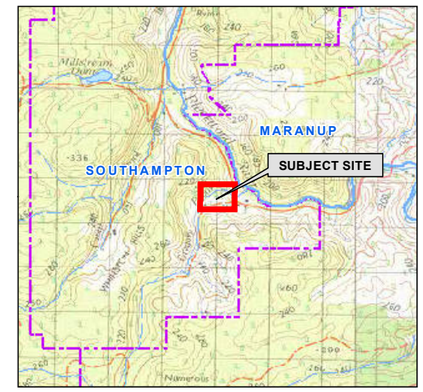
- 100m from Subject Site

Indicative Bushfire Attack Levels

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL LOW
- Classified Vegetation Boundary

0 20 40 60 80 100
Metres

------ LOCALITY ------



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 18/12/2023
Map updated by: Ian Ross 18/12/2023
A3 Scale 1:2,000

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2023\230072 - 246 Cassia Road Southampton (Linga Longa) (SV BAB)\Mapping\MXD\Campground\230072_CMP_Fig3-2_BAL_POST_Linga_Longa.mxd

Figure 3.3.2

BAL Contour Map

WESTERN CHALETS
Lot 945 on Plan 111290, Area : 107.87 ha
Cassia Road
SOUTHAMPTON
SHIRE OF DONNYBROOK-BALINGUP

AREA 1
AREA 3
Lot 945
AREA 6
AREA 2
AREA 3
AREA 5
AREA 4
AREA 2
Gregory Brook
CASSIA RD

------ LEGEND ------

- Subject Site
- Other Lots
- Driveway
- Proposed Driveway

Proposed Building

- Chalets

100m Vegetation Assessment Area

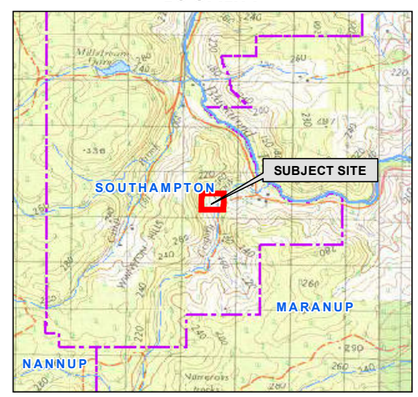
- 100m from Subject Site

Indicative Bushfire Attack Levels

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL LOW
- Classified Vegetation Boundary

0 20 40 60 80
Metres

------ LOCALITY ------



N

Aerial Imagery : Landgate/SLIP
Image Date : Feb 2017

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 18/12/2023
Map updated by: Ian Ross 18/12/2023
A3 Scale 1:1,250

BUSHFIRE PRONE PLANNING

Map Document Path / Name: K:\Projects\Jobs 2023\230072 - 246 Cassia Road Southampton (Linga Longa) (SV BAB)\Mapping\MXD\West_Chalets\230072_WC_Fig3-2_BAL_Linga_Longa.mxd

4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

The Guidelines for Planning in Bushfire Prone Areas (WAPC 2021 v1.4), Appendix 5, establish that the application of this section of the BMP is intended to support ***strategic planning*** proposals. At the strategic planning stage there will typically be insufficient proposed development detail to enable all required assessments, including the assessment against the bushfire protection criteria.

Strategic Planning Proposals

If the proposed development is at this stage of planning, this section of the BMP will identify:

- Issues associated with the level of the threats presented by any identified bushfire hazard;
- Issues associated with the ability to implement sufficient and effective bushfire protection measures to reduce the exposure and vulnerability levels (of elements exposed to the hazard threats), to a tolerable or acceptable level; and
- Issues that will need to be considered at subsequent planning stages.

Other Planning Proposals

For all other planning stages the following issues are addressed in other sections of this BMP:

- environmental, biodiversity and conservation values;
- The bushfire threats – with the focus on flame contact and radiant heat; and
- The ability of the proposed development to apply the required bushfire protection measures thereby enabling it to be considered for planning approval.

These section include:

- Section 2 – Environmental Conservation;
- Section 3 – Potential Bushfire Impact; and
- Section 5 – Assessment Against the Bushfire Protection Criteria. Including the guidance provided by the *Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2'*.

Is the proposed development a strategic planning proposal?	No

5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA (GUIDELINES V1.4)

5.1 Bushfire Protection Criteria Elements Applicable to the Proposed Development/Use

APPLICATION OF THE CRITERIA, ACCEPTABLE SOLUTIONS AND PERFORMANCE ASSESSMENT

The criteria are divided into five elements – location, siting and design, vehicular access, water and vulnerable tourism land uses. Each element has an intent outlining the desired outcome for the element and reflects identified planning and policy requirements in respect of each issue.

The example acceptable solutions (bushfire protection measures) provide one way of meeting the element's intent. Compliance automatically achieves the element's intent and provides a straightforward pathway for assessment and approval.

Where the acceptable solutions cannot be met, the ability to develop design responses (as alternative solutions that meet bushfire performance requirements) is an alternative pathway that is provided by addressing the applicable performance principles (as general statements of how best to achieve the intent of the element).

A merit based assessment is established by the SPP 3.7 and the Guidelines as an additional alternative pathway along with the ability of using discretion in making approval decisions (sections 2.5, 2.6 and 2.7). This is formally applied to certain development (minor and unavoidable – sections 5.4.1 and 5.7). Relevant decisions by the State Administrative Tribunal have also supported this approach more generally.

Elements 1 – 4 should be applied for all strategic planning proposals, subdivision or development applications, except for vulnerable tourism land uses which should refer to Element 5. Element 5 incorporates the bushfire protection criteria in Elements 1 – 4 but caters them specifically to tourism land uses. (Guidelines DPLH 2021v1.4)

The Bushfire Protection Criteria	Applicable to the Proposed Development/Use
Element 1: Location	No
Element 2: Siting and Design	No
Element 3: Vehicular Access	No
Element 4: Water	No
Element 5: Vulnerable Tourism Land Uses	Yes

5.2 Local Government Variations to Apply

Local governments may add to or modify the acceptable solutions to recognise special local or regional circumstances (e.g., topography / vegetation / climate). These are to be endorsed by both the WAPC and DFES before they can be considered in planning assessments. (Guidelines DPLH 2021v1.4).

Do endorsed regional or local variations to the acceptable solutions apply to the assessments against the Bushfire Protection Criteria for the proposed development /use?	None known or identified

5.3 Assessment Statements for Element 5: Vulnerable Tourism Land Uses

5.3.1 Other Short Term Accommodation

VULNERABLE TOURISM	
Element Intent	To provide bushfire protection for tourism land uses relevant to the characteristics of the occupants and/or the location, to preserve life and reduce the impact of bushfire on property and infrastructure.
Proposed Development/Use – Relevant Type	**Short term accommodation (other than B&B/Holiday House) including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds).**
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.
Pathway Applied to Provide an Alternative Solution	N/A

Acceptable Solutions - Assessment Statements

All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.

The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices 2 and 3. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).

Solution Component Check Box Legend ☑ Relevant & met ☒ Relevant & not met ⃠ Not relevant

A5.7 Siting and Design

A5.7a Asset protection zone (APZ) – caravan park only **Applicable**: No **Compliant**: N/A

☐ ☐ ⃠ The existing and/or proposed campground facilities (i.e. office, manages residence, camper's kitchen, showers, laundry etc.) can be sited within an asset protection zone of the required dimensions that will ensure their exposure to the potential radiant heat impact of a bushfire does not exceed 29 kW/m2 (BAL-29).

Supporting Assessment Details: N/A

A5.7b Asset protection zone (APZ) – certain accommodation **Applicable**: No **Compliant**: N/A

☐ ☐ ⃠ The following accommodation structures are considered by the proponents to be a tolerable loss in the event of a bushfire. Consequently, there is to be no radiant heat limitations applied to these sites (i.e. no specified dimensioned APZ). These structures are:

- Caravan and camping sites; and
- Eco tents and cabins.

Supporting Assessment Details: N/A

A5.7c Asset protection zone (APZ) – all other accommodation	Applicable:	Yes	Compliant:	Yes

APZ DIMENSIONS – DIFFERENCES IN REQUIREMENTS FOR PLANNING ASSESSMENTS COMPARED TO IMPLEMENTATION

A key required bushfire protection measure is to reduce the exposure of buildings/infrastructure (as exposed vulnerable elements at risk), to the direct bushfire threats of flame contact, radiant heat and embers and the indirect threat of consequential fires that result from the subsequent ignition of other combustible materials that may be constructed, stored or accumulate in the area surrounding these structures. This reduces the associated risks of damage or loss.

This is achieved by separating buildings (and consequential fire fuels as necessary) from areas of classified bushfire prone vegetation. This area of separation surrounding buildings is identified as the Asset Protection Zone (APZ) and consists of no vegetation and/or low threat vegetation or vegetation continually managed to a minimal fuel condition. The required separation distances will vary according to the site specific conditions and local government requirements.

The APZ dimensions stated and/or illustrated in this Report can vary dependent on the purpose for which they are being identified.

> *Note: Appendix B 'Onsite Vegetation Management' provides further information regarding the different APZ dimensions that can be referenced, their purpose and the specifications of the APZ that are to be established and maintained on the subject lot.*

THE 'PLANNING BAL-29' APZ DIMENSIONS

Purpose: To provide evidence of the development or use proposal's ability to achieve minimum vegetation separation distances. To achieve 'acceptable solution' planning approval for this factor, it must be demonstrated that the minimum separation distances corresponding to a maximum level of radiant transfer to a building of 29 kW/m^2, either exist or can be implemented (with certain exceptions). These separation distances are the 'Planning BAL-29' APZ dimensions.

The 'Planning BAL-29' APZ is not necessarily the size of the APZ that must be physically implemented and maintained by a landowner. Rather, its sole purpose is to identify if an acceptable solution for planning approval can be met.

THE 'REQUIRED' APZ DIMENSIONS

Purpose: Establishes the dimensions of the APZ to be physically implemented by the landowner on their lot: These will be the minimum required separation distances from the subject building(s) to surrounding bushfire prone vegetation (identified by type and associated ground slope). These are established by:

A. The 'BAL Rating APZ' of the subject building(s) when distances are greater than 'B' below (except when 'B' establishes a maximum distance); or

B. The 'Local Government' APZ' derived from the Firebreak/Hazard Reduction Notice when distances are greater than 'A' above, other than when a maximum distance is established, in which case this will apply; or

C. A combination of 'A' and 'B'.

> *Within this Report/Plan it is the **'Planning BAL-29' APZ** that will be identified on maps, diagrams and in tables as necessary – unless otherwise stated.*
>
> *The **'Required' APZ** dimension information will be presented in Appendix B1.1 and on the Property Bushfire Management Statement, when required to be included for a development application.*

☑ ☐ ☐ **APZ Width:** Every existing or a future habitable building on the lot(s) of the proposed development, can be located within the developable portion of the lot and be surrounded by a 'Planning BAL-29' APZ of the required dimensions (measured from any external wall or supporting post or column to the edge of

	the classified vegetation), that will ensure their exposure to the potential radiant heat impact of a bushfire does not exceed 29 kW/m^2.
☐ ☐ ⊘	**Restriction on Building Location:** It has been identified that the current developable portion of a lot(s) provides for a future building location that will result in that building being subject to a BA-40 or BAL-FZ rating. Consequently, it may be considered necessary to impose the condition that a restrictive covenant to the benefit of the local government pursuant to section 129BA of the Transfer of Land Act 1893, is to be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a restriction on the use of that portion of land (refer to Code F3 of Model Subdivision Conditions Schedule, WAPC June 2021 and Guidelines s5.3.2).
☑ ☐ ☐	**APZ Location:** The required dimensions for a 'Planning BAL-29' APZ can be contained solely within the boundaries of the lot(s) on which the existing or future building(s) is situated.
☐ ☐ ⊘	**APZ Location:** The required dimensions for a 'Planning BAL-29' APZ can be partly established within the boundaries of the lot(s) on which the existing or future building(s) is situated. The balance of the APZ would exist on adjoining land that satisfies the exclusion requirements of AS 3959:2018 cl 2.2.3.2 for non-vegetated areas and/or low threat vegetation and/or vegetation managed in a minimal fuel condition.
☐ ☐ ⊘	**APZ Location:** It can be justified that any adjoining (offsite) land forming part of a 'Planning BAL-29' APZ will: • If non-vegetated, remain in this condition in perpetuity; and/or • If vegetated, be low threat vegetation or vegetation managed in a minimal fuel condition in perpetuity.
☑ ☐ ☐	**APZ Management:** The area of land (within each lot boundary), that is to make up the required 'Landowner' APZ dimensions (refer to Appendix B, Part B1), can and will be managed in accordance with the requirements of the Guidelines Schedule 1 'Standards for Asset Protection Zones' (refer to Appendix B).
☐ ☐ ⊘	**Subdivision Staging:** There are undeveloped future stages of subdivision, containing bushfire prone vegetation, that have been taken into consideration for their potentially 'temporary' impact on the ability to establish a 'Planning BAL-29 APZ' on adjoining developed lots. A staging plan is developed to manage this.
☑ ☐ ☐	**Firebreak/Hazard Reduction Notice:** Any additional requirements established by the relevant local government's annual notice to install firebreaks and manage fuel loads (issued under s33 of the Bushfires Act 1954), can and will be complied with.
Supporting Assessment Details: The BAL – 29 APZ can be achieved with managed onsite vegetation for all habitable buildings, the proposed chalets to be constructed on the western boundary and the nature based camp area. Firebreaks are installed under the requirements established by the local government's annual firebreak notice.	
A5.7d Asset protection zone (APZ) – landscape management	**Applicable**: No **Compliant**: N/A
☐ ☐ ⊘	The preparation of a landscape management plan, to identify ongoing onsite vegetation management, is appropriate for the proposed development. This will be prepared.
Supporting Assessment Details: N/A	

