

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 9560 on Plan 140669 (6088 Vasse Highway)

Suburb: Nannup

State: WA

P/code: 6275

Local government area: Shire of Nannup

Description of the planning proposal: Development Application

BMP Plan / Reference Number: 230342

Version: v1.0

Date of Issue: 29/01/2024

Client / Business Name: Julie May

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)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minor development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High risk land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vulnerable land-use	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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.

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 11/12/2023

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address:

Site visit: Yes No

Date of site visit (if applicable): Day Month Year

Report author or reviewer:

WA BPAD accreditation level (please circle):

Not accredited Level 1 BAL assessor Level 2 practitioner Level 3 practitioner

If accredited please provide the following.

BPAD accreditation number: Accreditation expiry: Month Year

Bushfire management plan version number:

Bushfire management plan date: Day Month Year

Client/business name:

	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)?	<input type="checkbox"/>	<input type="checkbox"/>
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 bushfire protection criteria elements)?	<input type="checkbox"/>	<input type="checkbox"/>

Is the proposal any of the following (see [SPP 3.7 for definitions](#))?

	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input type="checkbox"/>	<input type="checkbox"/>
High risk land-use	<input type="checkbox"/>	<input type="checkbox"/>
Vulnerable land-use	<input type="checkbox"/>	<input type="checkbox"/>

None of the above

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author
or reviewer

Date



Bushfire Management Plan (BMP)



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

6008 Vasse Highway, Nannup

Shire of Nannup

Development Application - Vulnerable
Tourism Land Use

29 January 2024

Job Reference No: 230342

BPP GROUP PTY LTD T/A BUSHFIRE PRONE PLANNING

ACN: 39 166 551 784 | ABN: 39 166 551 784

**LEVEL 1, 159-161 JAMES STREET
GUILDFORD WA 6055****PO BOX 388
GUILDFORD WA 6935****08 6477 1144 | admin@bushfireprone.com.au****DOCUMENT CONTROL**

PREPARATION					
Co-Author:	Louise Stokes (BPAD Level 1 No. 5189)				
Original Author /Reviewed:	Kathy Nastov (BPAD Level 3 No. 27794)				
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Julie May	julesway@outlook.com.au	1.0	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>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.</p> <p>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.</p> <p>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.</p> <p>Copyright © 2022 BPP Group Pty Ltd: All intellectual property rights, including copyright, in format and proprietary content contained in documents created by Bushfire Prone Planning, remain the property of BPP Group Pty Ltd. Any use made of such format or content without the prior written approval of Bushfire Prone Planning, will constitute an infringement on the rights of the Company which reserves all legal rights and remedies in respect of any such infringement.</p>					

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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		Assessment Outcome
The Acceptable Solutions of the Bushfire Protection Criteria (Guidelines)		
Element	The Acceptable Solutions	
Other Short Term Accommodation	A5.7a Siting and design – APZ – caravan park	Fully Compliant
	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	N/A
	A5.7f Siting and design – onsite shelter – exposure to hazard	N/A
	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.	Partly 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	N/A
	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	N/A
	A5.9a Provision of water - reticulated	N/A
	A5.9b Provision of water – non-reticulated	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:	<p>The proposed development is a land use that can be categorised as a:</p> <p>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).</p> <p>The proposed land use for tourism or recreation involves visitors who are unfamiliar with the surroundings and/or presents evacuation challenges.</p>
Subject lot/site total area:	7.8297 ha
Number of additional lots being created:	N/A
Description of the proposed development/use:	
<p>This Bushfire Management Plan is being developed for Nannup Ponds, located on Vasse Highway, three minutes drive from the Nannup townsite on the Vasse Highway. The property owners are submitting a Development Application for a change of use from residential to short stay accommodation for the main homestead.</p> <p>Stage two of the project will be to:</p> <ul style="list-style-type: none"> - Locate a Tiny House to the south of the main residence, - Convert the most northern shed to a Campers Kitchen and Amenities block, - Convert the middle shed to a Manager's Quarters, and - Establish a caravan park area with eight powered sites. <p>The property is well maintained and the grassland areas are managed around the main residence and along the driveway. 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.</p> <p>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.</p>	

Development and management of potential bushfire hazard issues:

Nannup Ponds is located off the Vasse Highway, within an Extreme fire danger area. The risk during the bushfire season comes from the Forest vegetation and along the Carlotta Brook.

There are vast tracts of bushfire prone vegetation within 150 metre of the site boundary and in the broader landscape to the east of the property, which represents an extreme bushfire risk.

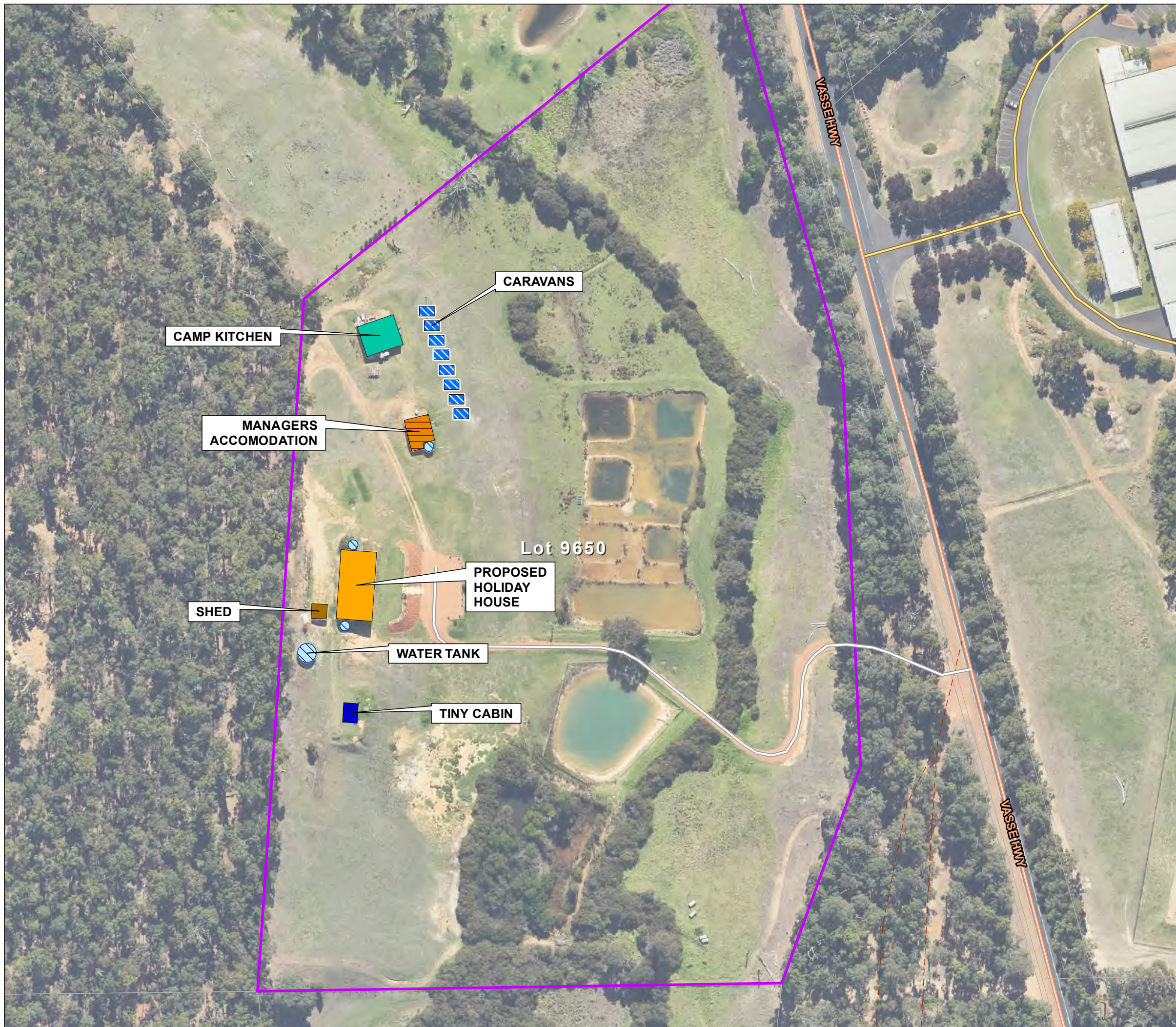
Along the Vasse Highway there are several lifestyle and small-scale agricultural properties, with a mix of pasture, managed grasses and forest vegetation. Along the adjacent East Nannup Road there are primarily small lots of lifestyle properties. To the east of the development site the Cockatoo Valley subdivision has 5 acre lots that have a strategic firebreak around the entire area. Properties in this area are managing fuel loads and asset protection zones.

The Nannup Brook Volunteer Fire Brigade shed is located on East Nannup Road, a two-minute drive from the development site and the Local Government's Evacuation location is a five-minute drive from the development site.

Visitors may not be familiar with the terrain and speed at which a bushfire can travel through the area, due to the vegetation type.

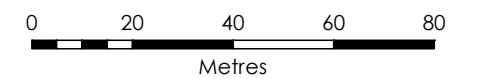
Figure 1.1
Proposed Development

Lot 9650 on Plan 140669, Area : 7.8297 ha
 6088 Vasse Highway,
 NANNUP 6275
SHIRE OF NANNUP

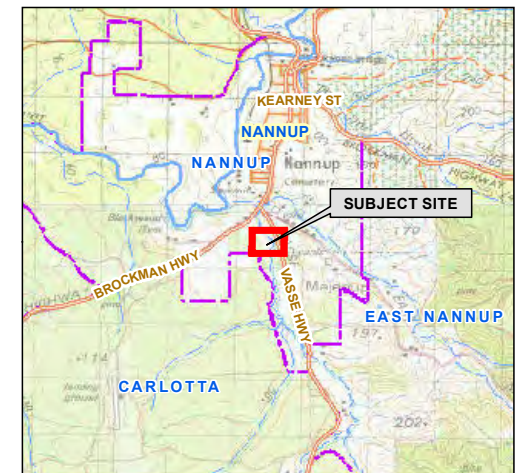


----- LEGEND -----

- Subject Site
- Other Lots
- Driveway
- Caravans
- Existing Building**
- Proposed Holiday House
- Shed
- Water Tank
- Proposed Building**
- Tiny Cabin
- Managers Accomodation
- Camp Kitchen



----- LOCALITY -----



Aerial Imagery : Landgate/SLIP
 Image Date : Feb 2022

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Ian Ross 21/12/2023
 Map updated by: Ian Ross 21/12/2023
 A3 Scale 1:1,500



Figure 1.2
Location Plan

Lot 9650 on Plan 140669, Area : 7.8297 ha
 6088 Vasse Highway,
 NANNUP 6275
SHIRE OF NANNUP



----- **LEGEND** -----

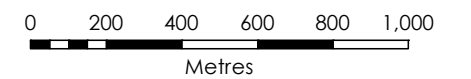
- Subject Site
- Bush Fire Brigade
- State Emergency Service Unit
- Volunteer Fire & Rescue Service

Reserves

- Reserves

Legislated Lands and Waters

- Section 34A Freehold
- Section 5(1)(h) Reserve
- State Forest



----- **LOCALITY** -----



Aerial Imagery : Landgate/SLIP
 Image Date : Feb 2022

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Ian Ross 21/12/2023
 Map updated by: Ian Ross 21/12/2023
 A3 Scale 1:20,000



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).

