

# Bushfire Management Plan Addendum

(PREPARED FOR PLANNING APPLICATION ASSESSMENT PURPOSES)



**Address / Location: Wanjeep Street,  
Coodanup**

**City of Mandurah**

**Subdivision Application**

**9 April 2024**

**Job Reference No: 220028**

BPP GROUP PTY LTD T/A BUSHFIRE PRONE PLANNING

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

SUITE 11, 36 JOHNSON STREET

GUILDFORD WA 6055


PO BOX 388

GUILDFORD WA 6935

08 6477 1144 | admin@bushfireprone.com.au



## DOCUMENT CONTROL

PREPARATION					
Author:	Sarina Gorman (BPAD Level 2 No. 42204)				
Reviewed:	Ian Macleod (BPAD Level 2 No. 39131)				
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		-		<input type="checkbox"/>	<input type="checkbox"/>
<p><b>Limitations:</b> 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.</p> <p>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.</p> <p>All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.</p> <p>Notwithstanding anything contained therein, Bushfire Prone Planning will not, except as the law may require, be liable for any loss or other consequences whether or not due to the negligence of their consultants, their servants or agents, arising out of the services provided by their consultants.</p> <p><b>Copyright © 2023 BPP Group Pty Ltd:</b> All intellectual property rights, including copyright, in format and proprietary content contained in documents created by Bushfire Prone Planning, remain the property of BPP Group Pty Ltd. Any use made of such format or content without the prior written approval of Bushfire Prone Planning, will constitute an infringement on the rights of the Company which reserves all legal rights and remedies in respect of any such infringement.</p>					

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## SUMMARY STATEMENTS

### THIS DOCUMENT – STATEMENT OF PURPOSE

#### The Bushfire Management Plan (BMP)

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

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

#### Risks Associated with Bushfire Events

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

#### Bushfire Protection Measures

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

- Protection measures to reduce the vulnerability of buildings to bushfire threats is primarily dealt with at the building application stage. They are implemented through the process of applying the Building Code of Australia (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

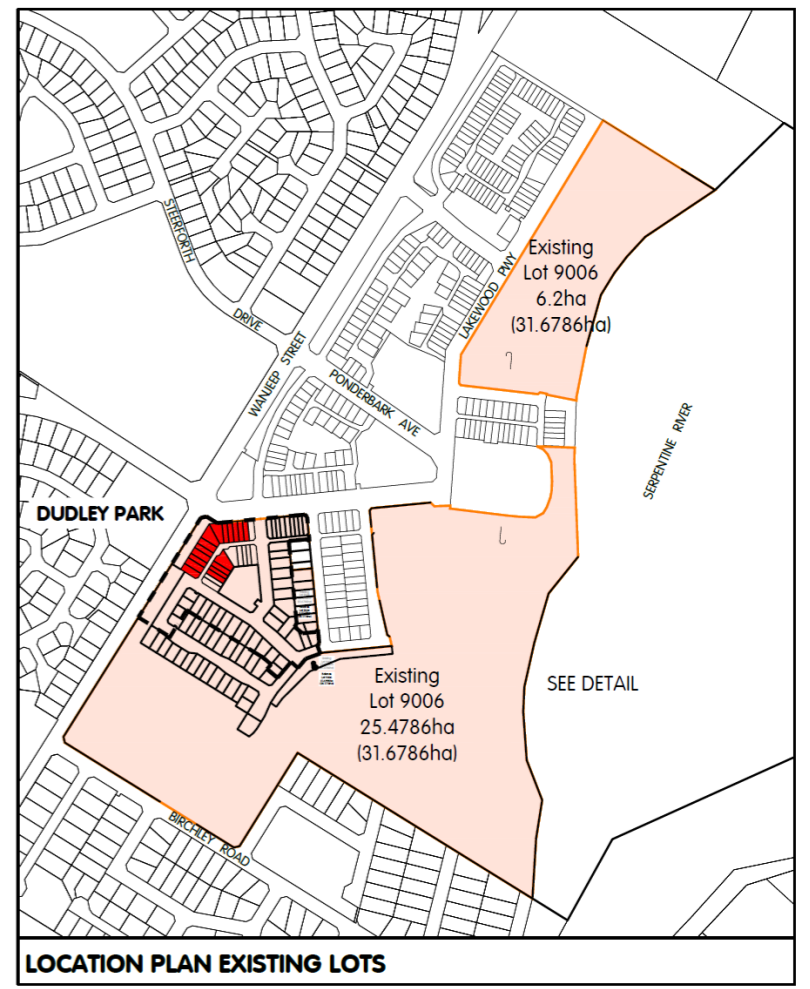
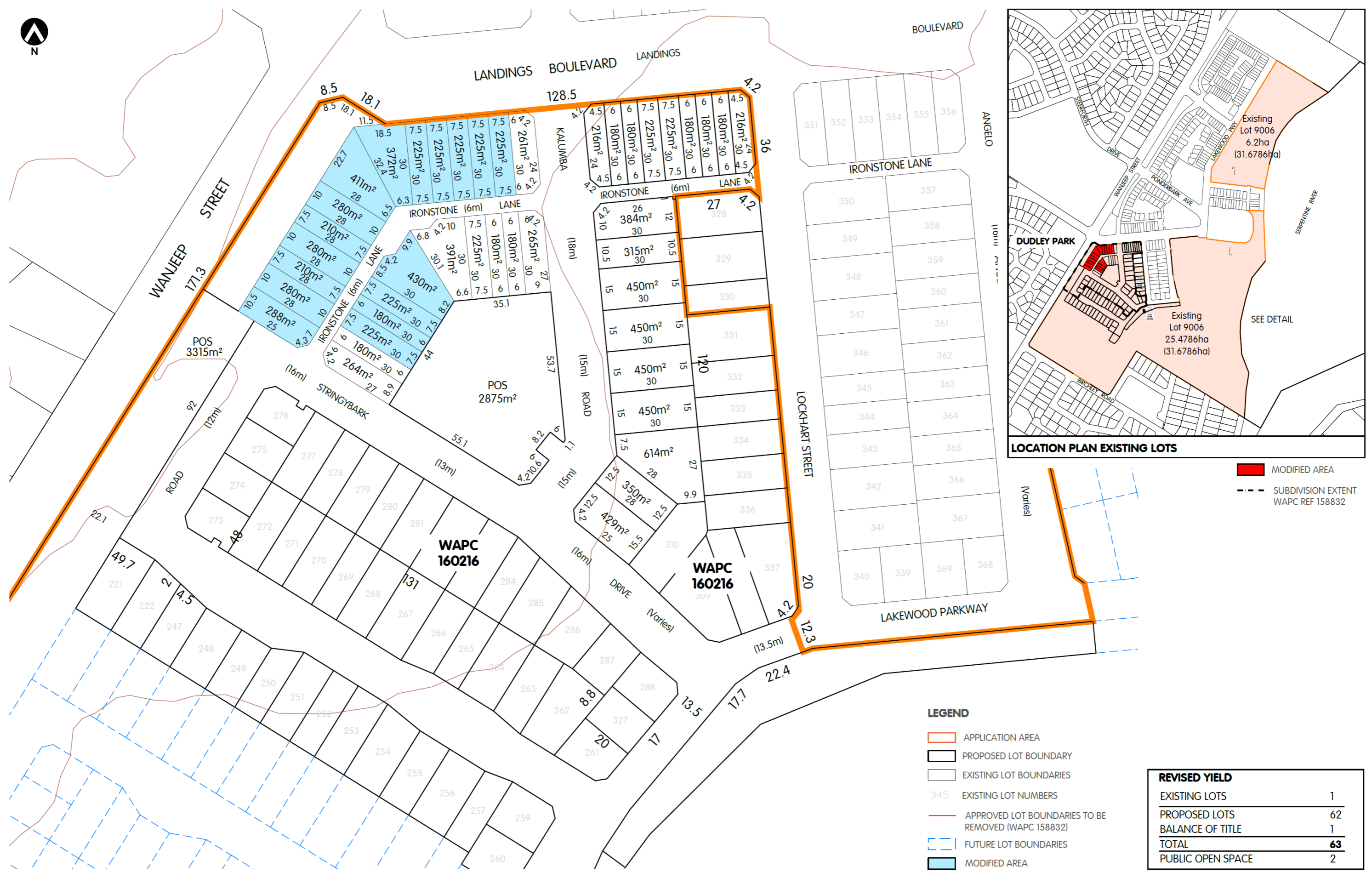
The BMP assesses the capacity of the proposed development or use to implement and maintain the required 'acceptable' solutions and any additionally recommended bushfire protection measures - or its capacity to satisfy the policy intent through the justified application of additional bushfire protection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

<b>THE PROPOSED DEVELOPMENT/USE – BUSHFIRE PLANNING COMPLIANCE SUMMARY</b>		
<b>Environmental Considerations</b>		<b>Assessment Outcome</b>
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?		Yes
<b>Required Bushfire Protection Measures</b>		<b>Assessment Outcome</b>
The Acceptable Solutions of the Bushfire Protection Criteria (Guidelines)		
Element	The Acceptable Solutions	
1: Location	A1 Location	Fully Compliant
	A1.1 Development location	Fully Compliant
2: Siting and Design of Development	A2 Siting and Design of Development	Fully Compliant
	A2.1 Asset Protection Zone (APZ)	Fully Compliant
3: Vehicular Access	A3 Vehicular Access	Fully Compliant
	A3.1 Public roads	Fully Compliant
	A3.2a Multiple access routes	Fully Compliant
	A3.2b Emergency access way	N/A
	A3.3 Through-roads	N/A
	A3.4a Perimeter roads	Fully Compliant
	A3.4b Fire service access route	N/A
	A3.5 Battle-axe legs	N/A
	A3.6 Private driveways	Fully Compliant
4: Water	A4 Water	Fully Compliant
	A4.1 Identification of future water supply	N/A
	A4.2 Provision of water for firefighting purposes	Fully Compliant
<b>Other Documents Establishing Bushfire Protection Measure Variations or Additions</b>		<b>Assessment Outcome</b>
A 'Planning Approval' or a 'Notice of Determination' which contains 'Conditions' to be met.		N/A
A DPLH/WAPC 'Position Statement'		N/A
Bushfire Management Plan Guidance for the Dampier Peninsula (DPLH 2021 Rev B)		N/A

# 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.		Subdivision Application (lot division)
<b>The Subject Land/Site</b>		Frasers Landing (Stage 4B) – Wanjeep Street, Coodanup in the City of Mandurah
<b>Number of Lots Created</b>		25
<b>Primary Proposed Construction</b>	<b>Type(s)</b>	New Building(s)
	<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.		N/A
<b>Description of the Proposed Development/Use</b>		
<p>This Bushfire Management Plan Addendum is to accompany the amended plan of subdivision for Frasers Landing – Stage 4B located at Wanjeep Street, Coodanup in the City of Mandurah. The Addendum is to be read in conjunction with the existing Bushfire Management Plan for these lots - <i>Bushfire Management Plan, Subdivision Stages 3 and 4 Frasers Landing – Lot 9006 Wanjeep Street, Coodanup – (Prepared by Bushfire Safety Consulting – Dated 12 December 2019)</i>.</p> <p>This Addendum addresses:</p> <ul style="list-style-type: none"> <li>The bushfire planning requirements stated in the WAPC Application number 158832 with respect to the modified allotment layout within Stage 4B. <ul style="list-style-type: none"> <li>Note – While this Addendum relates to Stage 4B specifically, it also gives consideration to the surrounding Stages (as identified in the Existing Bushfire Management Plan) that have since received approval as a means of informing of the on-going development in the area and to further substantiate that compliance with the technical requirements as established by the Guidelines for Planning in Bushfire Prone Areas can be achieved.</li> </ul> </li> </ul>		
<b>Description of Planned Staged Development and the Management of Potential Bushfire Planning Issues</b>		
<p>General Comment - Where the proposed development is staged, each stage must comply with the technical requirements as established by the Guidelines for Planning in Bushfire Prone Areas (v1.4).</p> <p>Additional Comment – The POS Areas located to the west, along Wanjeep Street (as identified in Figure 6 – Spatial Representation of Bushfire Management Strategies) and its on-going management (to s2.2.3.2 exclusion requirements of AS3959-2018) is to comply with the requirements of the approved Bushfire Management Plan (as referenced above).</p>		



