

## 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 801 Dean Road, Nannup

**Suburb:** North Nannup

**State:** WA

**P/code:** 6275

**Local government area:** Shire of Nannup

**Description of the planning proposal:** Change of use for short stay accommodation

**BMP Plan / Reference Number:** 180323

**Version:** v1.1

**Date of Issue:** 03/04/2023

**Client / Business Name:** Stefan Murphy

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 checked="" 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 BPC elements)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Is the proposal any of the following special development types (see SPP 3.7 for definitions)?</b>		
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 vulnerable land use as it is a tourism development with occupants with a lesser capacity to respond to bushfires.

**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

<b>Name</b> Kathy Nastor	<b>Accreditation Level</b> Level 3	<b>Accreditation No.</b> BPAD27794	<b>Accreditation Expiry</b> 01/08/2023
<b>Company</b> Bushfire Prone Planning		<b>Contact No.</b> 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** 03/04/2023



# Bushfire Management Plan (BMP)

- ◇ *Assessment of potential bushfire impact*
- ◇ *Environmental conservation*
- ◇ *Assessment of the development's ability to acceptably mitigate bushfire risk through application of required bushfire protection measures*
- ◇ *Creation of responsibilities to implement and maintain protection measures*



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

**Lot 801 Dean Road, Nannup**

**Shire of Nannup**

**Development Application - Vulnerable  
Tourism Land Use**



**3 April 2023**

**Job Reference No: 180323**

**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. 51589)	
Co-Author/Reviewer:	Kathy Nastov (BPAD Level 3 No. 27794)	

**VERSION HISTORY**

Version	Status/Details	Date
1.0	Original	6 February 2023
1.1	Updated 5.5.b & 5.5.c	3 April 2023

BMP (Master) Template v9.15

**DISTRIBUTION**

Destination		Version	No. Copies	Hard Copy	Electronic Copy
Person	Email				
Stefan Murphy	stefan.murphy@czrresources.com	1.0	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Stefan Murphy	stefan.murphy@czrresources.com	1.1	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Limitations:** The protection measures that will be implemented based on information presented 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 required protection measures (including bushfire resistant construction) and any other required or recommended measures, will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.

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

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

**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.

## TABLE OF CONTENTS

<b>SUMMARY STATEMENTS.....</b>	<b>3</b>
<b>1 PROPOSAL DETAILS AND THE BUSHFIRE MANAGEMENT PLAN.....</b>	<b>5</b>
1.1 THE PROPOSED DEVELOPMENT/USE DETAILS, PLANS AND MAPS .....	5
1.2 THE BUSHFIRE MANAGEMENT PLAN (BMP).....	10
1.2.1 COMMISSIONING AND PURPOSE .....	10
1.2.1 OTHER DOCUMENTS WITH IMPLICATIONS FOR DEVELOPMENT OF THIS BMP.....	10
<b>2 BUSHFIRE PRONE VEGETATION – ENVIRONMENTAL &amp; ASSESSMENT CONSIDERATIONS .....</b>	<b>11</b>
2.1 ENVIRONMENTAL CONSIDERATIONS – ‘DESKTOP’ ASSESSMENT .....	11
2.1.1 DECLARED ENVIRONMENTALLY SENSITIVE AREAS (ESA) .....	13
2.1.2 OTHER PROTECTED VEGETATION ON PUBLIC LAND .....	14
2.1.3 LOCALLY SIGNIFICANT CONSERVATION AREAS – LOCAL NATURAL AREAS (LNA) .....	14
2.2 BUSHFIRE ASSESSMENT CONSIDERATIONS.....	15
2.2.1 PLANNED ONSITE VEGETATION LANDSCAPING .....	15
2.2.2 PLANNED / POTENTIAL OFFSITE REHABILITATION OR RE-VEGETATION .....	15
2.2.3 IDENTIFIED REQUIREMENT TO MANAGE, MODIFY OR REMOVE ONSITE OR OFFSITE VEGETATION .....	15
2.2.4 VARIATIONS TO ASSESSED AREAS OF CLASSIFIED VEGETATION TO BE APPLIED.....	16
<b>3 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT .....</b>	<b>17</b>
3.1 BAL ASSESSMENT SUMMARY (CONTOUR MAP FORMAT) .....	18
3.1.1 CLASSIFIED VEGETATION AND TOPOGRAPHY MAP(S) .....	19
3.1.2 BAL CONTOUR MAP(S) .....	20
3.2 BAL ASSESSMENT SUMMARY (TABLE FORMAT) .....	21
3.2.1 THE BAL DETERMINATION METHODOLOGY AND LOCATION OF DATA AND RESULTS .....	21
3.2.2 SITE ASSESSMENT DATA AND BAL RESULTS .....	22
<b>4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES .....</b>	<b>23</b>
<b>5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA (GUIDELINES V1.4).....</b>	<b>24</b>
5.1 BUSHFIRE PROTECTION CRITERIA ELEMENTS APPLICABLE TO THE PROPOSED DEVELOPMENT/USE.....	24
5.2 LOCAL GOVERNMENT VARIATIONS TO APPLY .....	24
5.3 ASSESSMENT STATEMENTS FOR ELEMENT 5: VULNERABLE TOURISM LAND USES .....	25
5.3.1 B&B / HOLIDAY HOUSE OUTSIDE BUILT-OUT AREA.....	25
6.1 LANDOWNER RESPONSIBILITIES – PRIOR TO OPERATION .....	31
6.2 LANDOWNER / OCCUPIER RESPONSIBILITIES – ONGOING MANAGEMENT.....	32
6.3 LOCAL GOVERNMENT RESPONSIBILITIES – ONGOING MANAGEMENT .....	34
<b>APPENDIX A: DETAILED BAL ASSESSMENT DATA AND SUPPORTING INFORMATION .....</b>	<b>35</b>

A1: BAL ASSESSMENT INPUTS COMMON TO THE METHOD 1 AND METHOD 2 PROCEDURES.....	35
A1.1: FIRE DANGER INDICES (FDI/FDI/GFDI) .....	35
A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION.....	35
A1.3: EFFECTIVE SLOPE .....	40
A1.4: SEPARATION DISTANCE .....	41
A2: BAL ASSESSMENT INPUTS APPLIED USING THE METHOD 2 PROCEDURE.....	42
A2.1: SUMMARY OF CALCULATION INPUTS APPLIED AND THE LEVEL OF JUSTIFICATION REQUIRED.....	43
A2.3: SITE SLOPE.....	45
A3: BAL CALCULATOR – COPY OF INPUT/OUTPUT VALUES .....	46
<b>APPENDIX B: ADVICE - ONSITE VEGETATION MANAGEMENT - THE APZ .....</b>	<b>47</b>
B1: ASSET PROTECTION ZONE (APZ) DIMENSIONS.....	47
B1.1: THE APZ DIMENSIONS REQUIRED TO BE IMPLEMENTED BY THE LANDOWNER .....	49
B2: THE STANDARDS FOR THE APZ AS ESTABLISHED BY THE GUIDELINES (DPLH, V1.4) .....	50
B3: THE STANDARDS FOR THE APZ AS ESTABLISHED BY THE LOCAL GOVERNMENT .....	52
B4: VEGETATION AND AREAS EXCLUDED FROM CLASSIFICATION - ENSURE CONTINUED EXCLUSION .....	53
<b>APPENDIX C: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS.....</b>	<b>54</b>
<b>APPENDIX D: TECHNICAL REQUIREMENTS FOR FIREFIGHTING WATER SUPPLY.....</b>	<b>56</b>
D2: NON-RETICULATED AREAS – STATIC SUPPLY .....	56

## LIST OF FIGURES

---

Figure 1.1: Proposed development plan. ....	6
Figure 1.2: Proposed development (spatial context).....	7
Figure 1.3: Location plan (spatial context).....	8
Figure 1.4: Extract from Map of Bushfire Prone Areas (Office of Bushfire Risk Management, DFES) .....	9
Figure 2.1: Land identified with known environmental, biodiversity and conservation values. ....	12
Figure 3.1: Classified vegetation and topography map. ....	19
Figure 3.2: BAL Contour Map .....	20

## 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 (Volumes 1 and 2 of the national Construction Code) 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 land with identified environmental, biodiversity and conservation values limit the full application of the required bushfire protection measures?		No
Will land with 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	
5: Vulnerable Tourism Land Uses		
B&B/Holiday House – outside RBA	A5.4a Siting and design - APZ	Fully Compliant
	A5.5a Vehicular access – multiple access routes	Partly Compliant
	A5.5b Vehicular access – no-through roads – maximum length	Not Compliant
	A5.5c Vehicular access – EAW – alternative access option	Not Compliant
	A5.5d Vehicular access – public roads - technical requirements	N/A
	A5.5e Vehicular access – private driveways – technical requirements	Fully Compliant
	A5.5f Vehicular access – signage	Fully Compliant
	A5.6a Provision of water - reticulated	N/A
	A5.6b Provision of water – non-reticulated	Fully Compliant
Other 'Bushfire Planning' Documents to Be Produced	<p>This necessity for additional documents is determined by the proposed development/use type and the requirements established by SPP 3.7 and the associated Guidelines (as amended).</p> <p>They may be produced concurrently or subsequent to the BMP. Relevant actions will be identified within Section 6 'Responsibilities for Implementation of Bushfire Protection Measures.</p>	Required
Bushfire Emergency Plan: An operational document presenting prevent, prepare, respond and recover procedures and associated actions. As necessary, supporting information to justify determinations is included.		Yes
Summary Statement: The residence is short stay accommodation, classified Vulnerable Tourism, and therefore requires a Bushfire Emergency Plan.		
Bushfire Emergency Information (Poster): As a concise response information poster for certain vulnerable land uses.		Yes
Bushfire Emergency Information (Content): As content for inclusion into the Site's Emergency Plan for certain high risk land uses:		No