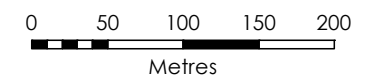
Figure 1.3
Bushfire Prone Area

Lot 9650 on Plan 140669, Area : 7.8297 ha
 6088 Vasse Highway,
 NANNUP 6275
SHIRE OF NANNUP



----- **LEGEND** -----

- Subject Site
- Other Lots
- Bush Fire Brigade
- Driveway
- Caravans
- Existing Building**
- Proposed Holiday House
- Shed
- Water Tank
- Proposed Building**
- Tiny Cabin
- Managers Accomodation
- Camp Kitchen
- Bush Fire Prone Areas**
- Bushfire Prone Areas (2021)



----- **LOCALITY** -----



Aerial Imagery : Landgate/SLIP
 Image Date : Feb 2022

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Ian Ross 21/12/2023
 Map updated by: Ian Ross 21/12/2023
 A3 Scale 1:5,000



1.2 The Bushfire Management Plan (BMP)

1.2.1 Commissioning and Purpose

Landowner / proponent:	Julie May
Bushfire Prone Planning commissioned to produce the BMP by:	julesway@outlook.com.au
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 Nannup

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	No	N/A	
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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None
Bush Forever	No	N/A	DPLH-022, SPP 2.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None

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

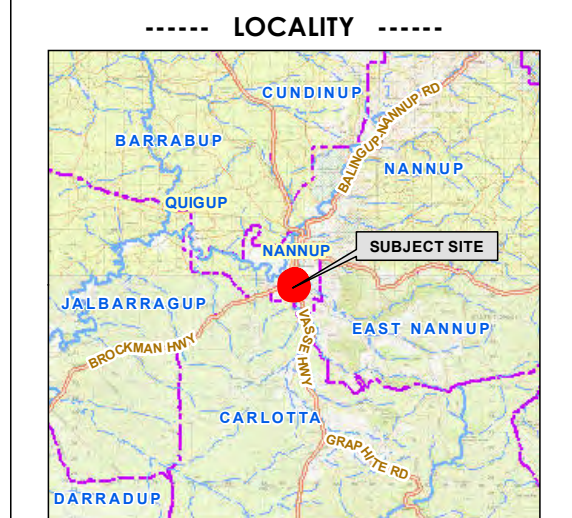
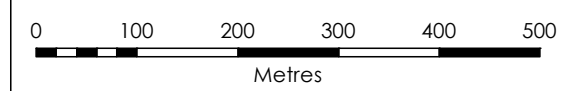
IDENTIFIED AREAS OF LAND HERITAGE VALUE		
Land with Heritage Value	Relevant to Proposal	Description and Potential Impact on Implementation of Bushfire Protection Measures
Aboriginal Heritage Places (DPLH)	No	
National Heritage List (Dept. of Agriculture, water and the Environment)	No	

Figure 2.1
Environmental Considerations

Lot 9650 on Plan 140669, Area : 7.8297 ha
 6088 Vasse Highway,
 NANNUP 6275
SHIRE OF NANNUP



- **LEGEND** -----
- Subject Site
 - Bush Fire Brigade
 - Driveway
 - Caravans
 - Existing Building**
 - Proposed Holiday House
 - Shed
 - Water Tank
 - Proposed Building**
 - Tiny Cabin
 - Managers Accomodation
 - Camp Kitchen
 - Reserves**
 - Reserves
 - Legislated Lands and Waters**
 - State Forest
 - Aboriginal Heritage**
 - Aboriginal Heritage Place DPLH001
 - Leeuwin Nannup Wetlands (Unreviewed)**
 - Floodplain



Aerial Imagery : Landgate/SLIP
 Image Date : Feb 2022

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Ian Ross 21/12/2023
 Map updated by: Ian Ross 21/12/2023
 A3 Scale 1:7,500

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence arising from relying on any information depicted.
 Map Document Path / Name: K:\Projects\Jobs 2023\230342 - 6088 Vasse Highway Nannup (BAL)\Mapping\MXD\Campground\230342_Fig2-1_ENV_6088 Vasse Hwy.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/m². 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 3.2 / BAL Contour Map
Method 2 (Detailed)	No	N/A	N/A	N/A	

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
Proposed Holiday House	BAL-29	BAL-29
Tiny Cabin	BAL-29	Not Determined
Caravan Park Sites, Camp Kitchen	BAL-29	Not Determined
Managers Quarters	BAL-12.5	Not Determined

¹ The assessment data used to derive the BAL ratings is sourced from Table 3.1 and Figure 3.2 '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).	Figure No 3.1.
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).	Figure No 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).

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
Area	Class		Applied Range	Measured								
		degree range	degrees	degrees	K	metres	metres	kW/m	metres	% Reduction		
1	(A) Forest	80	Upslope/Flat	Upslope								
2	(G) Grassland	80	Downslope >5-10	d/slope 6.4								
3	(G) Grassland	80	Downslope >5-10	d/slope 7.8								
4	(G) Grassland	80	Upslope/Flat	Upslope								
5	Excluded cl 2.2.3.2(e & f)	-	-	-								
6	Scrub	80	Downslope >5-10	d/slope 7.8								
7	(A) Forest	80	Downslope >5-10	d/slope 7.8								

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.

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	(G) Grassland	<8	8-<10	10-<16	16-<23	23-<50	>50		
3	(G) Grassland	<8	8-<10	10-<16	16-<23	23-<50	>50		
4	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50		
5	Excluded cl 2.2.3.2(e & f)	-	-	-	-	-	-		
6	(D) Scrub	<12	12-<17	17-<24	24-<35	35-<100	>100		
7	(A) Forest	<26	26-<33	33-<46	46-<61	61-<100	>100		

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.

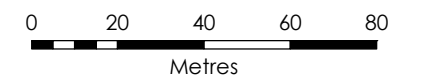
Figure 3.1
Classified Vegetation & Topography

Lot 9650 on Plan 140669, Area : 7.8297 ha
 6088 Vasse Highway,
 NANNUP 6275
SHIRE OF NANNUP

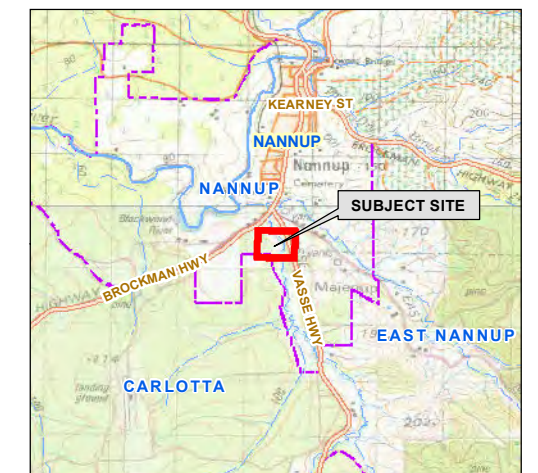


----- LEGEND -----

- Subject Site
- Other Lots
- Photo & Direction
- Driveway
- Caravans
- Existing Building**
- Proposed Holiday House
- Shed
- Water Tank
- Proposed Building**
- Tiny Cabin
- Managers Accomodation
- Camp Kitchen
- 150m Vegetation Assessment Area**
- 150m from Subject Site
- Classified Vegetation**
- Class (A) Forest
- Class (D) Scrub
- Class (G) Grassland
- Exclusion 2.2.3.2



----- LOCALITY -----

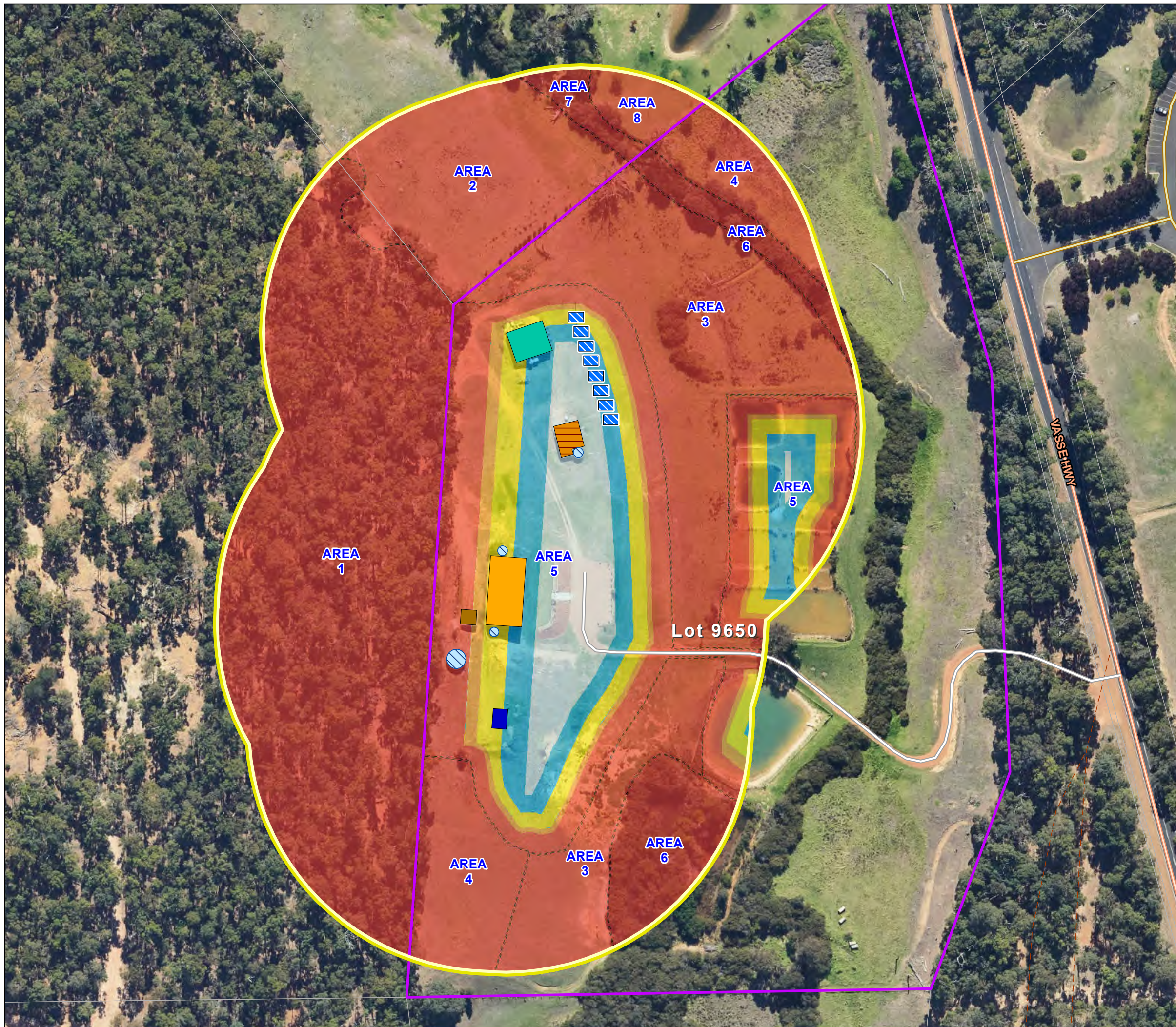


Aerial Imagery : Landgate/SLIP
 Image Date : Feb 2022

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Ian Ross 19/12/2023
 Map updated by: Ian 19/12/2023
 A3 Scale 1:1,750

Figure 3.2
BAL Contour Map

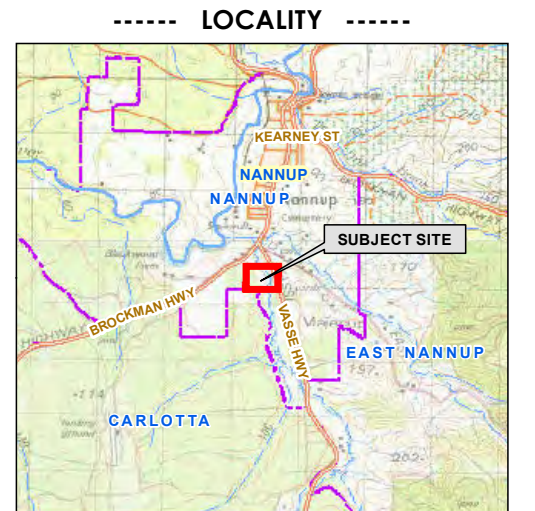
Lot 9650 on Plan 140669, Area : 7.8297 ha
 6088 Vasse Highway,
 NANNUP 6275
SHIRE OF NANNUP



----- **LEGEND** -----

- Subject Site
- Other Lots
- Driveway
- Caravans
- Existing Building**
 - Proposed Holiday House
 - Shed
 - Water Tank
- Proposed Building**
 - Tiny Cabin
 - Managers Accomodation
 - Camp Kitchen
- 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



Aerial Imagery : Landgate/SLIP
 Image Date : Feb 2022

Coordinate System: GDA 1994 MGA Zone 50
 Projection: Universal Transverse Mercator Units: Metre
 Map compiled by: Ian Ross 20/12/2023
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 Map Document Path / Name: K:\Projects\Jobs 2023\230342 - 6088 Vasse Highway Nannup (BAL)\Mapping\MXD\Campground\230342_Fig3-2_BAL_6088 Vasse Hwy.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	
<p>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.</p> <p>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).</p>	
Solution Component Check Box Legend	<input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant
A5.7 Siting and Design	
A5.7a Asset protection zone (APZ) – caravan park only	Applicable: Yes Compliant: Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> The existing and/or proposed campground facilities (i.e. office, managers 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/m ² (BAL-29).	
Supporting Assessment Details: The proposed caravan park (site, managers quarters and camp kitchen/ablutions) can achieve a BAL -29.	
A5.7b Asset protection zone (APZ) – certain accommodation	Applicable: No Compliant: N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> 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: <ul style="list-style-type: none"> • 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/m², 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

<p>the classified vegetation), that will ensure their exposure to the potential radiant heat impact of a bushfire does not exceed 29 kW/m².</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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).</p>
<p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 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.</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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.</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> APZ Location: It can be justified that any adjoining (offsite) land forming part of a 'Planning BAL-29' APZ will:</p> <ul style="list-style-type: none"> • 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.
<p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 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).</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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.</p>
<p><input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 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.</p>
<p>Supporting Assessment Details: The BAL – 29 APZ can be achieved with managed onsite vegetation for all existing and proposed buildings. Firebreaks are installed under the requirements established by the local government's annual firebreak notice.</p>
<p>A5.7d Asset protection zone (APZ) – landscape management Applicable: No Compliant: N/A</p>
<p><input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> The preparation of a landscape management plan, to identify ongoing onsite vegetation management, is appropriate for the proposed development. This will be prepared.</p>
<p>Supporting Assessment Details: N/A</p>

A5.7e Onsite shelter – pedestrian paths	Applicable:	No	Compliant:	N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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:	No	Compliant:	N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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). <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> The building's exposure to the bushfire hazard threat of radiant heat will be limited to a maximum radiant heat flux of 10 kW/m ² (calculated with an assumed flame temperature of 1200K) by providing the required separation distances from the bushfire hazard.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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/m ² (calculated with an assumed flame temperature of 1200K) by providing the required separation distances from the bushfire hazard.				
Supporting Assessment Details: Not applicable				
A5.7g Onsite shelter – bushfire construction requirements	Applicable:	No	Compliant:	N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> The internal vehicular access/private driveway can provide emergency access/egress for all patrons and staff in the event of a bushfire.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> It is possible to provide at least two internal access/egress points to the public road network.				
Supporting Assessment Details: There is one internal driveway for guests. The private driveway passes through reserve land to the Vasse Highway. The property owners will need to apply for an easement across the driveway to legally access the property.				
A5.8.1b Internal access/private driveway - technical requirements	Applicable:	Yes	Compliant:	Partly
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> The internal vehicular access/private driveway length is no greater than 70m. No technical requirements need to be met.				