A5.7e Onsite shelter – pedestrian paths	Applicable:	Yes	Compliant:	Yes
☑ ☐ ☐ To comply with acceptable solution A5.8.2e (lack of vehicular access), pedestrian paths to an onsite shelter area or building, with the required signage, can and will be provided.				
Supporting Assessment Details: Pedestrian paths to the onsite shelter location can be lit with appropriate signage installed.				
A5.7f Onsite shelter – exposure to the bushfire hazard	**Applicable:**	Yes	**Compliant:**	Yes
☐ ☐ ⊘ To comply with acceptable solution A5.8.2e (lack of vehicular access), a building that will function as a suitable onsite shelter can and will be provided that will reduce persons exposure to bushfire threats (through the shielding provided by the building). The building's exposure to the bushfire hazard threat of radiant heat will be limited to a maximum radiant heat flux of 10 kW/m2 (calculated with an assumed flame temperature of 1200K) by providing the required separation distances from the bushfire hazard.				
☑ ☐ ☐ To comply with acceptable solution A5.8.2e (lack of vehicular access), an open area that will function as a suitable onsite shelter can and will be provided that will limit persons exposure to a maximum radiant heat flux of 2 kW/m2 (calculated with an assumed flame temperature of 1200K) by providing the required separation distances from the bushfire hazard.				
Supporting Assessment Details: A M2 calculation has been completed that achieves a maximum radiant heat flux of 2kW/m2 based on 1200K for an onsite open-air shelter. The location of the open-air shelter is marked on Fig 3.1.1 and Fig 3.3.1				
A5.7g Onsite shelter – bushfire construction requirements	**Applicable:**	No	**Compliant:**	N/A
☐ ☐ ⊘ To comply with acceptable solution A5.8.2e (lack of vehicular access), the building(s) provided as an onsite shelter can and will be designed and constructed in accordance with the National Construction Code and the ABCB Community Shelter Handbook.				
Supporting Assessment Details: N/A				
A5.8 Vehicular Access				
A5.8.1 Vehicular Access for All Proposals				
A5.8.1a Internal access/private driveway - availability	**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐ The internal vehicular access/private driveway can provide emergency access/egress for all patrons and staff in the event of a bushfire.				
☑ ☐ ☐ It is possible to provide at least two internal access/egress points to the public road network.				
Supporting Assessment Details: The internal driveways are constructed to the technical requirements. Each function area (cottages, western chalets, nature based camping) has two internal access points to the public road network.				
A5.8.1b Internal access/private driveway - technical requirements	**Applicable:**	Yes	**Compliant:**	Yes
☐ ☐ ⊘ The internal vehicular access/private driveway length is no greater than 70m. No technical requirements need to be met.				

☑ ☐ ☐	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6. Refer also to Appendix C in this BMP), can and will be complied with.
☑ ☐ ☐	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.
☑ ☐ ☐	The turnaround area requirements (Guidelines, Figure 28, and within 30m of the habitable building) can and will be complied with.
Supporting Assessment Details: The technical details for the internal driveway are compliant with the Guidelines, Table 6. There are good turnaround areas at each location.	
A5.8.1c Signage	**Applicable**: Yes **Compliant**: Yes
☑ ☐ ☐	The required information to inform the actions of those persons onsite in the event of a bushfire will be prominently displayed within the site.
☑ ☐ ☐	This information will include evacuation routes and distance and the site specific procedural detail that will be established by the Bushfire Emergency Plan (or Information) that is required to be developed for the proposed use.
Supporting Assessment Details: Evacuation signage can be installed in the cottages, in the carpark of the nature stay campground and in the proposed chalets once constructed.	
A5.8.2 Vehicular Access for Short Term Accommodation Outside a Residential Built-out Area	
A5.8.2a Multiple access routes	**Applicable**: Yes **Compliant**: Yes
☑ ☐ ☐	Two-way public road access is provided in two different directions to at least two different suitable destinations.
Supporting Assessment Details: Southampton Road travels in different directions (Greenbushes, Bridgetown and Nannup) The road is accessible by 2WD vehicles in all weather conditions.	
A5.8.2b No-through roads – maximum length	**Applicable**: Yes **Compliant**: Yes
☐ ☐ ⦸	The no-through public road for the proposed development is no longer than 200 metres. It is existing and the adjoining classified vegetation (excluding the road reserve) is categorised an Extreme Bushfire Hazard Level (Guidelines, Table 3).
☑ ☐ ☐	The no-through public road for the proposed development is no longer than 500 metres. It is unavoidable and the adjoining classified vegetation (excluding the road reserve) is categorised a Moderate Bushfire Hazard Level (Guidelines, Table 3).
☐ ☐ ⦸	The no-through public road is unavoidable and the adjoining classified vegetation (excluding the road reserve) is categorised a Low Bushfire Hazard Level (Guidelines, Table 3) or is not identified as bushfire prone. Consequently, there is no limit on its length.
Supporting Assessment Details: Cassia Road is less than 200m in length to Linga Longa and the Southampton Road intersection. Vegetation on either side of the road is classified as moderate. On the northern side of the road is a small area of Forest vegetation and on the south side of the road is managed Grassland.	

To access the Western Chalets cars will drive along Cassia Road and turn tight right. Landgate details this as a public road and the landowner is the Local Government.				
A5.8.2c Emergency access way – alternative access option	**Applicable**:	No	**Compliant**:	N/A
☐ ☐ ⊘ A5.8.2a andA5.8.2b cannot be achieved.				
☐ ☐ ⊘ The proposed or existing EAW provides a through connection to a public road.				
☐ ☐ ⊘ The proposed or existing EAW is less than 500m in length and will be signposted and gated (remaining unlocked) to the specifications stated in the Guidelines and/or required by the relevant local government.				
☐ ☐ ⊘ The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6. Refer also to Appendix C in this BMP), can and will be complied with.				
Supporting Assessment Details: The no-through road and multi-access routes are compliant. There is no need for an Emergency Access Way.				
A5.8.2d Public roads - technical requirements	**Applicable**:	Yes	**Compliant**:	Yes
☑ ☐ ☐ The technical construction requirements of vertical clearance and weight capacity (Guidelines, Table 6. Refer also to Appendix C in this BMP), can and will be complied with.				
☑ ☐ ☐ All other applicable technical requirements of trafficable width, gradients and curves, are required to be in "accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Ausroad Standards and/or any applicable standard in the local government area" (Guidelines, Table 6 and sE3.1. Refer also to Appendix C in this BMP). The assessment conducted for the bushfire management plan indicates that it is unlikely that the proposed development can and will comply with the requirements. However, the applicable class of road, the associated technical requirements and subsequent proposal compliance, will need to be confirmed with the relevant local government and/or Main Roads WA.				
☐ ☒ ☐ A traversable verge is available adjacent to classified vegetation (Guidelines, E3.1), as recommended.				
Supporting Assessment Details: Cassia Road and Southampton Road meets the technical requirements for public roads.				
A5.8.2e Access limitations - onsite shelter option	**Applicable**:	Yes	**Compliant**:	Yes
☐ ☐ ⊘ The access requirements of two-way access, restricted no-through road length and provision of an EAW (established by A8.5.2a, A8.5.2b and A8.5.2c) cannot be achieved. The Guidelines provide for the protection measure of an onsite shelter to be provided in lieu of achieving these acceptable solutions.				
☐ ☐ ⊘ The capacity of the proposed development is no greater than 100 guests and staff at any one time.				
☐ ☐ ⊘ An onsite shelter can and will be provided that complies with the requirements for exposure to the bushfire hazard, building requirements and pedestrian paths (established by acceptable solutions A5.7e, A5.7f and A5.7g in 'Siting and Design').				

Supporting Assessment Details: All technical requirements for access comply. The option for an onsite open-air shelter is incorporated into this plan with consideration for the safety of patrons.

A5.9 Provision of Water for Firefighting Purposes				
A5.9a Reticulated supply	**Applicable**:	No	**Compliant**:	N/A

☐ ☐ ⊘ A reticulated water supply is available to the proposed development. The existing hydrant connection(s) are provided in accordance with the specifications of the relevant water supply authority.

☐ ☐ ⊘ A reticulated water supply is available to the proposed development. Hydrant connection(s) can and will be provided in accordance with the specifications of the relevant water supply authority.

Supporting Assessment Details: N/A

A5.9b Non-reticulated supply	**Applicable**:	Yes	**Compliant**:	Yes

☑ ☐ ☐ A static water supply (tank) for firefighting purposes will be installed on the lot that is additional to any water supply that is required for drinking and other domestic purposes.

☑ ☐ ☐ The technical requirements (location, volumes, design, materials, pipes and fittings), as established by the Guidelines (Schedule 2 and E4) and/or the relevant local government, can and will be complied with.

Supporting Assessment Details: The entire property is off-grid. The water tanks on site includes:

- 2 x 23,000 litre holding tanks that are filled automatically under pressure from the dam)
- 1 x 250,000 litre rain water tank.
- 1 x 5,000 litre tank at the Workers Cottages.
- 1 x 5,000 litre tank near the shed at the residence.
- 1 x 4,500 litre tank at the new shed.
- 2 x 33,000 litre tank at the café.
- 1 x 33,000 litre tank at the Function Centre, and
- 3 x 5,000 litres tanks at the Function Centre marquee.

1 x 23,000 litre tank is isolated for fire-fighting capabilities along with 1 x 33,000 litre tank at the function centre..

The Western Chalets area has 4 hydrant points that are currently being established.

The site has a fast attack unit, bulldozer and numerous tractors available for fire fighting response.

Refer to information contained in Appendix D for the firefighting water supply specifications and technical requirements.

5.3.2 Camping Ground Only (Remote) or Nature-Based Park

VULNERABLE TOURISM	
Element Intent	To provide bushfire protection for tourism land uses relevant to the characteristics of the occupants and/or the location, to preserve life and reduce the impact of bushfire on property and infrastructure.
Proposed Development/Use – Relevant Type	**Camping ground only (remote) or nature-based park.**
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.
Pathway Applied to Provide an Alternative Solution	N/A

Acceptable Solutions - Assessment Statements

All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.

The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices C and D. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).

Solution Component Check Box Legend ☑ Relevant & met ☒ Relevant & not met ⃠ Not relevant

A5.10 Siting and Design				
A5.10a Reduce exposure to radiant heat (separation)	**Applicable**:	Yes	**Compliant**:	Yes
☐ ☐ ⃠ The proposed camping sites are considered by the proponents to be a tolerable loss in the event of a bushfire. Consequently, there is to be no radiant heat limitations applied to these sites (i.e., no specified dimensioned APZ).				
☑ ☐ ☐ The proposed camping sites can be sited within an asset protection zone of the required dimensions that will ensure their exposure to the potential radiant heat impact of a bushfire does not exceed 29 kW/m2 (BAL-29).				
Supporting Assessment Details: All campgrounds can achieve siting within an area with a BAL - 29 APZ				
A5.10b Fire pits	**Applicable**:	Yes	**Compliant**:	Yes
☑ ☐ ☐ When open campfires are intended to be part of site operations, they will be contained in constructed fire pits and their use enforced in accordance with the Bush Fires Act 1954, including Section 25 with regard to use restrictions and vegetation clearances.				
Supporting Assessment Details: Fire pits do not constrain ember movement with air currents and wind. In consideration of the surrounding vegetation, their use will be prohibited during the bushfire season.				