## 1 PROPOSAL DETAILS AND THE BUSHFIRE MANAGEMENT PLAN

### 1.1 The Proposed Development/Use Details, Plans and Maps

<b>The Proposal's Planning Stage</b> For which certain bushfire planning documents are required to accompany the planning application.		Addition to Land use – Short Stay Accommodation (Holiday Home) in the existing dwelling
<b>The Subject Land/Site</b>		Lot 801, Dean Road, Nannup
<b>Total Area of Subject Lot/Site</b>		17,529 m <sup>2</sup>
<b>Number of Additional Lots Created</b>		N/A
<b>Primary Proposed Construction</b>	<b>Type(s)</b>	N/A
	<b>NCC Classification</b>	Class 1a (house)
<b>The 'Specific' Land Use Type for Bushfire Planning</b> When applicable, this classification establishes a requirement to conduct assessments and develop documents that are additional to this Bushfire Management Plan.		Vulnerable Tourism Land Use
<b>Factors Determining the 'Specific' Land Use Type</b>		The proposed development is a land use that is categorised as a Short term accommodation (other than B&B/Holiday House) including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds).
		The proposed tourism land use involves visitors who are unfamiliar with the surroundings and/or where they present evacuation challenges.
		The proposal would benefit from a Bushfire Emergency Plan to manage the safety of occupants in a bushfire event. Therefore, it should be treated as 'vulnerable'.
<b>Description of the Proposed Development/Use</b>		
<p>The existing residence on Lot 801 Dean Road is proposed for short stay accommodation, sleeping eight people in total.</p> <p>The residence is brick construction and has cleared vegetation around the buildings and water tank.</p> <p>There is one 160,000 litre metal water tank with appropriate turn around area and fitted camlock and valve. There is no stand alone water tank for fire fighting purposes, however the Shire of Nannup has endorsed the existing tank as appropriate to the needs.</p> <p>The property overlooks the Blackwood River and is located within a semi-rural subdivision on a no-through road. There is a walk track through the property down to the river. The subdivision itself has one road in/out however the Council is currently addressing this with an upgrade proposed to Gracillus Road.</p>		



Figure 1.1: Proposed development plan.

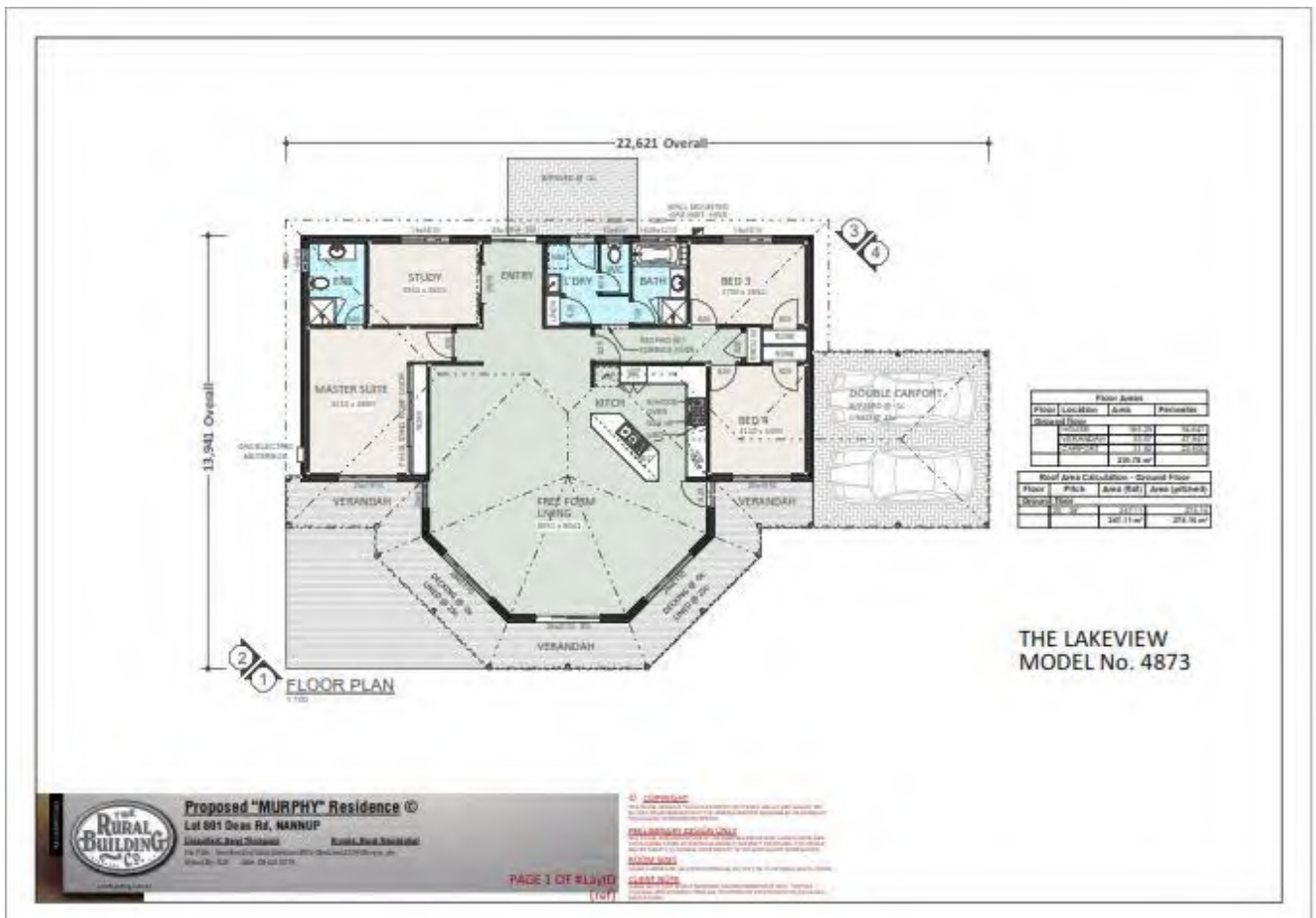





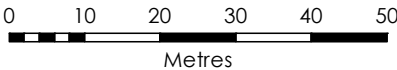


Figure 1.2  
**Proposed Development**

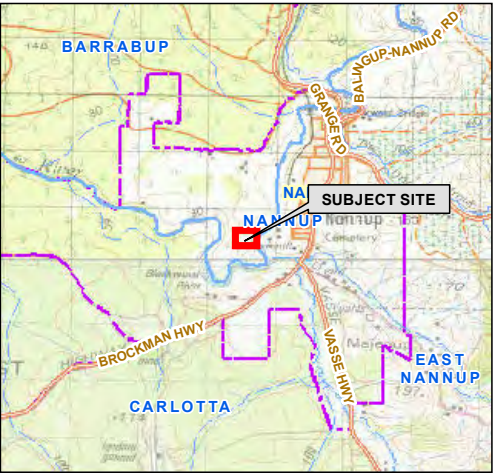
Lot 801 on Plan 068663, Area : 17,529 sq m  
Dean Road  
NANNUP  
**SHIRE OF NANNUP**

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

-  Subject Site
-  Other Lots
- Existing Building**
  -  Dwelling
  -  Shed
  -  Water Tank



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



Aerial Imagery : Landgate/SLIP  
Image Date : Oct 2021

Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map compiled by: Ian Ross 20/12/2022  
Map updated by: Ian Ross 20/12/2022  
A3 Scale 1:1,000





Figure 1.3  
Location Plan

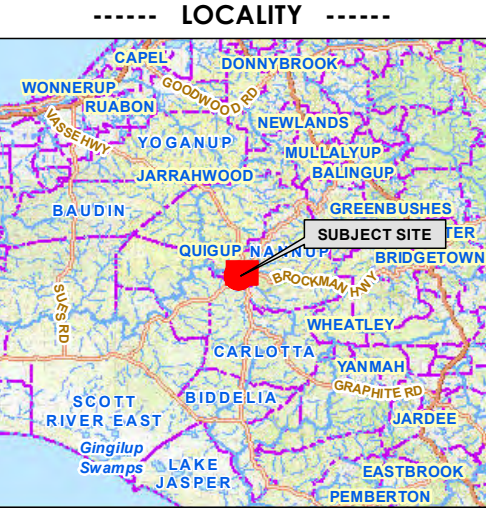
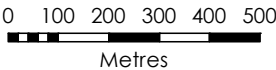
Lot 801 on Plan 068663, Area : 17,529 sq m  
Dean Road  
NANNUP  
SHIRE OF NANNUP

----- LEGEND -----

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

Legislated Lands and Waters

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



Aerial Imagery : Landgate/SLIP  
Image Date : Oct 2021

Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map compiled by: Ian Ross 20/12/2022  
Map updated by: Ian Ross 20/12/2022  
A3 Scale 1:15,000



#### 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 1.4: Extract from Map of Bushfire Prone Areas (Office of Bushfire Risk Management, DFES)