<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	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.
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The turnaround area requirements (Guidelines, Figure 28, and within 30m of the habitable building) can and will be complied with.
<p>Supporting Assessment Details: The technical details for the internal driveway are compliant with the Guidelines, the driveway length is 290m and passing bays can be installed. The existing bridge is currently 2.9m wide and 14.5m long. The existing side barriers can be extended to increase the horizontal width of the bridge.</p> <p>There is a good turnaround area at the cottages.</p>	
A5.8.1c Signage	Applicable: Yes Compliant: Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The required information to inform the actions of those persons onsite in the event of a bushfire will be prominently displayed within the site.
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	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.
<p>Supporting Assessment Details: Evacuation signage can be installed in the cottages, camp kitchen and guest carpark.</p>	
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
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Two-way public road access is provided in two different directions to at least two different suitable destinations.
<p>Supporting Assessment Details: Vasse Highway travels in different directions (Nannup, Manjimup and Pemberton) The road is accessible by 2WD vehicles in all weather conditions.</p>	
A5.8.2b No-through roads – maximum length	Applicable: No Compliant: N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	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).
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	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).
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	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.
<p>Supporting Assessment Details: Not applicable</p>	

A5.8.2c Emergency access way – alternative access option	Applicable:	No	Compliant:	N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> A5.8.2a and A5.8.2b cannot be achieved.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> The proposed or existing EAW provides a through connection to a public road.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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 multi-access routes are compliant. There is no need for an Emergency Access Way. There is an existing gated Emergency Access Way along the western boundary to Brockman Highway through State Forest. The Local Government has advised that this is not to be used as an access way to this property.				
A5.8.2d Public roads - technical requirements	Applicable:	Yes	Compliant:	Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 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.				
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 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). <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 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.				
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> A traversable verge is available adjacent to classified vegetation (Guidelines, E3.1), as recommended.				
Supporting Assessment Details: Vasse Highway meets the technical requirements for public roads.				
A5.8.2e Access limitations - onsite shelter option	Applicable:	No	Compliant:	N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> The capacity of the proposed development is no greater than 100 guests and staff at any one time.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/> 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: Not applicable			
A5.9 Provision of Water for Firefighting Purposes			
A5.9a Reticulated supply	Applicable:	No	Compliant: N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	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.		
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	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
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	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.		
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	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.		
<p>Supporting Assessment Details: The existing residence has a dedicated water tank for firefighting purposes (90,000 litres) that is fed by a windmill which connects to the dam. This will access the proposed Tiny Cabin when located on site.</p> <p>When the camping area is established a dedicated water tank for firefighting purposes of 50,000 litres will be required to be installed.</p> <p>Refer to information contained in Appendix D for the firefighting water supply specifications and technical requirements.</p>			

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	<p>The subject site is to be compliant with current version of the Shire of Nannup's Fire Break Order issued under s33 of the Bushfires Act 1954.</p> <p>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.</p> <p>[Refer to Section 5.3 and the information presented in Appendix B].</p>
2	<p>Establish a 50,000 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)</p>
3	<p>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.</p>
4	<p>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.</p>
5	<p>Prior to operation, all actions contained within the 'Pre-Season Preparation Procedure' established by the Bushfire Emergency Plan, must be completed.</p>
6	<p>Prior to operation, signage must be prominently displayed at the entrance to the campgrounds that informs the actions of those persons onsite in the event of a bushfire.</p>
7	<p>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.</p> <p>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.</p> <p>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.</p> <p>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).</p>

8	Construct the vehicular access routes within the property including the bridge to comply with the technical requirements referenced in the BMP and the relevant local government annual firebreak notice.
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6.2 Landowner/Occupier Responsibilities – Ongoing Management

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	Management Actions
1	<p>Maintain the Asset Protection Zone (APZ) around buildings, water tanks (and other structures as required) to satisfy:</p> <ul style="list-style-type: none"> 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	<p>The subject site is to be compliant with current version of the Shire of Nannup's Fire Break Compliance Notice issued under s33 of the Bushfires Act 1954.</p> <p>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.</p> <p>[Refer to Section 5.3 and the information presented in Appendix B].</p>
3	<p>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.</p>
4	<p>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.</p>
5	<p>Maintain the static firefighting water supply tanks and associated pipes/fittings/pump and vehicle hardstand in good working condition.</p>
6	<p>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.</p> <p>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.</p> <p>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.</p> <p>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).</p>

7	<p>Ensure all future buildings the landowner/lessee has responsibility for, are designed and constructed in full compliance with:</p> <ul style="list-style-type: none">• 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 <p>Any additional bushfire protection measures this Bushfire Management Plan has established are to be implemented.</p>
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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:	N/A

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
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VEGETATION AREA 1						
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	Up to 6m	Tree Height	Up to 30m	
Dominant & Sub-Dominant Layers (species as relevant)	Eucalypt (Marri, Jarrah) trees to a height of 25m, foliage cover 70%.					
Understorey:	Leaf litter, native grasses and bushes, saplings and Zamia palms					
Additional Justification:	Area 1 is upslope for the existing residence, however the area slopes to the north. The classification of upslope has continued for the camp area, as the Forest area is upslope from the proposed camp area.					
Post Development Assumptions:	Offsite vegetation that cannot be managed or removed by the landowner.					
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>PHOTO ID: 1</p> </div> <div style="text-align: center;">  <p>PHOTO ID: 2</p> </div> </div>						
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>PHOTO ID: 3</p> </div> <div style="text-align: center;">  <p>PHOTO ID: 4 (vegetation in background)</p> </div> </div>						

VEGETATION AREA 2				
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)	Sown pasture for stock. Evidence that some areas are machinery mown for presentation. Grass height currently less than 10cms in some areas and 10cms – 30cms in swamp areas.			
Understorey:	Not required.			
Additional Justification:	Not required.			
Post Development Assumptions:	Offsite vegetation that cannot be managed and removed by the landowner.			
				
PHOTO ID: 5		PHOTO ID: 6		

VEGETATION AREA 3				
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)	Sown pasture for stock. Evidence that some areas are machinery mown for presentation. Grass height currently less than 10cms in some areas and 10cms – 30cms in swamp areas.			
Understorey:	Not required.			
Additional Justification:	Not required.			
Post Development Assumptions:	Onsite vegetation that can be managed and removed by the landowner.			
				
PHOTO ID: 7		PHOTO ID: 8		

VEGETATION AREA 3				
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)	Sown pasture for stock. Evidence that some areas are machinery mown for presentation. Grass height currently less than 10cms in some areas and 10cms – 30cms in swamp areas.			
Understorey:	Not required.			
Additional Justification:	Not required.			
Post Development Assumptions:	Onsite vegetation that can be managed and removed by the landowner.			
				
PHOTO ID: 7		PHOTO ID: 8		

VEGETATION AREA 4				
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)	Sown pasture for stock. Evidence that some areas are machinery mown for presentation. Grass height currently less than 10cms.			
Understorey:	Not required.			
Additional Justification:	Not required.			
Post Development Assumptions:	Onsite vegetation that can be managed and removed by the landowner.			
				
PHOTO ID: 9		PHOTO ID: 10		
				
PHOTO ID: 11				

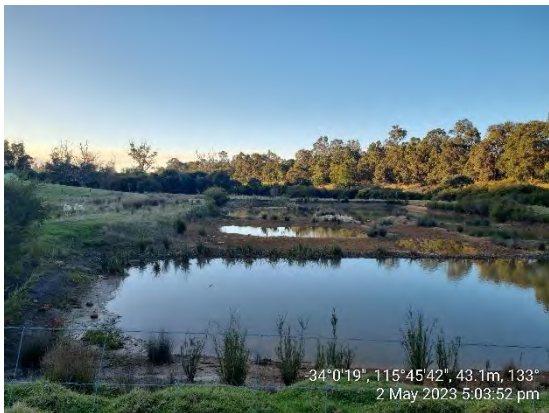






VEGETATION AREA 5					
Classification	EXCLUDED				
Types Identified					
Exclusion Clause	2.2.3.2 (e) non-vegetated areas and (f) low threat vegetation - high moisture content.				
Effective Slope	Measured	-	Applied Range (Method 1)	-	
Foliage Cover (all layers)	-	Shrub/Heath Height	-	Tree Height	-
Dominant & Sub-Dominant Layers (species as relevant)	Driveways, carparks, vegetable patch, marron ponds and managed gardens around the house and sheds.				
Understorey:	Not applicable				
Additional Justification:	It is assumed that these areas will be maintained in perpetuity.				
Post Development Assumptions:	Not required				
 <p>34°0'19", 115°45'42", 43.1m, 133° 2 May 2023 5:03:52 pm</p>			 <p>34°0'19", 115°45'42", 42.7m, 169° 2 May 2023 5:04:00 pm</p>		
PHOTO ID: 12			PHOTO ID: 13		
 <p>34°0'18", 115°45'39", 53.6m, 175° 2 May 2023 4:58:03 pm</p>			 <p>34°0'19", 115°45'40", 48.3m, 3° 2 May 2023 5:08:14 pm</p>		
PHOTO ID: 14			PHOTO ID: 15		

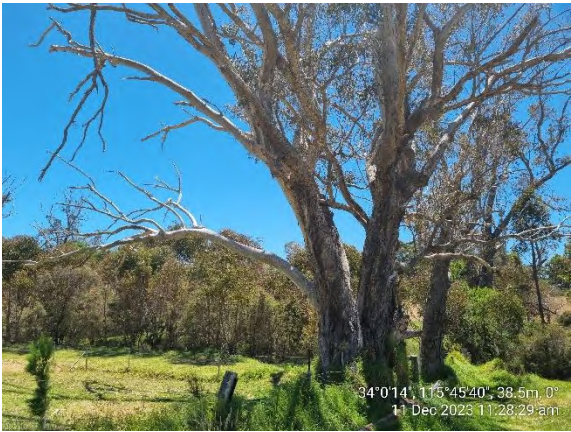





PHOTO ID: 16



PHOTO ID: 17

VEGETATION AREA 6					
Classification	D. SCRUB				
Types Identified	Closed scrub D-13				
Exclusion Clause	N/A				
Effective Slope	Measured	d/slope 7.8 degrees	Applied Range (Method 1)	Downslope >5-10 degrees	
Foliage Cover (all layers)	>90%	Shrub/Heath Height	Up to 6m	Tree Height	N/A
Dominant & Sub-Dominant Layers (species as relevant)	Tea tree growing in a creek line to a height of 4m with several individual bushes growing to 6m. 80% vegetation cover.				
Understorey:	N/A				
Additional Justification:	Not Required.				
Post Development Assumptions:	N/A				
 <p>-34°0'21", 115°45'40", 45.1m, 127° 2 May 2023 5:06:18 pm</p>			 <p>-34°0'21", 115°45'40", 45.1m, 131° 2 May 2023 5:06:42 pm</p>		
PHOTO ID: 18			PHOTO ID: 19		
 <p>-34°0'20", 115°45'43", 35.5m, 344° 21 Nov 2023 9:46:56 am</p>					
PHOTO ID: 20					

VEGETATION AREA 7						
Classification	A. FOREST					
Types Identified	Closed scrub D-13			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)	>90%	Shrub/Heath Height	Up to 6m	Tree Height	N/A	
Dominant & Sub-Dominant Layers (species as relevant)	Tea tree growing in a creek line to a height of 4m with several individual bushes growing to 6m. 80% vegetation cover. Eucalypts (Flooded Gum) growing to a height of 10m in the creek line with 30% canopy cover.					
Understorey:	N/A					
Additional Justification:	Not Required.					
Post Development Assumptions:	N/A					
						
PHOTO ID: 21			PHOTO ID: 22			

VEGETATION AREA 8				
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)	Sown pasture for stock. Evidence that some areas are machinery mown for presentation. Grass height currently less than 10cms.			
Understorey:	Not required.			
Additional Justification:	Not required.			
Post Development Assumptions:	Offsite vegetation that cannot be managed and removed by the landowner.			
				