**LOCATION PLAN EXISTING LOTS**

MODIFIED AREA  
 SUBDIVISION EXTENT WAPC REF 158832

**LEGEND**

- APPLICATION AREA
- PROPOSED LOT BOUNDARY
- EXISTING LOT BOUNDARIES
- 345 EXISTING LOT NUMBERS
- APPROVED LOT BOUNDARIES TO BE REMOVED (WAPC 158832)
- FUTURE LOT BOUNDARIES
- MODIFIED AREA

REVISED YIELD	
EXISTING LOTS	1
PROPOSED LOTS	62
BALANCE OF TITLE	1
<b>TOTAL</b>	<b>63</b>
PUBLIC OPEN SPACE	2

**CADASTRAL INFORMATION**  
 SOURCE: YMMDD:  
 DWG REF:  
 PROJECTION:  
**AERIAL PHOTOGRAPHY**  
 SOURCE: YMMDD:

**HATCH | RobertsDay**

SIZE A3 1:1250

REV	DESCRIPTION	YMMDD	DRAWN	APPR'D
A.4	UPDATE PRECAL	230807	TD	Rdu
A.3	ADDITIONAL MINOR MODS	230530	TD	Rdu
A.2	MOD LOT PRODUCT	230526	TD	Rdu
A.1	MODIFIED LOTS	210816	SB	Rdu

JOB CODE	SERVICE	DOC.TYPE	DRAW NO.	REV.
<b>FRA MAN DES</b>	<b>DES</b>	<b>DWG</b>	<b>304</b>	<b>A.4</b>

**MODIFIED SUBDIVISION PLAN**

**Frasers Landing - Wanjeep Street, Coodanup**  
City of Mandurah

DISCLAIMER: ISSUED FOR DESIGN INTENT ONLY. ALL AREAS AND DIMENSIONS ARE SUBJECT TO DETAIL DESIGN AND SURVEY.



Figure 1.2

### Modified Subdivision Map

Frasers Landing - Stages 3 & 4  
Wanjeep Street  
Coodanup  
City of Mandurah

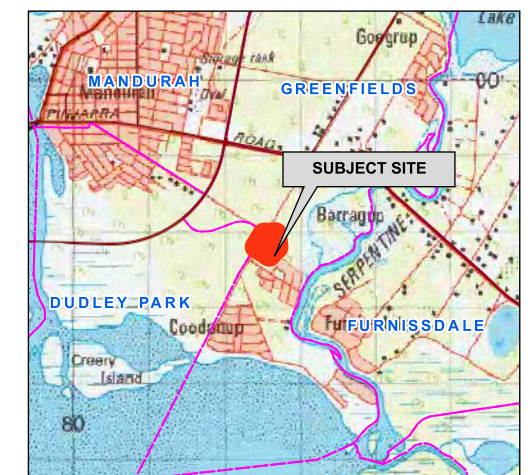
----- LEGEND -----

- H Hydrants
  - Cadastral
  - Subject Site - Stages 3 & 4
- Proposal**
- Modified Area
  - Stage 4B Allotments
  - POS
  - WAPC Approved



Metres

----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
 Projection: Universal Transverse Mercator Units: Metre  
 Map by: 09-04-2024  
 SCALE (A3): 1 : 1500

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

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

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

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

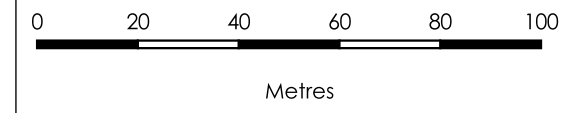
Figure 1.3

### Bushfire Prone Area

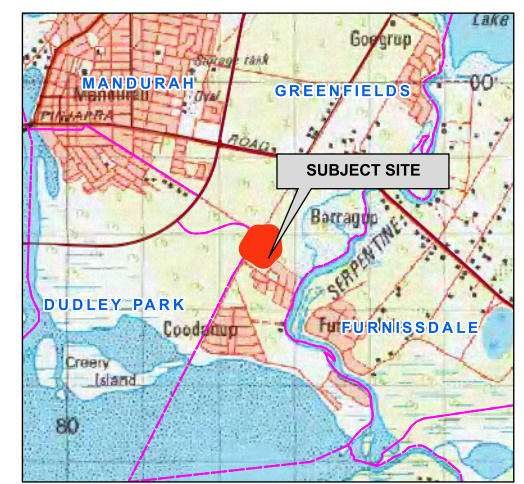
Frasers Landing - Stages 3 & 4  
 Wanjeep Street  
 Coodanup  
 City of Mandurah

----- LEGEND -----

- Bushfire Prone Areas 2021
  - Local Government Authority
  - Localities/Suburb
  - H Hydrants
  - Cadastral
  - Subject Site - Stages 3 & 4
- Proposal**
- Modified Area
  - Stage 4B Allotments
  - POS
  - WAPC Approved



----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
 Projection: Universal Transverse Mercator Units: Metre  
 Map by: 09-04-2024  
 SCALE (A3): 1 : 1500



Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

## 1.2 The Bushfire Management Plan (BMP)

### 1.2.1 Commissioning and Purpose

Landowner / proponent:	Frasers Property Australia
Bushfire Prone Planning commissioned to produce the BMP by:	Frasers Property Australia – Stuart Carter
Purpose of the BMP:	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  To satisfy the requirement for the provision of a Bushfire Management Plan to accompany the subdivision application.
BMP to be submitted to:	WA Planning Commission (WAPC)

### 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
Bushfire Management Plan	Yes	Yes	Yes	Yes	Bushfire Management Plan, Subdivision Stages 3 and 4 Frasers Landing – Lot 9006 Wanjeep Street, Coodanup – (Prepared by Bushfire Safety Consulting – Dated 12 December 2019).
Implications for this BMP: This addendum is an addition to the previous BMP referenced above and addresses the requirements stated in the WAPC Application number 158832 with respect to the modified allotment layout within Stage 4B. In addition – This addendum gives consideration for the changes in Standards, State Planning Policies and associated Guidelines.					

## 2 BUSHFIRE PRONE VEGETATION – ASSESSMENT CONSIDERATIONS

### 2.1 Bushfire Assessment Considerations

#### 2.1.1 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 <b>onsite</b> 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 <b>onsite</b> 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 <b>offsite</b> native vegetation to establish the required bushfire protection measures on the subject site?	Yes
Refer to the Existing Bushfire Management Plan - The POS Areas located to the west, along Wanjeep Street (as identified in Figure 6 – Spatial Representation of Bushfire Management Strategies) and its on-going management (to s2.2.3.2 exclusion requirements of AS3959-2018) is to comply with the requirements of the approved Bushfire Management Plan.  Refer also to Figure 3.1b 'Classified Vegetation & Topography Map (Post Development) – Variations Applied' and Refer to Appendix A1.2 for justification details supporting the change.	
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)?	Yes
As Above.	
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 (refer to Appendix B) continue to be met?  If 'Yes', appropriate evidence of the agreement or how it is to be established, shall be provided in this BMP as an addendum.	Yes
As Above.	

## 2.1.2 Classification Variations to Existing Areas of Vegetation

FOR THE PROPOSED DEVELOPMENT SITUATIONS TO BE ACCOUNTED FOR IN ASSESSING THE POTENTIAL BUSHFIRE IMPACT (BAL)	
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 than that which currently exists. (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.

#### 3.1.1 BAL Determination Methodology and Location of Data and Results

LOCATION OF DATA & RESULTS					
BAL Determination Methodology		Location of the Site Assessment Data			Location of the Results
AS 3959:2018	Applied to Assessment	Classified Vegetation and Topography Map(s)	Calculation Input Variables		Assessed Bushfire Attack Levels and/or Radiant Heat Levels
			Summary Data	Detailed Data with Explanatory and Supporting Information	
Method 1 (Simplified)	Yes	Figures 3.1a, & 3.1b	Table 3.2	Appendix A1	Table 3.1 Table 3.3 / BAL Contour Map
Method 2 (Detailed)	No	N/A	N/A	N/A	



### 3.1.2 BAL Ratings Derived from the Contour Map

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

DETAILS OF BUSHFIRE EXPOSURE TO PROPOSED ALLOTMENTS						
Derived from the Application of Method 1 BAL Determination Methodology (AS 3959:2018 Section 2, Table 2.5) <sup>1</sup>						
Total Number of Residential Lots.	BAL-FZ Exposure	BAL-40 Exposure	BAL-29 Exposure	BAL-19 Exposure	BAL-12.5 Exposure	BAL-LOW Exposure
25					10	15
<sup>1</sup> The assessment data used to derive the BAL ratings is sourced from Table 3.1 and Figure 3.2 'BAL Contour Map'. <sup>2</sup> Refer to the start of Section 3 for an explanation of indicative versus determined BAL ratings.						

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

RELEVANT CLASSIFIED VEGETATION	
Identification of Classified Vegetation that is Relevant to the Production of the BAL Contour Map(s)	Relevant Vegetation Map
<p>The relevant vegetation is the classified vegetation external to the subdivision boundaries. All identified classified vegetation areas, or portions of areas, within the proposed subdivision are excluded.</p> <p>This approach is applied to indicate the achievable bushfire attack levels within the subdivision and the resultant area of developable land on all lots where buildings will be subject to BAL-29 or less. It is based on the following assumptions:</p> <ol style="list-style-type: none"> <li>1. Any classified vegetation within the subdivision can potentially be managed or removed by the developer and/or landowner to meet asset protection zone standards; and</li> <li>2. Future development and consequent removal/management of vegetation that may take place on any adjoining land cannot be part of considerations for the subdivision.</li> </ol>	<p>Figures 3.1b &amp; 3.2</p>
<p>Supporting Assessment Details: Refer to the Existing Bushfire Management Plan - The POS Areas located to the west, along Wanjeep Street (as identified in Figure 6 – Spatial Representation of Bushfire Management Strategies) and its on-going management (to s2.2.3.2 exclusion requirements of AS3959-2018) is to comply with the requirements of the approved Bushfire Management Plan.</p>	

Table 3.2: Calculation inputs applied to deriving the vegetation separation distances corresponding to different levels of potential radiant heat transfer.

DATA APPLIED TO CALCULATE THE SITE SPECIFIC VEGETATION SEPARATION DISTANCES CORRESPONDING TO POTENTIAL RADIANT HEAT TRANSFER LEVELS <sup>1</sup>												
Applied BAL Determination Method		METHOD 1 - SIMPLIFIED PROCEDURE (AS 3959:2018 CLAUSE 2.2)										
The Calculation Input Variables - Corresponding to the Applied BAL Determination Method <sup>2</sup>												
Methods 1 and 2		Method 1			Method 2							
Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor
			Applied Range	Measured								
Area	Class		degree range	degrees	degrees	K	metres	metres	metres	metres	metres	% Reduction
1	Excluded cl 2.2.3.2(e & f)	80	N/A	N/A								
2	(A) Forest	80	Upslope or flat 0	flat 0								
3	(G) Grassland	80	Upslope or flat 0	flat 0								
4	(A) Forest	80	Upslope or flat 0	flat 0								
5	(A) Forest	80	Upslope or flat 0	flat 0								
6	(C) Shrubland	80	Upslope or flat 0	flat 0								

**Note 1:** The values used to indicate levels of potential radiant heat transfer (from fire in bushfire prone vegetation to exposed elements at risk), will be stated in subsequent tables as either as a bushfire attack level (BAL) and/or as kilowatts per square metre (kW/m<sup>2</sup>), as relevant to the application of the value and the type and use of the element at risk.