A5.10c Onsite shelter - pedestrian paths	Applicable:	Yes	Compliant:	Yes
☑ ☐ ☐ To comply with acceptable solution A5.11d (lack of vehicular access), pedestrian paths to an onsite shelter area, with the required signage, can and will be provided.				
Supporting Assessment Details: Pathway lighting can be installed, and appropriate signage can be erected.				
A5.10d Onsite shelter – open area	**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐ To comply with acceptable solution A5.11d (lack of vehicular access), an open area that will function as a suitable onsite shelter can and will be provided that will limit persons exposure to a maximum radiant heat flux of 2 kW/m2 (calculated with an assumed flame temperature of 1200K) by providing the required separation distances from the bushfire hazard.				
Supporting Assessment Details: A M2 calculation has been completed that achieves a maximum radiant heat flux of 2kW/m2 based on 1200K for an onsite open-air shelter. The location of the open-air shelter is marked on Fig 3.1and Fig 3.3.				
A5.11 Vehicular Access				
A5.11a Multiple access routes	**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐ Two-way public road access is provided in two different directions to at least two different suitable destinations.				
Supporting Assessment Details: Southampton Road travels in different directions (Greenbushes, Bridgetown and Nannup) The road is accessible by 2WD vehicles in all weather conditions.				
A5.11b No-through roads – maximum length	**Applicable:**	Yes	**Compliant:**	Yes
☐ ☐ ⦸ The no-through public road for the proposed development is no longer than 200 metres. It is existing and the adjoining classified vegetation (excluding the road reserve) is categorised an Extreme Bushfire Hazard Level (Guidelines, Table 3).				
☑ ☐ ☐ The no-through public road for the proposed development is no longer than 500 metres. It is unavoidable and the adjoining classified vegetation (excluding the road reserve) is categorised a Moderate Bushfire Hazard Level (Guidelines, Table 3).				
☐ ☐ ⦸ The no-through public road is unavoidable and the adjoining classified vegetation (excluding the road reserve) is categorised a Low Bushfire Hazard Level (Guidelines, Table 3) or is not identified as bushfire prone. Consequently, there is no limit on its length.				
Supporting Assessment Details: Cassia Road is less than 200m in length to Linga Longa and the Southampton Road intersection. Vegetation on either side of the road is classified as moderate. On the northern side of the road is a small area of Forest vegetation and on the south side of the road is Grassland.				
A5.11c Emergency access way – alternative access option	**Applicable:**	No	**Compliant:**	N/A
☐ ☐ ⦸ A5.11aa andA5.11b cannot be achieved.				
☑ ☐ ☐ The proposed or existing EAW provides a through connection to a public road.				

☐ ☐ ⊘	The proposed or existing EAW is less than 500m in length and will be signposted and gated (remaining unlocked) to the specifications stated in the Guidelines and/or required by the relevant local government.
☑ ☐ ☐	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6. Refer also to Appendix C in this BMP), can and will be complied with.
Supporting Assessment Details: Not applicable	

A5.11d Access limitations – onsite shelter option	**Applicable**: Yes	**Compliant**: Yes
☐ ☐ ⊘	The access requirements of two-way access, restricted no-through road length and provision of an EAW (established by A5.11a, A5.11b and A5.11c) cannot be achieved. The Guidelines provide for the protection measure of an onsite shelter to be provided in lieu of achieving these acceptable solutions.
☐ ☐ ⊘	The capacity of the proposed development is no greater than 100 guests and staff at any one time.
☐ ☐ ⊘	An onsite shelter can and will be provided that complies with the requirements for exposure to the bushfire hazard, bushfire construction requirements and pedestrian paths (established by acceptable solutions A5.10c and A5.10d in 'Siting and Design').
Supporting Assessment Details: All technical requirements for access comply. The option for an onsite open-air shelter is incorporated into this plan with consideration for the safety of patrons.	

A5.11e Internal access/private driveway - availability	**Applicable**: Yes	**Compliant**: Yes
☑ ☐ ☐	The internal vehicular access/private driveway can provide emergency access/egress for all patrons and staff in the event of a bushfire.
☑ ☐ ☐	It is possible to provide at least two internal access/egress points to the public road network.
Supporting Assessment Details: The nature based camp area has two access/egress points onto Cassia Road.	

A5.11f Internal access/private driveway - technical requirements	**Applicable**: Yes	**Compliant**: Yes
☑ ☐ ☐	The internal vehicular access/private driveway length is no greater than 70m. No technical requirements need to be met.
☑ ☐ ☐	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6. Refer also to Appendix C in this BMP), can and will be complied with.
☐ ☐ ⊘	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.
☑ ☐ ☐	The turnaround area requirements (Guidelines, Figure 28, and within 30m of the habitable building) can and will be complied with.
Supporting Assessment Details: The existing internal driveway to the nature-based campground is a gravel base. This is suitable for 2WD traffic in all weather conditions.	

A5.11g Signage	Applicable:	Yes	Compliant:	Yes
☑ ☐ ☐	The required information to inform the actions of those persons onsite in the event of a bushfire will be prominently displayed within the site.			
☑ ☐ ☐	This information will include evacuation routes and distance, where access is 4WD only and the site specific procedural detail that will be established by the Bushfire Emergency Plan (or Information) that is required to be developed for the proposed use.			
Supporting Assessment Details: Signage can be erected at the entrance way to the nature stay campground.				
A5.12 Provision of Water for Firefighting Purposes				
A5.12a No supply required	**Applicable:**	No	**Compliant:**	N/A
☐ ☐ ⊘	Drinking water is not provided onsite and the local government has not specifically requested that a firefighting water supply is to be provided. Consequently, no firefighting water supply is required.			
Supporting Assessment Details: Not applicable				
A5.12b Non-reticulated supply	**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐	Drinking water is provided onsite and it is intended for persons onsite to actively defend the site. A minimum of 20,000 litres of static supply will be provided, or a volume to the satisfaction of the local government.			
☐ ☐ ⊘	Drinking water is provided onsite and it is not intended for persons onsite to actively defend the site. Consequently, no firefighting water supply is required.			
Supporting Assessment Details: Whilst onsite drinking water will not be provided at the nature-stay campground, it is a requirement of the Local Government that a strategic water tank dedicated for fire-fighting purposes of 20,000 litres is located at the campground.				
A5.12c Non reticulated supply – technical requirements	**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐	The technical construction requirements (volumes, design, materials), established by the Guidelines and/or the local government, can and will be complied with. The technical requirements (design, construction materials, pipes and fittings), as established by the Guidelines (Element 4, Schedule 2, s2.2) and/or the relevant local government, can and will be complied with.			
Supporting Assessment Details: The technical requirements for strategic fire-fighting water tanks can be achieved. Refer to information contained in Appendix D for the firefighting water supply specifications and technical requirements.				

5.3.3 Day Uses

VULNERABLE TOURISM	
Element Intent	To provide bushfire protection for tourism land uses relevant to the characteristics of the occupants and/or the location, to preserve life and reduce the impact of bushfire on property and infrastructure.
Proposed Development/Use – Relevant Type	**Day uses (with no overnight accommodation) including art gallery, brewery, exhibition centre, hotel, reception centre, restaurant/cafe, small bar, tavern, winery.**
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.
Pathway Applied to Provide an Alternative Solution	N/A

Acceptable Solutions - Assessment Statements

All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.

The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices C and D. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).

Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant

A5.13 Siting and Design				
A5.13a Asset protection zone (APZ)	**Applicable**:	Yes	**Compliant**:	Yes

APZ DIMENSIONS – DIFFERENCES IN REQUIREMENTS FOR PLANNING ASSESSMENTS COMPARED TO IMPLEMENTATION

A key required bushfire protection measure is to reduce the exposure of buildings/infrastructure (as exposed vulnerable elements at risk), to the direct bushfire threats of flame contact, radiant heat and embers and the indirect threat of consequential fires that result from the subsequent ignition of other combustible materials that may be constructed, stored or accumulate in the area surrounding these structures. This reduces the associated risks of damage or loss.

This is achieved by separating buildings (and consequential fire fuels as necessary) from areas of classified bushfire prone vegetation. This area of separation surrounding buildings is identified as the Asset Protection Zone (APZ) and consists of no vegetation and/or low threat vegetation or vegetation continually managed to a minimal fuel condition. The required separation distances will vary according to the site specific conditions and local government requirements.

The APZ dimensions stated and/or illustrated in this Report can vary dependent on the purpose for which they are being identified.

> *Note: Appendix B 'Onsite Vegetation Management' provides further information regarding the different APZ dimensions that can be referenced, their purpose and the specifications of the APZ that are to be established and maintained on the subject lot.*

THE 'PLANNING BAL-29' APZ DIMENSIONS

Purpose: To provide evidence of the development or use proposal's ability to achieve minimum vegetation separation distances. To achieve 'acceptable solution' planning approval for this factor, it must be demonstrated that the minimum separation distances corresponding to a maximum level of radiant transfer to a building of 29 kW/m^2, either exist or can be implemented (with certain exceptions). These separation distances are the 'Planning BAL-29' APZ dimensions.

The 'Planning BAL-29' APZ is not necessarily the size of the APZ that must be physically implemented and maintained by a landowner. Rather, its sole purpose is to identify if an acceptable solution for planning approval can be met.

THE 'REQUIRED' APZ DIMENSIONS

Purpose: Establishes the dimensions of the APZ to be physically implemented by the landowner on their lot: These will be the minimum required separation distances from the subject building(s) to surrounding bushfire prone vegetation (identified by type and associated ground slope). These are established by:

A. The 'BAL Rating APZ' of the subject building(s) when distances are greater than 'B' below (except when 'B' establishes a maximum distance); or

B. The 'Local Government' APZ' derived from the Firebreak/Hazard Reduction Notice when distances are greater than 'A' above, other than when a maximum distance is established, in which case this will apply; or

C. A combination of 'A' and 'B'.

*Within this Report/Plan it is the **'Planning BAL-29' APZ** that will be identified on maps, diagrams and in tables as necessary – unless otherwise stated.*

*The **'Required' APZ** dimension information will be presented in Appendix B1.1 and on the Property Bushfire Management Statement, when required to be included for a development application.*

☑ ☐ ☐ **APZ Width:** The proposed (or a future) habitable building(s) on the lot(s) of the proposed development - or an existing building(s) for a proposed change of use – can be (or is) located within the developable portion of the lot and be surrounded by a 'Planning BAL-29' APZ of the required dimensions (measured from any external wall or supporting post or column to the edge of the classified vegetation), that will ensure their exposure to the potential radiant heat impact of a bushfire does not exceed 29 kW/m^2.

☐ ☐ ⦸ **Restriction on Building Location:** It has been identified that the current developable portion of a lot(s) provides for a future building location that will result in that building being subject to a BA-40 or BAL-FZ rating. Consequently, it may be considered necessary to impose the condition that a restrictive covenant to the benefit of the local government pursuant to section 129BA of the Transfer of Land Act 1893, is to be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a restriction on the use of that portion of land (refer to Code F3 of Model Subdivision Conditions Schedule, WAPC June 2021 and Guidelines s5.3.2).

☑ ☐ ☐ **APZ Location:** The required dimensions for a 'Planning BAL-29' APZ can be contained solely within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated.

☐ ☐ ⦸ **APZ Location:** The required dimensions for a 'Planning BAL-29' APZ can be partly established within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated. The balance of the APZ would exist on adjoining land that satisfies the exclusion requirements of AS 3959:2018 cl 2.2.3.2 for non-vegetated areas and/or low threat vegetation and/or vegetation managed in a minimal fuel condition.

☐ ☐ ⊘	**APZ Location:** It can be justified that any adjoining (offsite) land forming part of a 'Planning BAL-29' APZ will: • If non-vegetated, remain in this condition in perpetuity; and/or • If vegetated, be low threat vegetation or vegetation managed in a minimal fuel condition in perpetuity.
☑ ☐ ☐	**APZ Management:** The area of land (within each lot boundary), that is to make up the required 'Landowner' APZ dimensions (refer to Appendix B, Part B1), can and will be managed in accordance with the requirements of the Guidelines Schedule 1 'Standards for Asset Protection Zones' (refer to Appendix B).
☐ ☐ ⊘	**Subdivision Staging:** There are undeveloped future stages of subdivision, containing bushfire prone vegetation, that have been taken into consideration for their potentially 'temporary' impact on the ability to establish a 'Planning BAL-29 APZ' on adjoining developed lots. A staging plan is developed to manage this.
☑ ☐ ☐	**Firebreak/Hazard Reduction Notice:** Any additional requirements established by the relevant local government's annual notice to install firebreaks and manage fuel loads (issued under s33 of the Bushfires Act 1954), can and will be complied with.
Supporting Assessment Details: The ability to establish the 'Planning BAL-29' APZ dimensions is illustrated in Figure 3.3. The Function Centre marquee and event space can achieve a BAL – 29 APZ.	
A5.13b Onsite shelter – pedestrian paths	**Applicable**: Yes **Compliant**: Yes
☑ ☐ ☐	To comply with acceptable solution A5.14d (lack of vehicular access), pedestrian paths to an onsite shelter area or building, with the required signage, can and will be provided.
Supporting Assessment Details: Pathway lighting and appropriate signage can be installed from the Function Marquee and event area to the onsite open-air shelter space.	
A5.13c Onsite shelter – exposure to the bushfire hazard	**Applicable**: Yes **Compliant**: Yes
☐ ☐ ⊘	To comply with acceptable solution A5.14d, a building that will function as a suitable onsite shelter can and will be provided that will reduce persons exposure to bushfire threats (through the shielding provided by the building). The building's exposure to the bushfire hazard threat of radiant heat will be limited to a maximum radiant heat flux of 10 kW/m2 (calculated with an assumed flame temperature of 1200K) by providing the required separation distances from the bushfire hazard.
☑ ☐ ☐	To comply with acceptable solution A5.14d (lack of vehicular access), an open area that will function as a suitable onsite shelter can and will be provided that will limit persons exposure to a maximum radiant heat flux of 2 kW/m2 (calculated with an assumed flame temperature of 1200K) by providing the required separation distances from the bushfire hazard.
Supporting Assessment Details: A M2 calculation has been completed that achieves a maximum radiant heat flux of 2kW/m2 based on 1200K for an onsite open-air shelter. The location of the open-air shelter is marked on Fig 3.1 and Fig 3.3	

