

Bushfire Management Plan Coversheet

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

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 33 & 9000 Katharine Street

Suburb: Bellevue

State: WA

P/code: 6056

Local government area: Shire of Mundaring

Description of the planning proposal: Subdivision Application

BMP Plan / Reference Number: 15414

Version: v1.0

Date of Issue: 08/10/2024

Client / Business Name: Satterley Property Group Pty Ltd

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

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

N/A

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

BPAD Accredited Practitioner Details and Declaration

Name Kathy Nastov	Accreditation Level Level 3	Accreditation No. BPAD 27794	Accreditation Expiry 01/08/2025
Company Bushfire Prone Planning		Contact No. 6477 1144	

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

Signature of Practitioner



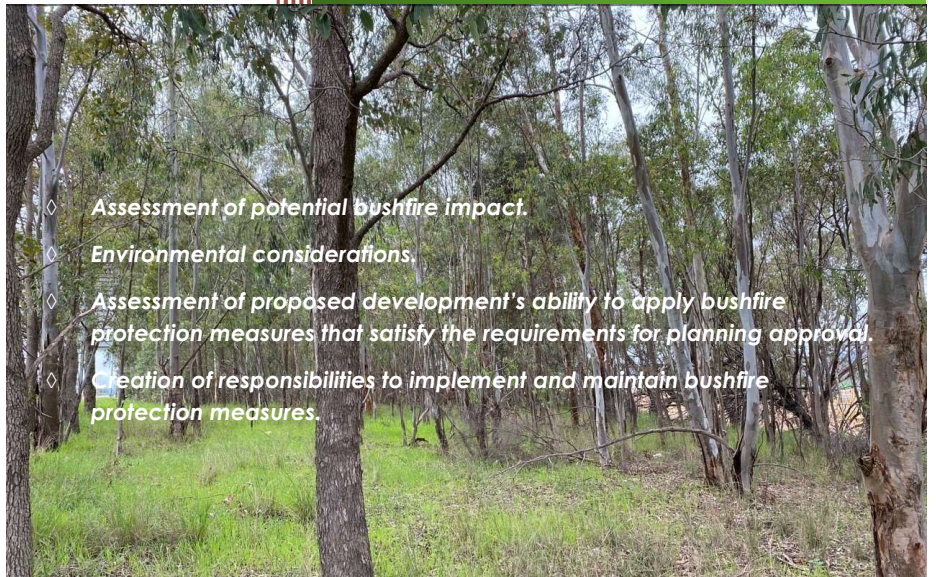
Date 08/10/2024



Robinson Grove Subdivision

Bushfire Management Plan

(PREPARED FOR PLANNING APPLICATION ASSESSMENT PURPOSES)



◆ *Assessment of potential bushfire impact.*

◆ *Environmental considerations.*

◆ *Assessment of proposed development's ability to apply bushfire protection measures that satisfy the requirements for planning approval.*

◆ *Creation of responsibilities to implement and maintain bushfire protection measures.*

Assessing all relevant requirements established by State Planning Policy 3.7

Lot 33 & 9000 Katharine Street, Bellevue

Shire of Mundaring

Subdivision Application

8 October 2024

Job Reference No: 15414

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DOCUMENT CONTROL

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		-		<input type="checkbox"/>	<input type="checkbox"/>
<p>Limitations: The protection measures that will be implemented based on information presented in this Bushfire Management Plan are minimum requirements and they do not guarantee that buildings or infrastructure will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating.</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>Copyright © 2023 BPP Group Pty Ltd: All intellectual property rights, including copyright, in format and proprietary content contained in documents created by Bushfire Prone Planning, remain the property of BPP Group Pty Ltd. Any use made of such format or content without the prior written approval of Bushfire Prone Planning, will constitute an infringement on the rights of the Company which reserves all legal rights and remedies in respect of any such infringement.</p>					
BMP (Master) Template v9.21					

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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.

THE PROPOSED DEVELOPMENT/USE – BUSHFIRE PLANNING COMPLIANCE SUMMARY		
Environmental Considerations		Assessment Outcome
Will land with identified environmental, biodiversity and conservation values limit the full application of the required bushfire protection measures?		No
Will land with identified environmental, biodiversity and conservation values need to be managed in the implementation and maintenance of the bushfire protection measures - but not limit their application?		No
Required Bushfire Protection Measures		Assessment Outcome
The Acceptable Solutions of the Bushfire Protection Criteria (Guidelines)		
Element	The Acceptable Solutions	
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	Fully Compliant
	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	N/A
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
Other Documents Establishing Bushfire Protection Measure Variations or Additions		Assessment Outcome

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
<p style="text-align: center;">Other 'Bushfire Planning' Documents to Be Produced</p> <p>This necessity for additional documents is determined by the proposed development/use type and the requirements established by SPP 3.7 and the associated Guidelines (as amended). They may be produced concurrently or subsequent to the BMP. Relevant actions will be identified within Section 6 'Responsibilities for Implementation of Bushfire Protection Measures.</p>	Required
Bushfire Emergency Plan: An operational document presenting prevent, prepare, respond and recover procedures and associated actions. As necessary, supporting information to justify determinations is included.	No
Bushfire Emergency Information (Poster): As a concise response information poster for certain vulnerable land uses.	No
Bushfire Emergency Information (Content): As content for inclusion into the Site's Emergency Plan for certain high risk land uses:	No
Bushfire Risk Assessment and Management Report:	No

1 PROPOSAL DETAILS AND THE BUSHFIRE MANAGEMENT PLAN

1.1 The Proposed Development/Use Details, Plans and Maps

The Proposal's Planning Stage For which certain bushfire planning documents are required to accompany the planning application.		Subdivision Application (lot division)
The Subject Land/Site		Lot 33 & 9000 Katharine Street, Bellevue
Total Area of Subject Lot/Site		94.0046 hectares
Number of Additional Lots Created		245
Primary Proposed Construction	Type(s)	New Building(s)
	NCC Classification	Class 1a (house)
The 'Specific' Land Use Type for Bushfire Planning When applicable, this classification establishes a requirement to conduct assessments and develop documents that are additional to this Bushfire Management Plan.		N/A
Description of the Proposed Development/Use		
<p>This Bushfire Management Plan has been prepared to accompany the Subdivision Application of 2 existing allotments into 241 residential allotments and 4 lots to be utilised at Public Open Spaces as part of the Robinson Grove Subdivision project. The remaining land of the original allotment will remain as a balance lot for future development.</p> <p>This subdivision application relates to stages 2 – 7 of the proposed development outlined in Figure 1.2 of this document. Stage 1 has already been approved (WAPC Ref: 158843) and is not part of this application.</p>		
Description of Planned Staged Development and the Management of Potential Bushfire Planning Issues		
<p>Each stage of the development has been considered when addressing the Bushfire Protection Criteria for this stage. The development of this stage will include the removal of some vegetation to facilitate the development of further stages. Further stages may require additional considerations addressed within a Bushfire Management Plan.</p>		

LEGEND

TOTAL APPLICATION AREA (94.0046ha)