**Note 2:** All data and information supporting the determination of the classifications and values stated in this table is presented in Appendix A. Where the values are stated as 'default' these are either the values stated in AS 3959:2018, Table B1 or the values calculated as intermediate or final outputs through application of the equations of the AS 3959:2018 BAL determination methodology. They are not values derived by the assessor.

Table 3.3: Vegetation separation distances corresponding to the stated levels of potential radiant heat transfer.

THE CALCULATED (SITE SPECIFIC) VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF POTENTIAL RADIANT HEAT TRANSFER (METRES) <sup>1</sup>									
Vegetation Classification		Maximum Radiant Heat Transfer (Flux)						10 kW/m <sup>2</sup>	2 kW/m <sup>2</sup>
		>40 kW/m <sup>2</sup>	40 kW/m <sup>2</sup>	29 kW/m <sup>2</sup>	19 kW/m <sup>2</sup>	12.5 kW/m <sup>2</sup>	N/A <sup>2</sup>		
		Bushfire Attack Levels							
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW		
1	Excluded cl 2.2.3.2(e & f)	N/A	N/A	N/A	N/A	N/A	N/A		
2	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100		
3	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50		
4	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100		
5	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100		
6	(C) Shrubland	<7	7-<9	9-<13	13-<19	19-<100	>100		

**Note 1:** The calculated results are illustrated in Figure 3.2 as a BAL Contour Map and/ or additional defining lines as necessary. All applied calculation input variables are presented in Table 3.2. A copy of the radiant heat calculator output for each area of classified vegetation is presented in Appendix A3.

**Note 2:** The BAL-LOW rating does not represent a maximum level of radiant heat transfer. The rating is applied when the separation distance is at least 100m from all classified vegetation except Grassland, for which 50m applies.

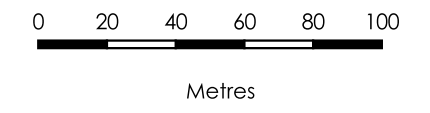
Figure 3.1a

# Classified Vegetation & Topography (Existing)

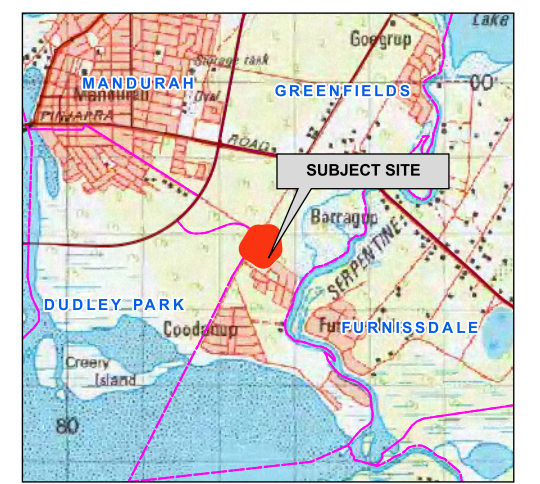
Fraser's Landing - Stages 3 & 4  
 Wanjeep Street  
 Coodanup  
 City of Mandurah

----- LEGEND -----

- Photos
- Elevation (m)
- Hydrants
- Subject Site - Stages 3 & 4
- Proposal**
  - Modified Area
  - Stage 4B Allotments
  - POS
  - WAPC Approved
- Assessment Area**
  - 150m Assessment Area
- Classified Vegetation**
  - Class A - Forest
  - Class C - Shrubland
  - Class G - Grassland
  - Exclusion 2.2.3.2



----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50  
 Projection: Universal Transverse Mercator Units: Metre  
 Map by: 09-04-2024  
 SCALE (A3): 1 : 2200



Figure 3.1b

# Classified Vegetation & Topography (Post Development)

Fraser's Landing - Stages 3 & 4  
 Wanjeep Street  
 Coodanup  
 City of Mandurah

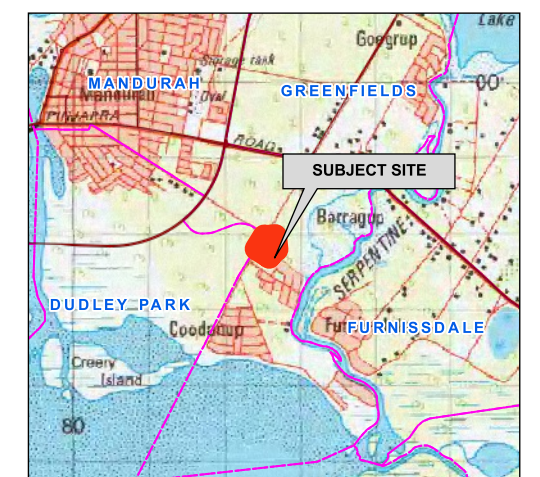
----- LEGEND -----

- Photos
- Elevation (m)
- Hydrants
- Subject Site - Stages 3 & 4
- Proposal**
  - Modified Area
  - Stage 4B Allotments
  - POS
  - WAPC Approved
- Assessment Area**
  - 150m Assessment Area
- Classified Vegetation**
  - Class A - Forest
  - Class C - Shrubland
  - Class G - Grassland
  - Exclusion 2.2.3.2



Metres

----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
 Projection: Universal Transverse Mercator Units: Metre  
 Map by: 09-04-2024  
 SCALE (A3): 1 : 2200

















Figure 3.2

### BAL Contour Map

Frasers Landing - Stages 3 & 4  
Wanjeep Street  
Coodanup  
City of Mandurah

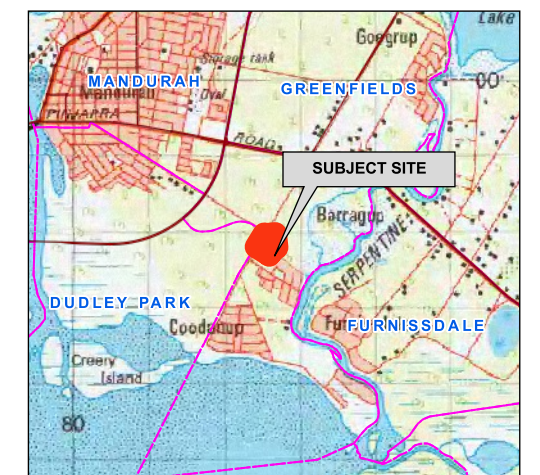
----- LEGEND -----

-  Hydrants
-  Subject Site - Stages 3 & 4
- Proposal**
  -  Modified Area
  -  Stage 4B Allotments
  -  POS
  -  WAPC Approved
- Assessment Area**
  -  100m Assessment Area
  -  150m Assessment Area
- Bushfire Attack Levels**
  -  BAL-FZ
  -  BAL-40
  -  BAL-29
  -  BAL-19
  -  BAL-12.5
  -  BAL-LOW



Metres

----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map by: 09-04-2024  
SCALE (A3): 1 : 2200

## 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	Yes
Element 2: Siting and Design	Yes
Element 3: Vehicular Access	Yes
Element 4: Water	Yes
Element 5: Vulnerable Tourism Land Uses	No

### 5.2 Local Government Variations to Apply

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

Do endorsed regional or local variations to the acceptable solutions apply to the assessments against the Bushfire Protection Criteria for the proposed development /use?

None known or identified

### 5.3 Assessment Statements for Element 1: Location

LOCATION			
<b>Element Intent</b>	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.		
<b>Proposed Development/Use – Relevant Planning Stage</b>	(Sb) Structure plan where the lot layout is known and subdivision application		
<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		
<b>Acceptable Solutions - Assessment Statements</b>			
<p><i>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 Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and 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>.</i></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
<b>E1 Location</b>			<b>Compliant:</b> Yes
<b>A1.1 Development location</b>	<b>Applicable:</b> Yes	<b>Compliant:</b> Yes	
<b>ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES</b>			
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> The subdivision is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL-29 or below.			
<b>Supporting Assessment Details:</b>			
<p>The proposed subdivision will provide an area of land within each lot that can be considered suitable for development as BAL-40 or BAL-FZ construction requirements will not be required to be applied. This meets the requirements established by Acceptable Solution A1.1 and its associated explanatory note.</p>			
<b>ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 &amp; 2 POSITION STATEMENT (2019)</b>			
<p>“Consideration should be given to the site context where ‘area’ is the land both within and adjoining the subject site. The hazards remaining within the site should not be considered in isolation of the hazards adjoining the site, as the potential impact of a bushfire will be dependent on the wider risk context, including how a bushfire could affect the site and the conditions for a bushfire to occur within the site.”</p> <p><b>Strategic Planning Proposals:</b> Consider the threat levels from any vegetation <u>adjoining</u> and <u>within</u> the subject site for which the potential intensity of a bushfire in that vegetation would result in it being classified as an Extreme Bushfire Hazard Level (BHL). Identify any proposed design strategies to reduce these threats.</p> <p><b>Structure Plans (lot layout known) and Subdivision Applications:</b> As for strategic planning proposals but <u>within</u> the subject site the relevant threat levels to consider are the radiant heat levels represented by BAL-FZ and BAL-40 ratings.</p>			

### **The Hazard Within the Subject Site**

Not applicable as there is no classifiable vegetation located within Frasers Landing Stage 4B.

### **The Hazard Adjoining the Subject Site**

Bushfire prone vegetation within the area exists as retained vegetation classified as Class A Forest, Class C Shrubland and Class G Grassland. All areas of classified vegetation are located within 150 metres of Stages 3 and 4 of Frasers Landing. The undeveloped land within the locality supports this vegetation. Managed areas within the developing and established residential area comprises of maintained private gardens, nature strips/road verges, driveways and cleared areas surrounding existing structures.

The adjoining land cannot be considered as rugged (which would present the potential for more extreme and variable fire behaviour).

Bushfire prone vegetation adjoining the existing subject land exists as a combination of Class A Forest, Class C Shrubland and Class G Grassland as mentioned above. The extent of this hazard is shown in Figures 3.1b and 3.2. These areas of vegetation are occurring under one main scenario:

1. Vegetation that has been retained on the existing lots in the area.

The potential bushfire impact on persons and property within the site will be an increase in the level of ember attack in the event of a bushfire.

### **The Potential of the Proposed Development to Reduce Bushfire Risk to the Existing Land Use**

When considered in the broader context of existing land use within the surrounding area, the proposed subdivision can potentially contribute to reducing the level of risk from bushfire to existing landowners.

This can be achieved in various ways and the following assessment points are made for the proposed subdivision:

- Planning for smaller lot sizes can reduce the level of risk from bushfires as a greater percentage of their total area will be comprised of land managed to APZ standards. This results in a reduction in the bushfire hazard over a broader area and establishes discontinuous fuels. This has benefits to all development in the area;
- For the proposed subdivision, future construction of dwellings (that are constructed to bushfire requirements), on two rather than one lot will result in significantly less bushfire prone vegetation within the lots when compared to the situation that exists with the existing lot. This will reduce and slow the potential movement of a bushfire across this land;
- For adjoining landowners the more bushfire resilient dwellings and reduced area of hazard on the proposed lots, will lower their level of risk from bushfire because the threat levels from the bushfire attack mechanisms on the adjoining land will be reduced. These reduced fuels will also be between them and a conservation reserve.

The potential for reduction in bushfire risk to surrounding properties compared to the present situation is considered, there is significant merit in the proposed subdivision that it is appropriate to consider.