A5.13d Onsite shelter – bushfire construction requirements	Applicable:	No	Compliant:	N/A
☐ ☐ ⊘ The building(s) provided as an onsite shelter can and will be designed and constructed in accordance with the National Construction Code and the ABCB Community Shelter Handbook.				
☐ ☐ ⊘ The building(s) provided as an onsite shelter can and will be built to the bushfire construction requirements corresponding to BAL-29 (as per AS 3959 or the NASH Standard) as a minimum – while complying with A15.13c (being subject to a maximum radiant heat flux of 10 kW/m^2).				
Supporting Assessment Details: None required				
A5.14 Vehicular Access				
A5.14a Multiple access routes	**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐ Two-way access is available. Public road access is provided in two different directions to at least two different suitable destinations.				
☐ ☐ ⊘ This exception applies. Secondary access cannot be achieved. The tourism land use is in a residential built out area.				
☐ ☐ ⊘ This exception applies. Secondary access cannot be achieved. The bushfire emergency plan provides for closure on days with forecast extreme or fire danger rating and a total fire ban and provides for the early evacuation of patrons and staff.				
☐ ☐ ⊘ This exception applies. Secondary access cannot be achieved. The bushfire emergency plan provides for non-operation during the bushfire season.				
Supporting Assessment Details: Southampton Road travels in different directions (Greenbushes, Bridgetown and Nannup) The road is accessible by 2WD vehicles in all weather conditions.				
A5.14b No-through roads – maximum length	**Applicable:**	Yes	**Compliant:**	Yes
☐ ☐ ⊘ The no-through public road for the proposed development is no longer than 200 metres. It is existing and the adjoining classified vegetation (excluding the road reserve) is categorised an Extreme Bushfire Hazard Level (Guidelines, Table 3).				
☑ ☐ ☐ The no-through public road for the proposed development is no longer than 500 metres. It is unavoidable and the adjoining classified vegetation (excluding the road reserve) is categorised a Moderate Bushfire Hazard Level (Guidelines, Table 3).				
☐ ☐ ⊘ The no-through public road is unavoidable and the adjoining classified vegetation (excluding the road reserve) is categorised a Low Bushfire Hazard Level (Guidelines, Table 3) or is not identified as bushfire prone. Consequently, there is no limit on its length.				
Supporting Assessment Details: Cassia Road is less than 200m in length to Linga Longa and the Southampton Road intersection. Vegetation on either side of the road is classified as moderate. On the northern side of the road is a small area of Forest vegetation and on the south side of the road is Grassland.				

A5.14c Emergency access way – alternative access options	Applicable: No	Compliant: N/A
☐ ☐ ⊘ A5.14a andA5.14b cannot be achieved.		
☐ ☐ ⊘ The proposed or existing EAW provides a through connection to a public road.		
☐ ☐ ⊘ The proposed or existing EAW is less than 500m in length and will be signposted and gated (remaining unlocked) to the specifications stated in the Guidelines and/or required by the relevant local government.		
☐ ☐ ⊘ The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6. Refer also to Appendix C in this BMP.), can and will be complied with.		
Supporting Assessment Details: Not applicable		

A5.14d Access limitations - onsite shelter option	Applicable: No	Compliant: Yes
☐ ☐ ⊘ The access requirements of two-way access, restricted no-through road length and provision of an EAW (established by A5.14a, A5.14b and A5.14c) cannot be achieved. The Guidelines provide for the protection measure of an onsite shelter to be provided in lieu of achieving these acceptable solutions.		
☐ ☐ ⊘ The capacity of the proposed development is no greater than 100 guests and staff at any one time.		
☐ ☐ ⊘ An onsite shelter can and will be provided in accordance with the requirements for exposure to the bushfire hazard, bushfire construction requirements and pedestrian paths (established by acceptable solutions A13b, A13c and A13d in 'Siting and Design').		
Supporting Assessment Details: All technical requirements for access comply. The option for an onsite open-air shelter is incorporated into this plan with consideration for the safety of patrons.		

A5.14e Public roads - technical requirements	Applicable: Yes	Compliant: Yes
☑ ☐ ☐ The technical construction requirements of vertical clearance and weight capacity (Guidelines, Table 6. Refer also to Appendix C in this BMP), can and will be complied with.		
☑ ☐ ☐ All other applicable technical requirements of trafficable width, gradients and curves, are required to be in "accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Ausroad Standards and/or any applicable standard in the local government area" (Guidelines, Table 6 and sE3.1. Refer also to Appendix C in this BMP). The assessment conducted for the bushfire management plan indicates that it is likely that the proposed development can and will comply with the requirements. However, the applicable class of road, the associated technical requirements and subsequent proposal compliance, will need to be confirmed with the relevant local government and/or Main Roads WA.		
☐ ☐ ⊘ A traversable verge is available adjacent to classified vegetation (Guidelines, E3.1), as recommended.		
Supporting Assessment Details: Southampton Road and Cassia Road meets the technical requirements for public roads.		

A5.14f Internal access/private driveway - technical requirements	Applicable:	Yes	Compliant:	Yes
☑ ☐ ☐ The internal vehicular access/private driveway length is no greater than 70m. No technical requirements need to be met.				
☑ ☐ ☐ The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6. Refer also to Appendix C in this BMP), can and will be complied with.				
☐ ☐ ⊘ Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.				
☑ ☐ ☐ The turnaround area requirements (Guidelines, Figure 28, and within 30m of the habitable building) can and will be complied with.				
Supporting Assessment Details: The internal driveway to the Function Centre Marquee and event space meets the technical requirements.				
A5.14g Internal access/private driveway - availability	**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐ The internal vehicular access/private driveway can provide emergency access/egress for all patrons and staff in the event of a bushfire.				
☑ ☐ ☐ It is possible to provide at least two internal access/egress points to the public road network.				
Supporting Assessment Details: There are two access/egress points to Cassia Road from the Function Centre Marquee and the event space.				
A5.14h Signage	**Applicable:**	Yes	**Compliant:**	Yes
☑ ☐ ☐ The required information to inform the actions of those persons onsite in the event of a bushfire will be prominently displayed within the site.				
☑ ☐ ☐ This information will include evacuation routes and distance and the site specific procedural detail that will be established by the Bushfire Emergency Plan (or Information) that is required to be developed for the proposed use.				
Supporting Assessment Details: A copy of the Evacuation Poster will be displayed in the Function Centre Marquee.				
A5.15 Provision of Water for Firefighting Purposes				
A5.15a Reticulated supply	**Applicable:**	No	**Compliant:**	N/A
☐ ☐ ⊘ A reticulated water supply is available to the proposed development. The existing hydrant connection(s) are provided in accordance with the specifications of the relevant water supply authority.				
☐ ☐ ⊘ A reticulated water supply is available to the proposed development. Hydrant connection(s) can and will be provided in accordance with the specifications of the relevant water supply authority.				
Supporting Assessment Details: None required.				
A5.15b Non-reticulated supply – water tank capacity	**Applicable:**	Yes	**Compliant:**	Yes

☑ ☐ ☐	A static water supply (tank) for firefighting purposes will be installed on the lot that is additional to any water supply that is required for drinking and other domestic purposes.
☑ ☐ ☐	A water tank(s) will be provided with a minimum capacity of 10,000 litres/500 m^2 of habitable floor space to a maximum of 50,000 litres.
Supporting Assessment Details: There is a 33,000 litre dedicated water tank for fire-fighting purposes at the café. In addition to the dam there are four water tanks located at the rear of the function marquee. One of these water tanks is dedicated for fire-fighting purposes (33,000 litres)	

A5.15c Non-reticulated supply – technical requirements	**Applicable**:	Yes	**Compliant**:	Yes

☑ ☐ ☐	The technical requirements (design, construction materials, pipes and fittings), as established by the Guidelines (Element 4, Schedule 2, s2.2) and/or the relevant local government, can and will be complied with.
Supporting Assessment Details: The Shire of Donnybrook-Balingup has indicated that the one tank at this location would be supported, on the proviso that it remains topped up from the bore. (See Fig 3.1) Refer to information contained in Appendix D for the firefighting water supply specifications and technical requirements.	

5.4 Additional Bushfire Protection Measures to be Implemented

The following bushfire protection measures are recommended to be implemented and maintained. They are additional to, or a variation of, those established by the relevant acceptable solutions applied to the proposed development/use within Sections 5 of this BMP (as applicable to the proposed development).

The intent of their application is to improve the bushfire performance of the proposed development/use and reduce residual risk levels to persons and property from a bushfire event.

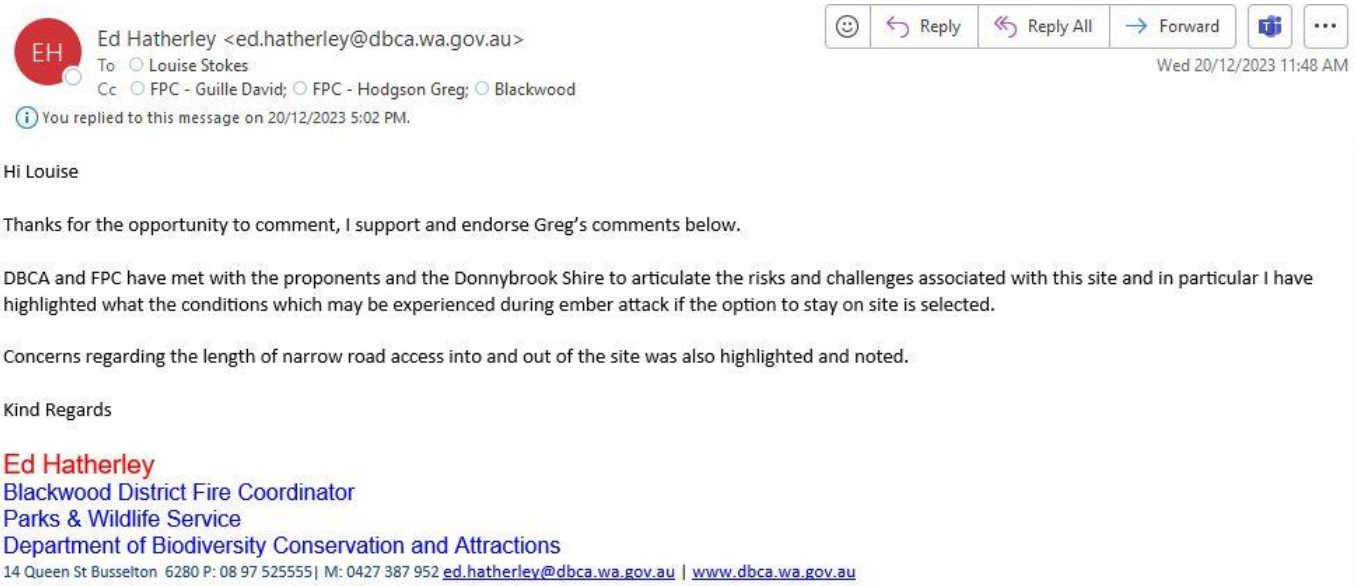
The development of these additional and/or varied protection measures originates the following potential sources (not exhaustive):

1. Out of the relevant merit based assessment when the Section titled 'Non-compliance – Additional Assessments' has been used in this BMP;
2. Out of the relevant performance based assessment when Section titled 'Non-compliance – Additional Assessments' has been used in this BMP;
3. Out of the development of any other required bushfire planning documents. These include a Bushfire Emergency Plan and the Bushfire Risk Assessment and Management Report;
4. Out of any additional bushfire planning guidance documents or position statements issued by the WA Department of Planning, Lands and Heritage;
5. From any 'Conditions' which may be applied to a 'Planning Approval' or a 'Notice of Determination; or
6. As a recommendation from the bushfire consultant.

The following table summarises the requirements/recommendations with the detail provided in the following sections.

When necessary, the implementation responsibility for these additional protection measures will be stated in Section 6 of this BMP and included in other operational documents as relevant.

This Bushfire Management Plan identifies that there are no areas of non-compliance with the relevant bushfire performance criteria as all the relevant acceptable solutions can be met. In consultation with applicable project stakeholders including the Manager of the Shire of Donnybrook-Balingup Planning Department, the local Community Emergency Services Manager (CESM), the Department of Biodiversity, Conservation and Attractions (DBCA), Forests Products Commission (FPC) and the local Department of Fire & Emergency Services (DFES) Area Officer it was identified that this development would benefit from the implementation of additional mitigation measures not covered in the bushfire protection criteria.



EH

Ed Hatherley <ed.hatherley@dbca.wa.gov.au>
To Louise Stokes
Cc FPC - Guille David; FPC - Hodgson Greg; Blackwood
You replied to this message on 20/12/2023 5:02 PM.

Reply | Reply All | Forward

Wed 20/12/2023 11:48 AM

Hi Louise

Thanks for the opportunity to comment, I support and endorse Greg's comments below.

DBCA and FPC have met with the proponents and the Donnybrook Shire to articulate the risks and challenges associated with this site and in particular I have highlighted what the conditions which may be experienced during ember attack if the option to stay on site is selected.

Concerns regarding the length of narrow road access into and out of the site was also highlighted and noted.