EASEMENT

SERVICES

WATER

PIPE

SEWER

CONNECTION

GRAVITY PIPE

PRESSURE MAIN

ELECTRICAL

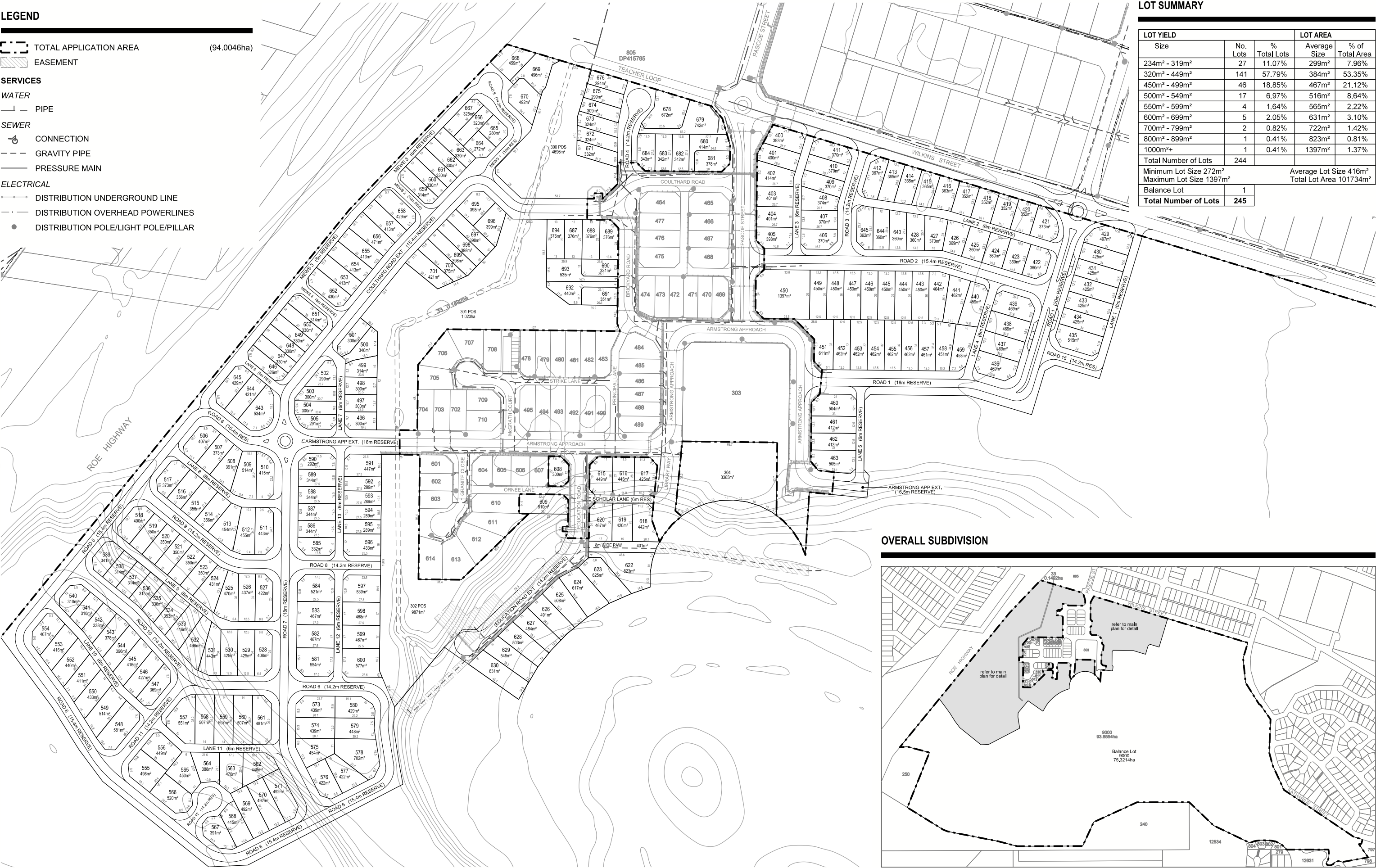
DISTRIBUTION UNDERGROUND LINE

DISTRIBUTION OVERHEAD POWERLINES

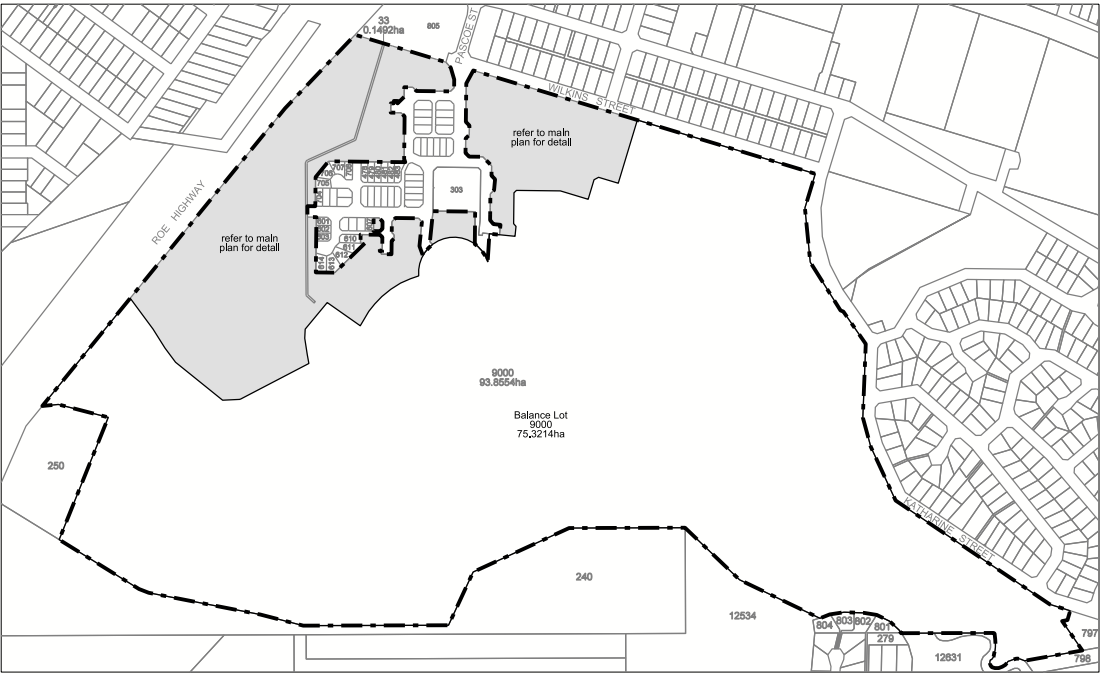
DISTRIBUTION POLE/LIGHT POLE/PILLAR

LOT SUMMARY

LOT YIELD			LOT AREA	
Size	No. Lots	% Total Lots	Average Size	% of Total Area
234m² - 319m²	27	11.07%	299m²	7.96%
320m² - 449m²	141	57.79%	384m²	53.35%
450m² - 499m²	46	18.85%	467m²	21.12%
500m² - 549m²	17	6.97%	516m²	8.64%
550m² - 599m²	4	1.64%	565m²	2.22%
600m² - 699m²	5	2.05%	631m²	3.10%
700m² - 799m²	2	0.82%	722m²	1.42%
800m² - 899m²	1	0.41%	823m²	0.81%
1000m²+	1	0.41%	1397m²	1.37%
Total Number of Lots	244			
Minimum Lot Size 272m²			Average Lot Size 416m²	
Maximum Lot Size 1397m²			Total Lot Area 101734m²	
Balance Lot	1			
Total Number of Lots	245			



OVERALL SUBDIVISION



Plan of Subdivision (Freehold)

LOT 33 ON D2365 & LOT 9000 KATHARINE STREET, ROBINSON GROVE

A Satterley Project



plan: 24/063/005B

scale: 1:2500@A3 | 1:1250@A1

0 25 50m

date: 11/07/2024

grid: PCG94

aerial: -

designed: ED

checked: ED

drawn: CR

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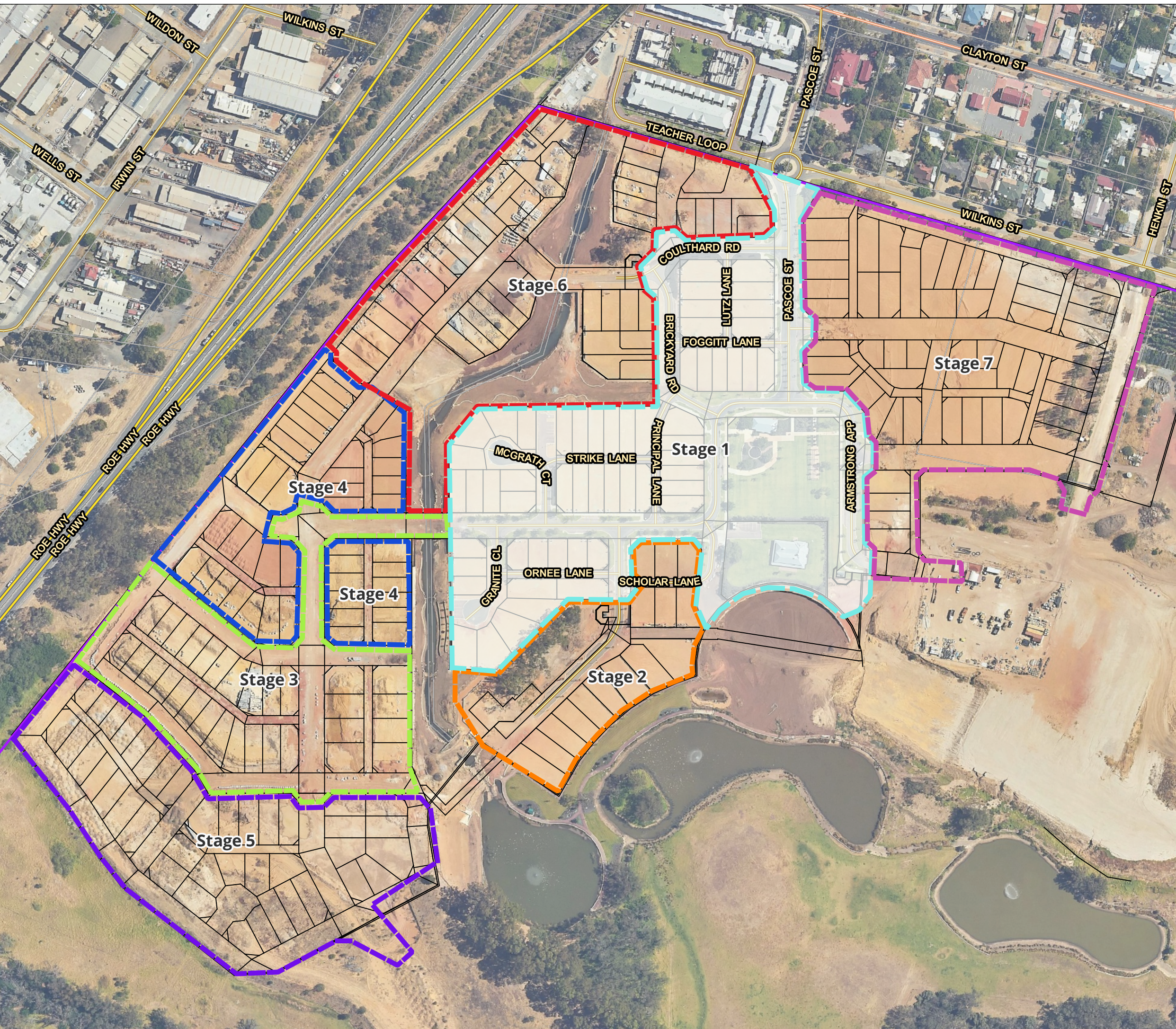


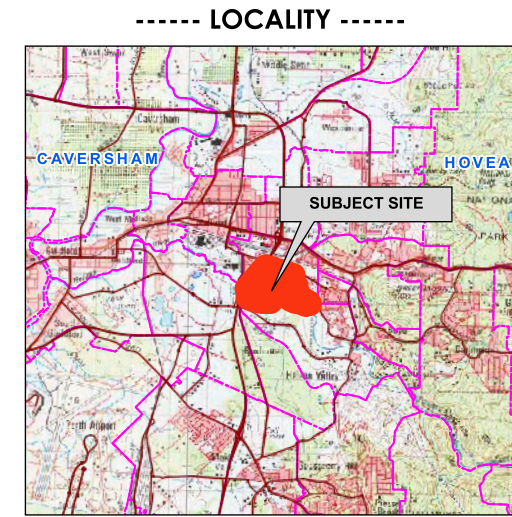
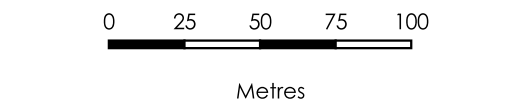
Figure 1.2
Proposed Subdivision
Lot 33 and Lot 9000 on Diagram 2365, Area:
94.0046 ha
Wilkins Street
BELLEVUE
SHIRE OF MUNDARING

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

Subject Site
 Cadastral
 Proposed Lot Boundaries

stages

Stage 1 Approved
WAPC Ref: 158843
 Stage 2
 Stage 3
 Stage 4
 Stage 5
 Stage 6
 Stage 7



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map by: Joy 08-10-2024
SCALE (A3): 1 : 2500

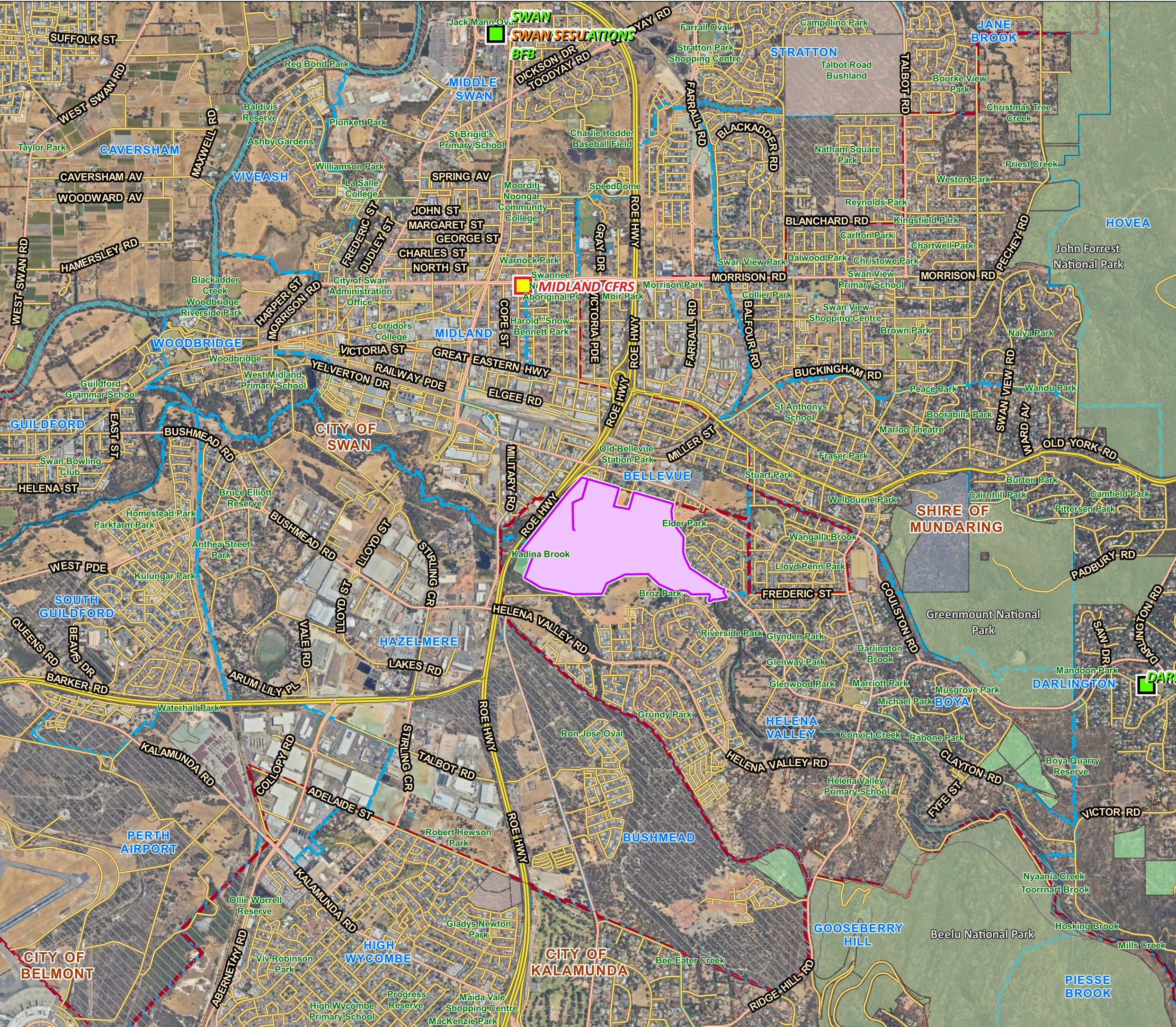


Figure 1.3
Location Map
Lot 33 and Lot 9000 on Plan 2365, Area:
96.0046ha
Wilkins Street
BELLEVUE
SHIRE OF MUNDARING