PHOTO ID: 23		PHOTO ID: 24		

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.

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 defensible 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)				Stated in the Relevant Firebreak Notice
		Corresponding to Stated BAL				
		BAL-29	BAL-19	BAL-12.5	BAL-LOW	
Existing Residence	Forest	21m				20m
	Grassland	10m				20m
	Grassland	10m				20m
Proposed Tiny House, Camp Kitchen, Managers Quarters, and Caravan Park sites	Grassland	8m				20m
	Scrub	17m				20m
	Forest	33m				20m
	Grassland	8m				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.

Guidelines for
Planning in
Bushfire
Prone Areas

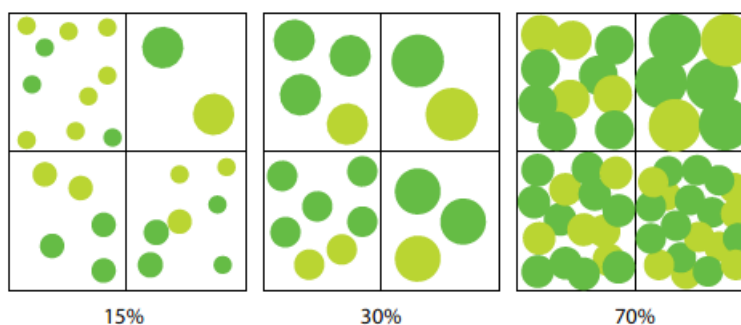
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ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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



<p>Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.</p>	<ul style="list-style-type: none"> • 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.
<p>Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)</p>	<ul style="list-style-type: none"> • 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.
<p>Grass</p>	<ul style="list-style-type: none"> • 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.
<p>Defendable space</p>	<ul style="list-style-type: none"> • 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.
<p>LP Gas Cylinders</p>	<ul style="list-style-type: none"> • 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.

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AS 3959:2018

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.

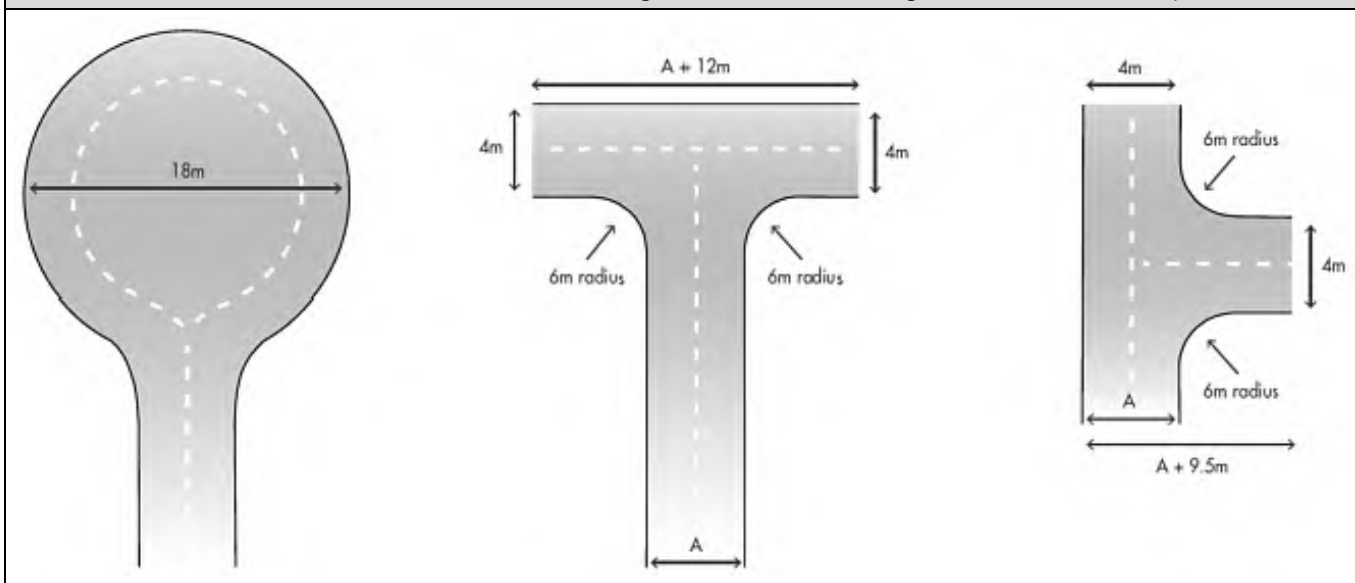
APPENDIX C: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

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.

APPENDIX D: TECHNICAL REQUIREMENTS FOR FIREFIGHTING WATER SUPPLY

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



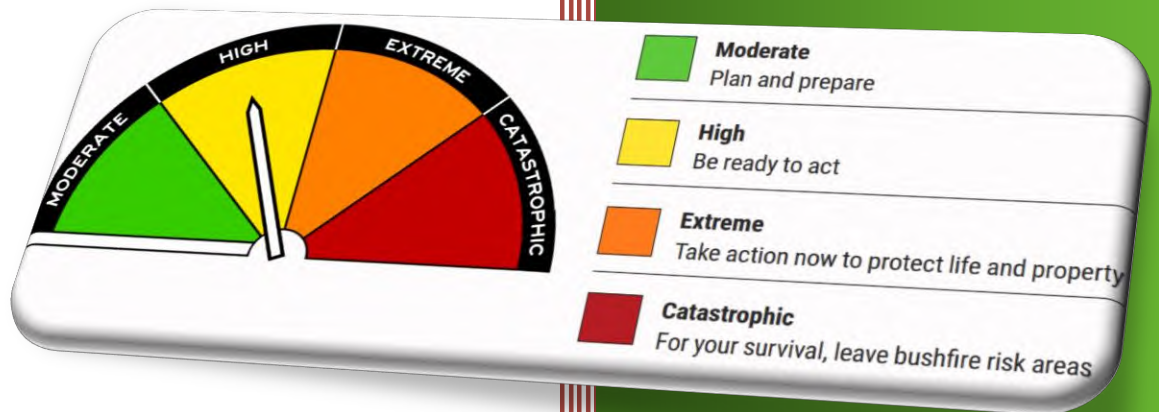
Full Flow 50mm Gate Valve and Male Camlock



Nannup Ponds

Bushfire Emergency Plan

An Information Document for Premises Without Onsite Personnel Responsible for Emergency Management



PREVENT | PREPARE | RESPOND

6008 Vasse Highway, Nannup

Shire of Nannup

Facility/Premises Use: Tourist development

29 January 2024

Associated BMP:

BPP Ref. No. 230342

BPP GROUP PTY LTD T/A BUSHFIRE PRONE PLANNING

ACN: 39 166 551 784 | ABN: 39 166 551 784

SUITE 11, 36 JOHNSON STREET
GUILDFORD WA 6055

PO BOX 388
GUILDFORD WA 6935

08 6477 1144 | admin@bushfireprone.com.au



DOCUMENT CONTROL

PREPARATION					
Co-Author:	Louise Stokes (BPAD Level 1 No. 51589)				
Author/Reviewed:	Kathy Nastov (BPAD Level 3 No. 27794)				
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<p>Limitation of Liability: The procedures and their associated actions contained in this Bushfire Emergency Plan do not guarantee that, in the event of a bushfire, buildings or infrastructure will not be damaged, 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 required procedures will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.</p> <p>Any representation, statement, opinion, or advice expressed or implied in this document is made in good faith based on information available to Bushfire Prone Planning at the time. 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, lack of care or otherwise of their consultants, their servants or agents, arising out of the services provided by their consultants.</p> <p>Copyright ©2023 BPP Group Pty Ltd: All intellectual property rights, including copyright, in format and proprietary content contained in documents created by Bushfire Prone Planning, remain the property of BPP Group Pty Ltd. Any use made of such format or content without the prior written approval of Bushfire Prone Planning, will constitute an infringement on the rights of the Company which reserves all legal rights and remedies in respect of any such infringement.</p>					
BEP Template (Unsupervised Site) v9.5					

THE BUSHFIRE EMERGENCY PLAN – ITS PURPOSE AND APPLICATION

The purpose of this Bushfire Emergency Plan (BEP) is to provide usable bushfire emergency management information that is relevant and targeted to the different types of persons who will be associated with the subject premises.

There will be two distinct types of persons who will have different reasons for being onsite and will typically not be on site together at the same time (although for some uses this may occur). These persons are:

1. The owner and/or operator of the premises, who, in most cases, will not reside or work on the site and will have no responsibility for actively managing the safety of occupants during a bushfire emergency event; and
2. Those persons who will typically be short stay occupants of the premises.

To best support the purpose, this BEP is constructed as an **INFORMATION DOCUMENT** to provide the most relevant required information independently to each type of person.

FOR THE OWNER/OPERATOR

This BEP provides the 'Prevention' and 'Preparation' procedures and their associated actions that must be conducted prior to and during the bushfire season. Additional reference information is included as appendices.

FOR THE SHORT STAY OCCUPANTS

This BEP provides a 'Bushfire Emergency Information Poster' that will be displayed within the premises to inform the occupants, in the event of a bushfire emergency, of the appropriate 'Response' procedure (and associated actions), for a given scenario, along with the safer locations for relocation when necessary to reduce their exposure to bushfire threats.

When necessary, the specific site/use data and consultant considerations applied in developing the BEP are included as an addendum to explain and justify the actions established by this BEP.

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1. APPLYING THE BUSHFIRE EMERGENCY PLAN

FOR THE OWNER OPERATOR OF THE PREMISES

- **Be familiar with all content in this Bushfire Emergency Plan, including the Appendices.**
- **Prior to and during the bushfire season (October to April) conduct the Pre-Season Prepare and Maintenance procedures.**

FOR THE SHORT STAY OCCUPANTS

- **Refer to the displayed Bushfire Emergency Information Poster**

2. EMERGENCY CONTACTS

2.1. EMERGENCY SERVICES

AGENCY/AUTHORITY	SERVICES	CONTACT
Department of Fire and Emergency Services / Police / Ambulance	Will respond to life threatening emergencies. Use to report a fire.	Phone call: triple zero '000' Phone app: EMERGENCY PLUS
State Emergency Service (SES)	Emergency assistance - securing your property, rescuing persons.	13 2500



2.2. UTILITIES / MEDICAL / ASSISTANCE

AGENCY/ORGANISATION	SERVICES	CONTACT
Nannup Hospital	Emergency medical services	(08)9756 3800
Manjimup Hospital	Emergency medical services	(08)9772 5100
Western Power	Response to electricity supply outages and damage.	13 1351
Crisis Care	Crisis accommodation	1800 199 008
Australian Red Cross	Humanitarian assistance	1800 733 276 Website: redcross.org.au/emergencies
Salvation Army	Social services care	13 72 58 (13 SALVOS) Website: salvationarmy.org.au/need-help/disasters-and-emergencies/

3. EMERGENCY INFORMATION SOURCES

THE IMPORTANCE OF BEING AWARE OF YOUR SURROUNDINGS

Know the types of vegetation that grow on surrounding land. Be aware of the potential behaviour of a fire in this vegetation and the threats it can present under different conditions. Relevant information is included in **Appendix 6**. Knowledge and awareness of the local environment and immediate past and current conditions is a valuable source of information that will assist with decision making – with hot/dry/windy weather presenting the worst conditions. Lookout for smoke (i.e., evidence of fire) within your surrounding landscape, for as far as you can see. Be aware of the current and forecast wind direction as any fire will be likely to spread in the direction to which the wind is blowing.

YOUR FIRE WEATHER DISTRICT (BOM)	Southern Forests
SOURCE	INFORMATION
Emergency WA emergency.wa.gov.au	This is the primary and most up to date source of information (maps and lists) for: <ul style="list-style-type: none"> Current warnings and incidents. Designated bushfire evacuation centre. Fire Danger Ratings (FDR) Total Fire Bans (TFB)
Bureau of Meteorology (BOM) bom.gov.au/wa/forecasts/fire-danger-ratings.shtml	Fire Danger Ratings (FDR) and the corresponding Fire Behaviour Index (FBI).
WA Department of Fire & Emergency Services (DFES) Information Line: 13 3337 (13 DFES)  dfes_wa  dfeswa dfes.wa.gov.au/hazard-information/bushfire	Republishing of Emergency WA Warnings. General emergency information. Provides overviews of bushfire hazard educational information, including bushfire behaviour and preparation, response, recovery information, and FAQ.
Local Radio Stations ABC (AM/digital) 98.3 abc.net.au/radio/stations	Current bushfire warnings, designated bushfire evacuation centre and other relevant information.
Emergency Alerts – through automated government telephone warning system	Voice messages (landline) and text messages (mobile) can be sent within a defined area under an immediate threat.
Bushfire.IO bushfire.io	Map based bushfire warnings, bushfire incidents and wind forecasts. A visual tool run privately – crosscheck with other sources.
WA Parks and Wildlife Service dpaw.wa.gov.au Website	Bushfire alerts and warnings, current prescribed burns in national parks.
Main Roads WA Phone: 13 8138 travelmap.mainroads.wa.gov.au/Home/Map	Road alerts and closures (incidents and roadworks).