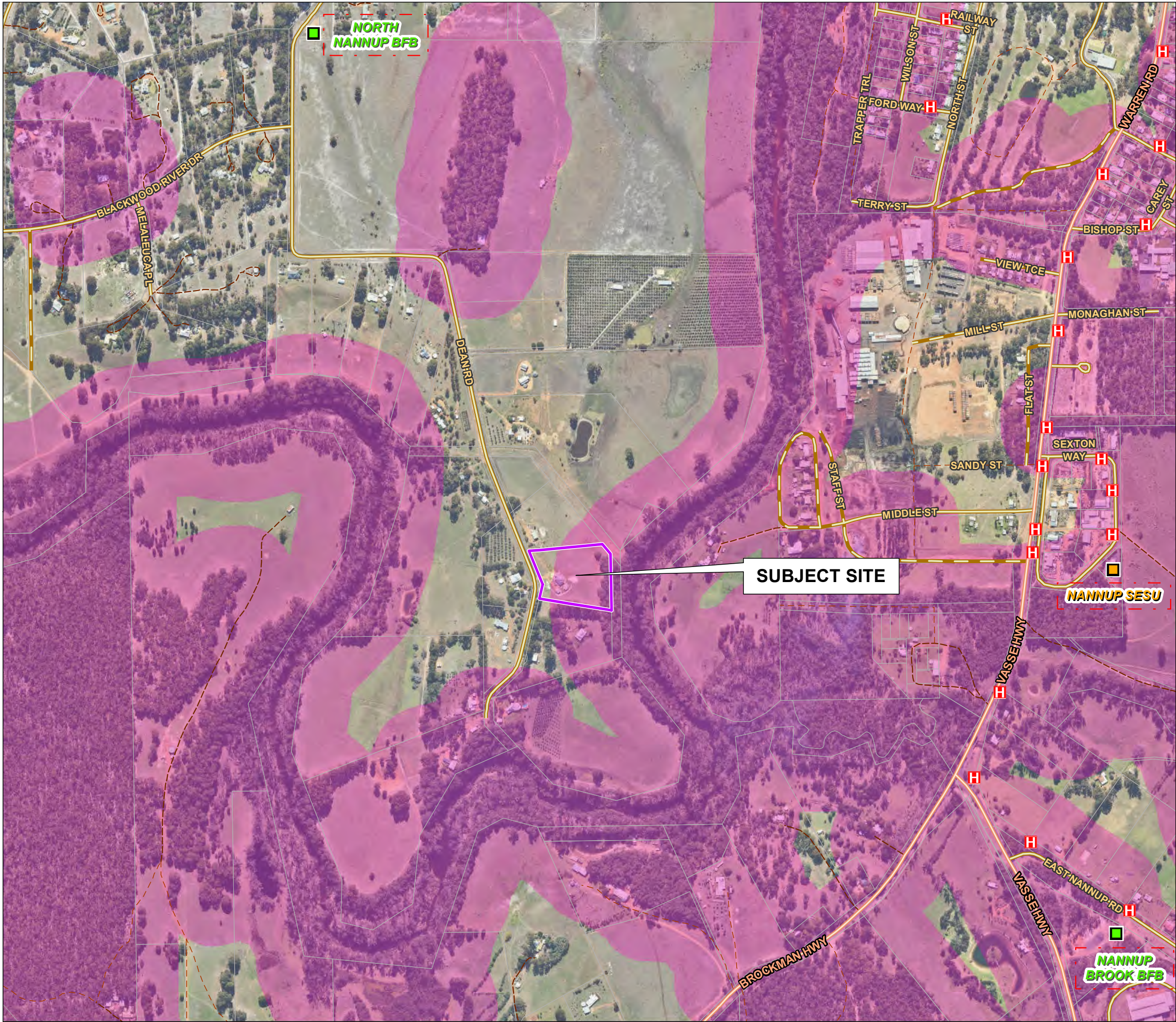
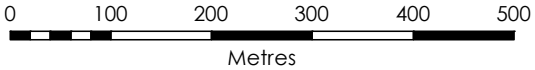


Figure 1.4  
**Bushfire Prone Area**

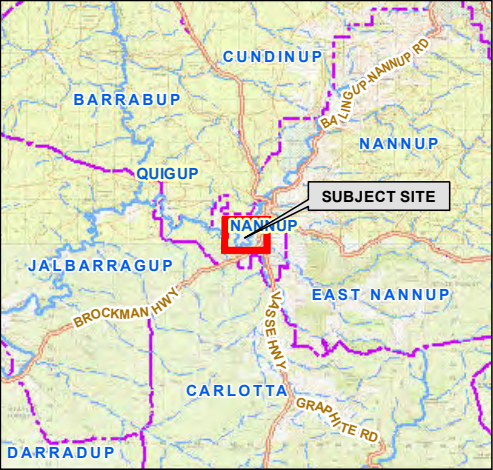
Lot 801 on Plan 068663, Area : 17,529 sq m  
Dean Road  
NANNUP  
**SHIRE OF NANNUP**

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

- Subject Site
  - Other Lots
  - Bush Fire Brigade
  - State Emergency Service Unit
  - Hydrant
- Bush Fire Prone Areas**
- Bushfire Prone Areas (2021)



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



Aerial Imagery : Landgate/SLIP  
Image Date : Oct 2021

Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map compiled by: Ian Ross 20/12/2022  
Map updated by: Ian Ross 20/12/2022  
A3 Scale 1:7,500



## 1.2 The Bushfire Management Plan (BMP)

### 1.2.1 Commissioning and Purpose

Landowner / proponent:	Stefan Murphy
Bushfire Prone Planning commissioned to produce the BMP by:	Stefan Murphy
Purpose of the BMP:	<p>To assess the proposal's ability to meet all relevant requirements established by State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7), the associated 'Guidelines and any relevant Position Statements; and</p> <p>To satisfy the requirement for the provision of a Bushfire Management Plan to accompany the development application.</p>
BMP to be submitted to:	Shire of Nannup

### 1.2.1 Other Documents with Implications for Development of this BMP

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 planned proposal for the subject. They potentially have implications for the assessment of bushfire threats and the identification and implementation of the protection measures that are established by this Bushfire Management Plan.

Table 1.4: Other relevant documents that may influence threat assessments and development of protection measures.

RELEVANT DOCUMENTS					
Document	Relevant	Currently Exists	To Be Developed	Copy Provided by Proponent / Developer	Title
Structure Plan	No	No	No	No	-
Bushfire Management Plan	Yes	Yes	Yes	Yes	BAL Assessment (BPP)
Bushfire Emergency Plan or Information	Yes	No	Yes	No	-
Implications for this BMP: Triggers for guest evacuation, welfare centre directions, responsibilities for managers/owners in relationship to short stay communication to visitors					
Bushfire Risk Assessment and Management Report	No	No	No	No	-
Environmental Asset or Vegetation Survey	No	No	No	No	-
Landscaping and Revegetation Plan	No	No	No	No	-
Land Management Agreement	No	No	No	No	-

## 2 BUSHFIRE PRONE VEGETATION – ENVIRONMENTAL & ASSESSMENT CONSIDERATIONS

### 2.1 Environmental Considerations – ‘Desktop’ Assessment

*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 Regulation (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>



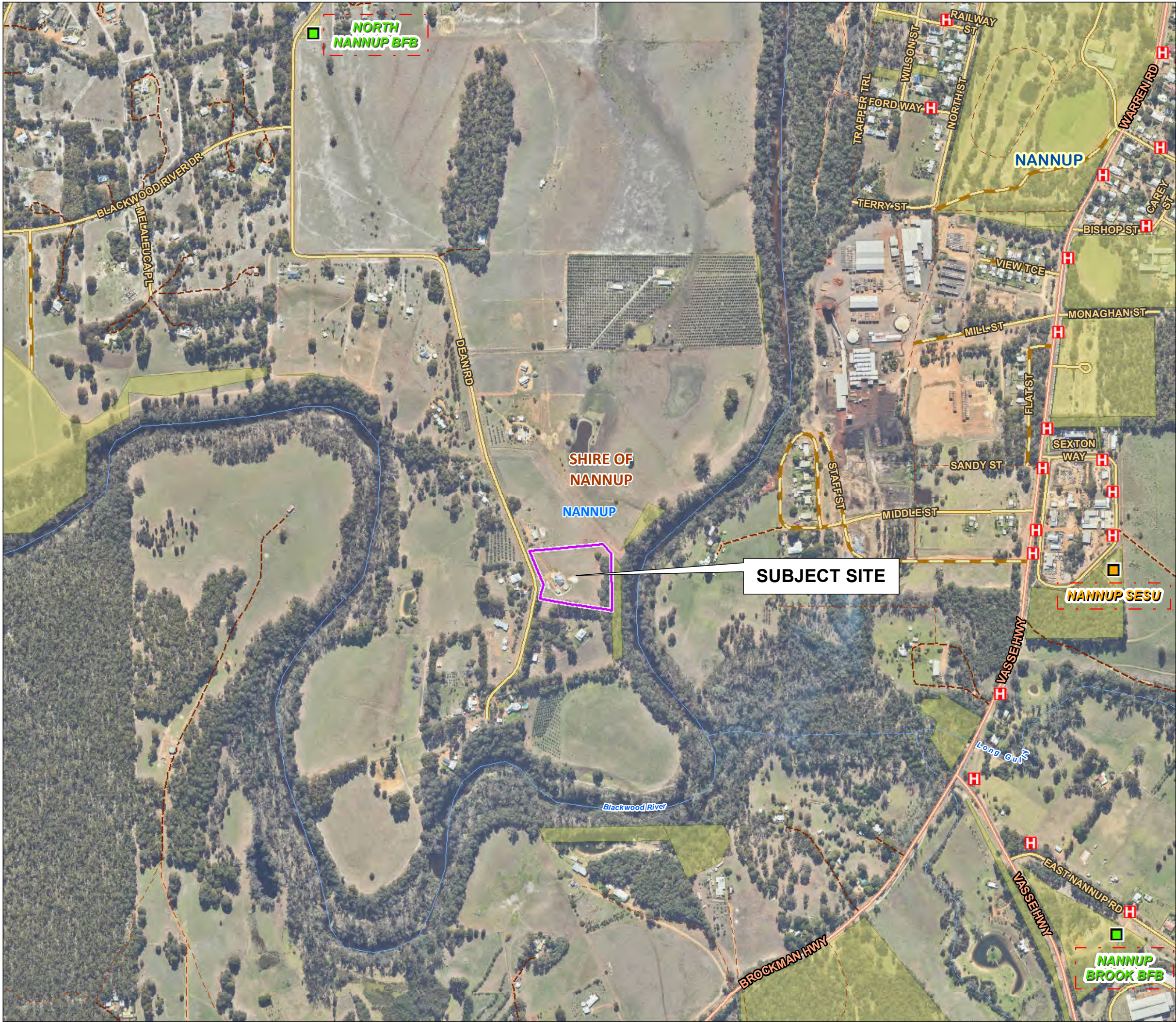
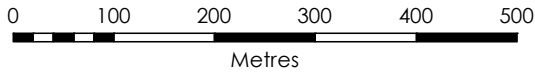


Figure 2.1  
**Environmental Considerations**

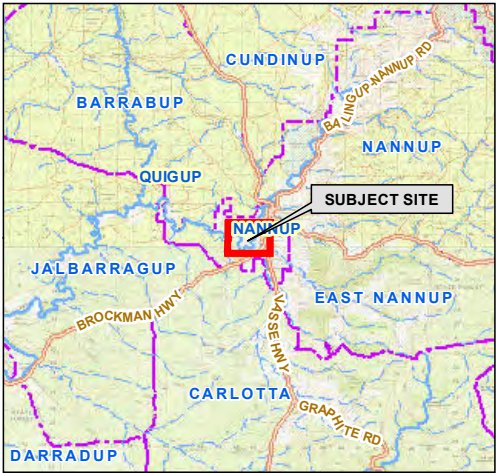
Lot 801 on Plan 068663, Area : 17,529 sq m  
Dean Road  
NANNUP  
**SHIRE OF NANNUP**