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

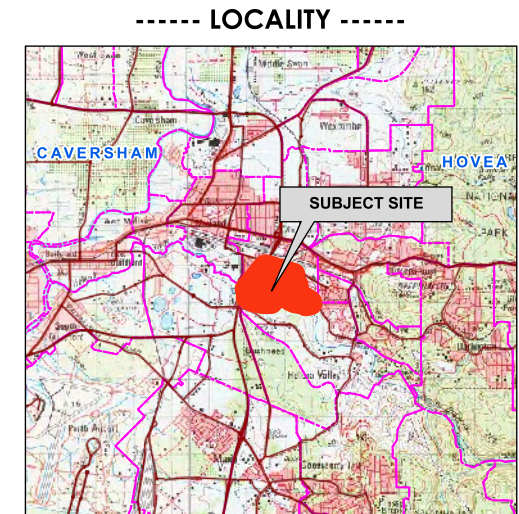
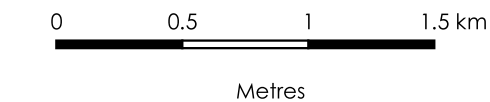
- Subject Site
- Localities
- LGA
- Reserves
- Bush Forever Sites

DBCA Legislated Lands and Waters

- Crown Freehold - Dept Managed
- National Park

DFES Stations

- Bush Fire Brigade
- Career Fire Rescue Service
- State Emergency Service Unit



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map by: Joy 12-09-2024
SCALE (A3): 1 : 30000

BUSHFIRE PRONE PLANNING

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.

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

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

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

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

Figure 1.4
Bushfire Prone Area
Lot 33 & 9000 on Plan 2395, Area: 96.0046ha
Katharine Street
BELLEVUE
SHIRE OF MUNDARING

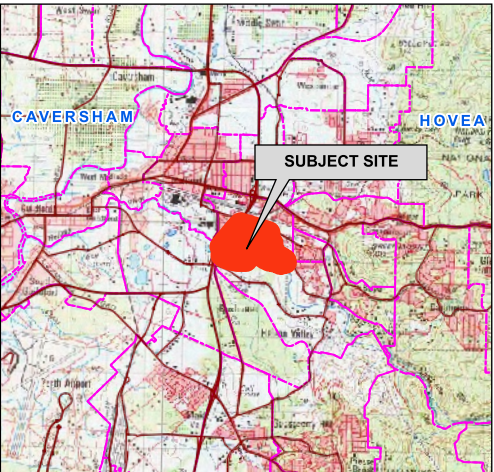
----- LEGEND -----

- Subject Site
- Cadastral
- Proposed Lot Boundaries
- Bushfire Prone Areas 2021

- stages
- Stage 1 Approved
WAPC Ref: 158843
 - Stage 2
 - Stage 3
 - Stage 4
 - Stage 5
 - Stage 6
 - Stage 7



----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map by: Joy 08-10-2024
SCALE (A3): 1 : 2800

1.2 The Bushfire Management Plan (BMP)

1.2.1 Commissioning and Purpose

Bushfire Prone Planning commissioned to produce the BMP by:	Satterley
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) and Shire of Mundaring

1.2.1 Other Documents with Implications for Development of this BMP

This section identifies any known assessments, reports or plans that have been conducted and prepared previously, or are being prepared concurrently, and are relevant to the planned proposal for the subject. They potentially have implications for the assessment of bushfire threats and the identification and implementation of the protection measures that are established by this Bushfire Management Plan.

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

RELEVANT DOCUMENTS					
Document	Relevant	Currently Exists	To Be Developed	Copy Provided by Proponent / Developer	Title
Structure Plan	Yes	Yes	No	No	Bushfire Management Plan (Strategic Planning Proposal) Lots 800 Katherine and 239 Wilkins Streets, Bellevue Report Date: 25 Oct 2016
Implications for this BMP: None					
Bushfire Management Plan	Yes	Yes	No	Yes	15414 Wilkins Street Bellevue v2 and all following addenda prepared by BPP.
Implications for this BMP: Informs accepted access track requirements and implementation as well as staged management.					
Preliminary bushfire advice (may include a BAL contour map)	No	No	No	No	-
Bushfire Emergency Plan or Information	No	No	No	No	-
Bushfire Risk Report	No	No	No	No	-

Environmental Asset or Vegetation Survey	No	No	No	No	-
Landscaping and Revegetation Plan	Yes	-	Yes	No	-
Implications for the BMP: Where any landscaping or re-vegetation is anticipated to occur an approved landscape management plan should be provided to demonstrate that the landowner/proponent responsible for the ongoing management has an obligation to undertake mitigation works and the approving decisionmaker support the vegetation classification and management treatments assigned to the subject area.					
Land Management Agreement	Yes	No	Yes	No	-
<p>Implications for the BMP: Main Roads accepted the installation of a Service Access Track along the Western border of the subject site (within the road reserve of Roe Highway) by the developer and have accepted maintenance responsibilities following installation ((Monday 1st October 2018). Letter of confirmation found in 15414 – BMP Stage 1 Addendum v1.2 prepared by BPP September 2020.</p> <p>The existing land agreement between Main Roads and the developer should be expanded to include the above access track as outlined within this document.</p>					

2 BUSHFIRE PRONE VEGETATION – ENVIRONMENTAL & ASSESSMENT CONSIDERATIONS

2.1 Environmental Considerations – ‘Desktop’ Assessment

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

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

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

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

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

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

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

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

2.1.1 Vegetation of Significance to be Retained on Public Land

IDENTIFICATION OF PROTECTED VEGETATION ON PUBLIC LAND							
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Legislated Lands and Waters Tenure categories include national and conservation parks, nature and crown reserves, state forest.	Yes	No	DBCA-011	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None
Designated Public Open Space	Yes	No	-	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS:

Figure 2.1 within this report indicates the presence of a Crown Freehold area (Kadina Brook) bordering the development site. This area has no influence on the application of any bushfire protection measures.

Figure 1.1 within this document indicates the presence of various public open spaces within the development. These areas have been assumed to be managed and maintained to a low threat standard.

Where any landscaping or re-vegetation is anticipated to occur an approved landscape management plan should be provided to demonstrate that the landowner/proponent responsible for the ongoing management has an obligation to undertake mitigation works and the approving decisionmaker supports the vegetation classification and management treatments assigned to the subject area.

2.1.2 Declared Environmentally Sensitive Areas (ESA)

IDENTIFICATION OF RELEVANT ENVIRONMENTALLY SENSITIVE AREAS							
ESA Class	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Heritage Areas (World and National)	No	No	Relevant register or mapping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None
Wetlands and their 50m Buffer These are wetlands of international importance (Ramsar List), conservation category and nationally important.	Yes	No	DBCA-010 and 011, 019, 040, 043, 044	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None
Threatened and Priority Flora and their continuous 50m buffer	Unlikely	Unlikely	DBCA-036	Restricted Scale of Data Available (security)	<input type="checkbox"/>	<input type="checkbox"/>	Data not available - confirm with relevant agency
Threatened Ecological Community	Yes	Unlikely	DBCA-038		<input type="checkbox"/>	<input type="checkbox"/>	Data not available - confirm with relevant agency
Bush Forever	No	No	DPLH-022, SPP 2.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None
Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011	No	No	DWER-062	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS:

BPP recommends further consultation with relevant authority is required regarding accurate accounts of threatened and priority flora as well as threatened ecological communities within the site access to this data has been restricted.

Some Public Open Spaces within the development are dual purpose wetland corridors and are to be revegetated to support biodiversity values and water quality targets. Figure 2.1 has indicated wetland areas throughout the development site due to the presence of Helena River. The Park and Recreation Reserve Development has been considered and is expected to be maintained as a "low threat" area.

Figure 2.1
Environmental Considerations Map
Lot33 & 9000 on Plan 2365, Area: 96.0046ha
Katharine Street
BELLEVUE
SHIRE OF MUNDARING

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

Subject Site

Proposed Lot Layout

Reserves

Geomorphic Wetlands Swan Coastal Plain

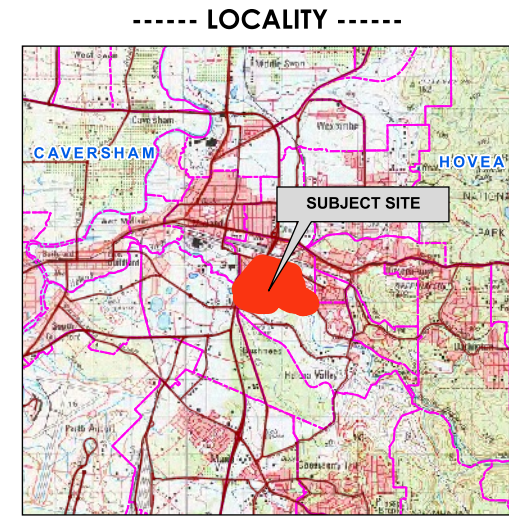
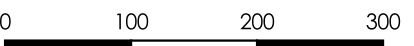
Floodplain