4. PRE-SEASON PREPARE PROCEDURE – ACTIONS TO IMPLEMENT

1. ANNUAL REVIEW OF THE BUSHFIRE EMERGENCY PLAN

Prior to the bushfire season (June to October), update and amend the Bushfire Emergency Plan as required. Assistance from a bushfire consultant is advised.

- Make required changes to emergency contacts and emergency information sources. Ensure that any changes are also applied to the bushfire emergency information displayed within the facility/premises.

- Ensure the designated assembly area, shelter-in-place building/area and the off-site safer locations and nominated evacuation routes are still the best options. Incorporate any changes into the Bushfire Emergency Plan and the information displayed within the premises.

- Where an offsite safer destination is an identified building(s), contact relevant persons to confirm continued availability for potential use during a bushfire emergency.

- Account for any change to buildings or equipment onsite that has implications for emergency management.

- Incorporate any improvements or additions to the emergency management procedures/actions that have been identified through experience with a bushfire event or changes in best practice bushfire emergency management that are developed over time.

- In the event any part of this BEP is amended as part of its annual review, replace old copies and destroy them.

2. DISPLAY & AVAILABILITY OF BUSHFIRE EMERGENCY INFORMATION

- Ensure the Display Poster 'Bushfire Emergency Information' (updated as necessary) is displayed (framed or laminated), in a prominent and accessible position within the premises.

Additional information can be displayed when considered appropriate. Examples are contained within the appendices. Copies of these resources are available for download on the DFES website.

- Ensure signage for bushfire water supply and evacuation routes are in place and legible.

Nannup Recreation Centre: Depart property and turn left onto Vasse Highway and right at the T junction. Turn left onto Centenary Avenue (opposite Struthers Street) and the Recreation Centre will be on your right.

Manjimup Town Hall: depart property and turn right onto Vasse Highway. Turn left at Graphite Road (54.2 kms) then right into Collier Street (200m) then turn right onto Mount Street. At the roundabout take the 3rd exit onto Rose Street and the Manjimup Town Hall will be on your right 300m down the road.

3. BUILDING PREPARATION

These actions address the required maintenance of premises buildings, prior to and during the bushfire season to ensure:

- Continued compliance with the construction standards that correspond to its Bushfire Attack Level (as determined in the Bushfire Management Plan);
- The vulnerability of buildings and other consequential fire fuels, to the direct and indirect attack mechanisms of bushfire is minimised; and
- The operational readiness of any installed firefighting equipment and infrastructure.

- If the facility/premises is constructed to BAL-12.5 requirements or higher, ensure any external gaps continue to be blocked or screened with non-combustible material (e.g. rock wool, sealant, mesh – maximum aperture of 2mm) to prevent ember entry. This includes under eaves, external cladding, roofs, external vents, skylights etc. Otherwise it is recommended that this action is applied.
- Check that all required window and door screening is in place (prevents ember entry to internal spaces and reduces radiant heat load on the glass).
- If installed, ensure all installed bushfire shutters are operational.
- If there is recent construction or planned construction of attached structures (decks, stairs, patio, carport etc.) or adjacent structures (dwelling, shed, carport etc.), ensure bushfire resistant materials (including non-combustible) have been used to the greatest extent possible.
- If an evaporative air cooler is installed ensure it is either constructed to the required BAL rating or is fitted with an appropriate ember protection screen.
- All gas cylinders to be installed and maintained in accordance with AS 1596. This standard includes requirements for small portable cylinders and larger cylinders used for domestic house supply. These include:
 - Safety release valve shall be directed away from the building and persons access/egress routes;
 - Metal piping and fittings shall be used on all piping inside the building's cavities and enclosable occupied spaces and the high pressure side of any gas regulators; and
 - Tethers securing cylinders are to be non-combustible.

This is to limit the potential for flames and high levels of radiant heat from gas flaring or explosion, to directly impact a building. The heat from the bushfire or a closer consequential fire can cause gas cylinder pressures to reach critical levels beyond which their pressure release valve releases large quantities of LP gas. If these gas cylinders fall over, this pressure release valve may no longer function correctly, and internal pressures continue to rise with continued heating until the cylinder ruptures. The resulting explosion includes a pressure wave and large ball of flame which can threaten nearby life and buildings. Flared or ruptured gas bottles are commonly found in post bushfire surveys.

- Remove and maintain at low levels, accumulated vegetation debris (fine fuels) near, on, in and against buildings and structures, including:
 - In construction crevices, gaps, on horizontal / shallow angle surfaces and at re-entrant corners in access ways, at wall/floor, wall/ground, roof/wall junctions and around doors, vents, windows;
 - In roof gutters and valleys; and
 - Adjoining/adjacent drains, culverts and pits.

- Around building(s), including verandahs and decks, remove or relocate away from the facility/premises those combustible items that may be seldom used or able to be stored more appropriately in the bushfire season. This includes furniture and mats. Refer to Appendix 7 'LANDSCAPING DESIGN & CONSTRUCTION PRINCIPLES TO APPLY' for further information regarding consequential fire fuels and recommended separation distances.

4. GROUNDS PREPARATION

These actions address the required management of onsite combustible items/materials (fuels) around, on or in buildings. By removing or reducing fuels, the likelihood and intensity of consequential fire is significantly reduced. Consequential (local) fire which is the most significant cause of building/structure damage/loss in bushfire events. Fuel management must be completed prior to the start of the bushfire season and maintained during the season. For additional guidance, refer to:

- The *Guidelines for Planning in Bushfire Prone Areas within the Explanatory Notes for Element 2 of the Bushfire Protection Criteria and Schedule 1: Standards for Asset Protection Zones (WAPC 2021)*;
- The DFES 'Bushfire Preparation Toolkit' publication. Website: publications.dfes.wa.gov.au/?hazard=Bushfire; and
- Where initial or renovation landscaping of grounds surrounding the facility/premises is being conducted, apply the directions and principles of the measures presented in Appendix 7 to the greatest extent possible.

- The Firebreak Notice:** Maintain compliance with the local government's annual firebreak and fuel load notice issued under section 33 of the Bush Fires Act 1954. Where the requirements are additional to or provide a greater level of bushfire protection than those established in this Emergency Plan, they must be complied with.

- Accessibility:** Ensure all property access/egress routes are kept clear and easily trafficable.

- The Asset Protection Zone (APZ) Dimensions:** Ensure the appropriate APZ as detailed below is installed and maintained:

Relevant Buildings(s)	Classified Vegetation [refer Fig 3.1]	Minimum Required Separation Distances (m)				Stated in the Relevant Firebreak Notice
		Corresponding to Stated BAL				
		BAL-29	BAL-19	BAL-12.5	BAL-LOW	
Existing Residence Proposed Tiny House, Camp Kitchen, Managers Quarters, and Caravan Park sites	Forest	21m				20m
	Grassland	10m				20m
	Grassland	10m				20m
	Grassland	8m				20m
	Scrub	17m				20m
	Forest	33m				20m
	Grassland	8m				20m

Asset Protection Zone Management:

Trees (greater than 6 metres in height):

- Remove branches overhanging buildings and powerlines;
- Remove lower branches to a height of 2m above the ground or any surface vegetation; and
- Remove loose bark (rake) to at least a height of 2m above the ground or any surface vegetation.

Shrubs (0.5 metres to 5 metres in height) and ground covers (greater than 0.5 metres in height):

- Ensure location and clump sizes remain in accordance with guidance in Appendix 7; and
- Remove all dead plant material.

Grass to be reduced and maintained at a height of 50 mm.

Fine Fuels (i.e., less than 6 mm in thickness):

- Ensure combustible dead vegetation matter is reduced to and maintained at less than 2 t/ha on average. Collecting and weighing an indicative 1m² of this litter above the mineral earth will indicate the fuel load (100g/m² = 1 t/ha); and
- Remove all debris piles.

Heavy Fuels (i.e., greater than 6 mm in thickness):

- Such as fallen branches, timber, firewood, packaging materials, building materials, outdoor furniture, garbage bins, debris piles.
- To be removed from the APZ or be separated from buildings/structures in accordance with guidance in Appendix 7.

Applied mulches:

- Should be non-combustible e.g., stone, gravel and crushed rock. Where wood mulch is used it should be greater than 6mm in thickness.

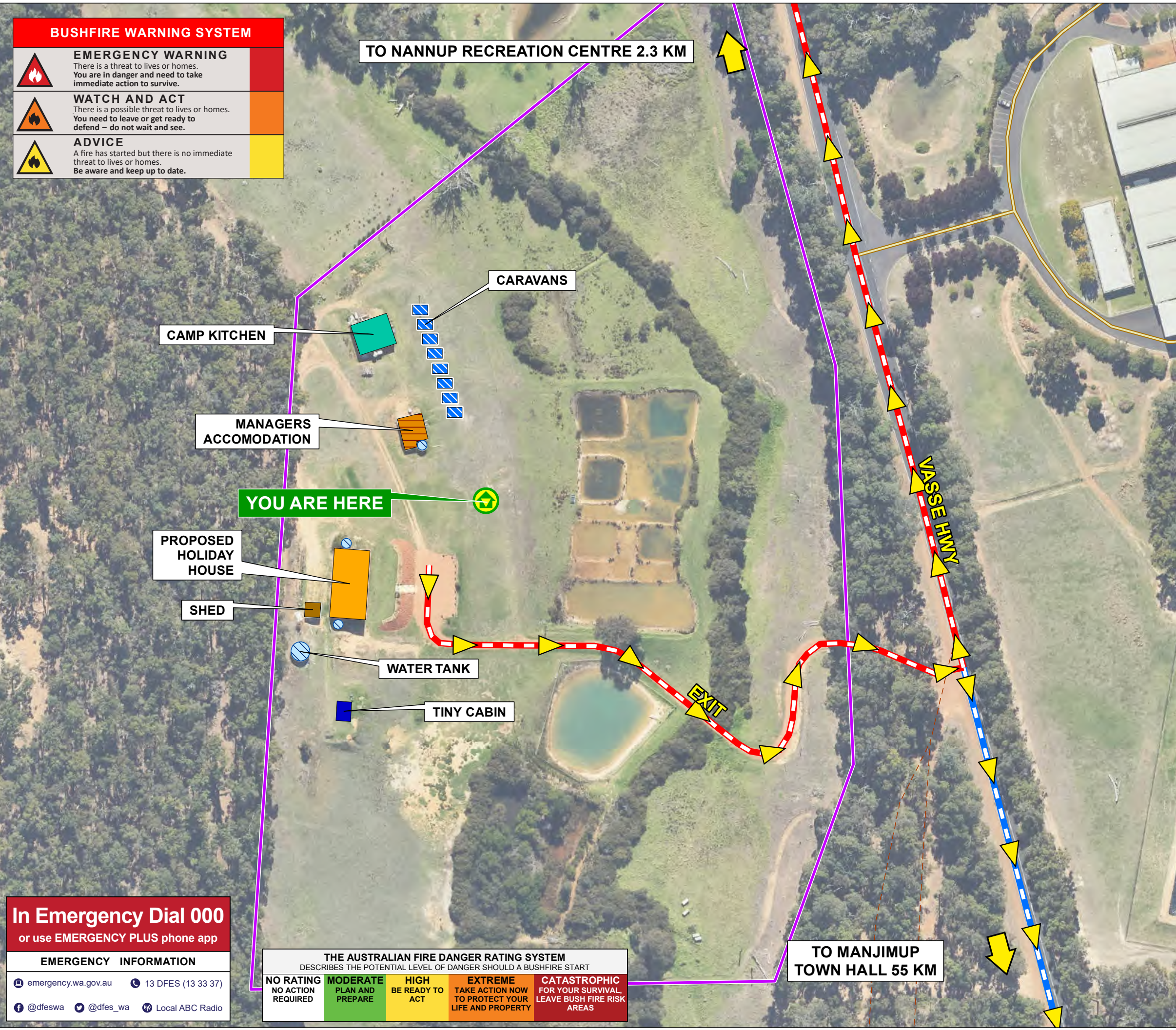
5. IN-SEASON MAINTENANCE PROCEDURE – ACTIONS TO IMPLEMENT

1. MAINTAIN BUILDINGS

- During the bushfire season (October to April), refer to Action List No. 3 in the 'Pre-Season Prepare Procedure' and ensure all actions applicable to management during the bushfire season are implemented.

2. MAINTAIN ASSET PROTECTION ZONES

- During the bushfire season (October to April), refer to Action List No. 4 in the 'Pre-Season Prepare Procedure' and ensure all actions applicable to management during the bushfire season are implemented.