## 5.4 Assessment Statements for Element 2: Siting and Design

SITING AND DESIGN OF DEVELOPMENT			
<b>Element Intent</b>	To ensure that the siting and design of development minimises the level of bushfire impact. (BPP Note: not building/construction design)		
<b>Proposed Development/Use – Relevant Planning Stage</b>	(Sb) Structure plan where the lot layout is known and subdivision application		
<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		
<b>Acceptable Solutions - Assessment Statements</b>			
<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 Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and 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>			
<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
<b>E2 Siting and Design of Development</b>			<b>Compliant:</b> Yes
<b>A2.1 Asset Protection Zone (APZ)</b>	<b>Applicable:</b> Yes	<b>Compliant:</b> Yes	Yes
<b>APZ DIMENSIONS – DIFFERENCES IN REQUIREMENTS FOR PLANNING ASSESSMENTS COMPARED TO IMPLEMENTATION</b>			
<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 (refer to Appendix B). 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: 10px auto; width: 80%;"> <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>			
<b>THE 'PLANNING BAL-29' APZ DIMENSIONS</b>			
<p><b>Purpose: To provide evidence of the development or use proposal's ability to achieve minimum vegetation separation distances.</b> 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.</p>			

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.

### ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES

**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 the proposed future (or a future) building/structure location that will result in that building/structure being subject to a BAL-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 January 2024 and Guidelines s5.3.2).

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

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

**APZ Location:** It can be justified that any adjoining (offsite) land forming part of a 'Planning BAL-29' APZ will:

- If non-vegetated, remain in this condition in perpetuity; and/or
- If vegetated, be low threat vegetation maintained in this condition in perpetuity (refer to Appendix B).

**APZ Management:** The area of land (within each lot boundary), that is to make up the required 'Landowner' APZ dimensions (refer to Appendix B, Part B1), can and will be managed in accordance with the requirements of the Guidelines Schedule 1 'Standards for Asset Protection Zones' (refer to Appendix B).

**Staged Subdivision:** The subdivision proposes development in stages and each stage is to comply with the relevant bushfire protection criteria.  
A balance lot is created or classified vegetation within a subsequent stage will be removed and/or modified and/or be subject to ongoing management, to ensure that proposed lots within the current stage of the subdivision achieve a development site subject to 29 kW/m<sup>2</sup> or below.  
The planned approach for achieving the required outcome is described in the supporting assessment details below.

**Firebreak/Hazard Reduction Notice:** Any additional requirements established by the relevant local government's annual notice to install firebreaks and manage fuel loads (issued under s33 of the Bushfires Act 1954), can and will be complied with.

**Supporting Assessment Details:** Asset protection zones can be contained both within and external of the boundaries of the subject land. It can be justified that adjoining land can form part of an APZ, meeting s2.2.3.2 exclusion requirements of AS3959-2018.

The APZ that will likely exist, will consist of a combination the following:

- Roads and unvegetated verges
- Footpaths
- Any applicable landscaping

**APZ Management Within the Subject Land:**

Refer to Figures 3.1b and 3.2 – Although not applicable to Frasers Landing Stage 4B as there is no classifiable vegetation located within, the exclusion requirements of s2.2.3.2 of AS3959 demonstrates that vegetation that is onsite is within the control of the subject site's landowner and therefore can potentially be removed or modified to mitigate the bushfire risk.

**APZ Management Outside the Lot:**

Refer to Figures 3.1b and 3.2 - The exclusion requirements of s2.2.3.2 of AS3959 can be demonstrated by the surrounding, established and developing residential area. Refer also to aerial imagery and photographic evidence contained within this plan in conjunction with the existing Bushfire Management Plan for further substantiation that compliance with this Acceptable Solution can be achieved.

**APZ Management - General:** Where any part of the required APZ dimension is vegetated for the purposes of landscaping, it will be managed in accordance with the technical requirements established by the Schedule 1: 'Standards for Asset Protection Zones (Guidelines)'. The APZ specifications are also detailed in Appendix 1 and the City of Mandurah Fire Compliance Notice.

**ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)**

**Strategic Planning Proposals:** "At this planning level there may not be enough detail to demonstrate compliance with this element. The decision-maker may consider this element is satisfied where A1.1 is met."

**Structure Plans (lot layout known) and Subdivision Applications:** "Provided that Element 1 is satisfied, the decision-maker may consider approving lot(s) containing BAL-40 or BAL-FZ under the following scenarios.

**Scenario A: The lots sizes provide sufficient area to accommodate a building and the establishment of an APZ dimensioned to ensure a maximum BAL rating of BAL-29 will apply to that building.**

## 5.5 Assessment Statements for Element 3: Vehicular Access

VEHICULAR ACCESS	
<b>Element Intent</b>	To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.
<b>Proposed Development/Use – Relevant Planning Stage</b>	(Sb) Structure plan where the lot layout is known and subdivision application
<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
<b>Acceptable Solutions - Assessment Statements</b>	
<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 Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and 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 C and D. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).</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
<b>E3 Vehicular Access</b>	<b>Compliant:</b> Yes
<b>A3.1 Public roads</b>	<b>Applicable:</b> Yes <b>Compliant:</b> Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The technical construction requirements of vertical clearance and weight capacity (Guidelines, Table 6) can and will be complied with (Refer also to Appendix C in this BMP).
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>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 E3.1. Refer also to Appendix C in this BMP).</p> <p>The assessment conducted for the bushfire management plan indicates that it is likely that the proposed development can and will comply with the requirements.</p> <p>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.</p> <p>or</p> <p>The applicable class(s) of road and technical requirements have been confirmed with the relevant local government/Main Roads WA. These can and will be complied with.</p>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	A traversable verge is available adjacent to classified vegetation (Guidelines, E3.1), as recommended.
<b>Supporting Assessment Details:</b> None Required.	

A3.2a Multiple access routes	Applicable:	Yes	Compliant:	Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> For each lot, two-way public road access is provided in two different directions to at least two different suitable destinations with an all-weather surface.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> The two-way access <u>is</u> available at an intersection no greater than 200m from the relevant boundary of each lot, via a no-through road.				
<p>The two-way access is <u>not</u> available at an intersection within 200m from the relevant boundary of each lot. However, the available no-through road satisfies the established exemption for the length limitation in every case. These requirements are:</p> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <ul style="list-style-type: none"> <li>• Demonstration of no alternative access (refer to A3.3 below);</li> <li>• The no-through road travels towards a suitable destination; and</li> <li>• The balance of the no-through road that is greater than 200m from the relevant lot boundary is within a residential built-out area or is potentially subject to radiant heat levels from adjacent bushfire prone vegetation that correspond to the BAL-LOW rating (&lt;12.5 kW/m<sup>2</sup>).</li> </ul>				
<b>Supporting Assessment Details:</b> Refer to Figures 1.1 and 1.2 contained within this plan - The proposed public road network within this subdivision provides access and egress to two different directions to two different locations for all allotments.				
A3.2b Emergency access way	Applicable:	No	Compliant:	N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> The proposed or existing EAW provides a through connection to a public road.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" 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 type="checkbox"/> <input checked="" type="checkbox"/> The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.2b. Refer also to Appendix C in this BMP), can and will be complied with.				
<p>The subdivision proposes development in stages and each stage is to comply with the relevant bushfire protection criteria.</p> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> A temporary EAW is planned to facilitate the staging arrangements of a subdivision as an interim second access route until the required second access route is constructed as a public road in a subsequent stage. The planned approach for achieving the required outcome is described in the supporting assessment details below.				
<b>Supporting Assessment Details:</b> None Required.				
A3.3 Through-roads	Applicable:	No	Compliant:	N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> A no-through public road is necessary as no alternative road layout exists due to site constraints.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> The no-through public road length does not exceed the established maximum of 200m to an intersection providing two-way access (Guidelines, E3.3).				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> The no-through public road exceeds 200m but satisfies the exemption provisions of A3.2a as demonstrated in A3.2a above.				



<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The public road technical construction requirements (Guidelines, Table 6 and E3.1. Refer also to Appendix C in this BMP), can and will be complied with as established in A3.1 above.
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	The turnaround area requirements (Guidelines, Figure 24) can and will be complied with.
<b>Supporting Assessment Details:</b> None Required.	
<b>A3.4a Perimeter roads</b>	<b>Applicable:</b> Yes <b>Compliant:</b> Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The proposed greenfield or infill development consists of 10 or more lots (including those that are part of a staged subdivision) and therefore should have a perimeter road. This is planned to be installed.
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>The proposed greenfield or infill development consists of 10 or more lots (including those that are part of a staged subdivision). However, it is not required on the established basis of:</p> <ul style="list-style-type: none"> <li>The vegetation adjoining the proposed lots is classified Class G Grassland;</li> <li>Lots are zoned rural living or equivalent;</li> <li>It is demonstrated that it cannot be provided due to site constraints; or</li> <li>All lots have existing frontage to a public road.</li> </ul>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The technical construction requirements of widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.4a) can and will be complied with.
<b>Supporting Assessment Details:</b> Refer to Figures 1.1 and 1.2 contained within this plan. Compliance with this Acceptable Solution can be achieved via the existing and proposed Public Road Network. The construction technical requirements established by the Guidelines and/or the local government can and will need to be complied with.	
<b>A3.4b Fire service access route</b>	<b>Applicable:</b> No <b>Compliant:</b> N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	The FSAR can be installed as a through-route with no dead ends, linked to the internal road system every 500m and is no further than 500m from a public road.
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	The technical construction requirements of widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.4b. Refer also to Appendix C in this BMP), can and will be complied with.
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	The FSAR can and will be signposted. Where gates are required by the relevant local government, the specifications can be complied with.
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	Turnaround areas (to accommodate type 3.4 fire appliances) can and will be installed every 500m on the FSAR.
<b>Supporting Assessment Details:</b> None Required.	
<b>A3.5 Battle-axe access legs</b>	<b>Applicable:</b> No <b>Compliant:</b> N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	A battle-axe leg cannot be avoided due to site constraints.
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	The proposed development is in a reticulated area and the battle-axe access leg length from a public road is no greater than 50m. No technical requirements need to be met.

<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>The proposed development is not in a reticulated area. The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.5. Refer also to Appendix C in this BMP), can and will be complied with.</p>				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.</p>				
<p><b>Supporting Assessment Details:</b> None Required.</p>					
<p><b>A3.6 Private driveways</b></p>	<table border="1"> <tr> <td style="background-color: #cccccc;"><b>Applicable:</b></td> <td style="background-color: #90ee90;">Yes</td> <td style="background-color: #cccccc;"><b>Compliant:</b></td> <td style="background-color: #90ee90;">Yes</td> </tr> </table>	<b>Applicable:</b>	Yes	<b>Compliant:</b>	Yes
<b>Applicable:</b>	Yes	<b>Compliant:</b>	Yes		
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>The private driveway to the most distant external part of the development site is within a lot serviced by reticulated water, is accessed via a public road with a speed limit of 70 km/hr or less and has a length is no greater than 70m (measured as a hose lay). No technical requirements need to be met.</p>				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.6. Refer also to Appendix C in this BMP), can and will be complied with.</p>				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.</p>				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>The turnaround area requirements (Guidelines, Figure 28, and within 30m of the habitable building) can and will be complied with.</p>				
<p><b>Supporting Assessment Details:</b> None Required.</p>					

## 5.6 Assessment Statements for Element 4: Water

WATER	
<b>Element Intent</b>	To ensure water is available to enable people, property and infrastructure to be defended from bushfire.
<b>Proposed Development/Use – Relevant Planning Stage</b>	(Sb) Structure plan where the lot layout is known and subdivision application
<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
<b>Acceptable Solutions - Assessment Statements</b>	
<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 Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and 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 C and D. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).</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
<b>E4 Water</b>	<b>Compliant:</b> Yes
<b>A4.1 Identification of future firefighting water supply</b>	<b>Applicable:</b> No <b>Compliant:</b> N/A
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> It can be demonstrated that reticulated or sufficient non-reticulated water for firefighting can be provided at the subdivision and/or development application stage in accordance with the specifications of the relevant water supply authority or the requirements of Schedule 2.	
<b>Supporting Assessment Details:</b> None Required.	
<b>A4.2 Provision of water for firefighting purposes</b>	<b>Applicable:</b> Yes <b>Compliant:</b> Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> A reticulated water supply is available to the proposed development. The existing hydrant connection(s) are provided in accordance with the specifications of the relevant water supply authority.	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> A reticulated water supply will be available to the proposed development. Hydrant connection(s) can and will be provided in accordance with the specifications of the relevant water supply authority.	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> A static water supply (tank) for firefighting purposes will be installed on each lot that is additional to any water supply that is required for drinking and other domestic purposes.	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> A strategic water supply (tank or tanks) for firefighting purposes will be installed within or adjacent to the proposed development that is additional to any water supply that is required for drinking and other domestic purposes. The required land will be ceded free of cost to the local government and the lot or road reserve where the tank is to be located will be identified on the plan of subdivision.	