Environmentally Sensitive Areas

Threatened Ecological Community

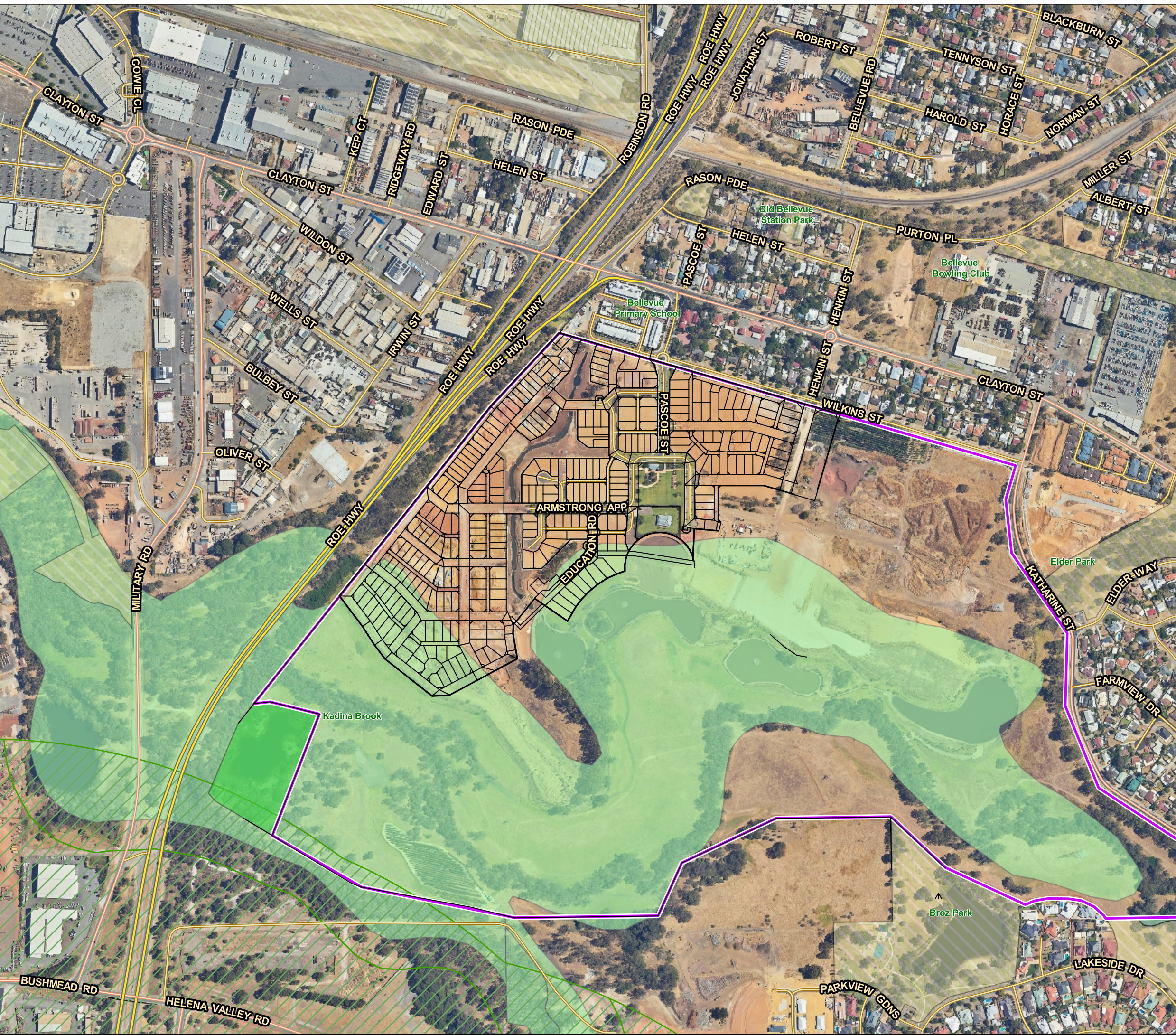
DBCA Legislated Lands and Waters

Crown Freehold - Dept Managed



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map by: Joy 08-10-2024
SCALE (A3): 1 : 6000



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.










SHIRE OF MUNDARING – LOCAL NATURAL AREAS

The Shire of Mundaring has a Local Biodiversity Strategy (2009) to protect or retain most of the Local Natural Areas (LNAs) currently found in the Shire. These are the natural areas that are not currently protected in the public conservation estate or included within state forests, water catchment areas or Bush Forever sites. Approval for modification or removal of native vegetation within these LNAs will need to be granted by the Shire.

The Strategy assigns conservation protection categories to the LNAs based on several considerations. Refer to the Shire of Mundaring Local Biodiversity Strategy and Local Planning Strategy (2009) for details. Maps (downloadable and online) are located on the Shire's website.




LOCAL NATURAL AREA (LNA) PROTECTION CATEGORIES

Categories have been assigned based on known ecological values, relative conservation priority (see below), other environmental attributes, Town Planning Zoning and other planning considerations.

Map Legend	Category (Level)
Local Natural Area Protection Level  Conservation  Protection  Retention  Limited Protection / Already Committed by Zoning To Be Determined / Negotiated  a) Land Reserved for Public Purposes and vested in an agency other than the Shire  b) Proposed open space within the Parkerville and Stoneville Townsite Developments  c) Residential zone: Special Environmental Features  d) Special Purpose zones (other than Parkerville and Stoneville Townsite Developments)  e) Local Reserve for Recreation (in TPS 4), Local Centre zone or Road Reserve	Conservation – On Crown Land vested for a conservation purpose.
	Protection – Conservation priority levels 1 & 2 on land near watercourses, on certain lot size and on certain zoned land.
	Retention - Conservation priority level 3 on land near watercourses, on certain lot size and on certain zoned land.
	Limited Protection – On land further from watercourses and already committed by zoning.
	To be Determined / Negotiated (comprising 5 sub-categories). The intent is that over time this land, through the planning and land management processes and by negotiations, will be assigned to the other categories.

LOCAL NATURAL AREA (LNA) CONSERVATION PRIORITIES

Whilst all natural areas have numerous ecological values, it is often necessary to consider their value relative to other areas in the Shire for conservation purposes, or when making decisions on development proposals. The Strategy determines relative conservation significance using a variety of ecological values to assign each LNA a conservation priority.

Map Legend	Priority	Intention	Relevant Conservation Assets
Conservation Priority  1  2  3	1	To be conserved or protected and receive active management	Rare vegetation complexes / At risk vegetation complexes / LNA's within 20 m of a watercourse Regional linkage over special features / Regional linkage over habitat
	2	To be conserved or protected and receive active management	Habitat LNA's / Special features / LNA's within 20-50m of a watercourse / Regional linkages
	3	To be retained and where possible receive active management	Every other LNA

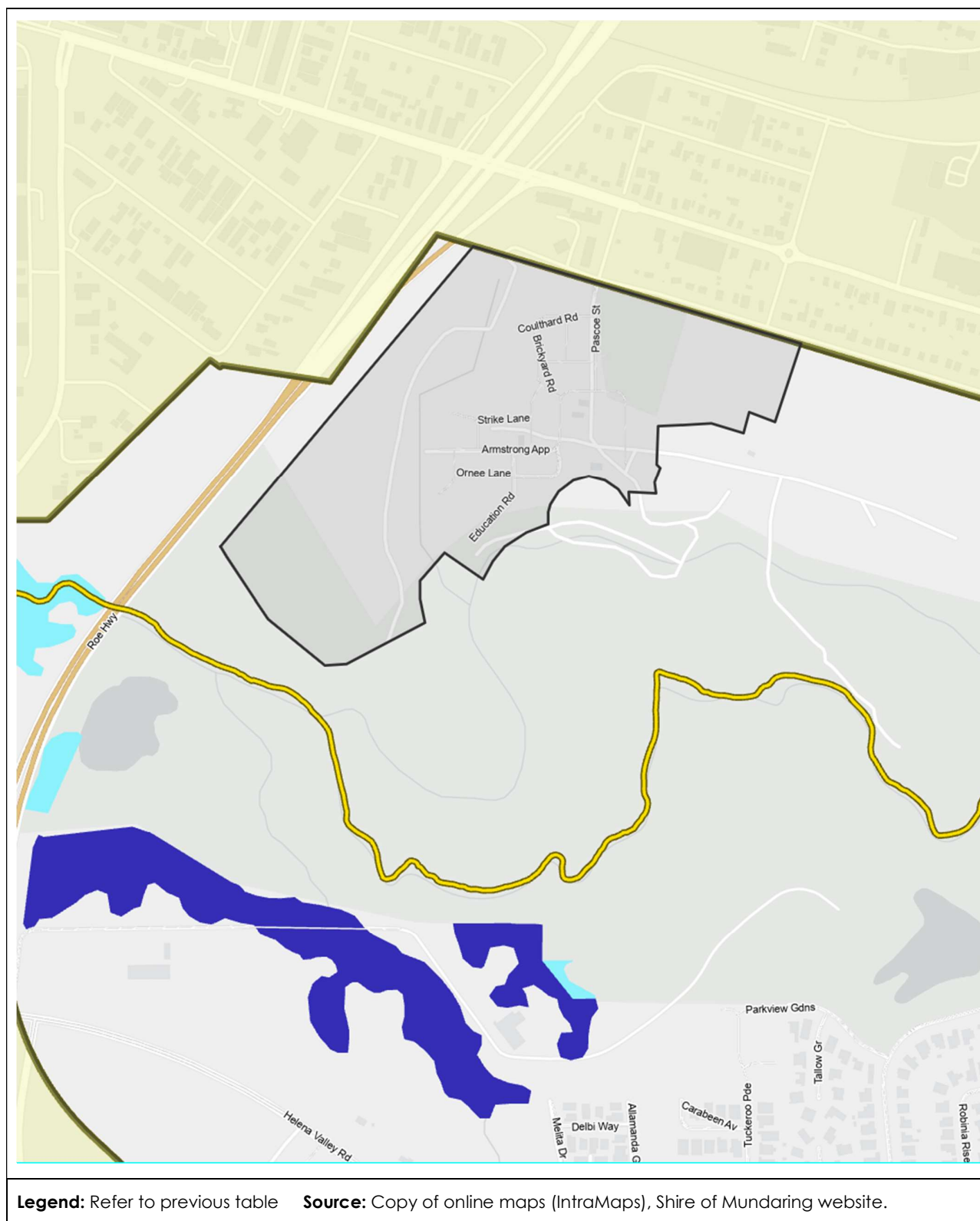


Figure 2.2: Identifying the local natural area existing on the subject site.