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

- Subject Site
- Bush Fire Brigade
- State Emergency Service Unit
- Hydrant
- Reserves



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



Aerial Imagery : Landgate/SLIP  
Image Date : Oct 2021

Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map compiled by: Ian Ross 20/12/2022  
Map updated by: Ian Ross 20/12/2022  
A3 Scale 1:7,500



## 2.1.1 Declared Environmentally Sensitive Areas (ESA)

IDENTIFICATION OF RELEVANT ENVIRONMENTALLY SENSITIVE AREAS							
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	No	DBCA-010 and 011, 019, 040, 043, 044	-	-	-	None
Bush Forever	No	No	DPLH-022, SPP 2.8	-	-	-	None
Threatened and Priority Flora + 50m Continuous Buffer	No	No	DBCA-036	Restricted Scale of Data Available (security)	-	-	None
Threatened Ecological Community	No	No	DBCA-038		-	-	None
Heritage Areas National / World	No	No	Relevant register or mapping	-	-	-	None
Environmental Protection (Western Swamp Tortoise) Policy 2002	No	No	DWER-062	-	-	-	None

## 2.1.2 Other Protected Vegetation on Public Land

IDENTIFICATION OF PROTECTED VEGETATION ON PUBLIC LAND							
Land with Environmental, Biodiversity, Conservation and Social Values	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	
Legislated Lands (tenure includes national park/reserve, conservation park, crown reserve and state forest)	Yes	No	DBCA-011	Shire mapping	—	—	None
Conservation Covenants	No	No	DPIRD-023	Only Available to Govt.	—	—	None
National World Heritage Areas	No	No	-	—	—	—	None
Designated Public Open Space	No	No	-	-	—	—	None

### DESCRIPTION OF THE IDENTIFIED AREA(S) OF VEGETATION

To the north of Lot 801 Dean Road is a Strategic Fire access way that is maintained by the Council. This runs to the Blackwood River from Dean Road.

## 2.1.3 Locally Significant Conservation Areas – Local Natural Areas (LNA)

IDENTIFICATION OF LOCALLY SIGNIFICANT CONSERVATION AREAS							
Land with Environmental, Biodiversity and Conservation Values	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	
Native Vegetation / Remnant Vegetation	Yes	Yes - Moderate	Identified in mapping	Local Government mapping	-	-	None
Riparian Zones / Foreshore Areas	No	No		-	-	-	None
Habitat Vegetation and Wildlife Corridors	No	No		-	-	-	None

## DESCRIPTION OF THE IDENTIFIED AREA(S) OF VEGETATION

Vegetation along the Blackwood River is predominantly Eucalypts with dense understorey. There is no ecological management of this vegetation which poses an extreme fire threat to all properties that front the river. If a fire was to take hold along the banks of the river during summer it would be difficult to contain, primarily due to limited access and high fuel loads. For this reason the Bushfire Emergency Plan supports early evacuation as the primary message for guests.

## 2.2 Bushfire Assessment Considerations

### 2.2.1 Planned Onsite Vegetation Landscaping

Identification of areas of the subject site planned to be landscaped, creating the potential for increased or decreased bushfire hazard for proposed development.

PLANNED LANDSCAPING	
Relevant to Proposal:	No

### 2.2.2 Planned / Potential Offsite Rehabilitation or Re-Vegetation

Identification of areas of land adjacent to the subject site on which re-vegetation (as distinct from natural re-generation) will or may occur and is likely to present a greater bushfire hazard for proposed development.

POTENTIAL RE-VEGETATION PROGRAMS		
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Description
Riparian Zones / Foreshore Areas	No	
Wetland Buffers	No	
Legislated Lands	Yes	The vegetation along the banks of the Blackwood River is under the jurisdiction of the Department of Water & Environmental Regulation(DWER)
Public Open Space	No	
Road Verges	No	
Other	No	

### 2.2.3 Identified Requirement to Manage, Modify or Remove Onsite or Offsite Vegetation

Identification of native vegetation subject to management, modification or removal.

REQUIREMENT TO MANAGE, MODIFY OR REMOVE NATIVE VEGETATION	
Has a requirement been identified to manage, modify or remove <u>onsite</u> native vegetation to establish the required bushfire protection measures on the subject site?	No
Is approval, from relevant state government agencies and/or the local government, to modify or remove <u>onsite</u> native vegetation required? (Note: if 'Yes' evidence of its existence should be provided in this BMP).	No
Has a requirement been identified to manage, modify or remove <u>offsite</u> native vegetation to establish the required bushfire protection measures on the subject site?	No

<p>Is written approval required, from relevant state government agencies and/or the local government, that permits the landowner, or another identified party, to modify or remove <b>offsite</b> bushfire prone vegetation and/or conduct other works, to establish an identified bushfire protection measure(s)?</p> <p>If 'Yes', appropriate evidence of the approval or how it is to be established, shall be provided in this BMP as an addendum.</p>	No
<p>Is a written management agreement required that states the obligation of the landowner, or another responsible party, to manage defined areas of <b>offsite</b> bushfire prone vegetation, in perpetuity, to ensure the conditions of no fire fuels and/or low threat vegetation and/or vegetation managed in a minimal fuel condition, continue to be met?</p> <p>If 'Yes', appropriate evidence of the agreement or how it is to be established, shall be provided in this BMP as an addendum.</p>	No

#### 2.2.4 Variations to Assessed Areas of Classified Vegetation to be Applied

<b>FOR THE PROPOSED DEVELOPMENT</b> <b>SITUATIONS TO BE ACCOUNTED FOR IN ASSESSING THE POTENTIAL BUSHFIRE IMPACT (BAL)</b>	
Area(s) of land will be subject to future vegetation rehabilitation or re-vegetation that will require a change to a higher threat classification of vegetation on that land to. (Note: this is not regeneration to the mature natural state which is accounted for in the 'existing state' assessment in accordance with AS 3959:2018).	No
Modification of existing area(s) of classified vegetation due to the implementation of the proposed development and/or prior to the site's occupancy or use. This modification will require a change to a lower threat classification (or exclusion from classification) for that area of vegetation.	No
Complete removal of existing area(s) of classified vegetation due to the implementation of the proposed development and/or prior to the site's occupancy or use. This modification will require an exclusion from classification for that area of vegetation.	No

### 3 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

#### BUSHFIRE ATTACK LEVELS (BAL) - UNDERSTANDING THE RESULTS

The potential transfer (flux/flow) of radiant heat from the bushfire to a receiving object is measured in kW/m<sup>2</sup>. 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.



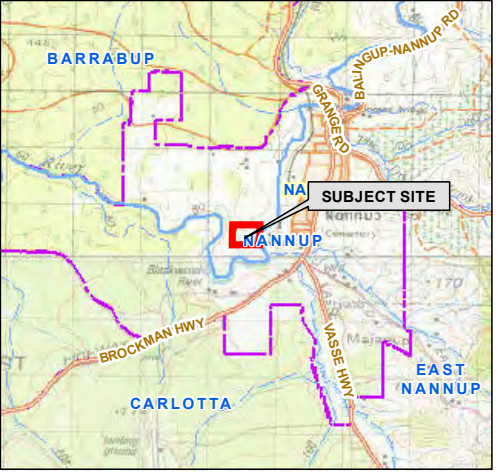


Figure 3.1  
**Classified Vegetation & Topography**  
Lot 801 on Plan 068663, Area : 17,529 sq m  
Dean Road  
NANNUP  
**SHIRE OF NANNUP**

- **LEGEND** -----
- Subject Site
  - Other Lots
  - Photo & Direction
  - Existing Building**
    - Dwelling
    - Shed
    - Water Tank
  - 150m Vegetation Assessment Area**
    - 150m from Subject Site
  - Classified Vegetation**
    - Class (A) Forest
    - Class (G) Grassland
    - Exempt 2.2.3.2
  - Vegetation Distance

0 20 40 60 80  
Metres

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



Aerial Imagery : Landgate/SLIP  
Image Date : Oct 2021  
Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map compiled by: Ian Ross 10/01/2023  
Map updated by: Ian Ross 10/01/2023  
A3 Scale 1:1,250





Figure 3.2


## BAL Contour Map

Lot 801 on Plan 068663, Area : 17,529 sq m  
Dean Road  
NANNUP  
SHIRE OF NANNUP