Kind Regards

Ed Hatherley
Blackwood District Fire Coordinator
Parks & Wildlife Service
Department of Biodiversity Conservation and Attractions
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RE: 230072 - 246 Cassia Road (Linga Longa) Sout...

HG

Hodgson, Greg <greg.hodgson@fp

To Louise Stokes

Cc Ed Hatherley; Guille, David

Mon 2:21 PM

Hi Louise

As discussed, thanks for considering FPCs interests in this area of the Dalgarup Plantation.

DBCA as landowner where pines exist are responsible for the initial fire response (on behalf of FPC) and I understand from previous discussions with DBCA and event organizer's that these are the recommended actions for people onsite should a fire emergency occur on the property during any events organized by the landowner.

These individual property BMP's can be referenced in FPC's Plantation Fire Management plans (BFMP) as they are developed for each Shire, DFES & DBCA.

It's noted that this pt of the Dalgarup Plantation sits within Donnybrook-Balingup Shire where Max Walker is the CFCO (and local FCO) for the area and is familiar with the property.

Regards

Greg

Greg Hodgson

Manager Fire Protection

Forest Products Commission

Additional Bushfire Protection Measures - To Implement Prior to the Next Event		
Bushfire Protection Measure	Relevant Site-Specific Details	Application
Ensure the Bushfire Emergency Plan is implemented.	The Bushfire Emergency Plan (BEP) is a required document that will act as a site-specific bushfire protection measure in support of this development. The BEP establishes triggers, procedures, and actions that will ensure the onsite persons will not be exposed to a (fully developed) landscape scale bushfire event because they will have been excluded from attending this site in advance. Should a bushfire incident occur whilst an Event is underway the presumption is that whilst the existing internal road network will always be able to facilitate an evacuation of the onsite persons in any developing bushfire emergency scenario due to the length of roads to Linga Longa, that all guests and patrons remain on site and move to the onsite open-air shelter.	To be applied

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE PROTECTION MEASURES

6.1 Developer/Landowner Responsibilities – Prior to Opening

DEVELOPER/LANDOWNER RESPONSIBILITIES – PRIOR TO OPENING	
No.	Implementation Actions
1	Establish the Asset Protection Zone (APZ) around the workers cottages to satisfy: • The dimension requirements established by the assessed site-specific conditions and the determined BAL rating, or the dimensions established by the annually issued local government Firebreak Notice – whichever is greater [refer to Section 5.4 of this BMP – including the notes 'What Sized APZ is to be Installed on the Lot']; and • The standards established by the Guidelines DPLH, 2021 v1.4, Schedule 1, or as varied by the local government through their annually issued Firebreak Notice. This is the responsibility of the developer/landowner before operating.
2	The subject site is to be compliant with current version of the Shire of Donnybrook Balingup's Fire Break Order issued under s33 of the Bushfires Act 1954. This may include specifications for asset protection zones that differ from Schedule 1 in the Guidelines DPLH, 2021 v1.4, with the intent to better satisfy local conditions. [Refer to Section 5.3 and the information presented in Appendix B).
3	Prior to operation, a copy of the Bushfire Emergency Plan (BEP) must be provided, and occupants are to be informed that it contains responsibilities that must be actioned due to the use of the land being defined as a 'Vulnerable Land Use' for the reasons identified in Section 1.1 of this BMP. The BEP 'Pre-Season Preparation Procedure' instructions must be complied with.
4	Prior to operation, when open air campfires will be part of site operations, install firepits and associated vegetation clearance to meet the requirements established by s25 of the Bushfires Act 1954.
5	Prior to operation, all actions contained within the 'Pre-Season Preparation Procedure' established by the Bushfire Emergency Plan, must be completed.
6	Prior to operation, signage must be prominently displayed in the carpark or at the entrance to the campgrounds that informs the actions of those persons onsite in the event of a bushfire.
7	Prior to operation, evacuation signage to be installed throughout the property, advising patrons of exit points and the location of the onsite open-air shelter.
8	Prior to relevant building work, inform the builder of the existence of this approved Bushfire Management Plan (BMP). The plan identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when ratings are indicative. BAL certificates will need to be issued to accompany building applications. The BMP may also establish, as an additional bushfire protection measure, that construction requirements to be applied will be those corresponding to a specified higher BAL rating.

	Compliance with the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks). Other classes of buildings may also be required to comply with this construction when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and the NASH Standard – Steel Framed Construction in Bushfire Areas (as amended).
9	Construct the vehicular access routes within the property including the Emergency Access Way to comply with the technical requirements referenced in the BMP and the relevant local government annual firebreak notice.
10	Implement the bushfire protection measures that have been established within Section 5.7 of this BMP as measures additional to those established by the acceptable solutions.
11	Establish a 20,000 litre static water tank dedicated for fire fighting purposes at the camp area. Ensure the tanks are metal, and couplings and fittings comply with the technical requirements (Appendix D)

6.2 Landowner/Occupier Responsibilities – Ongoing Management

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	Management Actions
1	Maintain the Asset Protection Zone (APZ) around buildings, water tanks (and other structures as required) to satisfy: • The dimension requirements established by the assessed site-specific conditions and the building's determined BAL rating, or the dimensions established by the annually issued local government Firebreak Notice – whichever is greater [refer to Section 5.4 of this BMP – including the notes 'What Sized APZ is to be Installed on the Lot']; and • The standards established by the Guidelines DPLH, 2021 v1.4, Schedule 1, or as varied by the local government through their annually issued Firebreak Notice.
2	The subject site is to be compliant with current version of the Shire of Donnybrook Balingup's Fire Break Compliance Notice issued under s33 of the Bushfires Act 1954. This may include specifications for asset protection zones that differ from Schedule 1 in the Guidelines DPLH, 2021 v1.4, with the intent to better satisfy local conditions. [Refer to Section 5.3 and the information presented in Appendix B).
3	As a vulnerable tourism land use for which open air campfires (contained in a firepit) are a part of site operations, enforce the use restrictions established by s25 of the Bush Fires Act 1954 and ensure the required vegetation clearances are maintained.
4	Maintain vehicular access route within the property to comply with the technical requirements referenced in the BMP and the relevant local government annual firebreak notice.
5	Maintain the static firefighting water supply tanks and associated pipes/fittings/pump and vehicle hardstand in good working condition.
6	Ensure that builders engaged to construct dwellings/additions and/or other relevant structures on the lot, are aware of the existence of this approved Bushfire Management Plan (BMP). The plan identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when ratings are indicative. BAL certificates will need to be issued to accompany building applications. The BMP may also establish, as an additional bushfire protection measure, that construction requirements to be applied will be those corresponding to a specified higher BAL rating. Compliance with the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks). Other classes of buildings may also be required to comply with the construction when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and the NASH Standard – Steel Framed Construction in Bushfire Areas (as amended).

7	Ensure all future buildings the landowner/lessee has responsibility for, are designed and constructed in full compliance with: • The bushfire resistant construction requirements of the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), as established by the Building Regulations 2012 (WA Building Act 2011); and Any additional bushfire protection measures this Bushfire Management Plan has established are to be implemented.

APPENDIX A: SUBJECT SITE BAL ASSESSMENT INFORMATION AND ADDITIONAL DATA

Assessed Site Inputs Common to the Method 1 and Method 2 Procedures

A1.1: FIRE DANGER INDICES (FDI/FDI/GFDI)

When using Method 1 the relevant FDI value required to be applied for each state and region is established by AS 3959:2018, Table 2.1. Each FDI value applied in Tables 2.4 – 2.7 represents both the Forest Fire Danger Index (FFDI) and a deemed equivalent for the Grassland Fire Danger Index (GFDI), as per Table B2 in Appendix B. When using Method 2, the relevant FFDI and GFDI are applied.

The values may be able to be refined within a jurisdiction, where sufficient climatological data is available and in consultation with the relevant authority.

Relevant Jurisdiction:	WA	Region:	Whole State	Method 1	Applied FDI:	80
				Method 2	Applied FFDI:	N/A
					Applied GFDI:	110

A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION

Vegetation Types and Classification

In accordance with AS 3959:2018 clauses 2.2.3 and C2.2.3.1, all vegetation types within 100 metres of the 'site' (defined as "the part of the allotment of land on which a building stands or is to be erected"), are identified and classified. Any vegetation more than 100 metres from the site that has influenced the classification of vegetation within 100 metres of the site, is identified and noted. The maximum excess distance is established by AS 3959: 2018 cl 2.2.3.2 and is an additional 100 metres.

Classification is also guided by the Visual Guide for Bushfire Risk Assessment in WA (WA Department of Planning February 2016) and any relevant FPA Australia practice notes.

Modified Vegetation

The vegetation types have been assessed as they will be in their natural mature states, rather than what might be observed on the day. Vegetation destroyed or damaged by a bushfire or other natural disaster has been assessed on its expected re-generated mature state. Modified areas of vegetation can be excluded from classification if maintained in a permanently low threat, minimal fuel condition, satisfying AS 3959:2018 s2.2.3.2(f), and there is sufficient justification to reasonable expect that this modified state will exist in perpetuity.

The Influence of Ground Slope

Where significant variation in effective slope exists under a consistent vegetation type, these will be delineated as separate vegetation areas to account for the difference in potential bushfire behaviour, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

THE INFLUENCE OF VEGETATION GREATER THAN 100 METRES FROM THE SUBJECT SITE	
Vegetation area(s) within 100m of the site whose classification has been influenced by the existence of bushfire prone vegetation from 100m – 200m from the site:	No

VEGETATION AREA 1 COTTAGES						
Classification	A. FOREST					
Types Identified	Open forest A-03					
Exclusion Clause	N/A					
Effective Slope	Measured	d/slope 17 degrees	Applied Range (Method 1)	Downslope >15-20 degrees		
Foliage Cover (all layers)	30-70%	Shrub/Heath Height	Up to 6m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers (species as relevant)	Eucalypt (Marri, Flooded Gum) along with Acacia and Wildling Pine trees to a height of 25m, foliage cover 50%.					
Understorey:	Leaf litter, native grasses and bushes, saplings, bracken, fallen logs and branches					
Additional Justification:	This area can be thinned to Woodland to achieve a BAL – 29 Asset Protection Zone around the cottages. The remained of the vegetation will remain as Forest.					
Post Development Assumptions:	Onsite vegetation can be managed or removed with permission from the Local Government					

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VEGETATION AREA 2 COTTAGES						
Classification	G. GRASSLAND					
Types Identified	Sown pasture G-26					
Exclusion Clause	N/A					
Effective Slope	Measured	d/slope 7.8 degrees		Applied Range (Method 1)	Downslope >5-10 degrees	
Foliage Cover (all layers)		Shrub/Heath Height		Tree Height		
Dominant & Sub-Dominant Layers (species as relevant)	Managed grasses (mown areas) around driveways and to create Asset Protection Zones around buildings. Grass length under 10cms in these areas. Further afield grass length is 10-30cms in height. Naturally managed by livestock and kangaroos grazing.					
Understorey:	Not Required.					
Additional Justification:	Not Required.					
Post Development Assumptions:	Onsite vegetation can be managed or removed by landowners					

	
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<table>
<tr><th colspan="8">VEGETATION AREA 3 COTTAGES</th></tr>
<tr><td>Classification</td><td colspan="7">A. FOREST</td></tr>
<tr><td>Types Identified</td><td colspan="7">Open forest A-03</td></tr>
<tr><td>Exclusion Clause</td><td colspan="7">N/A</td></tr>
<tr><td>Effective Slope</td><td>Measured</td><td colspan="2">d/slope 7.8 degrees</td><td colspan="2">Applied Range (Method 1)</td><td colspan="2">Downslope >5-10 degrees</td></tr>
<tr><td>Foliage Cover (all layers)</td><td colspan="2">30-70%</td><td>Shrub/Heath Height</td><td>1-2m</td><td>Tree Height</td><td>Up to 30m</td></tr>
<tr><td>Dominant & Sub-Dominant Layers (species as relevant)</td><td colspan="7">Eucalypt (Marri, Jarrah) along with wildling Pine trees to a height of 25m, foliage cover 50%.</td></tr>
<tr><td>Understorey:</td><td colspan="7">Leaf litter, native grasses and bushes, saplings,</td></tr>
<tr><td>Additional Justification:</td><td colspan="7">This area has had a prescribed burn through it to reduce fuel loads.</td></tr>
<tr><td>Post Development Assumptions:</td><td colspan="7">Onsite vegetation can be managed or removed with permission from the Local Government</td></tr>
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<tr><td colspan="8">PHOTO ID: 9</td></tr>
</table>