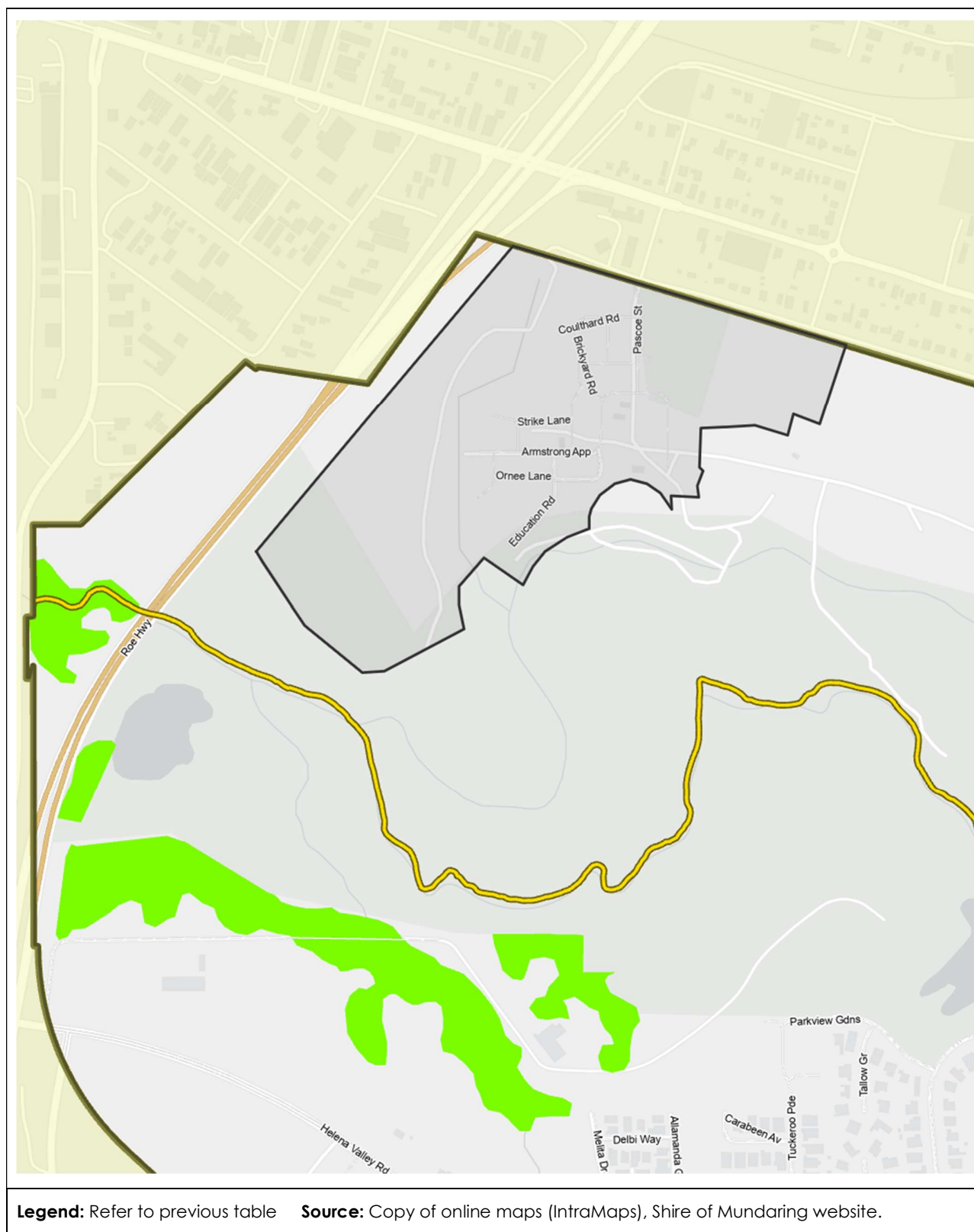


Figure 2.3: Identifying the protection category(s) existing on the subject site.

2.1.3 Response of Proposed Development to Identified Environmental Limitations

Consideration of the implications that identified protected areas of vegetation (i.e., those with environmental and subject to conservation) have for the proposed development.

PROPOSED DEVELOPMENT RESPONSE TO IDENTIFIED 'PROTECTED' VEGETATION	
The existence of 'protected' areas of vegetation has implications for the ability of the proposed development to reduce potential bushfire impact through modification or removal of vegetation.	No
Application of Design and/or Construction Responses to Limit Vegetation Modification or Removal	
Modify the development location to reduce exposure by increasing separation distance.	Not required
Redesign development, structure plan or subdivision.	Not required
Environmental consideration was given to Helena River and the existing flood plain during initial design stages.	
Reduction of lot yield where this can increase available separation distances.	Not required
Cluster development to limit modification or removal of vegetation.	Not required
Construct building(s) to the requirements corresponding to higher BAL ratings to reduce required separation distances.	Not required

2.2 Bushfire Assessment Considerations

2.2.1 Planned Onsite Vegetation Landscaping

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

PLANNED LANDSCAPING	
Relevant to Proposal:	Yes
Where any landscaping or re-vegetation is anticipated to occur an approved landscape management plan should be provided to demonstrate that the landowner/proponent responsible for the ongoing management has an obligation to undertake mitigation works and the approving decisionmaker supports the vegetation classification and management treatments assigned to the subject area.	

2.2.2 Planned / Potential Offsite Rehabilitation or Re-Vegetation

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

POTENTIAL RE-VEGETATION PROGRAMS		
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Description
Riparian Zones / Foreshore Areas	No	N/A
Wetland Buffers	Yes	It is noted that these areas will remain at a low threat state. Where any landscaping or re-vegetation is anticipated to occur an approved landscape management plan should be provided to demonstrate that the landowner/proponent responsible for the ongoing management has an obligation to undertake mitigation works and the approving decisionmaker supports the vegetation classification and management treatments assigned to the subject area.
Legislated Lands	No	N/A
Public Open Space	Yes	It is noted that these areas will remain at a low threat state. Where any landscaping or re-vegetation is anticipated to occur an approved landscape management plan should be provided to demonstrate that the landowner/proponent responsible for the ongoing management has an obligation to undertake mitigation works and the approving decisionmaker supports the vegetation classification and management treatments assigned to the subject area.
Road Verges	Yes	It is noted that these areas will remain at a low threat state. Where any landscaping or re-vegetation is anticipated to occur an approved landscape management plan should be provided to demonstrate that the landowner/proponent responsible for the ongoing management has an obligation to undertake mitigation works and the approving decisionmaker supports the vegetation classification and management treatments assigned to the subject area.
Other	No	-

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

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

REQUIREMENT TO MANAGE, MODIFY OR REMOVE NATIVE VEGETATION	
Has a requirement been identified to manage, modify or remove onsite native vegetation to establish the required bushfire protection measures on the subject site?	No
Classified Vegetation within the site that will be removed for this stage of development includes only grassland areas.	
Is approval, from relevant state government agencies and/or the local government, to modify or remove onsite native vegetation required?	No
Has a requirement been identified to manage, modify or remove offsite native vegetation to establish the required bushfire protection measures on the subject site?	Yes
Refer to Figure 3.1.1 'Post Development Classified Vegetation' and 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 offsite bushfire prone vegetation and/or conduct other works, to establish an identified bushfire protection measure(s)? If 'Yes', appropriate evidence of the approval or how it is to be established, shall be provided in this BMP as an addendum.	Yes
A Management Agreement between the Proponent and Main Roads is required to manage the vegetation within the Roe Highway Road Reserve to facilitate the extension of the proposed Service Access Track along the sound wall.	
Is a written management agreement required that states the obligation of the landowner, or another responsible party, to manage defined areas of offsite 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?	Yes
A Management Agreement between the Proponent and Main Roads is required for the Proponent to facilitate the extension of the proposed Service Access Track and Main Roads to maintain the required vegetation management in perpetuity.	

2.2.4 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.	Yes
Refer to Figure 3.1.1 'Post Development Classified Vegetation' and Appendix A1.2 for justification details supporting the change.	
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.	Yes
Refer to Figure 1.1 'Proposed Development Site Plan' and Figure 3.1.1 'Post Development Classified Vegetation'	

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/m². The AS 3959:2018 BAL determination methodology establishes the ranges of radiant heat flux that correspond to each bushfire attack level. These are identified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

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

DETERMINED BAL RATINGS

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

1. It's final design and position on the lot are known and the stated separation distance from classified bushfire prone vegetation exists and can justifiably be expected to remain in perpetuity; or
2. It will always remain subject to the same BAL regardless of its design or position on the lot after accounting for any regulatory or enforceable building setbacks from lot boundaries as relevant and necessary (e.g., R-codes, restrictive covenants, defined building envelopes) or the retention of any existing classified vegetation either onsite or offsite.

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

INDICATIVE BAL RATINGS

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

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

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

BAL RATING APPLICATION – PLANNING APPROVAL VERSUS BUILDING APPROVAL

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

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

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

3.1 BAL Assessment Summary (Contour Map Format)

INTERPRETATION OF THE BAL CONTOUR MAP

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

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

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

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

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

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

3.1.1 BAL Determination Methodology and Location of Data and Results

LOCATION OF DATA & RESULTS					
BAL Determination Methodology		Location of the Site Assessment Data			Location of the Results
AS 3959:2018	Applied to Assessment	Classified Vegetation and Topography Map(s)	Calculation Input Variables		Assessed Bushfire Attack Levels and/or Radiant Heat Levels
			Summary Data	Detailed Data with Explanatory and Supporting Information	
Method 1 (Simplified)	Yes	Figure 3.1.1 and Figure 3.1.2	Table 3.2	Appendix A1	Table 3.1 Table 3.3 / BAL Contour Map

3.1.2 BAL Ratings Derived from the Contour Map

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

BUSHFIRE ATTACK LEVEL FOR FUTURE BUILDINGS / STRUCTURES ON STATED LOT ¹		
Lot No.	Future Buildings / Structure	
	Indicative BAL ²	Determined BAL ²
506 517 - 518 539 - 540 554 645 648 - 663 667 - 668	BAL-29	Not Determined
507 516 519 538 541 553 644 646 - 647	BAL-19	Not Determined
497 - 505 508 - 515 520 - 523 534 - 537 542 - 545 548 - 552 555 565 - 571 644 - 665 669 - 670 671 - 676 695 - 701	BAL-12.5	Not Determined
460 - 463 496 525 - 533 547 - 548 556 - 564 573 - 600 615 - 630 678 - 684 687 - 694 931 - 977	BAL-LOW	Not Determined
¹ The assessment data used to derive the BAL ratings is sourced from Table 3.1 and Figure 3.2 'BAL Contour Map'. ² Refer to the start of Section 3 for an explanation of indicative versus determined BAL ratings.		

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

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

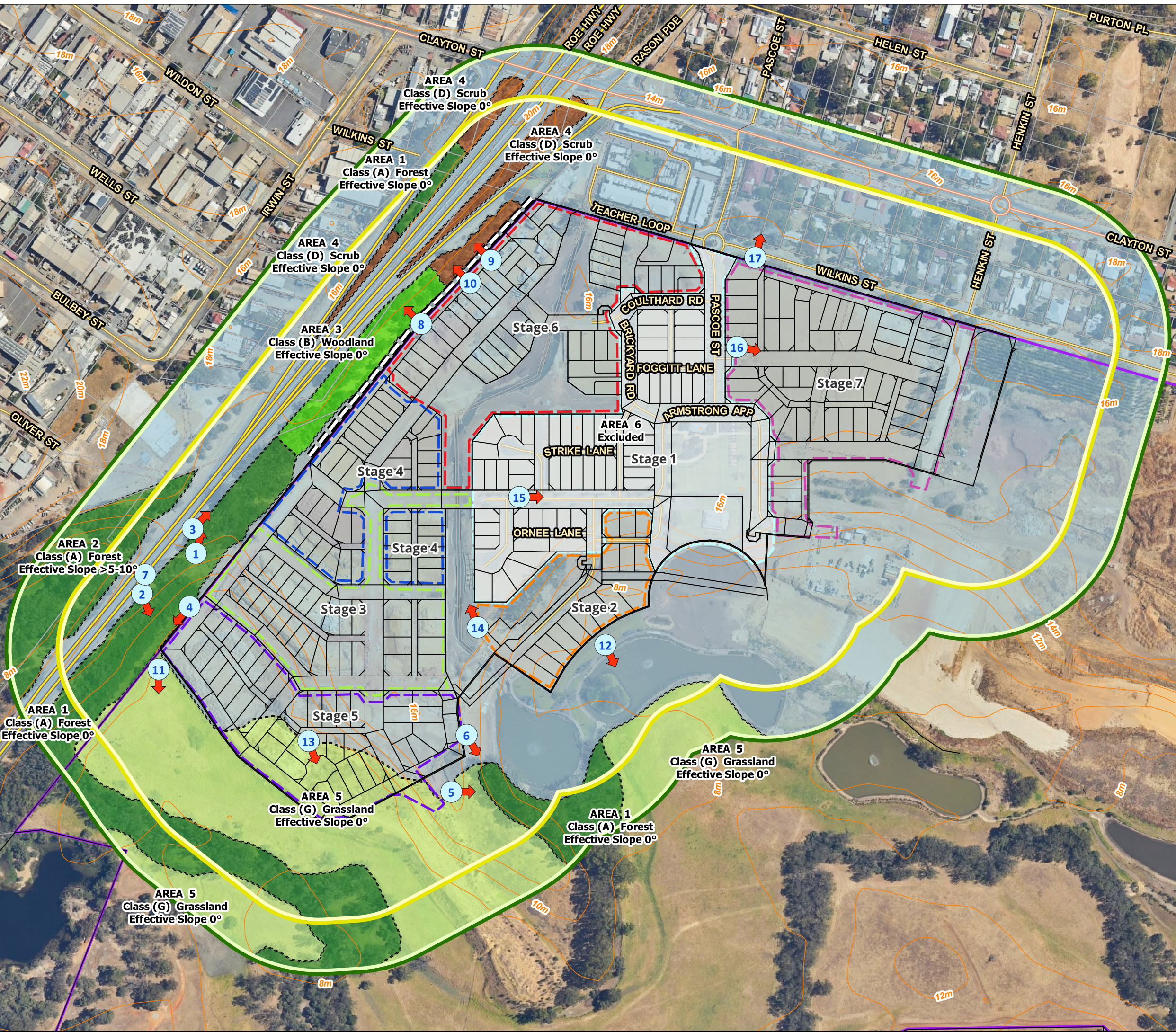
Table 3.2: Calculation inputs applied to deriving the vegetation separation distances corresponding to different levels of potential radiant heat transfer.