### ----- LEGEND -----

-  Subject Site
-  Other Lots







#### Existing Building

-  Dwelling
-  Shed
-  Water Tank

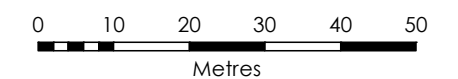
#### 100m Vegetation Assessment Area

-  100m from Subject Site

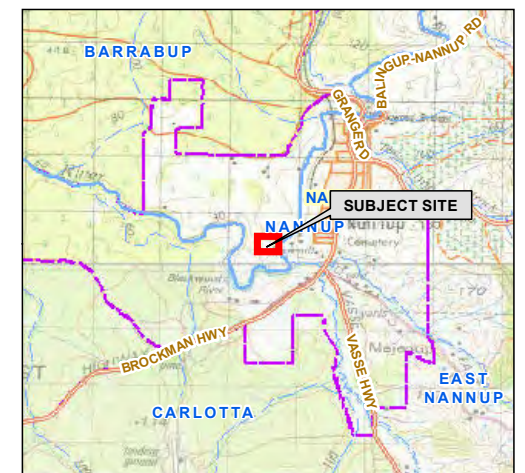
#### Indicative Bushfire Attack Levels

-  BAL FZ
-  BAL 40
-  BAL 29
-  BAL 19
-  BAL 12.5
-  BAL LOW

BAL Contours for Areas 1 and 2  
Calculated by Method 2

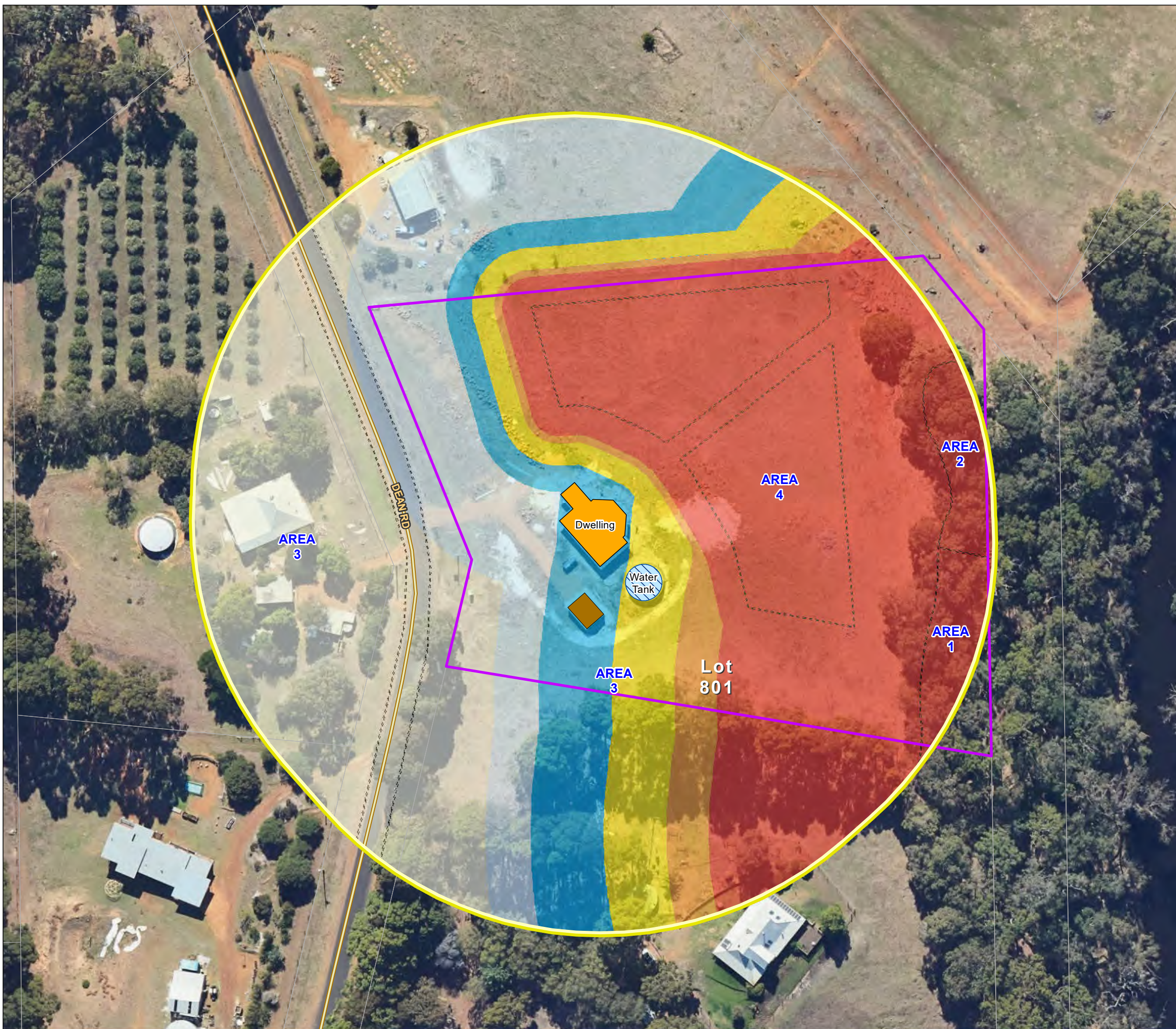


### ----- LOCALITY -----



Aerial Imagery : Landgate/SLIP  
Image Date : Oct 2021

Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map compiled by: Ian Ross 10/01/2023  
Map updated by: Ian Ross 10/01/2023  
A3 Scale 1:1,000





## 3.2 BAL Assessment Summary (Table Format)

### 3.2.1 The 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 3.2
Method 2 (Detailed)	Yes	Figure 3.1	Table 3.2	Appendix A2	
Reasons for the Application of the Method 2 Procedure					
1.	The conditions of the subject site and/or surrounding land are outside the scope of Method 1.				
2.	A more specific result is sought.				
<b>Identification of the specific issues associated with the site and/or proposed development that have necessitated the use of the Method 2 procedure:</b> The vegetation on Area 1 slope exceeds 20 degrees downslope, which is outside of the scope of Method 1 vegetation assessment.					

### 3.2.2 Site Assessment Data and BAL Results

Table 3.2: Summary of applied calculation input variables applied in deriving the BAL rating for the identified exposed element (the relevant building/structure).

DATA APPLIED TO THE DERIVATION OF RADIANT HEAT FLUX LEVELS – INCLUDING THOSE STATED AS BUSHFIRE ATTACK LEVELS (BAL) <sup>1</sup>																		
Applied BAL Determination Method			METHOD 2 - DETAILED PROCEDURE (AS 3959:2018 APPENDIX B)															
The Receiver of Radiant Heat Relevant Building(s) / Structure(s) and Their Location			Calculation Variables Corresponding to the BAL Determination Method															
			Methods 1 and 2		Method 1		Method 2			Method 1 and 2		Method 2						Bushfire Attack Level (BAL)
			Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Separation Distance		Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor	
						Applied Range	Measured			Minimum Allowed Building Setback <sup>2</sup>	Total							
			Area	Class		degree range	degrees	degrees		metres		K	metres	metres	kW/m	metres	% Reduction	
Existing building	1	(A) Forest	80	N/A	d/slope 23	d/slope 20+	80	-	84	Default	Default	Default	Default	Default	Default	BAL-19		
	2	(A) Forest	80	d/slope >15-20	d/slope 17	-	-	-		-	-	-	-	-	-	BAL-19		
	3	Excluded cl 2.2.3.2(f)	-	N/A	-	-	-	-		-	-	-	-	-	-	BAL-LOW		
	4	(G) Grassland	80	d/slope >5-10	d/slope 7	-	-	-		-	-	-	-	-	-	BAL-19		
	Determined Bushfire Attack Level															BAL-19		
<sup>1</sup> 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.																		
<sup>2</sup> This is the minimum building setback (i.e., the distance from a proposed building to the lot boundary) that is established by either the applicable R-code setback or another mechanism (e.g., restricted covenant), that is to apply to the proposed building/structure on the relevant lot. It is identified as a fixed component of the total separation distance from vegetation when its application is important to be identified because it establishes the closest distance to the lot boundary that a building/structure can legally exist. In other words, it identifies the part of the lot on which development cannot occur. When it is not critical for this distance to be identified, just the total separation distance is stated.																		

## 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

For strategic planning proposals 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.

### All Other Planning Proposals

For all other planning stages, this BMP will address what are effectively the same relevant issues but do it within the following sections:

- Section 2 – Bushfire Prone Vegetation - Environmental and Assessment Considerations: Assess environmental, biodiversity and conservation values;
- Section 3 – Potential Bushfire Impact: Assess the bushfire threats with the focus on flame contact and radiant heat; 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'*): Assess the ability of the proposed development to apply the required bushfire protection measures thereby enabling it to be considered for planning approval for these factors.

**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 with these 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?	No
---	----

## 5.3 Assessment Statements for Element 5: Vulnerable Tourism Land Uses

### 5.3.1 B&B / Holiday House Outside Built-Out Area

VULNERABLE TOURISM			
<b>Element Intent</b>	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.		
<b>Proposed Development/Use – Relevant Type</b>	Bed and breakfast and holiday house <u>outside</u> a residential built out area.		
<b>Element Compliance Statement</b>	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.		
<b>Pathway Applied to Provide an Alternative Solution</b>	N/A		
<p align="center"><b>Acceptable Solutions - Assessment Statements</b></p> <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 <a href="https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas">https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas</a>.</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>			
<b>Solution Component Check Box Legend</b>	<input checked="" type="checkbox"/> Relevant & met	<input checked="" type="checkbox"/> Relevant & not met	<input type="checkbox"/> Not relevant
A5.4 Siting and Design			
<b>A5.4a Asset protection zone (APZ)</b>	<b>Applicable:</b>	Yes	<b>Compliant:</b> Yes
<p align="center"><b>APZ DIMENSIONS – DIFFERENCES IN REQUIREMENTS FOR PLANNING ASSESSMENTS COMPARED TO IMPLEMENTATION</b></p> <p>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.</p> <p>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.</p> <p>The APZ dimensions stated and/or illustrated in this Report can vary dependent on the purpose for which they are being identified.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p><i>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.</i></p> </div>			



### THE 'PLANNING BAL-29' APZ DIMENSIONS

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

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

### THE 'REQUIRED' APZ DIMENSIONS

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

- A. The 'BAL Rating APZ' of the subject building(s) when distances are greater than 'B' below (except when 'B' establishes a maximum distance); or
- B. The 'Local Government' APZ' derived from the Firebreak/Hazard Reduction Notice when distances are greater than 'A' above, other than when a maximum distance is established, in which case this will apply; or
- C. A combination of 'A' and 'B'.