The strategic static water supply (tank or tanks) will be located no more than 10 minutes travel time from a subject site (at legal road speeds).

The technical requirements (location, number of tanks, volumes, design, construction materials, pipes and fittings), as established by the Guidelines (A4.2, E4 and Schedule 2) and/or the relevant local government, can and will be complied with.

**Supporting Assessment Details:** Refer to Figure 1.2 contained within this plan. A reticulated water supply is located immediately adjacent to the Subject Site. Hydrants are located at regular intervals along the surrounding roads/streets.

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

## 6 RESPONSIBILITY CHECKLISTS FOR THE IMPLEMENTATION AND MANAGEMENT OF BUSHFIRE PROTECTION MEASURES

The following sections and their associated tables establish:

- The bushfire protection measures that shall be initially implemented and those requiring ongoing maintenance to the stated requirements;
- The persons responsible for the implementation and maintenance of the required bushfire protection measures; and
- The persons responsible and the timing for compliance certification when required.

The necessity for the BMP to contain this information is established by the *Guidelines for Planning in Bushfire Prone Areas* (Version 1.4, WAPC 2021) in Appendices 3 and 5.

### 6.1 Developer Responsibilities Prior to Issue of Certificates of Title for New Lots

<b>TABLE 6.1(A)</b> <b>REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS</b> <b>(SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)</b>	
1	<p>For the entire area of each new lot, ensure any retained vegetation can be regarded as 'low threat' when considering the relevant parameters of extent, connectivity, flammability, moisture or fuel load as per AS 3959:2018 s2.2.3.2.</p> <p>The requirements established by the following will also apply:</p> <ul style="list-style-type: none"> <li>• The standards established for an Asset Protection Zone (APZ) by the <i>Guidelines for planning in bushfire prone areas</i>, DPLH, 2021 v1.4, Schedule 1; or</li> <li>• The standards established for an Asset Protection Zone (APZ) by the relevant local government's requirements set out in a section 33 notice under the Bush Fires Act 1954 (annual firebreak/fuel load notice); or</li> <li>• An alternative standard in a gazetted local planning scheme.</li> </ul> <p>If native vegetation is required to be modified or removed, ensure that approval has been received from the relevant authority (refer to the applicable local government for advice).</p>
2	<p>Clearing and/vegetation modification to be undertaken in accordance with requirements established by the BMP Addendum and those of the existing Bushfire Management Plan - <i>Bushfire Management Plan, Subdivision Stages 3 and 4 Frasers Landing – Lot 9006 Wanjeep Street, Coodanup – (Prepared by Bushfire Safety Consulting – Dated 12 December 2019) – Specifically Figure 6 – Spatial Representation of Bushfire Management Strategies.</i></p> <p>If native vegetation is required to be modified or removed, ensure that approval has been received from the relevant authority (refer to the applicable local government for advice).</p>
3	<p>Construct the public roads (including no through roads and perimeter roads as relevant), to comply with the technical requirements referenced in the BMP.</p>

TABLE 6.1(B)

 REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS  
 (SUBJECT TO COMPLIANCE BEING ESTABLISHED BY THE WAPC AND/OR LOCAL GOVERNMENT)

1	<p>[Relevant when stated as a condition of planning approval]</p> <p>A subdivision condition may be imposed that establishes a requirement for information to be provided that demonstrates the required bushfire protection measures contained in Section 6.1 of this bushfire management plan have been implemented during subdivisional works.</p> <p>The relevant measures are those that can be checked for compliance by a bushfire consultant. The compliance certification is to be provided as a certificate or report.</p>
2	<p>[Relevant when stated as a condition of planning approval]</p> <p>A notification, pursuant to Section 165 of the <i>Planning and Development Act 2005</i>, is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor.</p> <p>Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows:</p> <p><i>"This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is/may be subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land."</i> (Western Australian Planning Commission).</p>

## 6.2 Developer / Landowner Prior To Sale or Occupancy

<b>TABLE 6.2(A)</b> <b>REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS</b> <b>(SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)</b>	
1	<p>Prior to occupancy/operation establish and maintain the 'Required' Asset Protection Zone (APZ) along Wanjeep Street road reserve as identified in Figure 6 – Spatial Representation of Bushfire Management Strategies of the existing BMP, and 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 <i>Guidelines for planning in bushfire prone areas</i>, DPLH, 2021 v1.4, Schedule 1; or</li> <li>• The standards established for an Asset Protection Zone (APZ) by the relevant local government's requirements set out in a section 33 notice under the Bush Fires Act 1954 (annual firebreak/fuel load notice); or</li> <li>• An alternative standard in a gazetted local planning scheme.</li> </ul> <p>If native vegetation is required to be modified or removed, ensure that approval has been received from the relevant authority (refer to the applicable local government for advice).</p>

<b>TABLE 6.2(B)</b> <b>REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS</b> <b>(SUBJECT TO COMPLIANCE BEING ESTABLISHED BY THE WAPC AND/OR LOCAL GOVERNMENT)</b>	
2	<p>Prior to sale of a new lot(s), each lot is to be compliant with current version of the City of Mandurah Fire Compliance Notice issued under s33 of the Bushfires Act 1954.</p> <p>Where the Notice includes a standard for asset protection zones, this may differ from the standards established for an Asset Protection Zone (APZ) by the Guidelines DPLH, 2021 v1.4, Schedule 1 (refer to Appendix B), with the intent to better satisfy local conditions.</p> <p>An alternative standard in a gazetted local planning scheme may also apply to the subject lot(s).</p>

**TABLE 6.2(C)**
**REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS**
**(NOT SUBJECT TO COMPLIANCE CHECK)**

1	<p>Prior to relevant building work, inform the builder of the existence of this approved Bushfire Management Plan (BMP). The plan identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when ratings are indicative. BAL certificates will need to be issued to accompany building applications.</p> <p>The BMP may also establish, as an additional bushfire protection measure, that construction requirements to be applied will be those corresponding to a specified higher BAL rating.</p> <p>Compliance with the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks). Other classes of buildings may also be required to comply with 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>
2	<p>Each property owner on sale of the allotment is provided with a copy of the BMP and informed of their responsibilities. A copy of the approved BMP should be attached to all contracts of sale for the lot.</p>



## 6.3 Landowner Responsibilities – Ongoing Management

<b>TABLE 6.3</b> <b>REQUIRED BUSHFIRE PROTECTION MEASURES – ONGOING MANAGEMENT ACTIONS</b>	
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 <i>Guidelines for planning in bushfire prone areas</i>, DPLH, 2021 v1.4, Schedule 1; or</li> <li>• The standards established for an Asset Protection Zone (APZ) by the relevant local government's requirements set out in a section 33 notice under the Bush Fires Act 1954 (annual firebreak/fuel load notice); or</li> <li>• An alternative standard in a gazetted local planning scheme.</li> </ul>
2	<p>Comply with the City of Mandurah Fire Compliance Notice issued under s33 of the Bush Fires Act 1954. Check the notice annually for any changes.</p>
3	<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>
4	<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 2011); and</li> <li>• Any additional bushfire protection measures this Bushfire Management Plan has established are to be implemented.</li> </ul>
5	<p>Ensure the ongoing implementation of the BMP, including providing successive landowners with a copy of the BMP and making them aware of the responsibilities it contains.</p>

## 6.4 Local Government Responsibilities – Ongoing Management

TABLE 6.4 REQUIRED BUSHFIRE PROTECTION MEASURES – ONGOING MANAGEMENT ACTIONS	
1	<p>To be aware of the potential consequences of any significant changes in the local government's management of land, of which they have vested control (including re-vegetation), that could have an adverse impact on the determined BAL ratings that apply to adjacent existing or future buildings and where:</p> <ul style="list-style-type: none"> <li>• The determined BAL ratings have been established by an existing BMP or a BAL Assessment; and</li> <li>• The BAL has been correctly determined with appropriate consideration of what might reasonably be expected to potentially change in the future with regards to the classification of the vegetation being altered and/or management of the relevant area of vegetation.</li> </ul>
2	<p>To manage the vegetation within the adjoining Wanjeep Street road reserve in accordance with the requirements of Figure 6 – Spatial Representation of Bushfire Management Strategies of the existing BMP, and around habitable buildings of the existing BMP.</p> <p>This ensures the relevant vegetation is low threat vegetation and maintained in that condition in perpetuity.</p>

## 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:	N/A
					Applied GFDI:	N/A

#### A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION

##### Vegetation Types and Classification

In accordance with AS 3959:2018 Clauses 2.2.3 and C2.2.3.1, all vegetation types within 100 metres of the 'site' (defined as "the part of the allotment of land on which a building stands or is to be erected"), are identified and classified. Any vegetation more than 100 metres from the site that has influenced the classification of vegetation within 100 metres of the site, is identified and noted. The maximum excess distance is established by AS 3959: 2018 Clause 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 (refer to Appendix B) and that any required active management can be expected to continue in perpetuity, and this can be adequately justified.

##### 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:	None
Assessment Statement:	No vegetation types exist close enough, or to a sufficient extent, within the relevant area to influence classification of vegetation within 100 metres of the subject site.

VEGETATION AREA 1							
Classification	N/A						
Types Identified	N/A						
Exclusion Clause	2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - minimal fuel condition.						
Effective Slope	Measured	N/A		Applied Range (Method 1)	N/A		
Foliage Cover (all layers)	N/A		Shrub/Heath Height	N/A		Tree Height	N/A
Description/Justification:	<p>A combination of established and developing residential areas. Managed private gardens, Public Open Space Areas, street frontages and median strips/road verges. Grasses slashed and maintained to less than 50mm. Mulch used to suppress weed growth. Footpaths/hardstand areas cleared of unmanaged vegetation.</p> <p>Note – Some sparse grasses located within Stage 4B. This will not support a running fire.</p>						
Post Development Assumptions:	Not Applicable.						
							
PHOTO ID: 1			PHOTO ID: 2				
							
PHOTO ID: 3			PHOTO ID: 4				




VEGETATION AREA 1							
Classification	N/A						
Types Identified	N/A						
Exclusion Clause	2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - minimal fuel condition.						
Effective Slope	Measured	N/A		Applied Range (Method 1)	N/A		
Foliage Cover (all layers)	N/A		Shrub/Heath Height	N/A		Tree Height	N/A
Description/Justification:	As Above.						
Post Development Assumptions:	As Above.						
 <p>-32°32'53", 115°45'3", -18.0m 2 Apr 2024 10:26:36 am</p>			 <p>-32°32'51", 115°45'6", -18.9m 2 Apr 2024 9:30:57 am</p>				
PHOTO ID: 5			PHOTO ID: 6				
 <p>-32°32'51", 115°45'7", -19.7m 2 Apr 2024 8:26:15 am</p>			 <p>-32°32'54", 115°45'6", -20.1m 2 Apr 2024 9:26:35 am</p>				
PHOTO ID: 7			PHOTO ID: 8				
 <p>-32°33'0", 115°45'10", -20.2m 2 Apr 2024 10:35:33 am</p>			 <p>-32°32'58", 115°45'3", -19.8m 2 Apr 2024 11:03:55 am</p>				
PHOTO ID: 9			PHOTO ID: 10				

VEGETATION AREA 1							
Classification	N/A						
Types Identified	N/A						
Exclusion Clause	2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - minimal fuel condition.						
Effective Slope	Measured	N/A		Applied Range (Method 1)	N/A		
Foliage Cover (all layers)	N/A		Shrub/Heath Height	N/A		Tree Height	N/A
Description/Justification:	As Above.						
Post Development Assumptions:	As Above.						
							