<table>
<tr><th colspan="8">VEGETATION AREA 4 COTTAGES</th></tr>
<tr><td>Classification</td><td colspan="7">EXCLUDED</td></tr>
<tr><td>Types Identified</td><td colspan="7"></td></tr>
<tr><td>Exclusion Clause</td><td colspan="7">2.2.3.2 (e) non-vegetated areas and (f) low threat vegetation - high moisture content.</td></tr>
<tr><td>Effective Slope</td><td>Measured</td><td colspan="2">-</td><td>Applied Range (Method 1)</td><td colspan="2">-</td></tr>
<tr><td colspan="2">Foliage Cover (all layers)</td><td>-</td><td>Shrub/Heath Height</td><td>-</td><td>Tree Height</td><td>-</td></tr>
<tr><td colspan="2">Dominant & Sub-Dominant Layers (species as relevant)</td><td colspan="5">Driveways, carpark, vegetable patch/orchard and managed area around the cottages and tanks.</td></tr>
<tr><td colspan="2">Understorey:</td><td colspan="5">Not applicable</td></tr>
<tr><td colspan="2">Additional Justification:</td><td colspan="5">It is assumed that these areas will be maintained in perpetuity.</td></tr>
<tr><td colspan="2">Post Development Assumptions:</td><td colspan="5">Not required</td></tr>
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<tr><td colspan="4">PHOTO ID: 10</td><td colspan="4">PHOTO ID: 11</td></tr>
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<tr><th colspan="8">VEGETATION AREA 1 CAMPGROUNDS & FUNCTION MARQUEE</th></tr>
<tr><td>Classification</td><td colspan="7">A. FOREST</td></tr>
<tr><td>Types Identified</td><td colspan="7">Open forest A-03</td></tr>
<tr><td>Exclusion Clause</td><td colspan="7">N/A</td></tr>
<tr><td>Effective Slope</td><td>Measured</td><td colspan="2">flat 0 degrees</td><td colspan="2">Applied Range (Method 1)</td><td colspan="2">Upslope or flat 0 degrees</td></tr>
<tr><td>Foliage Cover (all layers)</td><td colspan="2">30-70%</td><td>Shrub/Heath Height</td><td>1-2m</td><td>Tree Height</td><td colspan="2">Up to 30m</td></tr>
<tr><td>Dominant & Sub-Dominant Layers (species as relevant)</td><td colspan="7">Eucalypt (Marri, Flooded Gum) along with Acacia and Wildling Pine trees to a height of 25m, foliage cover 50%.</td></tr>
<tr><td>Understorey:</td><td colspan="7">Leaf litter, native grasses and bushes, saplings, bracken, fallen logs and branches</td></tr>
<tr><td>Additional Justification:</td><td colspan="7">This area can be thinned to Woodland to achieve a BAL – 29 Asset Protection Zone around the cottages.</td></tr>
<tr><td>Post Development Assumptions:</td><td colspan="7">Onsite vegetation can be managed or removed with permission from the Local Government</td></tr>
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VEGETATION AREA 2 CAMPGROUND AND FUNCTION MARQUEE						
Classification	G. GRASSLAND					
Types Identified	Sown pasture G-26					
Exclusion Clause	N/A					
Effective Slope	Measured	flat 0 degrees		Applied Range (Method 1)	Upslope or flat 0 degrees	
Foliage Cover (all layers)		Shrub/Heath Height		Tree Height		
Dominant & Sub-Dominant Layers (species as relevant)	Managed grasses and unmanaged grasses around mountain bike park. Grass height in managed areas less than 10cms. Other areas grass height is 10cm – 50 cms.					
Understorey:	Not Required.					
Additional Justification:	Not Required.					
Post Development Assumptions:	Onsite vegetation can be managed or removed by landowners					

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VEGETATION AREA 3 CAMPGROUND AND FUNCTION MARQUEE						
Classification	EXCLUDED					
Types Identified						
Exclusion Clause	2.2.3.2 (e) non-vegetated areas and (f) low threat vegetation - high moisture content.					
Effective Slope	Measured	-	Applied Range (Method 1)	-		
Foliage Cover (all layers)	-	Shrub/Heath Height	-	Tree Height	-	
Dominant & Sub-Dominant Layers (species as relevant)	Driveways, carparks, avocado orchard, dam and managed areas around the café, function marquee, campground and water tanks. There is a significant number of deciduous trees planted in this area.					
Understorey:	Not applicable					
Additional Justification:	It is assumed that these areas will be maintained in perpetuity.					
Post Development Assumptions:	Not required					

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VEGETATION AREA 1 WESTERN CHALETS						
Classification	A. FOREST					
Types Identified	Open forest A-03					
Exclusion Clause	N/A					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	>90%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers (species as relevant)	Eucalypt (Marri and Jarrah) along with Acacia and Wildling Pine trees to a height of 25m, foliage cover 80%.					
Understorey:	Leaf litter, native grasses and bushes, saplings, bracken, fallen logs and branches. Some areas have tracts of blackberry through the forest vegetation.					
Additional Justification:	Not required					
Post Development Assumptions:	Onsite vegetation can be managed or removed with permission from the Local Government					

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VEGETATION AREA 2 WESTERN CHALETS						
Classification	A. FOREST					
Types Identified	Open forest A-03					
Exclusion Clause	N/A					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	>90%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers (species as relevant)	Pine plantation with trees currently at 10m in height. 80% vegetation cover.					
Understorey:	Blackberry, fallen leaves and branches.					
Additional Justification:	Not required					
Post Development Assumptions:	Offsite vegetation cannot be managed or removed by the land owner					

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VEGETATION AREA 3 WESTERN CHALETS						
Classification	A. FOREST					
Types Identified	Open forest A-03					
Exclusion Clause	N/A					
Effective Slope	Measured	d/slope 2.4 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	>90%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers (species as relevant)	Offsite area is a Pine plantation with trees currently at 10m in height. 80% vegetation cover. Onsite area is primarily Eucalypts (Marri and Jarrah) growing to a height of 15m with individual wildling pine trees growing to a height of 15m.					
Understorey:	Blackberry, fallen leaves and branches.					
Additional Justification:	Not required					
Post Development Assumptions:	Offsite vegetation cannot be managed or removed by the land owner. Onsite vegetation can be removed or managed if required with permission from the local government.					

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VEGETATION AREA 4 WESTERN CHALETS						
Classification	A. FOREST					
Types Identified	Open forest A-03					
Exclusion Clause	N/A					
Effective Slope	Measured	d/slope 7.8 degrees	Applied Range (Method 1)	Downslope >5-10 degrees		
Foliage Cover (all layers)	30-70%	Shrub/Heath Height	1-2m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers (species as relevant)	Eucalypt (Marri and Flooded Gums) vegetation follows the waterway. Trees are up to 15m in height, with 30% canopy cover. Wildling pine trees growing to a height of 15m. There are three distinct layers of vegetation, with the precautionary principle applied.					
Understorey:	Blackberry, native bushes, fallen leaves and branches.					
Additional Justification:	Not required					
Post Development Assumptions:	Offsite vegetation cannot be managed or removed by the land owner. Onsite vegetation can be removed or managed if required with permission from the local government.					

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VEGETATION AREA 5 WESTERN CHALETS						
Classification	G. GRASSLAND					
Types Identified	Sown pasture G-26					
Exclusion Clause	N/A					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)		Shrub/Heath Height		Tree Height		
Dominant & Sub-Dominant Layers (species as relevant)	Pasture and unmanaged grasses growing to a height of 10-50cms.					
Understorey:						
Additional Justification:	Not required					
Post Development Assumptions:	Offsite vegetation cannot be managed or removed by the land owner. Onsite vegetation can be removed or managed if required with permission from the local government.					

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VEGETATION AREA 6 WESTERN CHALETS						
Classification	EXCLUDED					
Types Identified						
Exclusion Clause	2.2.3.2 (e) non-vegetated areas and (f) low threat vegetation - high moisture content.					
Effective Slope	Measured	-	Applied Range (Method 1)	-		
Foliage Cover (all layers)	-	Shrub/Heath Height	-	Tree Height	-	
Dominant & Sub-Dominant Layers (species as relevant)	Driveways, carparks, camping area which is where the chalets will be constructed, dam, overflow and pathways.					
Understorey:	Not applicable					
Additional Justification:	It is assumed that these areas will be maintained in perpetuity.					
Post Development Assumptions:	Not required					

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A1.3: SEPARATION DISTANCE

Measuring

The separation distance is the distance in the horizontal plane between the receiver (building/structure or area of land being considered) and the edge of the classified vegetation (AS 3959:2018, clause 2.2.4)

The relevant parts of a building/structure from which the measurement is taken is the nearest part of an external wall or where a wall does not exist, the supporting posts or columns. Certain parts of buildings are excluded including eaves and roof overhangs.

The edge of the vegetation, for forests and woodlands, will be determined by the unmanaged understorey rather than either the canopy (drip line) or the trunk (AS 3959:2018, clause C2.2.5).

Measured Separation Distance as a Calculation Input

If a separation distance can be measured because the location of the building/structure relative to the edge of the relevant classified vegetation is known, this figure can be entered into the BAL calculation. The result is a determined BAL rating.

Assumed Separation Distance as a Calculation Input

When the building/structure location within the lot is not known, an assumed building location may be applied that would establish the closest positioning of the building/structure relative to the relevant area of vegetation.

The assumed location would be based on a factor that puts a restriction on a building location such as:

- An established setback from the boundary of a lot, such as a residential design code setback or a restrictive covenant; or
- Within an established building envelope.

The resultant BAL rating would be indicative and require later confirmation of the building/structure actual location relative to the vegetation to establish the determined BAL rating.

Separation Distance as a Calculation Output

With the necessary site specific assessment inputs and using the AS 3959:2018 bushfire modelling equations, the range of separation distances that will correspond to each BAL rating (each of which represents a range of radiant heat flux), can be calculated.

This has application for bushfire planning scenarios such as:

- When the separation distance cannot be measured because the exact location of the exposed element (i.e., the building, structure or area), relative to classified vegetation, is yet to be determined.

  In this scenario, the required information is the identification of building locations onsite that will correspond to each BAL rating. That is, indicative BAL ratings can be derived for a variety of potential building/structure locations; or

- The separation distance is known for a given building, structure or area (and a determined BAL rating can be derived), but additional information is required regarding the exposure levels (to the transfer of radiant heat from a bushfire), of buildings or persons, that will exist at different points within the subject site.

The calculated range of separation distances corresponding to each BAL rating can be presented in a table and/or illustrated as a BAL Contour Map – whichever is determined to best fit the purpose of the assessment.

For additional information refer to the information boxes in Section 3 'Bushfire Attack Levels (BAL) - Understanding the Results and Section 3.2. 'Interpretation of the BAL Contour Map'.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

For the subject development/use the applicable separation distances values are derived from calculations applying the assessed site data. They are an output value, not an input value and therefore are not presented or justified in this appendix.

The derived values are presented in Section 3, Table 3.1.

BAL Assessment Inputs Applied Using the Method 2 Procedure

STATING AND JUSTIFYING THE METHOD 2 CALCULATION INPUT VARIABLES APPLIED

As 3959:2018 Bal Determination Procedures: AS 3959:2018 establishes the official methodology to determine the radiant heat flux (RHF) a receiver (e.g., a building, structure, person or specified location), will potentially be exposed to from a fully developed bushfire within any adjacent classified vegetation. The methodology accounts for the configuration of a specific site and its surrounds.

The model calculations are complex. Consequently, AS 3959:2018 establishes two pathways to apply the methodology - a simplified procedure (Method 1) and a detailed procedure (Method 2).

Method 1: This procedure has limitations to both its scope and the degree to which site specific conditions can be applied. However, it requires minimal site assessment inputs and provides a standardised output that is satisfactory for many situations.

A moderate level of justification for some of the assessed inputs applied is required. This will demonstrate how the procedure detailed within AS 3959:2018 for Method 1(Section 2) has been followed.

Method 2: This procedure is used when the site conditions are out of the scope of Method 1 or when it is necessary to produce a more specific result. Higher levels of justification will be required for many of the input variables that are able to be modified using Method 2 (AS 3959:2018 Appendix B).

Section A2.1 below identifies the input variables that have been assessed for the proposed development and indicates the level of justification required for their application. The information contained within this Appendix will provide this justification information to the degree necessary.