DATA APPLIED TO CALCULATE THE SITE SPECIFIC VEGETATION SEPARATION DISTANCES CORRESPONDING TO POTENTIAL RADIANT HEAT TRANSFER LEVELS ¹													
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 ²													
Methods 1 and 2			Method 1			Method 2							
Vegetation Classification			FDI	Effective Slope		Site Slope	FFDI or GFDI	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor
				Applied Range	Measured								
Area	Class			degree range	degrees	degrees			K	metres	metres	kW/m	metres
1	(A) Forest		80	Upslope or flat 0	flat 0 / d/slope	-	-	-	-	-	-	-	-
2	(A) Forest		80	Downslope >5-10	d/slope 6	-	-	-	-	-	-	-	-
3	(B) Woodland		80	Upslope or flat 0	flat 0 / d/slope	-	-	-	-	-	-	-	-
4	(D) Scrub		80	Upslope or flat 0	flat 0 / d/slope	-	-	-	-	-	-	-	-
5	(G) Grassland		80	Upslope or flat 0	flat 0 / d/slope	-	-	-	-	-	-	-	-
6	Excluded cl 2.2.3.2(e & f)		N/A	N/A	N/A	-	-	-	-	-	-	-	-
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/m2), 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) ¹										
Vegetation Classification		Maximum Radiant Heat Transfer (Flux)							10 kW/m²	2 kW/m²
		>40 kW/m²	40 kW/m²	29 kW/m²	19 kW/m²	12.5 kW/m²	N/A ²			
		Bushfire Attack Levels								
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW			
1	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100	-	-	
2	(A) Forest	<26	26-<33	33-<46	46-<61	61-<100	>100	-	-	
3	(B) Woodland	<10	10-<14	14-<20	20-<29	29-<100	>100	-	-	
4	(D) Scrub	<10	10-<13	13-<19	19-<27	27-<100	>100	-	-	
5	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50	-	-	
6	Excluded cl 2.2.3.2(e & f)	-	-	-	-	-	-	-	-	
<p>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.</p> <p>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.</p>										

Figure 3.1.1
Classified Vegetation & Topography (Existing)
Lot 33 & 9000 on Plan 2365, Area: 94.0046ha
Katharine Street
BELLEVUE
SHIRE OF MUNDARING



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

- Subject Site
- Cadastral
- 150m Assessment Area
- 100m Assessment Area
- Photo Location and Direction
- Service Access Track
- Proposed Lot Layout

Classified Vegetation

- Class A - Forest
- Class B - Woodland
- Class D - Scrub
- Class G - Grassland
- Exclusion 2.2.3.2

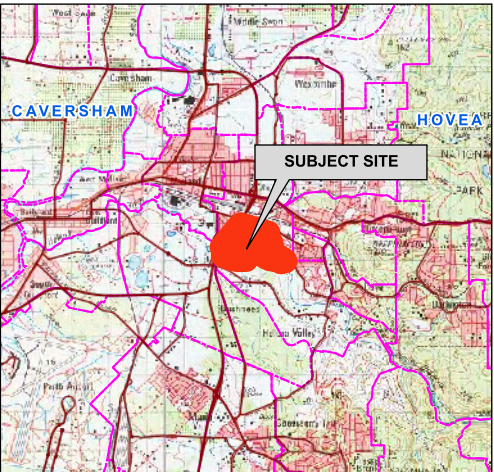
stages

- Stage 1 Approved WAPC Ref: 158843
- Stage 2
- Stage 3
- Stage 4
- Stage 5
- Stage 6
- Stage 7

0 50 100 150 200

Metres

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



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map by: Joy 08-10-2024
SCALE (A3): 1 : 3500

Figure 3.2
BAL Contour Map

Lot 33 & 9000 on Plan 2365, Area: 96.0046ha
Katharine Street
BELLEVUE
SHIRE OF MUNDARING

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

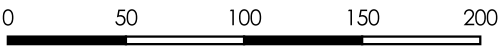
- Subject Site
- Cadastral
- 100m Assessment Area
- Approved Service Access Track (WAPC Ref: 158843)
- Proposed Service Access Track
- Proposed Lot Layout

Bushfire Attack Levels

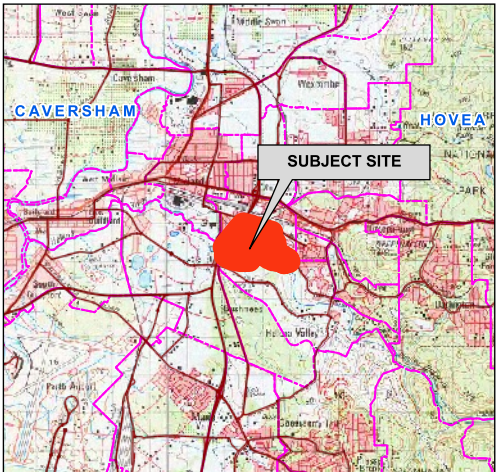
- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

stages

- Stage 1 Approved WAPC Ref: 158843
- Stage 2
- Stage 3
- Stage 4
- Stage 5
- Stage 6
- Stage 7



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



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map by: Joy 08-10-2024
SCALE (A3): 1 : 3200

Extension of 6m wide service access track

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	
<p>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.</p> <p>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.</p> <p>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).</p> <p>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.</p> <p>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)</p>	
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

<p>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).</p>	
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			
Element Intent	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.		
Proposed Development/Use – Relevant Planning Stage	(Sb) Structure plan where the lot layout is known and subdivision application		
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.		
Pathway Applied to Provide an Alternative Solution	N/A		
Acceptable Solutions - Assessment Statements All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the 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 https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas .			
Solution Component Check Box Legend <input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant			
E1 Location		Compliant:	Yes
A1.1 Development location	Applicable:	Yes	Compliant: Yes
ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES			
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> The subdivision application 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.			
Supporting Assessment Details: Upon completion, 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. Figure 3.1.2 indicates the management that is required within the Roe Highway Road Reserve and the extension of a 6m wide compacted limestone service access track which will allow all lots within the subdivision to be subject to BAL-29 or below.			
ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)			
<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>Strategic Planning Proposals: 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>Structure Plans (lot layout known) and Subdivision Applications: 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

The existing lot has been predominantly cleared for development. Small strips of remnant forest vegetation still exist to the south of the proposed development along with areas of grassland and wetland sedges along the Helena River. The hazard within the site, poses a low threat to the development and includes many areas that will become landscaped and POS areas within the site. The impact of the slopes under the vegetation will be dependent on a bushfire's direction of travel, but slopes in the range of zero to five degrees do exist and bushfire travelling upslope will have increased intensity and rate of spread.

The primary bushfire threat from bushfire prone vegetation remaining within the proposed lot will be embers. This threat will be mitigated by the application of appropriate building design, bushfire construction requirements and the ongoing maintenance of the APZ to ensure the buildings will not be impacted by consequential fire within combustible materials used, stored or accumulated within the APZ.

The Hazard Adjoining the Subject Site

- To the northwest and southwest, the development is adjoining the Midland commercial area with little to no native vegetation, posing a low bushfire threat to the subject site.
- To the north, east and southeast, the development site is adjoining residential areas, containing only small patches of vegetation, with minimal native vegetation areas, posing a low threat to the subject site.
- Figure 1.3 within this report, shows the extent of native vegetation existing along the Helena River and Roe Highway. These areas are the main threat of bushfire to the new lots within the development site.

Consequently, there are limited scenarios in which the subject development site is likely to be subject to a significant bushfire event in adjoining vegetation.

It is limited to a fire in the narrow strip of creek line vegetation in which a bushfire would either be a flanking fire or if a direct fire, be unable to develop fully because of the short fire run. Additionally, due to the limited extent of the unmanaged vegetation along Roe Highway and along the extent of the creek line to west and south the length of time the subject site would be exposed to the impacts of bushfire (ember and radiant heat attack) would be relatively short.

The development site, within the context of its location in the broader landscape, cannot be considered as being at a higher risk from bushfire attack mechanisms.

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

BPP: Example. Only include this type of content if relevant

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 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;

The potential for reduction in bushfire risk to surrounding properties compared to the present situation is considered, there is 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			
Element Intent	To ensure that the siting and design of development minimises the level of bushfire impact. (BPP Note: not building/construction design)		
Proposed Development/Use – Relevant Planning Stage	(Sb) Structure plan where the lot layout is known and subdivision application		
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.		
Pathway Applied to Provide an Alternative Solution	N/A		
Acceptable Solutions - Assessment Statements All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the 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 https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas .			
Solution Component Check Box Legend <input checked="" type="checkbox"/> Relevant & met <input checked="" type="checkbox"/> Relevant & not met <input type="checkbox"/> Not relevant			
E2 Siting and Design of Development			Compliant: Yes
A2.1 Asset Protection Zone (APZ)	Applicable:	Yes	Compliant: Yes
APZ DIMENSIONS – DIFFERENCES IN REQUIREMENTS FOR PLANNING ASSESSMENTS COMPARED TO IMPLEMENTATION A key required bushfire protection measure is to reduce the exposure of buildings/infrastructure (as exposed vulnerable elements at risk), to the direct bushfire threats of flame contact, radiant heat and embers and the indirect threat of consequential fires that result from the subsequent ignition of other combustible materials that may be constructed, stored or accumulate in the area surrounding these structures. This reduces the associated risks of damage or loss. This is achieved by separating buildings (and consequential fire fuels as necessary) from areas of classified bushfire prone vegetation. This area of separation surrounding buildings is identified as the Asset Protection Zone (APZ) and consists of no vegetation and/or low threat vegetation (refer to Appendix B). The required separation distances will vary according to the site specific conditions and local government requirements. The APZ dimensions stated and/or illustrated in this Report can vary dependent on the purpose for which they are being identified.			
<div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><i>Note: Appendix B 'Onsite Vegetation Management' provides further information regarding the different APZ dimensions that can be referenced, their purpose and the specifications of the APZ that are to be established and maintained on the subject lot.</i></p> </div>			
THE 'PLANNING BAL-29' APZ DIMENSIONS Purpose: To provide evidence of the development or use proposal's ability to achieve minimum vegetation separation distances. To achieve 'acceptable solution' planning approval for this factor, it must be demonstrated that the minimum separation distances corresponding to a maximum level of radiant transfer to a building of 29 kW/m ² , either exist or can be implemented (with certain exceptions). These separation distances are the 'Planning BAL-29' APZ dimensions.			