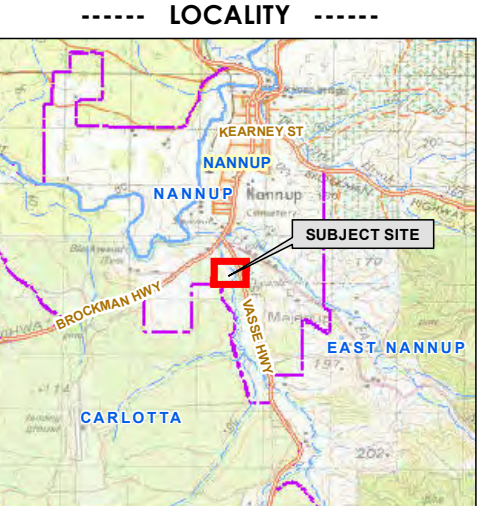
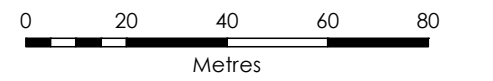


BUSHFIRE WARNING SYSTEM	
	EMERGENCY WARNING There is a threat to lives or homes. You are in danger and need to take immediate action to survive.
	WATCH AND ACT There is a possible threat to lives or homes. You need to leave or get ready to defend – do not wait and see.
	ADVICE A fire has started but there is no immediate threat to lives or homes. Be aware and keep up to date.

Figure 1
Site Emergency Information

Lot 9650 on Plan 140669, Area : 7.8297 ha
6088 Vasse Highway,
NANNUP 6275
SHIRE OF NANNUP

- **LEGEND** -----
- You Are Here
 - Primary Evacuation Route
 - Secondary Evacuation Route
 - Subject Site
 - Driveway
 - Caravans
 - Existing Building**
 - Proposed Holiday House
 - Shed
 - Water Tank
 - Proposed Building**
 - Tiny Cabin
 - Managers Accomodation
 - Camp Kitchen



Aerial Imagery : Landgate/SLIP
Image Date : Feb 2022

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map compiled by: Ian Ross 21/12/2023
Map updated by: Ian Ross 21/12/2023
A3 Scale 1:1,500

In Emergency Dial 000
or use **EMERGENCY PLUS** phone app

EMERGENCY INFORMATION

emergency.wa.gov.au 13 DFES (13 33 37)

@dfeswa @dfes_wa Local ABC Radio

THE AUSTRALIAN FIRE DANGER RATING SYSTEM
DESCRIBES THE POTENTIAL LEVEL OF DANGER SHOULD A BUSHFIRE START

NO RATING NO ACTION REQUIRED	MODERATE PLAN AND PREPARE	HIGH BE READY TO ACT	EXTREME TAKE ACTION NOW TO PROTECT YOUR LIFE AND PROPERTY	CATASTROPHIC FOR YOUR SURVIVAL, LEAVE BUSH FIRE RISK AREAS
--	-------------------------------------	--------------------------------	---	--

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence arising from relying on any information depicted.
Map Document Path / Name: K:\Projects\Jobs 2023\230342 - 6088 Vasse Highway Nannup (BAL)\Mapping\MXD\Campground\230342_BEP_Fig1_SITE_6088 Vasse Hwy.mxd

BUSHFIRE EMERGENCY INFORMATION

6008 Vasse Highway, Nannup

THE PRIMARY EMERGENCY PROCEDURE TO FOLLOW FOR THIS PREMISES IS SAFE (EARLY) EVACUATION

Trigger to Evacuate: A bushfire is identified relatively close, and a bushfire EMERGENCY or WATCH AND ACT warning may or may not be issued., You are concerned for your safety.

Procedure: Call 000 to report bushfire if no warnings current. Cease all activities, shut all doors/windows, turn off air conditioners, turn off bottled gas and depart for the allocated Welfare Centre. Check information sources for latest updates, dial 000 if unsure. Re-evaluate the situation to ensure evacuation routes remain available (if not, follow shelter in place procedure below). Follow emergency services instructions if they are present.

ELEVATED THREAT PROCEDURE

Trigger to Act: A bushfire is identified a considerable distance away, and a bushfire ADVICE warning may or may not be issued but you are concerned for your safety.

Procedure: Call 000 to report bushfire if no warnings current. Ensure everyone at the premises is aware of the situation, closely monitor the information sources and the changes outside. If the current Fire Danger Rating is Catastrophic or Extreme or persons have health conditions, consider pre-emptively leaving the accommodation and travel to a lower threat area for the day.

SHELTER-IN-PLACE PROCEDURE

Trigger to Shelter: Impact from bushfire is imminent, evacuation routes are threatened and there is no time to perform a safe (early) evacuation or emergency services have instructed you to shelter in place.

Procedure: Call 000 to report the bushfire and tell them you are sheltering in place. Move to the onsite shelter. Drink plenty of water, stay aware of what is happening, and monitor information sources.

The detailed emergency management procedures for this premises are established in the Bushfire Emergency Plan located in the Guest compendium with the provided Guest Information.

000
Fire or Life Threatening
Emergencies



Alerts and Warnings
emergency.wa.gov.au

13 3337
DFES Emergency
Information

132 500
SES Emergency
Assistance

13 13 51
Western Power

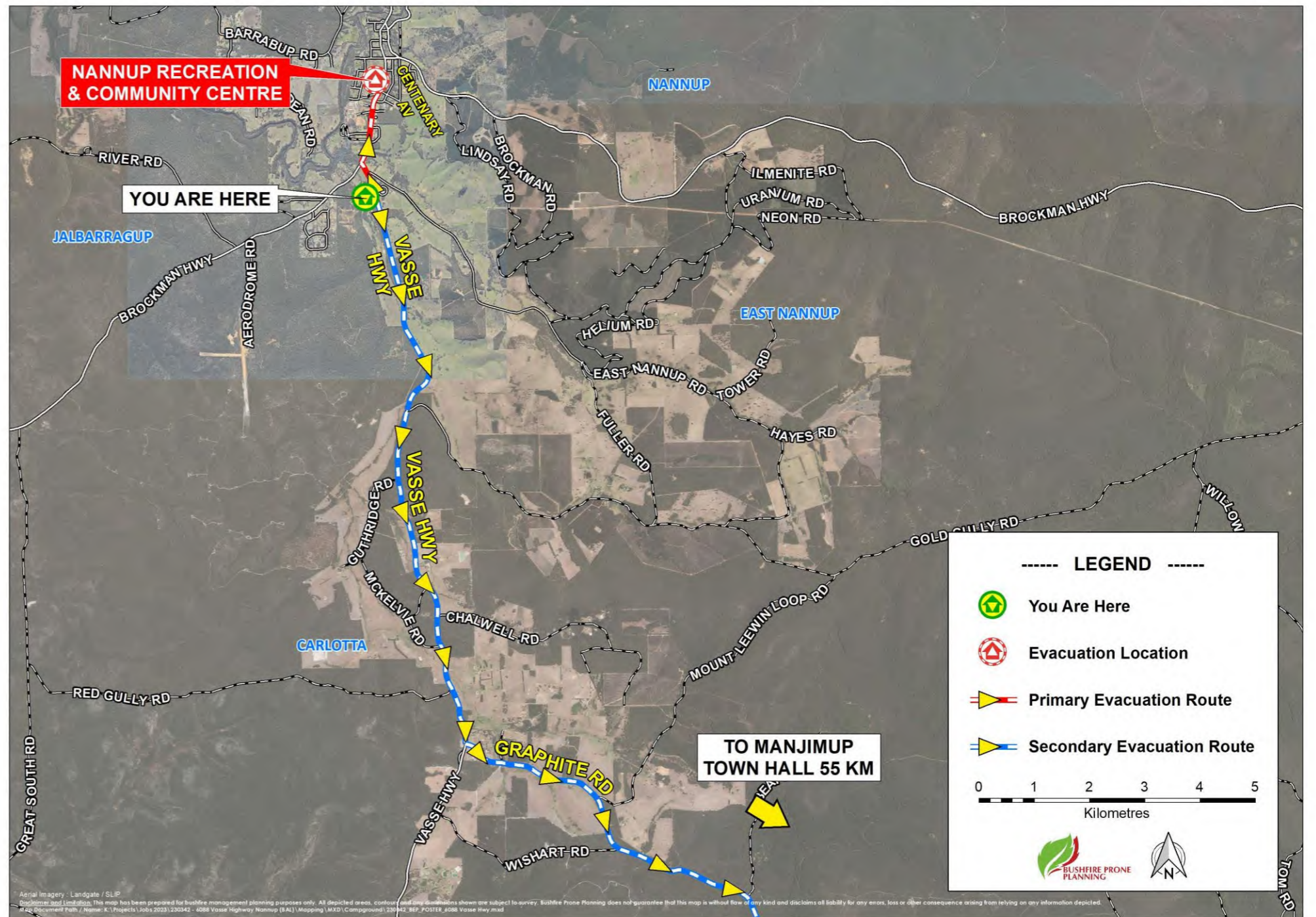
@dfeswa
DFES Facebook

Radio
Local ABC

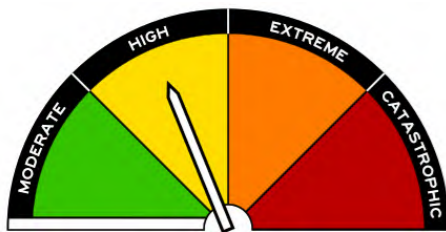
Property Owner: 0417 072 082 Nannup Hospital (08) 9756 3800 Manjimup Hospital (08) 9772 5100

Evacuation Destination 1. Nannup Recreation Centre: Depart property and turn left onto Vasse Highway and right at the T junction. Turn left onto Centenary Avenue (opposite Struthers Street) and the Recreation Centre will be on your right.

Evacuation Destination 2. Manjimup Town Hall: depart property and turn right onto Vasse Highway. Turn left at Graphite Road (54.2 kms) then right into Collier Street (200m) then turn right onto Mount Street. At the roundabout take the 3rd exit onto Rose Street and the Manjimup Town Hall will be on your right 300m down the road.



FORECAST FIRE DANGER RATINGS



The higher the rating, the more dangerous the conditions and the greater the consequences if a fire starts.

No Rating	No Action Required
Moderate	Plan and Prepare
High	Be Ready to Act
Extreme	Take Action Now to Protect Your Life and Property
Catastrophic	For Your Survival, Leave Bush Fire Risk Areas

BUSHFIRE EVENT WARNINGS

	ADVICE A fire has started but there is no immediate threat to lives or homes. Be aware and keep up to date.
	WATCH AND ACT There is a possible threat to lives or homes. You need to leave or get ready to defend – do not wait and see.
	EMERGENCY WARNING There is a threat to lives or homes. You are in danger and need to take immediate action to survive.

APPENDIX 1: BUSHFIRE WARNINGS – WHEN A BUSHFIRE IS IDENTIFIED



EMERGENCY WARNING

An out of control fire is approaching fast and you need to take immediate action to survive. If you haven't prepared your home it is too late.

You must seek shelter or leave now if it is safe to do so.



WATCH AND ACT

A fire is approaching and there is a possible threat to lives or homes. Put your plan into action. If your plan is to leave, make sure you leave early. If your plan is to stay, check all your equipment is ready.

Only stay and defend if you are mentally and physically prepared.



ADVICE

A fire has started but there is no immediate danger. Stay alert and watch for signs of a fire.

Be aware and keep up to date.

Where can I get information during an emergency?

emergency.wa.gov.au 13 DFES (13 33 37)

@dfeswa @dfes_wa Local ABC Radio



APPENDIX 2: FIRE DANGER RATINGS - FORECAST BUSHFIRE RISK

THE HIGHER THE RATING, THE MORE DANGEROUS THE CONDITIONS AND THE GREATER THE CONSEQUENCES IF A FIRE STARTS.



Australian Fire Danger Rating System

Moderate: Plan and prepare.

Most fires can be controlled. Stay up to date and be alert for fires in your area.

High: Be ready to act.

Fires can be dangerous. Decide what you will do if a fire starts. Leave bushfire risk areas if necessary.

Extreme: Take action now to protect your life and property.

Fires will spread quickly and be extremely dangerous. Put your bushfire plan into action. If you and your property are not prepared to the highest level, plan to leave early.

Catastrophic: For your survival, leave bushfire risk areas.

These are the most dangerous conditions for a fire. If a fire starts and takes hold, lives are likely to be lost. Homes cannot withstand fires in these conditions.



When there is minimal risk, Fire Danger Ratings will be set to 'No Rating'. On these days you still need to remain alert and abide by local seasonal laws and regulations.



Monitor conditions and [emergency.wa.gov.au](https://www.emergency.wa.gov.au) for ratings and bushfire warnings. If a fire starts near you, take action immediately to protect your life. Do not wait for a warning.