A2.1: SUMMARY OF CALCULATION INPUTS APPLIED AND THE LEVEL OF JUSTIFICATION REQUIRED

AS 3959:2018 BUSHFIRE ATTACK LEVEL (BAL) DETERMINATION PROCEDURES INPUT VARIABLES FOR THE FIRE BEHAVIOUR AND RADIATION MODELS						
✓	Indicates which site specific variables have been assessed and applied to the assessment of the proposed development/use.	**IDENTIFICATION OF THE CALCULATION INPUT VARIABLES ASSESSED AND/OR MODIFIED FOR THE PROPOSED DEVELOPMENT/USE**				
	Indicates an AS 3959 methodology or jurisdiction default variable (or a methodology calculated variable in the case of EOR or flame angle). No justification required.					
	Indicates a variable that either must or can have an assessor value applied. Requires justification.					
	Indicates a variable that can have an assessor value applied. Requires detailed justification.	Using Method 1		Using Method 2		
ASSESSOR QUALIFICATION REQUIRED [1]		BPAD Level 1		BPAD Level 3		
LEVEL OF JUSTIFICATION REQUIRED TO APPLY [2]		None	Moderate	None	Moderate	High
Fire weather	Fire danger index (FDI/FFDI/GFDI)	✓				
	Wind speed					
	Ambient temperature					
	Relative humidity					
Bushfire Prone Vegetation and slope of the land it grows on	Vegetation classification [3]		✓		✓	
	Effective slope		✓		✓	
	Understorey and total fuel loads [4]					
	Vegetation height					
	Fuel age					
	Fuel moisture					
Receiver (building) positioning parameters	Site slope				✓	
	Separation distance		✓		✓	
	Elevation of the receiver (EOR).				✓	
Bushfire flame parameters	Flame temperature [5]					
	Flame width					✓
	Flame angle					
	Flame emissivity					
	Heat of combustion					
INTERMEDIATE OUTPUT FROM THE FIRE BEHAVIOUR AND RADIATION MODELS						
Rate of Spread - derived from fuel loads, fuel type, fuel height, FDI, effective slope and wind speed.						
Fire Intensity – derived from fuel loads, rate of spread and heat of combustion [6]						
Path Length – derived from flame angle and separation distance.						
Transmittance – derived from ambient temperature and relative humidity.						
View Factor – derived from flame length, flame width, flame angle, separation distance, elevation of receiver and site slope.						
FINAL OUTPUT OF THE FIRE BEHAVIOUR AND RADIATION MODELS						
Flame Length – derived from fuel loads, ROS (for Forest, Woodland) and fire intensity (for Scrub, Shrubland, Grassland) [6]						✓
Radiant Heat Flux and the Corresponding Bushfire Attack Level (BAL) – derived from view factor, flame emissivity, flame temperature, transmittance and corresponding to the worst possible flame angle.						
TABLE NOTES (see next page)						

[1] **Authority to Use Method 2:** Within WA, use of this procedure is restricted to bushfire practitioners who hold the BPAD Level 3 accreditation as issued by the Fire Protection Association Australia (FPAA) through their Bushfire Planning and Design Accreditation Scheme (BPAD Scheme) that complies with the Western Australian Bushfire Accreditation Framework.

[2] **Level of Justification Required in Applying Method 2:** AS 3959:2018 Appendix B establishes the detailed procedure for the Method 2 determination of BAL(s) as consisting of 10 steps. When justification is required for an assessed variable value to be applied, the required level of justification can vary. The level definitions used in this table are:

Moderate: Requires the provision of readily available and understood argument and evidence such as when:

1. The methodology step requires or allows for an input variable to be a site assessed value; or
2. A methodology step requires a jurisdictionally determined value which the relevant authority may change for different land use scenarios; or

High: Requires a detailed argument, appropriate evidence and justification when:

1. The variable is derived from the methodology step that applies an AS 3959:2018 default value or determines an intermediate output value (i.e. the result of applying a step's equations).

[3] **Applying a Different Vegetation Classification:** This approach may be justified when certain characteristics of the site's local vegetation complex align with the broad based descriptions of AS 3959:2018, but expert knowledge identifies characteristics that would result in the applied AS 3959 bushfire behaviour model not being properly representative of a fire in the local vegetation. This potential outcome is in part due to the ecological classification of vegetation that is used in AS 3959 rather than a classification more aligned with fuel structure/fire behaviour.

The justification of using a different classification is predicated on the fact that the intent of classifying vegetation in the BAL determination methodology of AS 3959:2018, is to identify the most appropriate fire behaviour model equations to apply.

For example, with respect to contribution to potential fire behaviour, it is often more important to consider vegetation structure rather than canopy cover, yet canopy cover is a key classification factor applied in AS 3959:2018.

Also findings from more recent bushfire behaviour research is not yet incorporated into the current version of the Standard. Certain currently applied bushfire behaviour models within As 3959:2018 are outdated and may under or over predict radiant heat flux and flame length.

[4] **Modifying Fuel Loads:** Potential steady state maximum fuel loads at a specific site for a given vegetation classification may vary significantly (above and below) from those that are to be applied as the default values in AS 3959:2018.

The Standard only provides the single set of ecological descriptors and corresponding fuel loads that are to be applied to vegetation complexes across Australia, hence its accuracy for all situations will be questionable. The relevant authority for a jurisdiction can establish different fuel loads to be applied.

However, fuel loads for the purposes of determining expected fire behaviour have not currently been determined to the degree necessary in WA, which results in the default values both over and underestimating fuel loads for WA vegetation types. WA DFES in providing advice to decision makers, will currently not accept any assessment and subsequent variation of the default fuel loads. If any variation was to be applied in an assessment, it would need to be argued for based on appropriate evidence and the development of a merit based case to the satisfaction of the decision maker.

The one circumstance where Bushfire Prone Planning will reduce fuel loads is in the calculations associated with a short fire run in forest type vegetation – in which the developing fire will not crown. Therefore, most bark and all canopy fuels can justifiably be excluded from total fuel load.

Note [5] - Flame Temperature: The Guidelines (DPLH 2021, v1.4) Section 5.5.3.1.3 and the relevant acceptable solutions within the bushfire protection criteria, establish that the higher flame temperature of 1200 K is to be applied when determining the availability of suitable onsite sheltering options for tourism vulnerable land uses.

Note [6] – Fireline Intensity and Flame Length: These values are determined as intermediate and final outputs of the AS 3959:2018 modelling. Changing these values would not be a valid use of the methodology for a fully developed fire. However, for the circumstance of a developing fire in small patches or corridors of vegetation, there may be justification when an authoritative source is identified to provide an override value.

A2.3: SITE SLOPE

SITE SLOPE APPLIED

MEASURING

Site slope is the 'line of sight' slope (upslope [-] or downslope [+] degrees) between the 'site' and the edge of the relevant area of classified vegetation (AS 3959:2018 clause B5). The 'site' being "the part of the allotment of land on which a building stands or is to be erected" (AS 3959:2018 clause 1.5.30). In other words, it is the slope between the base of the potential bushfire and the base of the receiver in a straight line – irrespective of changes in slope or any other physical obstructions between these two points.

Method 2 allows for the determination of the actual site slope (degrees) and it is independent of effective slope (Method 1 assumes the site slope is the same as the effective slope that is applied when a given range of effective slope is used).

PURPOSE

Site slope is applied to position the building relative to the modelled bushfire (the radiant heat panel) and affects the calculated 'view factor' for a given (or default height) of the 'elevation of receiver'. This in turn influences the calculated level of radiant heat that will potentially be transferred from the bushfire to the building.

LIMITATIONS

AS 3959:2018 clause B1 limits site slope to 20^0 but explains that this limitation due to the considered impracticality managing any vegetation to ensure it is low threat vegetation or vegetation managed in a minimal fuel condition in perpetuity on steeper slopes. This is likely to result in an inability to maintain the assessed separation distance between the building and the classified vegetation. Consequently, where the maintenance of vegetation is not a limiting factor, the application of a greater site slope can be justified to position the building relative to the bushfire more accurately.

Relevant Site	Relevant Vegetation		Assessed / Planned Building Setback from Lot Boundary		Relative Height Difference Site vs Base of Vegetation	Separation Distance	Site Slope [1]	
			Relevant Lot Boundary	Distance			Measured	Calculated
	Area	Class		metres	metres	metres	degrees	degrees
Onsite open space shelter	1	(A) Forest	-	-	-	160m	-	flat 0
	2	(G) Grassland	-	-	-	90m	-	flat 0

[1] When it is not possible to measure on site (physical obstructions) the slope is calculated, including through use of relative heights and compiled distances.

A1.3: EFFECTIVE SLOPE

Measuring

Effective slope refers to the slope "under the classified vegetation which most significantly influences bushfire behaviour (AS 3959:2018, clause B4, CB4). It is not the average slope.

It is described as upslope, flat or downslope when viewed from the exposed element (e.g., building) looking towards the vegetation – and measured in degrees. Ground slope has a direct and significant influence on a bushfire's rate of spread and intensity, which increases when travelling up a slope.

The slope under the vegetation in closest proximity to the exposed element(s), over the distance that will most likely carry the entire depth of the flaming front, will be a significant consideration in the determination of the effective slope. This distance is determined as a function of the potential quasi-steady rate of spread and expected residence time (i.e., the flaming combustion period at a single point on the ground), of a bushfire in the specific vegetation type/landscape scenario.

Slope Variation Within Areas of Vegetation

Where a significant variation in effective slope exists under a consistent vegetation type, these will be delineated as separate vegetation areas to account for the difference in potential bushfire behaviour, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

Slope Variation Due to Multiple Development Sites

When the effective slope, under a given area of bushfire prone vegetation, will vary significantly relative to multiple proposed development sites (exposed elements), then the effective slopes corresponding to each of the different locations, are separately identified.

The relevant (worst case) effective slope is determined in the direction corresponding to the potential directions of fire spread towards the subject building(s).

Differences in Application of Effective Slope - AS 3959:2018 Method 1 versus Method 2 Procedures

The Method 1 procedure provides five different slope ranges from flat (including all upslopes) to 20 degrees downslope to define the effective slope and bushfire behaviour model calculations apply the highest value in each range (i.e., 0^0, 5^0, 10^0, 15^0 or 20^0).

The Method 2 procedure requires an actual slope (up or down in degrees) to be determined. AS 3959:2018, clause B1 limits the effective slope that can be applied to 30 degrees downslope and 15 degrees upslope. Where any upslope is greater than 15 degrees, then 15 degrees is to be used.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

The effective slopes determined from the site assessment are recorded in Table 3.1 of this Bushfire Management Plan. When their derivation requires additional explanation and justification, this is provided below.

A1.4: SEPARATION DISTANCE

Measuring

The separation distance is the distance in the horizontal plane between the receiver (building/structure or area of land being considered) and the edge of the classified vegetation (AS 3959:2018, clause 2.2.4)

The relevant parts of a building/structure from which the measurement is taken is the nearest part of an external wall or where a wall does not exist, the supporting posts or columns. Certain parts of buildings are excluded including eaves and roof overhangs.

The edge of the vegetation, for forests and woodlands, will be determined by the unmanaged understorey rather than either the canopy (drip line) or the trunk (AS 3959:2018, clause C2.2.5).

Measured Separation Distance as a Calculation Input

If a separation distance can be measured because the location of the building/structure relative to the edge of the relevant classified vegetation is known, this figure can be entered into the BAL calculation. The result is a determined BAL rating.

Assumed Separation Distance as a Calculation Input

When the building/structure location within the lot is not known, an assumed building location may be applied that would establish the closest positioning of the building/structure relative to the relevant area of vegetation.

The assumed location would be based on a factor that puts a restriction on a building location such as:

- An established setback from the boundary of a lot, such as a residential design code setback or a restrictive covenant; or
- Within an established building envelope.

The resultant BAL rating would be indicative and require later confirmation of the building/structure actual location relative to the vegetation to establish the determined BAL rating.

Separation Distance as a Calculation Output

With the necessary site specific assessment inputs and using the AS 3959:2018 bushfire modelling equations, the range of separation distances that will correspond to each BAL rating (each of which represents a range of radiant heat flux), can be calculated.

This has application for bushfire planning scenarios such as:

- When the separation distance cannot be measured because the exact location of the exposed element (i.e., the building, structure or area), relative to classified vegetation, is yet to be determined.

  In this scenario, the required information is the identification of building locations onsite that will correspond to each BAL rating. That is, indicative BAL ratings can be derived for a variety of potential building/structure locations; or

- The separation distance is known for a given building, structure or area (and a determined BAL rating can be derived), but additional information is required regarding the exposure levels (to the transfer of radiant heat from a bushfire), of buildings or persons, that will exist at different points within the subject site.

The calculated range of separation distances corresponding to each BAL rating can be presented in a table and/or illustrated as a BAL Contour Map – whichever is determined to best fit the purpose of the assessment.

For additional information refer to the information boxes in Section 3 'Bushfire Attack Levels (BAL) - Understanding the Results and Section 3.2. 'Interpretation of the BAL Contour Map'.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

For the subject development/use the applicable separation distances values are derived from calculations applying the assessed site data. They are an output value, not an input value and therefore are not presented or justified in this appendix.

The derived values are presented in Section 3, Table 3.1.

A3: BAL Calculator – Copy of Input/Output Values

CALCULATION OF SEPARATION DISTANCES – METHOD 2: Forest 0

FLAMESOL
FPA AUSTRALIA

Calculated October 15, 2023, 8:27 pm (BALc v.4.9)

Forest

Bushfire Attack Level calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	2.4 km/h
Vegetation classification	Forest	Flame length	19.8 m
Understorey fuel load	25 t/ha	Flame angle	83 °
Total fuel load	35 t/ha	Panel height	19.65 m
Vegetation height	n/a	Elevation of receiver	9.82 m
Effective slope	0 °	Fire intensity	43,400 kW/m
Site slope	0 °	Transmissivity	0.697
Distance to vegetation	160 m	Viewfactor	0.0232
Flame width	100 m	Radiant heat flux	1.81 kW/m²
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

CALCULATION OF SEPARATION DISTANCES – METHOD 2: Grassland 0

FLAMESOL
FPA AUSTRALIA

Calculated October 15, 2023, 8:20 pm (BALc v.4.9)

Onsite shelter

Bushfire Attack Level calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Grassland Fire Danger Index	110	Rate of spread	14.3 km/h
Vegetation classification	Grassland	Flame length	6.87 m
Understorey fuel load	4.5 t/ha	Flame angle	86 °
Total fuel load	4.5 t/ha	Panel height	6.85 m
Vegetation height	n/a	Elevation of receiver	3.42 m
Effective slope	0 °	Fire intensity	33,247 kW/m
Site slope	0 °	Transmissivity	0.74
Distance to vegetation	90 m	Viewfactor	0.0226
Flame width	100 m	Radiant heat flux	1.87 kW/m²
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

APPENDIX B: ONSITE VEGETATION MANAGEMENT - THE APZ

THE ASSET PROTECTION ZONE (APZ)

This is an area surrounding a habitable building containing either no fire fuels and/or low threat fire fuels that are maintained in a minimal fuel condition. The primary objectives include:

- To ensure the building is sufficiently separated from the bushfire hazard to limit the impact of its direct attack mechanisms. That is, the dimensions of the APZ will, for most site scenarios, remove the potential for direct flame contact on the building, reduce the level of radiant heat to which the building is exposed and ensure some reduction in the level of ember attack (with the level of reduction being dependent on the vegetation types of present);
- To ensure any vegetation retained within the APZ presents low threat levels and prevents surface fire spreading to the building;
- To ensure other combustible materials that can result in consequential fire (typically ignited by embers) within both the APZ and parts of the building, are eliminated, minimised and/or appropriately located or protected. The explanatory notes in the Guidelines provide some guidance for achieving this objective and other sources are available. This is a primary cause of building loss in past bushfire events; and
- Provide a defendable space for firefighting activities.