PHOTO ID: 11				PHOTO ID: 12			
							
PHOTO ID: 13				PHOTO ID: 14			
							
PHOTO ID: 15							



VEGETATION AREA 2						
Classification	<b>A. FOREST</b>					
Types Identified	Open forest A-03		Woodland B-05			
Exclusion Clause	N/A					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)		Upslope or flat 0 degrees	
Foliage Cover (all layers)	30-70%	Shrub/Heath Height	>2m	Tree Height	Up to 30m	
Description/Justification:	POS Area to the west of the Subject Site, Along Wanjeep Street - Mixed composition inclusive of Banksia and Eucalypts. Understorey consists of unmanaged grasses, low shrub and low trees in some sections. Other sections have minimal understorey. Occasional open areas between canopies.					
Post Development Assumptions:	Refer to the Existing Bushfire Management Plan. It is assumed for the purposes of assessment that the POS Areas located to the west, along Wanjeep Street can be modified and subsequently maintained to s2.2.3.2 exclusion requirements of AS3959-2018. In addition – it is further assumed for the purposes of assessment that the on-going management within these areas has been agreed upon and subsequently endorsed by relevant Decision Makers and associated Stakeholders.					
						
PHOTO ID: 16			PHOTO ID: 17			
						
PHOTO ID: 18						



VEGETATION AREA 3				
Classification	<b>G. GRASSLAND</b>			
Types Identified	Sown pasture G-26			
Exclusion Clause	N/A			
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. While some sections currently appear to be in a managed state, other sections however do appear unmanaged. As the area is located outside of the Subject Site, it is not within the control of the Landowner. As such, the area has been classified in accordance with AS3959-2018 as a precautionary measure. Foliage cover less than 10%.			
Post Development Assumptions:	Not Applicable.			
				
PHOTO ID: 19		PHOTO ID: 20		



VEGETATION AREA 4							
Classification	<b>A. FOREST</b>						
Types Identified	Open forest A-03			Woodland B-05			
Exclusion Clause	N/A						
Effective Slope	Measured	flat 0 degrees		Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	30-70%		Shrub/Heath Height	>2m		Tree Height	Up to 30m
Description/Justification:	<p>Central POS Area – It is recognised that sections within this area receive management to achieve s2.2.3.2 exclusion requirements of AS3959-2018. As there are sections that are clearly unmanaged (recognised as remnant vegetation) and it is located within 100 metres of other areas of vegetation being classified, the entire area has been classified as a precautionary measure with a worst-case scenario approach.</p> <p>Mixed composition inclusive of Banksia and Eucalypts. Understorey consists of unmanaged grasses, low shrub and low trees in some sections. Other sections have minimal understorey. Occasional open areas between canopies.</p>						
Post Development Assumptions:	<p>Refer to the Existing Bushfire Management Plan. It is assumed for the purposes of assessment that the POS Areas located to the west, along Wanjeep Street can be modified and subsequently maintained to s2.2.3.2 exclusion requirements of AS3959-2018. In addition – it is further assumed for the purposes of assessment that the on-going management within these areas has been agreed upon and subsequently endorsed by relevant Decision Makers and associated Stakeholders.</p> <p>Resulting from the on-going management of the POS Area along Wanjeep Street, there will no longer be any classifiable vegetation located within 100 metres of the Central POS. As such, it will become excludable under clause 2.2.3.2 (b) of AS3959-2018.</p>						
							
PHOTO ID: 21			PHOTO ID: 22				
							
PHOTO ID: 23							

VEGETATION AREA 5								
Classification	<b>A. FOREST</b>							
Types Identified	Open forest A-03			Woodland B-05				
Exclusion Clause	N/A							
Effective Slope	Measured	flat 0 degrees		Applied Range (Method 1)		Upslope or flat 0 degrees		
Foliage Cover (all layers)	30-70%		Shrub/Heath Height		>2m		Tree Height Up to 30m	
Description/Justification:	Mixed composition inclusive of Banksia and Eucalypts. Understorey consists of unmanaged grasses, low shrub and low trees in some sections. Occasional open areas between canopies.							
Post Development Assumptions:	Not Applicable.							
								
PHOTO ID: 24				PHOTO ID: 25				
								
PHOTO ID: 26				PHOTO ID: 27				

VEGETATION AREA 5								
Classification	<b>A. FOREST</b>							
Types Identified	Open forest A-03			Woodland B-05				
Exclusion Clause	N/A							
Effective Slope	Measured	flat 0 degrees		Applied Range (Method 1)		Upslope or flat 0 degrees		
Foliage Cover (all layers)	30-70%		Shrub/Heath Height		>2m		Tree Height	Up to 30m
Description/Justification:	As Above.							
Post Development Assumptions:	As Above.							
								
PHOTO ID: 28				PHOTO ID: 29				

VEGETATION AREA 6							
Classification	<b>C. SHRUBLAND</b>						
Types Identified	Closed (low) heath C-10						
Exclusion Clause	N/A						
Effective Slope	Measured	flat 0 degrees		Applied Range (Method 1)		Upslope or flat 0 degrees	
Description/Justification:	Unmanaged low shrub averaging less than two (2) metres in height. Mixed species composition. Unmanaged grasses present also. Note – Area 5 can be seen in the background of Photo ID's 30 and 31.						
Post Development Assumptions:	Not Applicable.						
							
PHOTO ID: 30				PHOTO ID: 31			

## A1.3: EFFECTIVE SLOPE

### EXPLAINING THE ASSESSMENT METHODOLOGY APPLIED BY BUSHFIRE PRONE PLANNING

**DEFINITION:** Effective slope is “the slope under that classified vegetation which most influences the bushfire attack” (AS 3959:2018, Clause 1.5.11).

“The effective slope under the classified vegetation is not the same as the average slope for the land surrounding the site of the proposed building. The effective slope is that slope which most significantly influences bushfire behaviour” (AS 3959:2018, Clause CB4).

The slope is described as upslope, flat or downslope when viewed from an exposed element (e.g., building) and looking towards the vegetation. It is measured in degrees.

[Note: Additional relevant guidance provided by AS 3959:2018 and NSW RFS, Planning for Bushfire Protection (2019) is incorporated into the applied assessment methodology and is presented at the end of this explanation.]

### COMPOUND SLOPES UNDER VEGETATION AND DETERMINING SLOPE SIGNIFICANCE

**Non-Linear Slopes:** When the slope of ground under the vegetation out to the distance to be assessed (100 m or further if necessary), is not a straight line or nearly straight line slope, then it is made up of several different slopes i.e., it is a compound slope. The different slope angles and lengths must be factored into the determination of the effective slope value to be applied. Different slopes will potentially influence the bushfire rate of spread and intensity, both increasing and decreasing it.

**Significant Slope:** The AS 3959:2018 bushfire attack level determination methodology, with default inputs, models a fully developed bushfire. Therefore, a 'significant' slope is one that will significantly influence bushfire behaviour. To be 'significant' the length of the slope must be 'sufficient' to support a fully developed fire on that slope. The angle of a significant slope could be the determined effective slope for the area of classified vegetation if it is the one that 'most influences the bushfire attack'.

**Sufficient Slope Length:** Is a slope that will, as a minimum, allow the entire flame depth (flaming zone) of a fully developed fire (100m flame width) to exist on that slope.

The expected flame depth of a fully developed bushfire is a function of the length of time the flaming phase will exist on a section of the fuel bed (the 'residence time') and the bushfire's 'rate of spread'. For a given rate of spread, longer residence times result in greater flame depths. Greater flame depths are correlated with greater flame temperatures and greater flows of radiant heat.

The primary factors that will increase the residence time are:

- Heavier fine fuel loads of grass, leaf litter, twigs, bark etc less than 6mm in width and existing within the surface and near surface layers (and elevated fuel layers when contiguous with the base layers); and
- A greater percentage of larger fine fuels within the fuel load.

The primary factors that increase the rate of spread (apart from fire weather factors), include finer fuels, drier fuels, horizontal continuity of fuel and steeper upward ground slope in the direction of fire travel.

Example values:

- Residence Time: Grassfire 5 – 15 seconds, Forest fire 25 -50 seconds.
- Rate of Spread: Grassfires of a few km/hr are considered fast moving, 5-10 km/hr is common and fastest in the order of 25km/hr. Forest fire typically recorded in metres/hour with 1-1.5 km/hr being considered fast moving and fastest in the order of 3–4 km/hr.
- Flame Depth: More typically, a few metres for grasses to tens of metres for forest fires.

**An Isolated Slope:** For scenarios where there is a single significant slope (based on the above criteria) additional consideration would need to be given to the time and distance consumed by a bushfire still in its 'developing' phase. This will require due consideration be given to how it is potentially ignited i.e., from a single or multiple points, as this will influence the time and distance required to fully develop. For such scenarios, a normally significant slope may not be sufficiently long. It may be necessary to determine the potential bushfire impact more accurately by

justifying the application of a lesser effective slope, or a lower threat vegetation classification, or calculating a reduced head fire width (using short fire run modelling).

**Determined Effective Slope:** Only a 'significant' slope can potentially be the effective slope by itself. In which case, for a defined area of classified vegetation area, the worst significant slope under that vegetation is to apply.

The table below presents Bushfire Prone Planning's considerations applied to assessing short and/or compound slopes in determining the effective slope.

Slope Length (m)	Considered a Significant Slope	Considerations in Determining the Effective Slope
< 5	No	Where these short slopes exist as part of a compound slope under an area of classified vegetation, they can be ignored as they will not influence the fire behaviour in that vegetation.
5-20	No	These slopes will have a range of influence on fire behaviour from very little to a degree of influence that must be accounted for to some extent by the determined effective slope that is applied (i.e., with a greater length apply to a greater extent). But the actual slope of these shorter slopes is likely not to be applied as it is not a 'significant' length.
20-30	Maybe	<p>The same considerations applied to the 5-20m slope lengths should be applied here. However, more justification would need to be presented to support their assessment as not being 'significant' slopes.</p> <p>For these slope lengths, consideration must be given more broadly to the potential level of risks associated with a bushfire event in this location. The risk level will be a function of the bushfire hazard threat levels (direct attack mechanisms) within the immediate and broader assessment area as influenced by local topography, vegetation extents and types and the exposure and vulnerability of persons and/or buildings/structures to these threats. Higher risk levels require greater precaution meaning these slopes should be considered 'significant', and vice versa.</p> <p>Consider the potential for a bushfire on adjoining or nearby land be a source of ignition and/or pre-heating to vegetation on the subject slope.</p> <p>Consider if vegetation on the slope is likely be ignited by a single ignition point or is multipoint ignition possible from bushfire an adjoining slopes or the surrounding area. Single point ignition will require a fire to travel further before being fully developed (DFES considers less than 100m fire runs may be considered a short fire run for forest, woodland and scrub vegetation classifications, RFS NSW applies 150m).</p> <p>Isolated slopes of this length are less likely to be considered significant as compared to when part of a compound slope.</p>
>30	Yes	Likely to always be a significant slope unless isolated (i.e., exists alone) – in which case, justifying the application of a lesser effective slope, or a lower threat vegetation classification, or calculating a reduced head fire width, are approaches that may need to be applied.