Your life may depend on the decisions you make, even before there is a fire. Create or review your bushfire plan at mybushfireplan.wa.gov.au



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JUNE 2022/V1.0



APPENDIX 3: FIRE BEHAVIOUR INDEX - FORECAST BUSHFIRE RISK



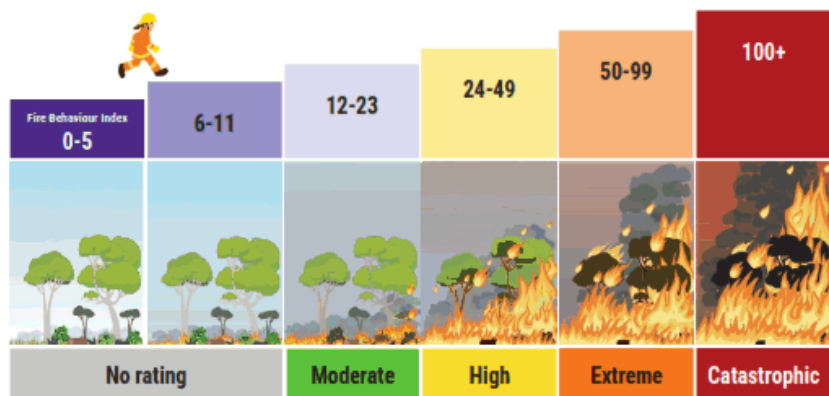
While the AFDRS Fire Danger Ratings are primarily intended for community messaging, the Fire Behaviour Index is intended to support operational fire management decision making.

Features of the FBI:

A Fine Scale of Fire Behaviour	The FBI is expressed in whole numbers from 0 to 100+. As the FBI rises, the more dangerous a fire that starts will become.	Takes advantage of decades of improved understanding of fire behaviour, fuels and fire weather.
Stepped Categories	Links transitions in fire behaviour to implications for operational decision making.	Turns the FBI into a powerful operational tool and takes advantage of improved understanding of relationship between fire behaviour, fire spread, suppression and impacts.
Fuel Type Specific	Eight different Fire Behaviour Indexes based on eight different fire behaviour models.	Takes advantage of decades of improved knowledge of fire behaviour in different fuels to produce more specific results.
Nationally Consistent	The index is the same anywhere in Australia.	Supports cross border operations and resource sharing.

The Stepped categories are controlled by tables that define FBI thresholds. The thresholds represent changes in the underlying fire behaviour that have consequences for fire operational decision making, including:

- Indicative fire behaviour and fire weather.
- Implications for prescribed burning.
- Fire suppression and containment strategies that are appropriate.
- Potential for impact on life, property and infrastructure.



For more information visit afac.com.au/initiative/afdrs or email AFDRS@dfes.wa.gov.au

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APPENDIX 4: BUSHFIRE RISKS AND DANGERS



BUSHFIRE RISKS AND DANGERS



BUSHFIRES HAPPEN EVERY SUMMER; THEY CAN START SUDDENLY AND WITHOUT WARNING.
If you live in or near bushland you need to understand the risks and dangers that bushfires cause. Remember that flames are not the only risk you face in a bushfire.



EMBER ATTACK

Ember attack occurs before, during and after a fire front passes.

Embers are pieces of burning bark, leaves or twigs that are carried by the wind around the main fire creating spot fires.

Spotting can be carried over half a kilometre from a fire.

Embers can land in areas around your home such as your garden, under or in the gutters of your home and on wooden decks.

If not extinguished, your house could catch fire.

RADIANT HEAT

The hotter, drier and windier the day, the more intense a bushfire will be and the more radiant heat it will generate.

Radiant heat can cause injury and death from burns and cause the body's cooling system to fail, leading to heat exhaustion and possible heart failure.

It is important that you include water and appropriate clothing in your emergency kit and consider where you will shelter during a bushfire to protect yourself from radiant heat.

SMOKE

Lung injuries and suffocation can occur where the body is exposed to smoke and super-heated air.

It is important to seek shelter when heat and smoke are most intense.

Your nose and mouth should be covered with a dust mask, wet towel or scarf.

A special filter mask should be included in your survival kit for people in your family who suffer respiratory conditions such as asthma.



For more information visit dfes.wa.gov.au/bushfire
or contact DFES Community Preparedness: Community.Preparedness@dfes.wa.gov.au
or **9395 9816**

The information contained in this material is provided voluntarily as a public service by the Department of Fire and Emergency Services (DFES). This material has been prepared in good faith and is derived from sources believed to be reliable and accurate at the time of publication. Nevertheless, the reliability and accuracy of the information cannot be guaranteed and DFES expressly disclaims liability for any loss or omission, done or not done in the reliance on the information and for any consequences, whether direct or indirect, arising from such loss or omission. This publication is intended to be a guide only and viewers should obtain their own independent advice and make their own necessary inquiries.



APPENDIX 5: GUIDELINES FOR TRAVELLING IN CARS DURING A BUSHFIRE



TRAVELLING DURING A BUSHFIRE



BUSHFIRES CAN START WITHOUT WARNING. People have been killed or seriously injured during bushfires. If you are travelling or staying near bushland, fire is a real risk to you. **Pack an emergency kit including important items such as woollen blankets, drinking water and protective clothing.**



IF THERE IS A LOT OF SMOKE

- Slow down as there could be people, vehicles and livestock on the road.
- Turn your car headlights and hazard lights on.
- Close the windows and outside vents.
- If you can't see clearly, pull over and wait until the smoke clears.

IF YOU BECOME TRAPPED BY A FIRE

- Sheltering inside a vehicle is a very high risk strategy. It is unlikely that a person will survive in all but the mildest circumstances.**
- Park the vehicle off the roadway where there is little vegetation, with the vehicle facing towards the oncoming fire front.
- Turn the engine off.
- Close the car doors, windows and outside vents, **and call 000.**
- Stay in the car until the fire front has passed. Stay as close to the floor as possible and cover your mouth with a damp cloth to avoid inhalation of smoke.
- Stay covered in woollen blankets, continue to drink water and wait for assistance.
- Once the front has passed and the temperature has dropped, cautiously exit the vehicle.

IMPORTANT INFORMATION

- Find the local ABC radio frequency in the area. Stay up to date in a major emergency, when lives and property are at risk, ABC radio will issue broadcast warnings at a quarter to and a quarter past the hour.
- Main Roads provides updated information on road closures throughout WA. Call 138 138 or www.mainroads.wa.gov.au
- Check the weather forecast and current fire restrictions. Be aware of the Fire Danger Rating for the area you are travelling to and be prepared to reassess your plans.
- Download the Bushfire Traveller's Checklist at www.dfes.wa.gov.au

For more information visit dfes.wa.gov.au/bushfire

or contact DFES Community Preparedness: Community.Preparedness@dfes.wa.gov.au or **9395 9816**



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HOW FIREPROOF IS YOUR PLAN?

APPENDIX 6: INDICATIVE BUSHFIRE BEHAVIOUR TO IMPACT THE FACILITY/PREMISES

Information Relevance: This information is included in the Bushfire Emergency Plan to inform and assist the decision making of those persons onsite who have the responsibility to manage a bushfire emergency for the subject facility/premises.

The information establishes the key factors to be considered in understanding the types and scale of key bushfire behaviours that can be expected to impact the facility/premises on a given day. These factors are the type of vegetation that exists on the land surrounding the subject premises/facility, the relevant surrounding terrain, and the forecast Fire Danger Rating (FDR) that applies to the locality.

Information Source: The information is taken from the bushfire behaviour modelling applied within the **Australian Fire Danger Rating System (AFDRS)**. Within this system, eight accepted bushfire behaviour models, describing mathematically the way fire moves and spreads through different vegetation types, are currently available and are applied to twenty two different vegetation types across Australia.

The modelling is used to derive the Fire Behaviour Index (FBI) that assists firefighting operational decision making. From the FBI, Fire Danger Ratings (FDR) are derived which provide the broad categories needed to communicate fire danger to the community. The determination of the daily FDR considers the vegetation types present and the forecast fire weather conditions. The higher the rating, the more dangerous the conditions and the greater the consequences if a fire starts. (Source: AFDRS project led by NSW RFS, Australian Bureau of Meteorology and AFAC).

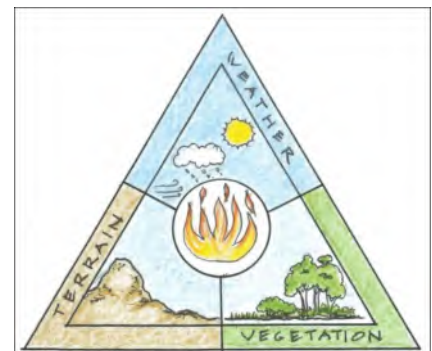
The Fire Behaviour Triangle

The behaviour of a bushfire, including the types of threats, intensity and how quickly it moves, depends on the three factors of vegetation, weather and terrain.

This is known as the fire behaviour triangle – because all three factors combine to shape the characteristics of the bushfire (source: CSIRO 'Bushfire best practice guide' at ... research.csiro.au/bushfire/).

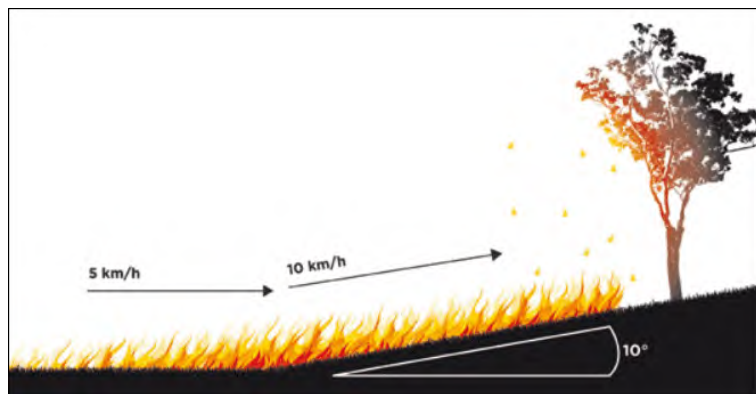
The influence of fire weather (FDR) and vegetation types (as per AFDRS) on the potential bushfire impact to the subject facility/premises, can be derived from the tables presented on the following page(s). Greater fuel loads will result in behaviours at the higher end of stated values.

The influence of terrain can be derived by considering the existence and degree of sloping ground and changes in changes in relief (e.g., flat, undulating or rugged land), surrounding the subject facility/premises and particularly under the vegetation.



The Influence of Terrain (topography)

A fire will burn faster uphill. This is because the flames can easily reach more unburnt fuel in front of the fire. Radiant heat pre-heats the fuel in front of the fire, making the fuel even more flammable.



(source: Country Fire Authority, Victoria).

For every 10° slope, the fire will double its speed. For example, if a fire is travelling at 5 km per hour along flat ground and it hits a 10° slope it will double in speed to 10 km per hour up the hill. By increasing in speed the fire also increases in intensity, becoming even hotter.

The opposite applies to a fire travelling downhill. The flames reach less fuel, and less radiant heat pre-heats the fuel in front of the fire. For every 10° of downhill slope, the fire will halve its speed. Fires tend to move more slowly as the slope decreases

Terrain should be considered for its potential to increase adverse fire behaviour including flame heights, forward rates of spread and ember production (in relevant vegetation i.e., primarily bark fuels). Essentially, where vegetation exists on sloping land near your site, assume that the higher end of adverse fire behaviours is much more likely to apply.

VEGETATION TYPES IDENTIFIED SURROUNDING THE SUBJECT FACILITY/PREMISES		
As Applied in the AFDRS		Vegetation Location Relative to the Facility/Premises
Fire Behaviour Model (short name)	Fuel Types / Description	
Forest	Dry eucalypt forests, shrubby understorey/litter surface fuel. Forests with high moisture content due to structure, topography or inundation.	Offsite vegetation to the east of the site. Ensure any fallen branches across the boundary fence are cleared and leaf litter onsite is managed prior to, and during the fire season.
Shrubland	Temperate shrublands and heathlands of varying heights. Includes wet heathlands.	Along each side of the Carlotta Brook are areas of Scrub vegetation.
Grassland	Continuous/tussock grasslands. Modified/native pasture (grazing). Non-irrigated cropping. Low shrublands (wet or arid) with no overstorey.	Across the property are areas of managed and unmanaged grassland.