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

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

☒ ☐ ☐

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

☐ ☐ ☒

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

☒ ☐ ☐

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

<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p><b>APZ Location:</b> The required dimensions for a 'Planning BAL-29' APZ can be partly established within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated. The balance of the APZ would exist on adjoining land that satisfies the exclusion requirements of AS 3959:2018 cl 2.2.3.2 for non-vegetated areas and/or low threat vegetation and/or vegetation managed in a minimal fuel condition.</p>
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p><b>APZ Location:</b> 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"> <li>• If non-vegetated, remain in this condition in perpetuity; and/or</li> <li>• If vegetated, be low threat vegetation or vegetation managed in a minimal fuel condition in perpetuity.</li> </ul>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p><b>APZ Management:</b> 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>
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p><b>Subdivision Staging:</b> 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>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p><b>Firebreak/Hazard Reduction Notice:</b> 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><b>Supporting Assessment Details:</b> A BAL-19 is achieved and can be maintained in perpetuity. A number of deciduous trees have been planted around the parking area, which aid in fire management.</p>	
<b>A5.5 Vehicular Access</b>	
<b>A5.5a Multiple access routes</b>	
<b>Applicable:</b> <span style="background-color: #92D050; padding: 2px 5px;">Yes</span> <b>Compliant:</b> <span style="background-color: #FFD700; padding: 2px 5px;">Partly</span>	
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<p>Two-way public road access is provided in two different directions to at least two different suitable destinations.</p>
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<p>The exception to the provision of two-way access applies. Public road vehicular access to a suitable destination is available, and it leads away from the bushfire hazard. Secondary access (including an EAW) cannot be achieved.</p>
<p><b>Supporting Assessment Details:</b> Two way public road access is available from Blackwood River Drive and Dean Road (1.6kms from the site). The subdivision currently is one road in/out and Council is addressing this in partnership with DBCA and upgrading Gracillus Road which links to Mowen Road. Dean Road itself is a no-through road.</p>	
<b>A5.5b No-through roads – maximum length</b>	
<b>Applicable:</b> <span style="background-color: #92D050; padding: 2px 5px;">Yes</span> <b>Compliant:</b> <span style="background-color: #FF0000; color: white; padding: 2px 5px;">No</span>	
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<p>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</p>

	Hazard Level (Guidelines, Table 3).
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	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 checked="" type="checkbox"/> <input type="checkbox"/>	The no-through public road is unavoidable and the adjoining classified vegetation (excluding the road reserve) is categorised a Low Bushfire Hazard Level (Guidelines, Table 3) or is not identified as bushfire prone. Consequently, there is no limit on its length.

**Supporting Assessment Details:** Dean Road is a no-through road and is 1.6kms from the intersection of Blackwood River Drive to the site. Vegetation along Dean road is primarily unmanaged Grassland to a height of 50cm. There are a large number of native kangaroos that assist to manage the density and height of the verge vegetation throughout the seasons. Dean Road sits along the ridge and should a fire front come from the north or east across town it would be easily visible. For this reason, early evacuation is the primary message in the Bushfire Emergency Plan.

A5.5c Emergency access way – alternative access option		Applicable:	Yes	Compliant:	No
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	A5.5a and A5.5b cannot be achieved.				
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	The proposed or existing EAW provides a through connection to a public road.				
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	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 checked="" 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.				

**Supporting Assessment Details:** There is no trafficable EAW along Dean Road to a safer location or public road. There is an EAW from Dean Road to the Blackwood River. It would not be advised for guests to utilise this in an emergency. It is not advised that guests move to the Blackwood River in a fire emergency. Safe and early evacuation is promoted to the designated welfare centre, and consideration should be given to closure of the accommodation on days of Extreme Bushfire rating.

A5.5d Public roads - technical requirements		Applicable:	Yes	Compliant:	Partly
<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 type="checkbox"/> <input checked="" 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).  The assessment conducted for the bushfire management plan indicates that it is likely that the proposed development can and will comply with the requirements.				

	However, the applicable class of road, the associated technical requirements and subsequent proposal compliance, will need to be confirmed with the relevant local government and/or Main Roads WA.
<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:** Dean Road, Blackwood River Drive and Barrabup Road comply with the technical requirements of the guidelines. Gracillus Road currently does not comply, however will comply once the road upgrade is completed.

A5.5e Private driveways - technical requirements		Applicable:	Yes	Compliant:	Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The 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 type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	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 (Figure 28, Guidelines and within 30m of the habitable building) can and will be complied with.				

Supporting Assessment Details: None required

A5.5f 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.				

**Supporting Assessment Details:** None required

#### A5.6 Provision of Water for Firefighting Purposes

A5.6b 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.				

**Supporting Assessment Details:** A 160,000l water tank exists on the property and has appropriate valves and camlock coupling and fittings. The Local Government has confirmed that no additional independent water tanks are required for fire fighting purposes.

## 6 BUSHFIRE PROTECTION MEASURES - RESPONSIBILITY FOR IMPLEMENTATION CHECKLIST

### 6.1 Landowner Responsibilities – Prior to Operation

DEVELOPER/LANDOWNER RESPONSIBILITIES – PRIOR TO OPERATION	
No.	Implementation Actions
1	<p>The local government may condition a development application approval with a requirement for the landowner/proponent to register a notification onto the certificate of title and deposited plan (with the required wording stated by the local government).</p> <p>This will be done pursuant to <i>Section 70A Transfer of Land Act 1893 (as amended)</i> as per 'Factors affecting use and enjoyment of land, notification on title'.</p> <p>This is to notify owners and prospective purchasers of the land that:</p> <ol style="list-style-type: none"> <li>1. The land is in a designated bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner;</li> <li>2. The land is subject to a Bushfire Management Plan that establishes certain protection measures to manage bushfire risk that are to be implemented and continue to be applied at the owners cost; and</li> <li>3. That additional planning and building requirements may apply to development on this land.</li> </ol>
2	<p>Prior to future 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 these 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>
3	<p>Prior to operation, signage must be prominently displayed within the site that informs the actions of those persons onsite in the event of a bushfire. This will include evacuation route information, site procedures – as per the instructions within the Bushfire Information Poster developed for the site and use.</p>
4	<p>Prior to operation, all actions contained within the 'Pre-Season Preparation Procedure' established by the Bushfire Emergency Plan, must be completed.</p>

## 6.2 Landowner / Occupier Responsibilities – Ongoing Management

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	Management Actions
1	<p>Maintain the 'Required' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy:</p> <ul style="list-style-type: none"> <li>The minimum required dimensions established in Appendix B1; and</li> <li>The standards established by the Guidelines DPLH, 2021 v1.4, Schedule 1, or as varied by the local government through their annually issued firebreak / hazard reduction notice when the variations have been endorsed by the WAPC and DFES as per s4.5.3 of the Guidelines.</li> </ul>
2	<p>Comply with the Shire of Nannup Fuel Hazard Reduction and Firebreak Notice issued under s33 of the Bush Fires Act 1954. Check the notice annually for any changes.</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 routes within the lot to comply with the technical requirements referenced in the BMP and the relevant local government's annual firebreak / hazard reduction notice.</p>
5	<p>Maintain the static firefighting water supply tank 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.</p> <p>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>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). 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> <p>As an additional bushfire protection measure, other classes of buildings may also be required to comply with these construction requirements when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. The BMP may also establish that construction requirements to be applied will be those corresponding to a specified higher BAL rating. When applicable, these requirements will be identified in Section 5.7.</p>
7	<p>Ensure all future buildings the landowner has responsibility for, are designed and constructed in full compliance with:</p> <ul style="list-style-type: none"> <li>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</li> </ul>



	<p>2011); and</p> <ul style="list-style-type: none"> <li>Any additional bushfire protection measures this Bushfire Management Plan has established are to be implemented.</li> </ul>
8	<p>Annually review the Bushfire Emergency Plan and complete all actions contained within the 'Pre-Season Preparation Procedure' and the 'In-Season Preparation Procedure' at the appropriate times of the year.</p>

### 6.3 Local Government Responsibilities – Ongoing Management

LOCAL GOVERNMENT – ONGOING MANAGEMENT	
No.	Management Actions
1	<p>Monitor landowner compliance with the annual Shire of Nannup Fuel Hazard Reduction &amp; Firebreak Notice and with any bushfire protection measures that are:</p> <ul style="list-style-type: none"> <li>• Established by this BMP;</li> <li>• Are required to be maintained by the landowner/occupier; and</li> <li>• Are relevant to local government operations.</li> </ul>

## APPENDIX A: DETAILED BAL ASSESSMENT DATA AND SUPPORTING INFORMATION

### A1: BAL Assessment 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:	80
					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 they consist of low threat vegetation or vegetation managed in a 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.


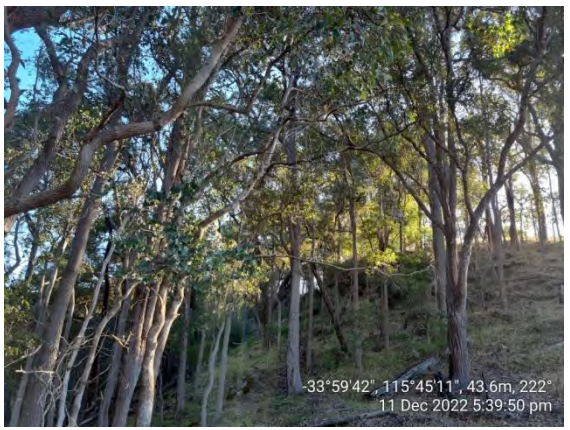
#### THE INFLUENCE OF VEGETATION GREATER THAN 100 METRES FROM THE SUBJECT SITE

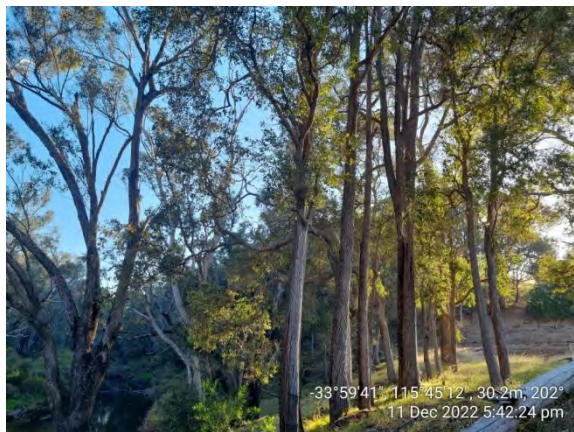

Vegetation area(s) within 100m of the site whose classification has been influenced by the existence of bushfire prone vegetation from 100m – 200m from the site:



No. 1

##### Assessment Statement:

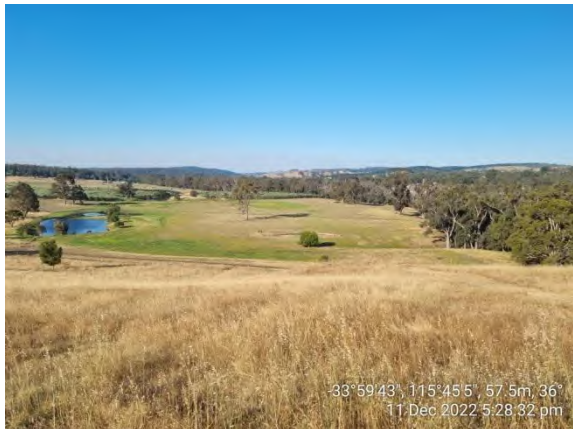

Area 1 vegetation (Forest) is over a 20 degree slope and is an extreme fire risk for this property. The reserve land is owned by the Department of Water & Environmental Regulation. The vegetation is not managed and poses a fire threat to all properties fronting the Blackwood River, particularly in summer.