#### **BPP Approach - Slope Variation Within Areas of Vegetation**

When multiple 'significant' slope lengths with large differences in degrees of effective slope (or different applicable slope ranges when AS 3959:2018 Method 1 is applied), exists under a single vegetation classification, these will be delineated as separate vegetation areas of classified vegetation to account for the difference in potential bushfire behaviour and impact, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

#### **Effective Slope Variation Due to Multiple Development Sites**

When the effective slope, under a single 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).

#### **AS 3959:2018 EFFECTIVE SLOPE DETERMINATION - GUIDANCE**

The Standard presents a broad set of guidance statements that indicate the intent of deriving an effective slope value for use in calculations, rather than detailing the 'in the field' determination process. These include:

- Highlighting the importance of the value by stating "The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the severity of the fire and the ultimate level of radiant heat flux" (Clause C2.2.5). [Note: A common rule of thumb is that for every 10 degrees of upslope, a fire will double its rate of spread if moving in the direction of the prevailing wind].
- It may be necessary to consider the slope under the classified vegetation for distances greater than 100 m in order to determine the effective slope for that vegetation classification.
- "Where there is more than one slope within the classified vegetation, each slope shall be individually assessed, and the worst case Bushfire Attack Level shall apply" (Clause 2.2.5).

#### **NSW RFS 2019, PLANNING FOR BUSHFIRE PROTECTION - APPENDIX A1.5 - ADDITIONAL DETERMINATION GUIDANCE**

- "In identifying the effective slope - it may be found that there are a variety of slopes covering different distances within the vegetation. The effective slope is considered to be the slope under the vegetation which will most significantly influence the bushfire behaviour for each aspect. This is usually the steepest slope. In situations where this is not the case, the proposed approach must be justified".
- "Vegetation located closest to an asset may not necessarily be located on the effective slope".

#### **SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION**

The effective slopes determined from the site assessment are recorded in Table 3.2 of this Bushfire Management Plan.

## 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 3.1 and illustrated as a BAL contour map in Figure 3.2.

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

### THE ASSET PROTECTION ZONE (APZ) – EXPLANATORY INFORMATION

The APZ is an area surrounding a building/structure in which fire fuels are intensively managed (reducing sources and quantities) to provide localised protection. Any retained or planted vegetation must be able to be considered low threat (due to a range of characteristics) or as being continuously maintained in a minimal fuel condition. The primary objectives of establishing an APZ are:

1. Ensure a reduction in the exposure of the building/structure to bushfire direct attack mechanisms (threats) of flame contact, radiant heat transfer and ember attack, by establishing appropriate separation from the bushfire prone vegetation. The required APZ dimensions will be dependent on site specific conditions and the use of the site;
2. Ensure a reduction in the exposure of the building/structure to bushfire indirect attack mechanisms (threats) by:
  - Preventing surface fire spreading to the building/structure;
  - Minimising the potential for tree strike; and
  - Limiting the potential for consequential fire to impact the building/structure by eliminating, reducing and/or shielding consequential fire fuels. These fuels include accumulated debris, stored combustible/flammable items and constructed combustible items. Consequential fire, typically ignited by embers, is the primary cause of building loss in a bushfire event; and
3. To provide a defensible space for firefighting activities.

The *Guidelines for planning in bushfire prone areas* (WAPC 2021 v1.4) Appendix 4, Element 2 Explanatory Notes and Schedule 1: Standards for APZ, provide an example of how the objectives might be met.

### B1: The Asset Protection Zone (APZ) - Dimension and Location Requirements

#### PLANNING APPLICATION REQUIREMENTS VERSUS LANDOWNER IMPLEMENTATION REQUIREMENTS

**ONE IDENTIFIES THE ABILITY OF DEVELOPMENT TO ACHIEVE A MAXIMUM LEVEL OF EXPOSURE TO CERTAIN BUSHFIRE THREATS AND THE OTHER ESTABLISHES WHAT IS TO BE PHYSICALLY IMPLEMENTED SURROUNDING BUILDINGS/STRUCTURES**

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

For planning approval purposes, an assessment against the Bushfire Protection Criteria in the *Guidelines for planning in bushfire prone areas* (WAPC 2021, v1.4), is conducted. Element 2 of the criteria (Siting and Design) establishes the acceptable solution (A2.1: APZ) requiring proposed development to depict on submitted plans that every habitable building can be surrounded by an APZ that can be reasonably expected to comply with the maintenance requirements (APZ standards) in perpetuity, and meets the following dimension and location requirements:

**Dimensions:** The minimum dimensions of the 'Planning BAL-29 APZ' are those that will ensure the potential radiant heat impact on the relevant buildings does not exceed 29 kW/m<sup>2</sup>. These dimensions will vary dependent on the site specific conditions.

**Location:** The 'Planning BAL-29 APZ' dimensions must not extend past lot boundaries onto land the landowner has no responsibility for or control over. Limited exceptions include:

- When adjoining land is not vegetated (e.g., built out, roads, car parks, drainage systems, rock, water body etc.);
- When adjoining land does or will contain low threat vegetation (refer to Appendix B) and it can be justified that enforceable mechanisms are in place to ensure the APZ status of this land will exist in perpetuity. Such areas of land include:



- o Publicly managed areas of vegetation (e.g., public open space, recreation grounds/areas and services installed in a common section of land). For certain situations, evidence of an entity's enforceable requirement to manage these areas to the required standard would be included in either the BAL Assessment Report or Bushfire Management Plan;
- o Land on a neighbouring lot that is/will be part of the required APZ surrounding buildings/structures on that lot, and/or required firebreak, and for which the owner of that lot has a recognised responsibility to implement and maintain.
- o Adjoining land for which a formalised and enforceable authority and responsibility is created for the owner of the lot on which development is proposed, or another third party, to manage vegetation in perpetuity, on land they do not own. This is not common, and the necessary evidence of the responsibility would be included in the BAL Assessment Report or Bushfire Management Plan.

If the proposed development can potentially satisfy these dimension and location requirements, then planning approval can be considered for this requirement, and then be subject to all other planning requirements being met.

#### KEY POINT

*The 'Planning BAL-29 APZ' dimensions are not necessarily those that must be physically implemented and maintained by a landowner. Implementation requirements may be different (see 'Determined BAL Rating APZ' below).*

*The purpose of identifying the ability of proposed development to apply the 'Planning BAL-29 APZ' dimensions is solely to inform decision makers as to the ability of the proposed building works to limit exposure to certain bushfire threats (flame contact, radiant heat transfer and ember attack), to the extent represented by a BAL-29 rating.*

*Note for certain vulnerable land uses, evidence of the ability to implement a larger APZ may be required to inform planning decisions. These include dimensions corresponding to radiant heat impact levels of 10 kW/m<sup>2</sup> and/or 2 kW/m<sup>2</sup> and calculated using a flame temperature of 1200 K – rather than 29kW/m<sup>2</sup> at 1090 K.*

#### THE 'DETERMINED BAL RATING APZ'

The dimensions associated with the 'Determined BAL Rating APZ' are derived for the specific site conditions and are to be physically implemented and maintained by the landowner. The rating also establishes the bushfire construction requirements for any new building works which results in the built resilience to bushfire threats corresponding to their distance from the bushfire hazard. Variations of these dimensions will only exist as the result of either:

- A requirement presented within an associated Bushfire Management Plan to increase the size of the APZ as part of an alternative solution, and which is subsequently approved by the decision maker; or
- A directive of the relevant Local Government through their annual Firebreak/Hazard Reduction Notice (see below) that results in a larger dimension.

The applicable 'determined' BAL rating is stated in the BAL Assessment Data section of the BAL Assessment Report or Bushfire Management Plan.

If an 'indicative' or 'conditional' rather than a 'determined' BAL rating is stated, the corresponding separation distances (dimensions) are just informative. Confirmation that the stated BAL rating (or a different rating) will apply, is still subject to either certain physical requirements being met or approval from relevant authorities for native vegetation removal is obtained (refer to explanatory information in Section 3).

**Dimensions:** The minimum dimensions of the 'BAL Rating APZ' will be those associated with the 'determined' BAL rating for the relevant buildings/structures and stated in the following Table B1.

*Note for certain vulnerable land uses and relevant buildings/areas, 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 a flame temperature of 1200K – rather than 29kW/m<sup>2</sup> at 1090 K.*

**Location:** As for the 'Planning BAL-29 APZ'.

### THE 'LOCAL GOVERNMENT APZ'

Certain Local Government's state the dimensions of the APZ that must be established surrounding buildings in their annual Firebreak/Hazard Reduction Notice. For certain vegetation/sites, based on environmental considerations, they may also establish a maximum allowable dimension, typically that corresponding to a BAL-29 rating.

### THE 'REQUIRED APZ'

The dimensions associated with the 'Required APZ' are to be established and maintained by the landowner within the subject lot and surrounding the subject buildings/structures. The 'Required APZ' will be appropriately depicted in Reports and Plans on the Property Bushfire Management Statement when it is required to be included.

**Dimensions:** The 'Required APZ' dimensions are the minimum distances away from the subject building/structure that the APZ must extend towards each relevant area of classified vegetation (note: a distance may also be a maximum distance when relevant as an environmental constraint). These distances are stated in the following Table B1.

The dimensions to implement are determined by:

- A. Those associated with the 'Determined BAL APZ' for the subject building(s) when distances are greater than 'B' below (except when 'B' has established a maximum distance); or
- B. The 'Local Government' APZ' derived from their 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' as they may apply to different areas of classified vegetation.

**Location:** As for the 'Planning BAL-29 APZ'.

Table B1: The APZ dimensions required to be implemented and maintained by the landowner.

ESTABLISHING THE 'REQUIRED APZ' DIMENSIONS TO BE IMPLEMENTED AND MAINTAINED BY LANDOWNER WITHIN THEIR LOT									
Relevant Buildings(s)	Vegetation Classification		MINIMUM REQUIRED SEPARATION DISTANCES BETWEEN BUILDING/STRUCTURE AND BUSHFIRE PRONE VEGETATION <sup>1</sup>						
			Dimensions Associated with the 'BAL Rating APZ'			Dimensions Associated with the 'Local Government APZ'		The 'Required APZ' Dimensions <sup>3</sup>	
			Potential Bushfire Impact <sup>2</sup>			Separation Distance	Firebreak / Hazard Reduction Notice		
	Area	Class	Stated As	Value	Status	metres	metres	metres	metres
All Proposed Allotments	1	Excluded cl 2.2.3.2(e & f)	BAL Rating	BAL-LOW	Indicative	-	None Stated	-	All land within the subject lot surrounding the proposed buildings/structures will be the required APZ". The following may also be appropriate words in the right circumstances when permission/authority/responsibility can be appropriately identified: The road verge is to be managed in accordance with the APZ Standards
	2	Excluded cl 2.2.3.2(f)	BAL Rating	BAL-LOW	Indicative	-	None Stated	-	
	3	(G) Grassland	BAL Rating	BAL-12.5	Indicative	-	None Stated	-	
	4	(A) Forest	BAL Rating	BAL-LOW	Indicative	-	None Stated	-	
	5	(A) Forest	BAL Rating	BAL-12.5	Indicative	-	None Stated	-	
	6	(C) Shrubland	BAL Rating	BAL-LOW	Indicative	-	None Stated	-	
<p><b>Note 1:</b> Refer to all explanatory information on the preceding pages.</p> <p><b>Note 2:</b> For the bushfire direct attack mechanisms of flame contact, radiant heat transfer and, to some extent, ember attack.</p> <p><b>Note 3:</b> These are minimum distances unless a maximum is being applied by a local government.</p>									
<p><b>Comments:</b> None Required.</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.