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

THE 'REQUIRED' APZ DIMENSIONS

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

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

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

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

ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES

<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>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/m².</p>
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>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).</p>
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>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.</p>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>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).</p>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>APZ Location: It can be justified that any adjoining (offsite) land forming part of a 'Planning BAL-29' APZ will:</p> <ul style="list-style-type: none"> • If non-vegetated, remain in this condition in perpetuity; and/or • If vegetated, be low threat vegetation maintained in this condition in perpetuity (refer to Appendix B).

<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>APZ Management: The area of land (within each lot boundary), that is to make up the required 'Landowner' APZ dimensions (refer to Appendix B, Part B1), can and will be managed in accordance with the requirements of the Guidelines Schedule 1 'Standards for Asset Protection Zones' (refer to Appendix B).</p>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Staged Subdivision: The subdivision proposes development in stages and each stage is to comply with the relevant bushfire protection criteria.</p> <p>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/m² or below.</p> <p>The planned approach for achieving the required outcome is described in the supporting assessment details below.</p>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Firebreak/Hazard Reduction Notice: Any additional requirements established by the relevant local government's annual notice to install firebreaks and manage fuel loads (issued under s33 of the Bushfires Act 1954), can and will be complied with.</p>
<p>Supporting Assessment Details:</p> <p>Onsite native vegetation will be required to be modified and/or removed, for which the appropriate authority will be required (refer to Section 2 of this BMP and Appendix A). Once the staged subdivision is complete, the parts of the 'Planning BAL-29' APZ that exist outside each proposed lot consist of:</p> <ul style="list-style-type: none"> Roads and unvegetated verges Footpaths Parking bays Landscaped public open space managed by local government. Adjacent lots with no existing vegetation and planned high density residential construction and associated managed landscaping. <p>For offsite land that is part of the 'Planning BAL-29' APZ, a written agreement will be required between the developer and Main Roads to allow the extension of the Maintenance Access Track along the Roe Highway Road Reserve and management of this area in perpetuity.</p>	
ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)	
<p>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."</p> <p>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.</p>	
<p>Scenario C: BAL-40 or BAL-FZ levels of radiant heat are contained within the front setback of a lot(s) with road frontage that provides for hazard separation (as prescribed in a local planning scheme or the residential Design Codes).</p>	

5.5 Assessment Statements for Element 3: Vehicular Access

VEHICULAR ACCESS			
Element Intent	To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.		
Proposed Development/Use – Relevant Planning Stage	(Sb) Structure plan where the lot layout is known and subdivision application		
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.		
Pathway Applied to Provide an Alternative Solution	N/A		
<p align="center">Acceptable Solutions - Assessment Statements</p> <p>All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the 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 https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.</p> <p>The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices 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>			
Solution Component Check Box Legend	<input checked="" type="checkbox"/> Relevant & met	<input checked="" type="checkbox"/> Relevant & not met	<input type="checkbox"/> Not relevant
E3 Vehicular Access	Compliant:	Yes	
A3.1 Public roads – technical requirements	Applicable:	Yes	Compliant: Yes
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The technical construction requirements of vertical clearance and weight capacity (Guidelines, Table 6) 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>		
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	A traversable verge is available adjacent to classified vegetation (Guidelines, E3.1), as recommended.		
<p>Supporting Assessment Details:</p> <p>All proposed roads will be constructed 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.</p>			

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 vehicular access is provided in two different directions to at least two different suitable destinations with an all-weather surface.				
<input checked="" type="checkbox"/> <input type="checkbox"/> <input 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.				
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<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> <ul style="list-style-type: none"> • Demonstration of no alternative access (refer to A3.3 below); • The no-through road travels towards a suitable destination; and • 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 (<12.5 kW/m²). 				
Supporting Assessment Details: Existing and proposed subdivision public roads provide access and egress in two different directions and to two different destinations from all lots or within an intersection of less than 200m from the lot boundary.					
A3.2b Emergency access way		Applicable:	No	Compliant:	N/A
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	The proposed or existing EAW provides a through connection to a public road.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	The proposed or existing EAW is less than 500m in length and will be signposted and gated (remaining unlocked) to the specifications stated in the Guidelines and/or required by the relevant local government.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.2b. Refer also to Appendix C in this BMP), can and will be complied with.				
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	<p>The subdivision proposes development in stages and each stage is to comply with the relevant bushfire protection criteria.</p> <p>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.</p>				
Supporting Assessment Details: None required.					
A3.3 Through-roads		Applicable:	Yes	Compliant:	Yes
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="radio"/>	A no-through public road is necessary as no alternative road layout exists due to site constraints.				
<input checked="" type="checkbox"/> <input type="checkbox"/> <input 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="radio"/>	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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The turnaround area requirements (Guidelines, Figure 24) can and will be complied with.
Supporting Assessment Details: For this stage of development, there is 1 no-through road (Education Road). This road does not exceed 200m in length and will comply with the turn around area requirements at the cul-de-sac.			
A3.4a Perimeter roads			Applicable: Yes Compliant: 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="checkbox"/>	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: <ul style="list-style-type: none"> The vegetation adjoining the proposed lots is classified Class G Grassland; Lots are zoned rural living or equivalent; It is demonstrated that it cannot be provided due to site constraints; or All lots have existing frontage to a public road.
<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.
Supporting Assessment Details: A perimeter road is proposed for the subdivision development as a whole and will be constructed to the technical construction requirements outlined in the Guidelines and Appendix C of this document.			
A3.4b Fire service access route			Applicable: No Compliant: N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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="checkbox"/>	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="checkbox"/>	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="checkbox"/>	Turnaround areas (to accommodate type 3.4 fire appliances) can and will be installed every 500m on the FSAR.
Supporting Assessment Details: None required.			
A3.5 Battle-axe access legs			Applicable: No Compliant: N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	It can be demonstrated that 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"/>	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.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.
Supporting Assessment Details: None required.			
A3.6 Private driveways			Applicable: No Compliant: N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	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.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	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.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	The turnaround area requirements (Guidelines, Figure 28, and within 30m of the habitable building) can and will be complied with.
Supporting Assessment Details: None required.			

5.6 Assessment Statements for Element 4: Water

WATER			
Element Intent	To ensure water is available to enable people, property and infrastructure to be defended from bushfire.		
Proposed Development/Use – Relevant Planning Stage	(Sb) Structure plan where the lot layout is known and subdivision application		
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.		
Pathway Applied to Provide an Alternative Solution	N/A		
<p align="center">Acceptable Solutions - Assessment Statements</p> <p>All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the 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 https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.</p> <p>The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices 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>			
Solution Component Check Box Legend	<input checked="" type="checkbox"/> Relevant & met	<input checked="" type="checkbox"/> Relevant & not met	<input type="checkbox"/> Not relevant
E4 Water	Compliant:	Yes	
A4.1 Identification of future firefighting water supply	Applicable:	No	Compliant: 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.			
Supporting Assessment Details: None required.			
A4.2 Provision of water for firefighting purposes	Applicable:	Yes	Compliant: Yes
<input 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 checked="" 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. The proposed subdivision will retain an existing habitable building for which the same standard of water supply will be provided.			
<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.	
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	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).
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	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.
<p>Supporting Assessment Details:</p> <p>During subdivisional works, water hydrants will be installed within the subdivision to comply with the technical construction requirements within Appendix D of this document and be located no more than 200m apart.</p> <p>Refer to information contained in Appendix D for the firefighting water supply specifications and technical requirements.</p>	

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

TABLE 6.1(A) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)	
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"> • 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 • 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 • An alternative standard in a gazetted local planning scheme; or <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>Establish the planned public open space. Ensure all retained and planned vegetation can be regarded as 'low threat' when considering the relevant parameters of extent, connectivity, flammability, moisture or fuel load.</p>
3	<p>Clearing and/vegetation modification to be undertaken in accordance with requirements established by the BMP.</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>
4	<p>To facilitate the staging arrangements of the subdivision, vegetation removal and/or modification is required on land that is part of a subsequent stage.</p>
5	<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(A) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)	
6	Install the reticulated firefighting water supply and hydrants to comply with the technical requirements referenced in the BMP.
7	Agreement between developer and Main Roads Western Australia has been established; allowing the extension of the already approved Maintenance Access Track along the Roe Highway Road Reserve and the subsequent management of the track by Main Roads.

TABLE 6.1(B) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE BEING ESTABLISHED BY THE WAPC AND/OR LOCAL GOVERNMENT)	
	<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>
1	<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 Responsibilities Prior To Sale or Occupancy or Commencement of Operation

TABLE 6.2(A) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE CHECK TO BE CONDUCTED BY A BUSHFIRE CONSULTANT)	
1	<p>Prior to occupancy/operation establish the 'Required' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy:</p> <ul style="list-style-type: none"> • The minimum required dimensions established in Appendix B1; and • The standards established by the <i>Guidelines for planning in bushfire prone areas</i>, DPLH, 2021 v1.4, Schedule 1; or • 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 • An alternative standard in a gazetted local planning scheme; or <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>To facilitate the staging arrangements of the subdivision, ongoing management of vegetation to a minimal fuel, condition and presenting a low threat, is required on land that is part of a subsequent stage.</p> <p>Prior to sale of the subject lots, and until the subsequent stage is developed, the required vegetation removal and/or modification identified in the BMP must be carried out.</p>

TABLE 6.2(B) REQUIRED BUSHFIRE PROTECTION MEASURES - IMPLEMENTATION ACTIONS (SUBJECT TO COMPLIANCE BEING ESTABLISHED BY THE WAPC AND/OR LOCAL GOVERNMENT)	
1	<p>Prior to sale of a new lot(s), each lot is to be compliant with current version of the Shire of Mundaring Firebreaks and Fuel Load Notice 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)	
	<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>
1	<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 / Occupier Responsibilities – Ongoing Management

TABLE 6.3 REQUIRED BUSHFIRE PROTECTION MEASURES – ONGOING MANAGEMENT ACTIONS	
1	<p>Maintain the 'Required' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy:</p> <ul style="list-style-type: none"> • The minimum required dimensions established in Appendix B1; and • The standards established by the <i>Guidelines for planning in bushfire prone areas</i>, DPLH, 2021 v1.4, Schedule 1; or • 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 • An alternative standard in a gazetted local planning scheme; or
2	<p>Maintain any areas nominated to be revegetated in accordance with the vegetation classification and management standards as specified in the BMP and/or Landscape Management Plan.</p>
3	<p>Comply with the Shire of Mundaring Firebreaks and Fuel Load Notice issued under s33 of the Bush Fires Act 1954. Check the notice annually for any changes.</p>
4	<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>
5	<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"> • The bushfire resistant construction requirements of the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), as established by the Building Regulations 2012 (WA Building Act 2011); and • Any additional bushfire protection measures this Bushfire Management Plan has established are to be implemented.

	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.
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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"> • The determined BAL ratings have been established by an existing BMP or a BAL Assessment; and • 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.