VEGETATION AREA 1						
Classification	A. FOREST					
Types Identified	Low open forest A-04					
Exclusion Clause	N/A					
Effective Slope	Measured	d/slope 23 degrees		Applied Range (Method 1)		20+
Foliage Cover (all layers)	>90%	Shrub/Heath Height		N/A	Tree Height	Up to 30m
Dominant & Sub-Dominant Layers (species as relevant)	Eucalypt forest (primarily Marri and River gum) to a height of 12m with 70% canopy cover.					
Understorey:	Understorey of fallen logs, branches and leaf litter. Some bracken and native bushes.					
Additional Justification:	Vegetation Areas 1 and 2 are functionally the same and are separated by effective slope relative to the building. Slopes vary throughout the Area, but the worst-case fire run has been applied.					
Post Development Assumptions:	N/A					
<div><div></div><div></div></div>						
PHOTO ID: 1				PHOTO ID: 2		

VEGETATION AREA 2							
Classification	A. FOREST						
Types Identified	Low open forest A-04						
Exclusion Clause	N/A						
Effective Slope	Measured	d/slope 17 degrees		Applied Range (Method 1)		Downslope >15-20 degrees	
Foliage Cover (all layers)	>90%	Shrub/Heath Height		N/A		Tree Height	Up to 30m
Dominant & Sub-Dominant Layers (species as relevant)	Eucalypt forest (primarily Marri and River gum) to a height of 12m with 70% canopy cover.						
Understorey:	Understorey of fallen logs, branches and leaf litter. Some bracken and native bushes. Grass (unmanaged) is growing along the river bank.						
Additional Justification:	Vegetation Areas 1 and 2 are functionally the same and are separated by effective slope relative to the building. Slopes vary throughout the Area, but the worst-case fire run has been applied.						
Post Development Assumptions:	N/A						
<div><div></div><div></div></div>							
PHOTO ID: 3				PHOTO ID: 4			

VEGETATION AREA 3						
Classification	EXCLUDED					
Types Identified	Low threat vegetation					
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)	Managed gardens around buildings, private driveways and public roads. There is an olive orchard to the west of the site that is reticulated.					
Understorey:	N/A					
Additional Justification:	Not Required..					
Post Development Assumptions:	N/A					
<div><div><div><div>-33°59'45", 115°45'6", 60.8m, 161°</div><div>11 Dec 2022 5:23:12 pm</div></div></div><div><div><div>-33°59'41", 115°45'2", 55.2m, 331°</div><div>11 Dec 2022 5:26:33 pm</div></div></div></div>						
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	d/slope 7 degrees	Applied Range (Method 1)		Downslope >5-10 degrees	
Foliage Cover (all layers)	>90%	Shrub/Heath Height	N/A		Tree Height	N/A
Dominant & Sub-Dominant Layers (species as relevant)	Grass vegetation to a height of 50cms. The slope is too difficult for machinery to navigate due to the number of rocks on the slope. The property has recently been fenced, so kangaroos cannot access the property and manage the vegetation naturally. Areas that can be accessed are slashed as per the Shire of Nannup Firebreak & Fuel Hazard Reduction notice annually.					
Understorey:	N/A					
Additional Justification:	Not Required.					
Post Development Assumptions:	N/A					
<div><div></div><div></div></div>						
PHOTO ID: 5			PHOTO ID: 6			

### A1.3: EFFECTIVE SLOPE

#### Measuring

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

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

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

#### Slope Variation Within Areas of Vegetation

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

#### Slope Variation Due to Multiple Development Sites

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

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

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

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

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

### SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

The effective slopes determined from the site assessment are recorded in Table 3.2 of this Bushfire Management Plan. When their derivation requires additional explanation and justification, this is provided below.



## A1.4: SEPARATION DISTANCE

### Measuring

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

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

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

### Measured Separation Distance as a Calculation Input

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

### Assumed Separation Distance as a Calculation Input

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

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

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

The resultant BAL rating would be indicative and require later confirmation (via a Compliance Report) 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 3.2 and illustrated as a BAL contour map in Figure 3.2.

## A2: BAL Assessment Inputs Applied Using the Method 2 Procedure

### STATING AND JUSTIFYING THE METHOD 2 CALCULATION INPUT VARIABLES APPLIED

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

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

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

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

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

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

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

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



Level 3 accreditation as issued by the Fire Protection Association Australia (FPAA) through their Bushfire Planning and Design Accreditation Scheme (BPAD Scheme) that complies with the Western Australian Bushfire Accreditation Framework.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## A2.3: SITE SLOPE

### SITE SLOPE APPLIED

#### MEASURING

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

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

#### PURPOSE

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

#### LIMITATIONS

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

Relevant Site	Relevant Vegetation		Assessed / Planned Building Setback from Lot Boundary		Relative Height Difference Site vs Base of Vegetation	Separation Distance	Site Slope <sup>1</sup>	
			Relevant Lot Boundary	Distance			Measured	Calculated
	Area	Class			metres	metres		
Existing Building	1	(A) Forest	East	99	7	84m	d/slope 23	d/slope 23
	2							
	3							
	4							

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

### A3: BAL Calculator – Copy of Input/Output Values

#### CALCULATION OF BUSHFIRE ATTACK LEVELS – METHOD 2



Calculated May 11, 2018, 2:23 pm (MDC v.4.8)

Minimum Distance Calculator - AS3959-2009 (Method 2)			
Inputs		Outputs	
Fire Danger Index	80	Rate of spread	11.73 km/h
Vegetation classification	Forest	Flame length	80.46 m
Surface fuel load	25 t/ha	Flame angle	43 °, 49 °, 55 °, 60 °, 63 ° & 77 °
Overall fuel load	35 t/ha	Elevation of receiver	20.68 m, 22.21 m, 22.71 m, 22.17 m, 21.69 m & 11.46 m
Vegetation height	n/a	Fire intensity	212,185 kW/m
Effective slope	23 °	Transmissivity	0.815, 0.784, 0.754, 0.734, 0.724 & 0.673
Site slope	7 °	Viewfactor	0.6443, 0.4858, 0.3306, 0.2239, 0.1814 & 0.0488
Flame width	100 m	Minimum distance to < 40 kW/m <sup>2</sup>	55 m
Windspeed	n/a	Minimum distance to < 29 kW/m <sup>2</sup>	66.4 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m <sup>2</sup>	83.4 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m <sup>2</sup>	103.2 m
		Minimum distance to < 10 kW/m <sup>2</sup>	115.3 m

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

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

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

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



## APPENDIX B: ADVICE - ONSITE VEGETATION MANAGEMENT - THE APZ

### THE ASSET PROTECTION ZONE (APZ) - DESCRIPTION

This is an area surrounding a habitable building containing low threat fire fuel fuels (including vegetation), or vegetation managed in a minimal fuel condition, no fire fuels or any combination. 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 is low threat and/or is managed in a minimum fuel condition 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. (Note: The explanatory notes in the Guidelines provide some guidance for achieving this objective and other sources are available. Research shows that consequential fire, ignited by embers, is the primary cause of building loss in past bushfire events); and
- To provide a defensible space for firefighting activities.

### B1: Asset Protection Zone (APZ) Dimensions

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

##### 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 purpose is to identify if an acceptable solution for planning approval can be met i.e., can a specified minimum separation distance from bushfire prone vegetation exist.*

An assessment against the Bushfire Protection Criteria is conducted for planning approval purposes. To satisfy 'A2.1: Asset Protection Zone', it must be demonstrated that certain minimum separation distances between the relevant building/structure and different classes of bushfire prone vegetation, either exist or can be created and will remain in perpetuity. These minimum separation distances determine the 'Planning BAL-29' APZ dimensions.

**Dimensions:** The minimum dimensions are those that will ensure the potential radiant heat impact on subject buildings does not exceed 29 kW/m<sup>2</sup>. These dimensions will vary dependent on the vegetation classification, the slope of the land they are growing on and certain other factors specific to the subject site.

*Note: For certain purposes associated with vulnerable land uses, the 'Planning BAL-29' APZ may be replaced with dimensions corresponding to radiant heat impact levels of 10 kW/m<sup>2</sup> and 2 kW/m<sup>2</sup> and calculated using 1200K flame temperature.*

**Location:** The identified 'Planning BAL-29' APZ must not extend past lot boundaries onto land the landowner has no control over either now or potentially at some point in the future. Limited exceptions include:

- When adjoining land is not vegetated (e.g., built out, roads, car parks, drainage, rock, water body etc.);
- When adjoining land currently or, will in the short term, contain low threat vegetation and or vegetation managed in a minimal fuel condition as per AS 3959:2018 cl. 2.2.3.2. It must be reasonable (justifiable) to expect this low threat vegetation and/or level of management will continue to exist or be conducted in perpetuity and require no action from the owner of the subject lot.

Such areas of land include formally managed areas of vegetation (e.g., public open space / recreation areas / services installed in a common section of land). For specific scenarios, evidence of the formal commitment to manage these areas to a certain standard may be required and would be included in the

BMP.

These areas of land can also be part of the required APZ on a neighbouring lot for which the owner of that lot has a recognised responsibility to establish and maintain; and

- When there is a formalised and enforceable capability and responsibility created for the subject lot owner, or any other third party, to manage vegetation on land they do not own in perpetuity. This would be rare, and evidence of the formal authority would be included in the BMP.

The bushfire consultant's 'Supporting Assessment Detail', that is presented in the assessment against the acceptable solution A2.1, will identify and justify how any adjoining land within the 'Planning BAL-29' APZ will meet the APZ standards. Or otherwise, explain how this condition cannot be met.