B1: The Dimensions and Location of the APZ to be Established and Maintained

THE APZ DIMENSIONS

The determined BAL rating of the relevant building/structure will establish the corresponding bushfire construction requirements that are to apply. The minimum required APZ dimensions must be those that will ensure the retention of the determined BAL rating. This ensures that the potential radiant heat exposure of the building/structure will be limited to the level that the applied construction requirements are designed to resist.

The size of the APZ that is to be established and maintained surrounding the subject building/structure, will be the largest that is defined by either:

- The dimensions corresponding to the determined BAL rating stated on the BAL Certificate and which accounts for the specific site conditions; or
- The dimensions established by the relevant local government's annual firebreak notice as can be issued under s33 of the Bushfires Act 1954. This may state a required single minimum dimension for an APZ surrounding a building, or a dimension that varies with slope of the land under the different areas of bushfire prone vegetation that impact the building. Check the notice annually for revisions to requirements.

Relevant Buildings(s)	Classified Vegetation [refer Fig 3.1]	Minimum Required Separation Distances (m)				
		Corresponding to Stated BAL				Stated in the Relevant Firebreak Notice
		BAL-29	BAL-19	BAL-12.5	BAL-LOW	
Workers Cottages	Woodland	35m	48m	64m	100m	20m
	Forest	52m	68m	87m	100m	20m
	Grassland	10m	16m	23m	50m	20m
	Forest	33m	46m	61m	100m	20m
Campgrounds, Function Centre Marquee	Forest	21m	31m	42m	100m	20m
	Grassland	8m	12m	17m	50m	20m
	Forest	21m	31m	61m	100m	20m

Western Chalets	Forest	21m	31m	61m	100m	20m
	Forest	27m	37m	50m	100m	20m
	Forest	33m	46m	61m	100m	20m
	Grassland	8m	12m	17m	50m	20m

THE APZ LOCATION

The APZ should be contained solely within the boundaries of the lot, except in instances where the neighbouring lot(s) or adjacent public land is non-vegetated or will be maintained to a low-fuel state in perpetuity, and this can be justified. Where possible, planning for siting and design of development should incorporate elements that include non-vegetated areas (e.g., roads / parking / drainage / water body) and/or formally managed areas of vegetation (public open space / recreation areas / services installed in a common section of land), as either part of the required APZ dimensions for each lot or to additionally increase separation distances to reduce exposure further.

B2: The Standards for the APZ as Established by the Guidelines (DPLH, v1.4)

Within the Guidelines (source: https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas), the management Standards are established by:

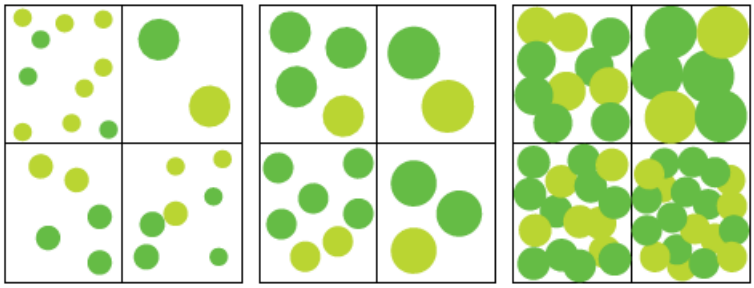
- Schedule 1: Standards for Asset Protection Zones (see extract below) established by the Guidelines; and
- The associated explanatory notes (Guidelines E2) that address (a) managing an asset protection zone (APZ) to a low threat state (b) landscaping and design of an asset protection zone and (c) plant flammability.

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.

Figure 19: Tree canopy cover – ranging from 15 to 70 per cent at maturity



Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

B3: The Standards for the APZ as Established by the Local Government

Refer to the Firebreak Notice issued annually (under s33 of the Bushfires Act 1954) by the relevant local government. It may state Standards that vary from those established by the Guidelines and that have been endorsed by the WAPC and DFES as per Section 4.5.3 of the Guidelines.

A copy of the relevant annual notice is not included here as they are subject to being reviewed and modified prior to issuing each year. Refer to ratepayers notices and/or the local government's website for the current version.

B4: Maintaining Low Threat and Non-Vegetated Areas Excluded from Classification

AS 3959 establishes the methodology for determining a bushfire attack level (BAL). The methodology includes the classification of the subject site's surrounding vegetation according to their 'type' and the application of the corresponding bushfire behaviour models to determine the BAL. Certain vegetation can be considered as low threat and excluded from classification. Where this has occurred in assessing the site, the extract from AS3959:2018 below state the requirements (including the size of the vegetation area if relevant to the assessment) for maintenance of those areas of land.

2.2.3.2 *Exclusions—Low threat vegetation and non-vegetated areas*

The following vegetation shall be excluded from a BAL assessment:

(a) Vegetation of any type that is more than 100 m from the site.

(b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.

(c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified vegetation.

(d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.

(e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

(f) Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

NOTES:

1 Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).

2 A windbreak is considered a single row of trees used as a screen or to reduce the effect of wind on the leeward side of the trees.

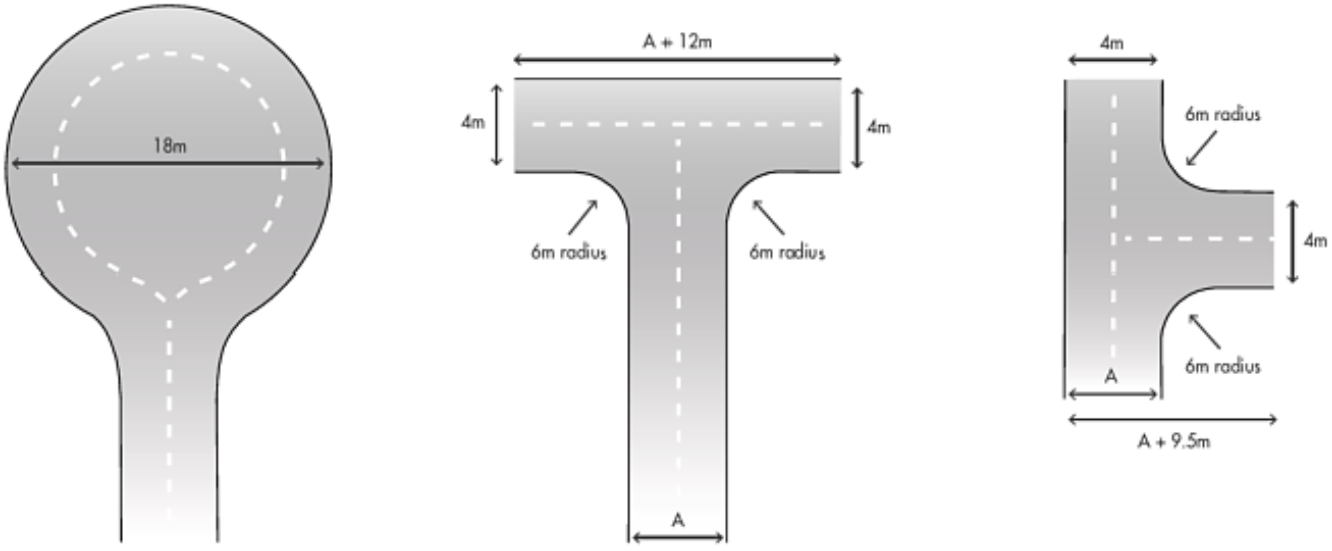
APPENDIX C: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

The design/layout requirements for access are established by the acceptable solutions of the Guidelines (DPLH, 2021 v1.4) Element 3 and vary dependent on the access component, the land use and the presence of 'vulnerable' persons. Consequently, the best reference source are the Guidelines. The technical requirements that are fixed for all components and uses are presented in this appendix.

GUIDELINES TABLE 6, EXPLANATORY NOTES E3.3 & E3.6 AND RELEVANT ACCEPTABLE SOLUTIONS

Technical Component	Vehicular Access Types / Components			
	Public Roads	Emergency Access Way [1]	Fire Service Access Route [1]	Battle-axe and Private Driveways [2]
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum Horizontal clearance (m)	N/A	6	6	6
Minimum Vertical clearance (m)	4.5			
Minimum weight capacity (t)	15			
Maximum Grade Unsealed Road [3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum Grade Sealed Road [3]		1:7 (14.3%)		
Maximum Average Grade Sealed Road		1:10 (10%)		
Minimum Inner Radius of Road Curves (m)		8.5		

Turnaround Area Dimensions for No-through Road, Battle-axe Legs and Private Driveways [4]



Passing Bay Requirements for Battle-axe leg and Private Driveway

When the access component length is greater than the stated maximum, passing bays are required every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum 6m).

Emergency Access Way – Additional Requirements

Provide a through connection to a public road, be no more than 500m in length, must be signposted and if gated, gates must be open the whole trafficable width and remain unlocked.

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% or 7.1 degree) entry and exit angle.

[4] The turnaround area should be within 30m of the main habitable building.

D2: Non-Reticulated Areas – Static Supply

For specified requirements, refer to the Guidelines Element 4: Water – Acceptable Solution A4.2 , Explanatory Notes E4 (that provide water supply establishment detail under the headings of water supply; independent water and power supply; strategic water supplies, alternative water sources and location of water tanks) and the technical requirements established by Schedule 2 (reproduced below).

SCHEDULE 2: WATER SUPPLY DEDICATED FOR BUSHFIRE FIREFIGHTING PURPOSES

2.1 Water supply requirements

Water dedicated for firefighting should be provided in accordance with Table 7 below, and be in addition to water required for drinking purposes.

Table 7: Water supply dedicated for bushfire firefighting purposes

PLANNING APPLICATION	NON-RETICULATED AREAS
Development application	10,000L per habitable building
Structure Plan / Subdivision: Creation of 1 additional lot	10,000L per lot
Structure Plan / Subdivision: Creation of 3 to 24 lots	10,000L tank per lot **or** 50,000L strategic water tank
Structure Plan / Subdivision: Creation of 25 lots or more	50,000L per 25 lots or part thereof Provided as a strategic water tank(s) or 10,000L tank per lot

2.2 Technical requirements

2.2.1 Construction and design

An above-ground tank and associated stand should be constructed of non-combustible material. The tank may need to comply with AS/NZS 3500.1:2018.

Below ground tanks should have a 200mm diameter access hole to allow tankers or emergency service vehicles to refill direct from the tank, with the outlet location clearly marked at the surface. The tank may need to comply with AS/NZS 3500.1:2018. An inspection opening may double as the access hole provided that the inspection opening meets the requirements of AS/NZS 3500.1:2018. If the tank is required under the BCA as part of fire hydrant installation, then the tank will also need to comply with AS 2419.

Where an outlet for an emergency service vehicle is provided, then an unobstructed, hardened ground surface is to be supplied within four metres of any water supply.

2.2.2 Pipes and fittings

All above-ground, exposed water supply pipes and fittings should be metal. Fittings should be located away from the source of bushfire attack and be in accordance with the applicable section below, unless otherwise specified by the local government.

2.2.2.1 Fittings for above-ground water tanks:

- Commercial land uses: 125mm Storz fitting; or
- Strategic water tanks: 50mm or 100mm (where applicable and adapters are available) male camlock coupling with full flow valve; or
- Standalone water tanks: 50mm male camlock coupling with full flow valve; or
- Combined water tanks: 50mm male camlock coupling with full flow valve or a domestic fitting, being a standard household tap that enables an occupant to access the water supply with domestic hoses or buckets for extinguishing minor fires.

2.2.2.2 Remote outlets

In certain circumstances, it may be beneficial to have the outlet located away from the water supply. In such instances in which a remote outlet is to be used, the applicant should consult the local government and DFES on their proposal.

EXAMPLE CONSTRUCTION AND FITTINGS	
	
Strategic 47,000 Litre Concrete Tank & Protected Fittings	
	
10,000 Litre Concrete Tank	Storz and Camlock Couplings
	
Full Flow 50mm Ball Valve	Full Flow 50mm Gate Valve and Male Camlock