Guidelines for  
Planning in  
Bushfire  
Prone Areas

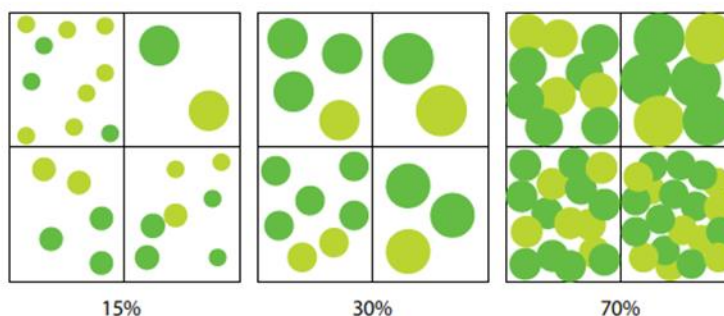
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### ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

#### SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

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



<p>Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub &gt;6 metres in height are to be treated as trees.</p>	<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>
<p>Ground covers* (&lt;0.5 metres in height. Ground covers &gt;0.5 metres in height are to be treated as shrubs)</p>	<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>
<p>Grass</p>	<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>
<p>Defendable space</p>	<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>
<p>LP Gas Cylinders</p>	<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 Excluded from Classification - Ensure Continued Low Threat Status

### EXPLANATORY NOTES

When applying AS 3959:2018 BAL determination methodology, vegetation adjoining or adjacent to the subject site can be excluded from classification based on being 'low threat'. To maintain this status, certain requirements must continue to be met in accordance with the below extract from AS3959:2018. Refer to the 'Classified Vegetation and Topography Map' for the relevant areas associated with the subject site.

Determination of 'low threat' vegetation is based on factors such as:

- Proximity to the subject site
- Small areas of vegetation
- Low flammability
- High moisture content
- Low fuel load

Aside from a naturally occurring low fuel load, vegetation maintained in a minimal fuel condition through active management can be excluded. The associated key requisite is that the active management can be expected to continue in perpetuity, and this can be adequately justified.

Acceptable forms of justification typically involve supportable evidence or the existence of an enforceable mechanism. Examples of enforceable mechanisms include:

- Requirements established by a Section 33 (Bush Fires Act 1954) notice issued by a local government;
- An appropriate and enforceable agreement between relevant parties (which may involve additions to land titles); and
- For public open space, written evidence that the land manager e.g., local government or State Government Department, agrees to maintain the public open space in a low threat state in perpetuity.

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AS 3959:2018

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

The following vegetation shall be excluded from a BAL assessment:

- (a) Vegetation of any type that is more than 100 m from the site.
- (b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.
- (c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified vegetation.
- (d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.
- (e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.
- (f) Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

#### NOTES:

- 1 Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).
- 2 A windbreak is considered a single row of trees used as a screen or to reduce the effect of wind on the leeward side of the trees.

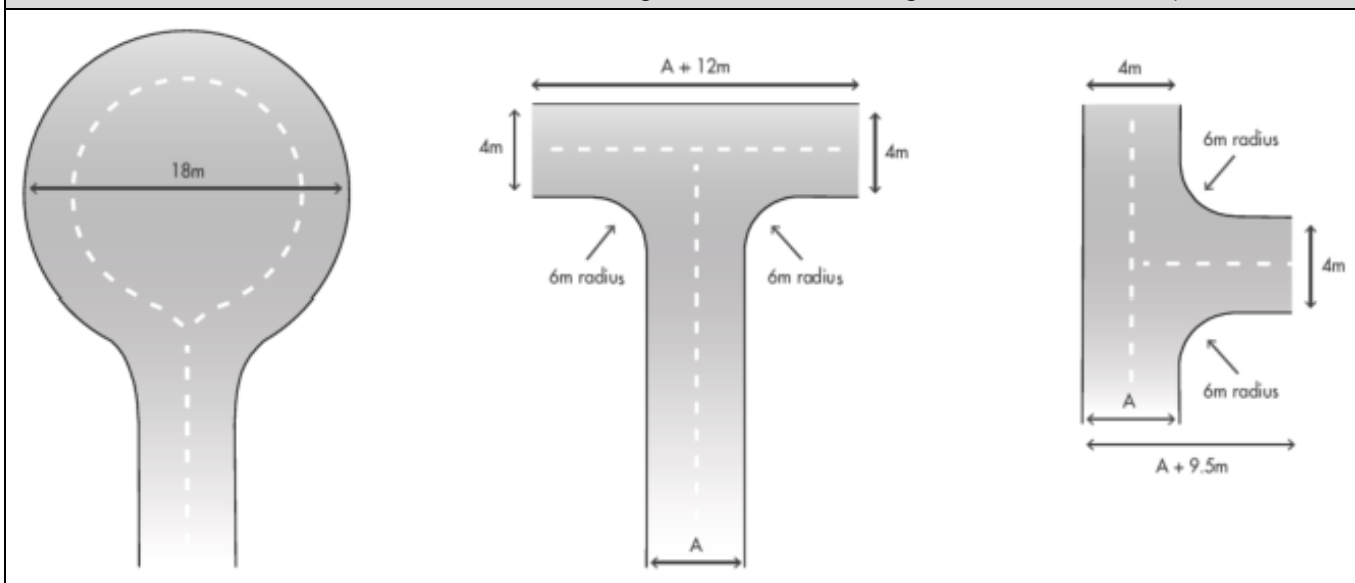
## APPENDIX C: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

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

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

Technical Component	Vehicular Access Types / Components			
	Public Roads	Emergency Access Way <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

### D1: Reticulated Areas – Hydrant Supply

The Guidelines state "where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority."

The main scheme water suppliers / authorities in WA are The Water Corporation, AqWest – Bunbury Water Corporation and Busselton Water Corporation. Various local authority exists in other non-scheme and regional areas. However, most existing fire hydrants are connected to Water Corporation water mains.

Consequently, the hydrant location specifications from The Water Corporation's 'No 63 Water Reticulation Standard' (Ver 3 Rev 15) are provided in the extract below with the key distances relevant to bushfire planning assessments being highlighted. This Standard is deemed to be the baseline criteria for developments and should be applied unless different local water supply authority conditions apply. Other applicable specification will be found in the Standard.

*Note: The maximum distance from a hydrant to the rear of a lot/building is generally interpreted as not applicable to large lot sizes where the maximum distance becomes an impractical limitation i.e., typically rural residential areas.*

Design Standard DS 63  
Water Reticulation Standard



#### 2.2.1.5 Appurtenances

##### c. Hydrants

Hydrants shall be screw-down hydrant with built-in isolation valve and installed only on DN100 or larger pipes. Hydrants shall be located:

- so that the maximum distance between a hydrant and the rear of a building envelope, (or in the absence of a building envelope the rear of the lot) shall be 120m;
- so that spacing (as measured by hose-run) between hydrants in non-residential or mixed use areas shall be maximized and no greater than 100m;
- so that spacing (as measured by hose-run) between hydrants in residential areas with lots per dwelling <10,000m<sup>2</sup> shall be maximized and no greater than 200m;
- so that spacing between hydrants (as measured by hose-run) in rural residential areas where minimum lots per dwelling is >10,000 m<sup>2</sup> (1ha) shall be maximized and no greater than 400m;
- centrally along the frontage of a lot to avoid being under driveways, unless the lot features a frontage 6m or less, in which case it shall be placed to the side opposite the driveway;
- at lots that have the widest frontage in the local area;
- where appropriate at the truncation of road junctions or intersections so that they can serve more than one street and can be readily located;
- on both sides of the major roads at staggered intervals where there are mains on both sides of the road;
- at major intersections on dual multi-lane roads, where two hydrants are to be sited on diagonally opposite corners;
- hydrants should be located at least 20m from traffic calming devices i.e., median slow points or chokers, chicanes, mini traffic circles, and intersection 'pop-outs' to ensure traffic is not impeded;
- in a position not less than 10m from any high voltage main electrical distribution equipment such as transformers and distribution boards, liquefied petroleum gas or other combustible storage;
- directly on top of the main using a tee unless proved to be impractical.



## ADDENDUM:

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- **Figure 6 – Spatial Representation of Bushfire Management Strategies** – As referenced in the existing *Bushfire Management Plan, Subdivision Stages 3 and 4 Frasers Landing – Lot 9006 Wanjeep Street, Coodanup* – (Prepared by Bushfire Safety Consulting – Dated 12 December 2019).

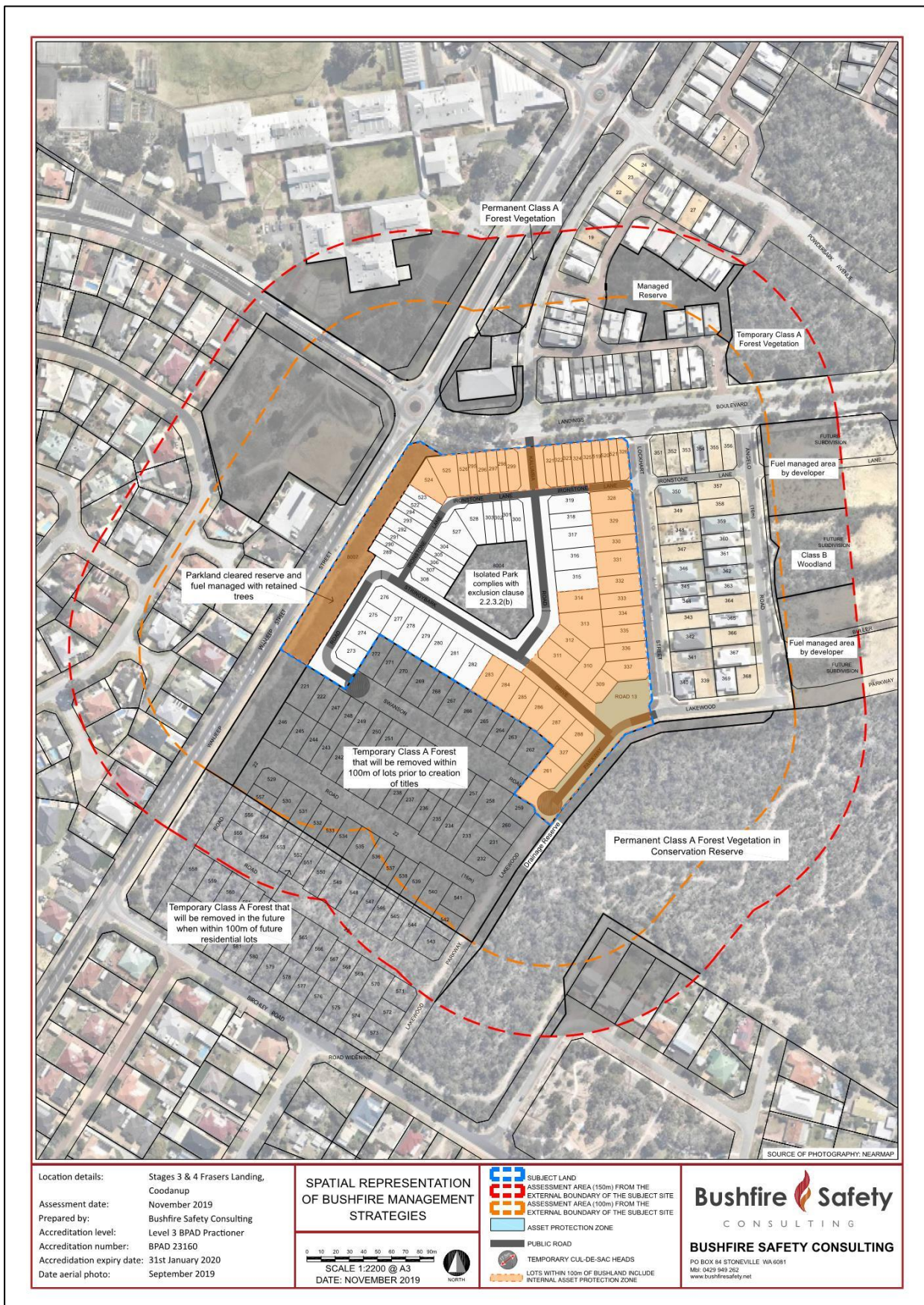


Figure 6: Spatial Representation of Bushfire Management Strategies