### THE 'BAL RATING' APZ DIMENSIONS

The applicable BAL rating will have been stated in the BAL Assessment Data section of the BAL Assessment Report or BMP (as relevant). The BAL rating can be assessed as 'determined' or 'indicative' or be 'conditional', dependent of the specific conditions associated with the site and the stage of assessment or planning. It is the eventual assessment of the 'Determined' BAL that will establish both the BAL rating that is to apply and its corresponding 'BAL Rating' APZ dimensions.

**Dimensions:** The minimum dimensions of the 'BAL Rating' APZ to be established and maintained will be those that correspond to the determined BAL rating for the subject building/structure that has accounted for surrounding vegetation types, the slope of the land they are growing on and certain other factors specific to the subject site and surrounding land.

Establishing the 'BAL Rating' APZ will ensure 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 when that building/structure is required to be constructed to the standard corresponding to the Determined BAL.

*Note: For certain purposes associated with vulnerable land uses, the 'BAL Rating' APZ dimensions may be replaced with dimensions corresponding to the specific radiant heat impact levels of 10 kW/m<sup>2</sup> and 2 kW/m<sup>2</sup> and calculated using 1200K flame temperature.*

**Location:** The same conditions will apply as for the 'Planning BAL-29' APZ.

### THE 'LOCAL GOVERNMENT' APZ DIMENSIONS

Some Local Government's establish the dimensions of the APZ that must be established surrounding buildings in their annual Firebreak/Hazard Reduction Notice. Or for a specific site they may establish a maximum allowable dimension (typically that corresponding to BAL-29). When established, the landowner will need to be comply with these.

### THE 'REQUIRED' APZ DIMENSIONS

This is the APZ that is to be established and maintained by the landowner within the subject lot and surrounding the subject building(s). It will be identified on the Property Bushfire Management Statement when it is required to be included in this Report/Plan.

**Dimensions:** The 'Required APZ' dimensions are the minimum (or maximum when relevant) distances away from the subject building(s) that the APZ must extend. These distances will not necessarily be the same all around the building(s). They can vary and are dependent on the different vegetation types (and their associated ground slope) that can exist around the building(s), and specific local government requirements. The dimensions to implement are determined 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'.

**Location:** The same conditions will apply as for the 'Planning BAL-29' APZ.

## B1.1: THE APZ DIMENSIONS REQUIRED TO BE IMPLEMENTED BY THE LANDOWNER

DETERMINATION OF THE 'REQUIRED' APZ DIMENSIONS TO BE IMPLEMENTED AND MAINTAINED BY LANDOWNER WITHIN THEIR LOT										
Relevant Buildings(s)	Vegetation Classification [Refer to Fig 3.1]		Minimum Required Separation Distances from Building to Vegetation (metres)							
			Established by the 'BAL Rating' APZ Dimension					Established by the "Local Government" APZ Dimension	The 'Required' APZ Dimensions [see note]	
			Determined Radiant Heat Impact	Stated 'Indicative' or 'Conditional' BAL				Firebreak / Hazard Reduction Notice		
	Area	Class		BAL-29	BAL-19	BAL-12.5	BAL-LOW			
	1	(A) Forest	BAL-19			84			20m	-
	2	(A) Forest				68m			20m	-
	3	Excluded cl 2.2.3.2(e & f)				-			-	-
	4	(G) Grassland				10m			20m	-
<p><b>Note:</b> The 'Required' APZ Dimension corresponding to each area of vegetation is the greater of the 'BAL Rating' or the 'Firebreak/Hazard Reduction Notice' APZ dimension - unless a local government maximum distance(s) is established as a result of their environmental assessment of the subject site. The area of the APZ will also be limited to the subject lot boundary unless otherwise justified in this Report/Plan. Final determination of the dimensions will require that any indicative or conditional BAL becomes a 'Determined' BAL.</p>										
<p><b>Comments:</b> The Shire of Nannup Firebreak &amp; Fuel Hazard Reduction Notice requires a 20m APZ around habitable buildings. The 10m BAL-19 APZ therefore must be extended to 20m for compliance.</p>										

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

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

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

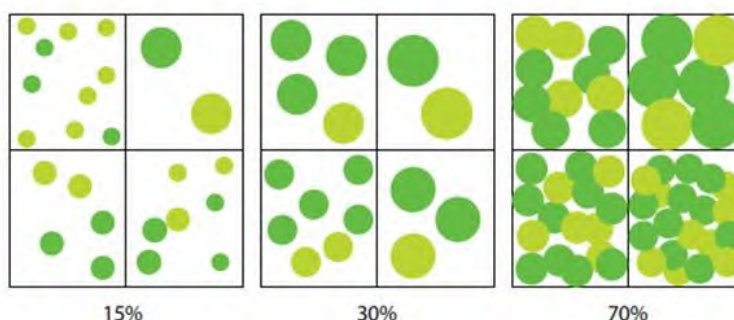


## ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

### SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	<ul style="list-style-type: none"> <li>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).</li> </ul>
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	<ul style="list-style-type: none"> <li>Should be managed and removed on a regular basis to maintain a low threat state.</li> <li>Should be maintained at &lt;2 tonnes per hectare (on average).</li> <li>Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch &gt;6 millimetres in thickness.</li> </ul>
Trees* (>6 metres in height)	<ul style="list-style-type: none"> <li>Trunks at maturity should be a minimum distance of six metres from all elevations of the building.</li> <li>Branches at maturity should not touch or overhang a building or powerline.</li> <li>Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation.</li> <li>Canopy cover within the APZ should be &lt;15 per cent of the total APZ area.</li> <li>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.</li> </ul>

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



Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	<ul style="list-style-type: none"> <li>• Should not be located under trees or within three metres of buildings.</li> <li>• Should not be planted in clumps &gt;5 square metres in area.</li> <li>• Clumps should be separated from each other and any exposed window or door by at least 10 metres.</li> </ul>
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	<ul style="list-style-type: none"> <li>• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above.</li> <li>• Can be located within two metres of a structure, but three metres from windows or doors if &gt;100 millimetres in height.</li> </ul>
Grass	<ul style="list-style-type: none"> <li>• Grass should be maintained at a height of 100 millimetres or less, at all times.</li> <li>• Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.</li> </ul>
Defendable space	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
LP Gas Cylinders	<ul style="list-style-type: none"> <li>• 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.</li> <li>• The pressure relief valve should point away from the house.</li> <li>• No flammable material within six metres from the front of the valve.</li> <li>• Must sit on a firm, level and non-combustible base and be secured to a solid structure.</li> </ul>

*\* 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 / hazard reduction 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 applicable 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: Vegetation and Areas Excluded from Classification - Ensure Continued Exclusion**

AS 3959:2018 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 relevant bushfire behaviour models to determine the BAL.

Certain vegetation can be considered as low threat or managed in a minimal fuel condition and can be excluded from classification. Where this has occurred in assessing the site, the extract from AS3959:2018 below states the requirements that must continue to exist for the vegetation on those areas of land to be excluded from classification (including the size of the vegetation area if relevant to the assessment).

15

**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:**

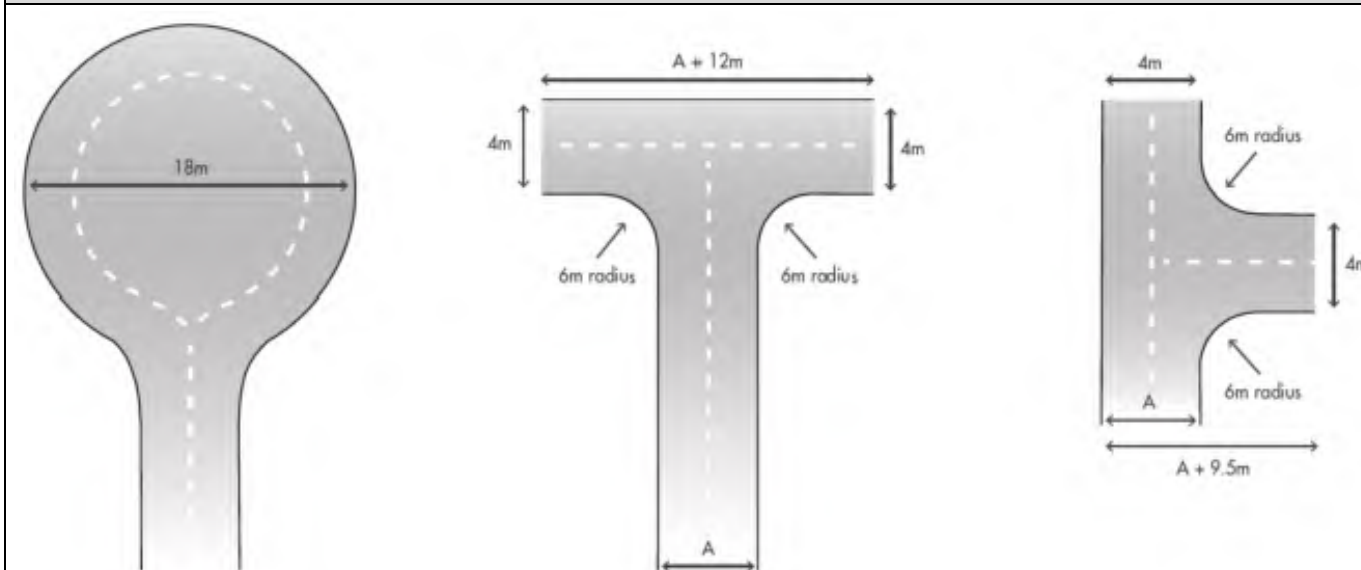
- 1 Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).
- 2 A windbreak is considered a single row of trees used as a screen or to reduce the effect 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 <sup>1</sup>	Fire Service Access Route <sup>1</sup>	Battle-axe and Private Driveways <sup>2</sup>
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 <sup>3</sup>	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum Grade Sealed Road <sup>3</sup>		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 <sup>4</sup>				



**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.

<sup>1</sup> To have crossfalls between 3 and 6%.

<sup>2</sup> 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.

<sup>3</sup> Dips must have no more than a 1 in 8 (12.5% or 7.1 degree) entry and exit angle.



<sup>4</sup> 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 <b>or</b> 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