FOREST

THE INDICATIVE FIRE BEHAVIOUR CORRESPONDING TO THE FIRE BEHAVIOUR INDEX (0-100) AND THE ASSOCIATED FIRE DANGER RATING (FDR)

Source: AFDRS v. 2022_6






FDR	INDICATIVE BUSHFIRE BEHAVIOUR		
NO RATING	<p>MAX FLAME HEIGHT <1 m</p> <p>0-5</p> <p>RATE OF SPREAD 0-40 m/hr</p>	<p>Fire difficult to ignite and sustain. Fires generally unlikely to spread and likely to self-extinguish.</p>	<p>SPOTTING POTENTIAL Potential for any spotting is very limited and likely <150 m</p>
	<p><4 m</p> <p>6-11</p> <p>20-110 m/hr</p>	<p>Slow spreading fires, typically involving surface and near-surface fuels and sometimes bark and elevated fuels. Spotting is sporadic and limited to short-distances.</p>	<p>Potential for spotting is limited with short distance spotting possible up to 400 m</p>
MODERATE	<p>2-8 m</p> <p>12-23</p> <p>60-600 m/hr</p>	<p>Actively spreading fires typically involving surface, near-surface, elevated and bark fuel layers and occasionally canopy fuels. Low-moderate spotting frequency; isolated medium range spotting can occur.</p>	<p>Short distance spotting occurring with increasing frequency with possible medium distance spotting up to 2 km</p>
HIGH	<p>7-14 m</p> <p>24-49</p> <p>0.3-1 km/hr</p>	<p>Rapidly spreading fires with potential for development into large burn areas within burning period. Fires typically involving most fuel layers. Short-range spotting is prevalent, with possibility of medium range and occasional long-range distance spotting.</p>	<p>Short and medium distance spotting occurring with increasing frequency with possible long distance spotting up to 4 km</p>
EXTREME	<p>11 m - approx. double forest</p> <p>50-99</p> <p>0.7-3 km/hr</p>	<p>Fires likely to quickly transition to crowning. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.</p>	<p>High ember density in short and medium range with possible long distance spotting up to 12 km</p>
CATASTROPHIC	<p>>30 m (approx. double forest height)</p> <p>100+</p> <p>>2 km/hr can be expected, possibly >3 km/hr</p>	<p>Fires likely to quickly transition to crowning. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.</p>	<p>High ember density in short and medium range with possible long distance spotting occurring 20-30 km ahead of the main fire front</p>

SHRUBLAND

THE INDICATIVE FIRE BEHAVIOUR CORRESPONDING TO THE FIRE BEHAVIOUR INDEX (0-100) AND THE ASSOCIATED FIRE DANGER RATING (FDR)

Source: AFDRS v.2022_6



FDR	INDICATIVE BUSHFIRE BEHAVIOUR				
NO RATING	<p>MAX FLAME HEIGHT <0.5 m</p>	<p>0-5</p> 	<p>RATE OF SPREAD 0-20 m/hr</p>	<p>Flame dimensions are generally insufficient to breach sparse and discontinuous fuels or inter-hummock gaps.</p>	<p>SPOTTING POTENTIAL Potential for any spotting is extremely limited</p>
	<p><0.5-1.5 m</p>	<p>6-11</p> 	<p>20-150 m/hr</p>	<p>Sustained spread of fire.</p>	<p>Potential for spotting is limited</p>
MODERATE	<p>1-4 m</p>	<p>12-23</p> 	<p>150-1300 m/hr</p>	<p>Fast moving, wind-driven fires that are mostly actively crowning.</p>	<p>Potential for spotting is limited except where eucalypt/mallee trees are present where spotting is likely to be minimal and limited</p>
HIGH	<p>2-8 m</p>	<p>24-49</p> 	<p>up to 6.5 km/hr</p>	<p>Fast moving, wind-driven, crown fires with high potential for large fire areas. Mostly complete combustion of fuels and few unburnt patches.</p>	<p>Possible short distance spotting mostly <20 m or where eucalypt/mallee trees are present where spotting is likely to be minimal and limited to short distances (<100 m). Any spot fires are typically overrun by the main head fire</p>
EXTREME	<p>>4m and likely >8m</p>	<p>50+</p> 	<p>>1.5 and likely >6.5 km/hr</p>	<p>Rapid fire growth, extremely fast moving, wind-driven fires. High potential for large fire areas with complete combustion of fuels and few unburnt patches.</p>	<p>Possible short distance spotting mostly <40 m except where eucalypt/mallee trees are present where spotting may be up to 200 m with spot fires typically quickly overrun by the main head fire</p>
CATASTROPHIC					

GRASSLAND

THE INDICATIVE FIRE BEHAVIOUR CORRESPONDING TO THE FIRE BEHAVIOUR INDEX (0-100) AND THE ASSOCIATED FIRE DANGER RATING (FDR)

Source: AFDRS v. 2022_6

FDR	INDICATIVE BUSHFIRE BEHAVIOUR				
NO RATING	<p>MAX FLAME HEIGHT <1 m</p>	<p>0-5</p>	<p>RATE OF SPREAD 0-30 m/hr</p>	<p>Fire difficult to ignite and sustain. Fires generally unlikely to spread and likely to self-extinguish.</p>	<p>SPOTTING POTENTIAL Potential for any spotting is very limited.</p>
	<p><1.5 m</p>	<p>6-11</p>	<p><13 km/hr</p>	<p>Fire easily sustained. Typically wind driven fires that can spread quickly.</p>	<p>Potential for spotting Potential for short distance spotting is limited.</p>
MODERATE	<p>1.5-2.5 m</p>	<p>12-23</p>	<p>0.5-6 km/hr</p>	<p>Typically wind driven and rapidly spreading fires with the potential to gain size quickly.</p>	<p>Possible short distance spotting occurring.</p>
HIGH	<p>2-3 m</p>	<p>24-49</p>	<p>2.5-10 km/hr</p>	<p>Wind driven, rapidly spreading fires with potential for development into large fire area/size and with the potential for short distance spotting and long flame lengths.</p>	<p>Short distance spotting occurring with increasing frequency.</p>
EXTREME	<p>2.5-3.5m</p>	<p>50-99</p>	<p>5-16 km/hr</p>	<p>Extremely rapid fire growth and increasing likelihood of large final fire area/size. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.</p>	<p>Likely short distance spotting occurring with increasing frequency.</p>
CATASTROPHIC	<p>>3m</p>	<p>100+</p>	<p>>8 km/hr can be expected, possibly >16 km/hr</p>	<p>Extremely rapid fire growth and high likelihood of large final fire area/size. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.</p>	<p>Likely short distance spotting occurring with increasing frequency.</p>

APPENDIX 7: LANDSCAPING DESIGN & CONSTRUCTION PRINCIPLES TO APPLY

Where initial or renovation landscaping of grounds surrounding the facility/premises is being conducted, apply the directions and principles of the following measures to the greatest extent possible.

For additional guidance, refer to:

- The *Guidelines for Planning in Bushfire Prone Areas within the Explanatory Notes for Element 2 of the Bushfire Protection Criteria and Schedule 1: Standards for Asset Protection Zones (WAPC 2021)*; and
- The DFES 'Bushfire Preparation Toolkit' publication. Website: publications.dfes.wa.gov.au/?hazard=Bushfire

Use of Non-Vegetated Areas and/or Public Open Space:

Reduce the exposure of the facility/premises to the direct and indirect threats of bushfire by incorporating low threat uses of land adjoining the facility/premises and/or the bushfire hazard. These uses create robust and easier managed asset protection zones and include:

- Non-vegetated areas e.g. footpaths, paved areas, roads, driveways, parking, drainage, swimming pools;
- Formally managed areas of vegetation (public open space and other recreation areas), including irrigated areas; and
- Services installed in a common section of non-vegetated land.

Landscaping – Non-Combustible Construction: Ensure non-combustible materials are used for fencing and any other landscaping construction, including retaining walls.

Landscaping – Tree and Plant Species Selection

Utilise trees and plants with characteristics that are more resistant to burning. Refer to *Guidelines for Planning in Bushfire Prone Areas, Appendix 4 'Explanatory Notes E2: Plant Flammability' (WAPC 2021)* for initial guidance.

Avoid planting trees with ribbon or stringy barks (ember/firebrand production). Preference for smooth bark.

Landscaping – Tree and Plant Separation from the Facility/Premises (Location):

Trees (greater than 6 metres in height: Minimise the potential for tree strike damage (falling or blown) to the facility/premises (allowing flame, radiant heat and ember entry to internal spaces), and debris accumulation on, in and around the facility/premise. Principles to apply are:

- Ideally trees will be separated from buildings/structures by a distance of at least 1.5 times the height of the tallest tree;
- As a minimum, trunks at maturity should be at least 6 metres from all elevations of the building, branches at maturity should not touch or overhang a building or powerlines. Mature tree canopies should be separated at least 5m with total canopy cover not exceeding 15% and not connected to tree canopy outside the APZ;
- Species of trees that produce significant quantities of debris (fine fuels) during the bushfire season should be located a sufficient distance away from vulnerable exposed elements to ensure debris cannot drop and accumulate within at least 4m of buildings/structures or be likely to be relocated by wind to closer than 4m to buildings / structures.

Shrubs and scrub (0.5 metres to 6 metres in height):

- Should not be located under trees or within 3 metres of buildings;
- Should not be planted in clumps greater than 5m² in area;
- Clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres (unless they can be classified as low flammability plants); and
- Shrubs greater than 6 metres in height are to be treated as trees.

Ground covers (less than 0.5 metres in height):

- Can be planted under trees but and no closer than two metres from a structure but 3 metres from doors or windows if greater than 100 mm in height; and
- Ground covers greater than 0.5 metres in height are to be treated as shrubs.

Grass: Where possible utilise irrigated perennial species.

Mulches should be non-combustible e.g., stone, gravel and crushed rock. Where wood mulch is used it should be greater than 6mm in thickness.

Separation Between the Facility/Premises and the Consequential Fire Fuels of Stored Flammable Products (Fuels / Other Hazardous Materials):

If applicable. establish sufficient separation distance between the consequential fire fuels and the facility/premises. The required separation distance will be dependent on the fuel and storage type and will need to be determined.

Separation Between the Facility/Premises and the Consequential Fire Fuels of Stored and Constructed Combustible Items:

These consequential fire fuels include:

- Stored Combustible Items - Heavy Fuels (greater than 6mm diameter) e.g. building materials, packaging materials, firewood, branches, sporting/playground equipment, outdoor furniture, garbage bins etc:
- Stored Combustible Items – Large Heavy Fuels e.g. vehicles, caravans, boats, trailers and large quantities of dead vegetation materials stored as part of site use.
- Constructed Combustible Items – Heavy Fuels e.g. landscaping structures including fences, screens, walls, plastic water tanks.
- Constructed Combustible Items – Large Heavy Fuels e.g. adjacent buildings/structures including houses, sheds, garages, carports. (Note: If the adjacent structure is constructed to BAL-29 requirements or greater and can implement a significant number of additional bushfire protection measures associated with reducing exposure and vulnerability, these minimum separation distances could be reduced by 30%).

Apply the rule of thumb "assume flames produced from a consequential fire source will be twice as high as the object itself ... where the consequential fire source is a structure, then the maximum eave height is a reasonable measure of maximum height".

Apply the following separation distances from the subject building/structure as a multiple of the height of the consequential fire source and dependent on the bushfire construction standard applied to the building/structure:

- At least six times the height when the facility/premises construction incorporates design and materials that is only intended to resist low levels of radiant heat up to 12.5 kW/m² and no flame contact (BAL-12.5);
- Between 4 and 6 six times the height when the facility/premises construction incorporates design and materials intended to resist radiant heat up to 29 kW/m² and no flame contact (BAL-29).
- Between 2 and 4 times the height when the facility/premises construction incorporates design and materials intended to resist up to 40kW/m² and potential flame contact (BAL-40).

- Less than 2 times the height when the facility/premises construction incorporates design and materials intended to resist extreme levels of radiant heat and flame contact (BAL-FZ).
- Zero separation distance is required if the facility/premises is separated by a non-combustible FRL 60/60/60 rated wall, or the potential consequential fire source is fully enclosed by the facility/premises.

- Constructed Barriers to Shield Facility/Premises from Bushfire:** Where applicable, install walls, fences and/or landforms to shield the facility/premises (or any identified consequential fire fuels – refer to previous item) from direct and indirect bushfire attack mechanisms and reduce the potential impact of these threats.

These barriers should be constructed using appropriate fire resistant / non-combustible construction materials (e.g. masonry, steel, earthworks). These are to withstand the impact of direct bushfire attack mechanisms for the required period.

- Constructed Barriers to Shield Facility/Premises from Consequential Fire:** Applicable to all identified consequential fire fuel sources. Install a non-combustible barrier (including complete enclosure when appropriate), of required robustness, that will reduce the exposure of the facility/premises to the threats of consequential fire.

- Planted Vegetation Barrier to Shield Facility/Premises:** Use appropriate species (lower flammability) of hedges and trees strategically to reduce the facility/premises exposure to radiant heat, to filter/trap embers and firebrands, and to lower wind speeds (prevailing synoptic and/or fire driven).

- Shield Non-Structural Essential Elements:** These are vulnerable elements essential to the continued operation of the facility/premises which are potentially exposed to the fire attack mechanisms of both bushfire and consequential fire. They include electricity cabling and water plumbing and also applies to any installed firefighting equipment / water storage.

When the use of fire rated materials to the degree necessary is not possible or practical, the application of non-combustible shielding can be applied to reduce exposure to the bushfire threats. Shielding includes underground installation.

- Constructed Barrier to Shield Persons on Pathways to Safer Onsite Area/Building:** Where possible, alongside the relevant pathways, utilise walls / fences / landforms as shielding structures constructed using fire resistant / non-combustible construction materials (e.g. masonry, steel, earthworks).

These are to withstand the impact of direct bushfire attack mechanisms for the required period and provide the required reduction in threat levels to persons (including firefighters) traversing the pathway.