APPENDIX A: DETAILED BAL ASSESSMENT DATA AND SUPPORTING INFORMATION



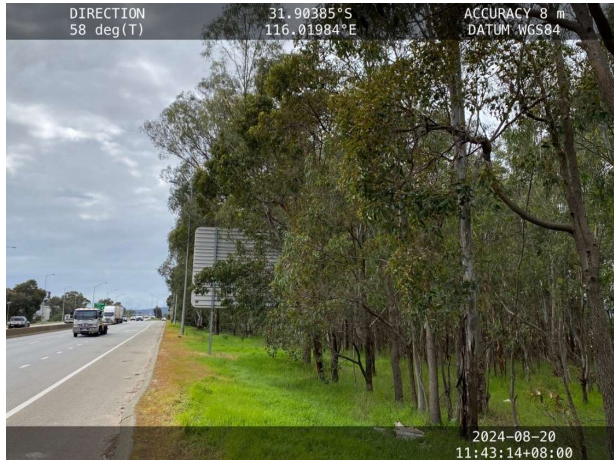

A1: BAL Assessment Inputs Common to the Method 1 and Method 2 Procedures

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


<p>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.</p> <p>The values may be able to be refined within a jurisdiction, where sufficient climatological data is available and in consultation with the relevant authority.</p>						
Relevant Jurisdiction:	WA	Region:	Whole State	Method 1	Applied FDI:	80


A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION



<p>Vegetation Types and Classification</p> <p>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.</p> <p>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.</p> <p>Modified Vegetation</p> <p>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.</p> <p>The Influence of Ground Slope</p> <p>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.</p>	
<p>THE INFLUENCE OF VEGETATION GREATER THAN 100 METRES FROM THE SUBJECT SITE</p>	
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	A. FOREST						
Types Identified	Open forest A-03						
Exclusion Clause	N/A						
Effective Slope	Measured	flat 0 degrees / upslope / parallel slope		Applied Range (Method 1)		Upslope or flat 0 degrees	
Foliage Cover (all layers)	30-70%		Shrub/Heath Height		>2m	Tree Height	Up to 30m
Justification Comments:	This area of vegetation consists of tall, dense Eucalyptus trees intermixed with low shrubs and grasses. Predominantly young, dense eucalyptus trees, interspersed with taller gum species. Scattered native grasses and seasonal grasses.						
Post Development Assumptions:	The extension of the approved Service Access Track will require the removal of some classified vegetation and increase the separation distance between the Forest vegetation and the proposed Lots. This will require approval by the relevant authorities. The extent of the Service Access Track extension is shown in Figure 3.1.1 and 3.1.2 of this document.						
<div><div><div>DIRECTION 66 deg(T)</div><div>31.90391°S 116.01985°E</div><div>ACCURACY 5 m DATUM WGS84</div><div>2024-08-20 11:40:23+08:00</div></div><div><div>DIRECTION 180 deg(T)</div><div>31.90436°S 116.01931°E</div><div>ACCURACY 5 m DATUM WGS84</div><div>2024-08-20 11:42:11+08:00</div></div></div>							
PHOTO ID: 1				PHOTO ID: 2			
<div><div><div>DIRECTION 58 deg(T)</div><div>31.90385°S 116.01984°E</div><div>ACCURACY 8 m DATUM WGS84</div><div>2024-08-20 11:43:14+08:00</div></div><div><div>DIRECTION 276 deg(T)</div><div>31.90452°S 116.01989°E</div><div>ACCURACY 5 m DATUM WGS84</div><div>2024-08-20 11:45:49+08:00</div></div></div>							
PHOTO ID: 3				PHOTO ID: 4			

<p>DIRECTION 78 deg(T) 31.90616°S ACCURACY 5 m 116.02233°E DATUM WGS84</p>  <p>2024-08-20 11:55:04+08:00</p>	<p>DIRECTION 129 deg(T) 31.90563°S ACCURACY 6 m 116.02261°E DATUM WGS84</p>  <p>2024-08-20 11:56:18+08:00</p>
<p>PHOTO ID: 5</p>	<p>PHOTO ID: 6</p>

VEGETATION AREA 2						
Classification	A. FOREST					
Types Identified	Open forest A-03					
Exclusion Clause	N/A					
Effective Slope	Measured	d/slope 6 degrees		Applied Range (Method 1)		Downslope >5-10 degrees
Foliage Cover (all layers)	30-70%		Shrub/Heath Height		1-2m	Tree Height Up to 30m
Justification Comments:	Dense forest vegetation on the western side of Roe Highway. Tall native trees with a multitiered understorey structure "ladder fuels" which may comprise of low to tall shrubs, scrub, and immature dominant tree species and a dense grassy under storey.					
Post Development Assumptions:	N/A					
<div><div><div>DIRECTION 268 deg(T)</div><div>31.90428°S 116.01940°E</div></div><div><div>ACCURACY 5 m DATUM WGS84</div><div></div></div><div><div>2024-08-20 11:41:53+08:00</div></div></div>						
PHOTO ID: 7						

VEGETATION AREA 3						
Classification	B. WOODLAND					
Types Identified	Woodland B-05			Low woodland B-07		
Exclusion Clause	N/A					
Effective Slope	Measured	flat 0 degrees		Applied Range (Method 1)		Upslope or flat 0 degrees
Foliage Cover (all layers)	10-30%		Shrub/Heath Height		<2m	Tree Height Up to 30m
Justification Comments:	This section of vegetation along Roe Highway consists of a mix of scattered shrubs and small trees with a dominant grassy understorey. Including scattered Shea oaks, Paperbark trees and other native species.					
Post Development Assumptions:	N/A					
<div><div><div>DIRECTION 281 deg(T)</div><div>31.90201°S 116.02223°E</div></div><div><div>ACCURACY 4 m DATUM WGS84</div><div></div></div><div>2024-07-02 14:16:27+08:00</div></div>						
PHOTO ID: 8						

VEGETATION AREA 4						
Classification	D. SCRUB					
Types Identified	Closed scrub D-13					
Exclusion Clause	N/A					
Effective Slope	Measured	flat 0 degrees		Applied Range (Method 1)		Upslope or flat 0 degrees
Foliage Cover (all layers)	10-30%		Shrub/Heath Height		Up to 6m	Tree Height Up to 30m
Justification Comments:	This section of the narrow strip of vegetation along Roe Highway is dominated by <i>Melaleuca</i> species which are unlikely to reach more than 6m in height at maturity, occasional Shea oaks (<i>Casuarina equisetifolia</i>) and a dense shrub layer.					
Post Development Assumptions:	N/A					
<div><div><div>DIRECTION 4 deg(T)</div><div>31.90144°S 116.02296°E</div><div>ACCURACY 7 m DATUM WGS84</div></div><div></div><div>2024-07-02 14:11:26+08:00</div></div>						
<div><div><div>DIRECTION 323 deg(T)</div><div>31.90161°S 116.02276°E</div><div>ACCURACY 8 m DATUM WGS84</div></div><div></div><div>2024-07-02 14:08:00+08:00</div></div>						
PHOTO ID: 9				PHOTO ID: 10		

VEGETATION AREA 5							
Classification	G. GRASSLAND						
Types Identified	Sown pasture G-26			Open tussock G-23			
Exclusion Clause	N/A						
Effective Slope	Measured	flat 0 degrees		Applied Range (Method 1)		Upslope or flat 0 degrees	
Foliage Cover (all layers)	<30%		Shrub/Heath Height		<2m	Tree Height	Up to 30m
Justification Comments:	Large areas of grassland outside of this development area have been classified as worst case scenario. The area is dominated by grass, with the occasional tree and small wetland shrubs along the bank of the Helena River.						
Post Development Assumptions:	Grasses need to be removed / managed as indicated in Figure 3.1.2 within this document allowing for future stages of development.						
<div><div>DIRECTION 172 deg(T)</div><div>31.90503°S 116.01953°E</div><div>ACCURACY 5 m DATUM WGS84</div></div> <div></div> <div><div>2024-08-20 11:47:25+08:00</div></div>							
PHOTO ID: 11							





VEGETATION AREA 6					
Exclusion Clause	2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - minimal fuel condition.				
Effective Slope	Measured	-		Applied Range (Method 1)	-
Foliage Cover (all layers)	-	Shrub/Heath Height	-	Tree Height	-
Justification Comments:	Non-vegetated areas such as those cleared for roads and new lots within the subdivision have been excluded. Managed and landscaped areas, such as road verges, public open spaces and managed areas of the Helena River have been excluded due to their minimal fuel condition and low threat vegetation. Grasses have been kept to less than 5cm in height, all trees have been under pruned and cleared of any under storey to a parkland standard both within the subdivision development and the surrounding residential area. The Park and Recreation Reserve Development has been considered and is expected to be maintained as a "low threat" area.				
Post Development Assumptions:	N/A				
<div><div><div>DIRECTION 134 deg(T)</div><div>31.90487°S 116.02413°E</div><div>ACCURACY 6 m DATUM WGS84</div></div><div></div><div>2024-07-02 14:48:34+08:00</div></div>					
PHOTO ID: 12			<div><div><div>DIRECTION 148 deg(T)</div><div>31.90563°S 116.02101°E</div><div>ACCURACY 7 m DATUM WGS84</div></div><div></div><div>2024-08-20 11:52:58+08:00</div></div>		
<div><div><div>DIRECTION 343 deg(T)</div><div>31.90475°S 116.02281°E</div><div>ACCURACY 10 m DATUM WGS84</div></div><div></div><div>2024-08-20 11:57:57+08:00</div></div>					
PHOTO ID: 14			<div><div><div>DIRECTION 87 deg(T)</div><div>31.90354°S 116.02334°E</div><div>ACCURACY 16 m DATUM WGS84</div></div><div></div><div>2024-07-02 14:37:46+08:00</div></div>		
PHOTO ID: 15					



PHOTO ID: 16



PHOTO ID: 17

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 to 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 to be ignited by a single ignition point or is multipoint ignition possible from bushfire on 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/m². 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:

- 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;
- 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.
- 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/m² and/or 2 kW/m² and calculated using a flame temperature of 1200 K – rather than 29kW/m² 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/m² and 2 kW/m² and calculated using a flame temperature of 1200K – rather than 29kW/m² 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.

DETERMINATION OF THE 'REQUIRED' APZ DIMENSIONS TO BE IMPLEMENTED AND MAINTAINED BY LANDOWNER WITHIN THEIR LOT										
Relevant Buildings(s)	Vegetation Classification [Refer to Fig 3.1]		Minimum Required Separation Distances from Building to Vegetation (metres)							
			Established by the 'BAL Rating' APZ Dimension				Established by the "Local Government" APZ Dimension		The 'Required' APZ Dimensions [see note]	
	Area	Class	Determined Radiant Heat Impact	Stated 'Indicative' or 'Conditional' BAL				Firebreak / Hazard Reduction Notice		Maximum Allowed
BAL-29				BAL-19	BAL-12.5	BAL-LOW				
All proposed allotments	1	(A) Forest	N/A	21-<31	31-<42	42-<100	>100	20m APZ may be required by a Fire Control Officer from the Shire of Mundaring	N/A	All land within the new allotments will be the required APZ. The road verges should also be managed to the APZ standard.
	2	(A) Forest		33-<46	46-<61	61-<100	>100			
	3	(B) Woodland		14-<20	20-<29	29-<100	>100			
	4	(D) Scrub		13-<19	19-<27	27-<100	>100			
	5	(G) Grassland		8-<12	12-<17	17-<50	>50			
	6	Excluded cl 2.2.3.2(e & f)		-	-	-	-			
Note: The 'Required' APZ Dimension corresponding to each area of vegetation is the greater of the 'BAL Rating' or the 'Firebreak/Hazard Reduction Notice' APZ dimensions – unless a local government maximum distance(s) is established as a result of their environmental assessment of the subject site. The area of the APZ will also be limited to the subject lot boundary unless otherwise justified in this Report/Plan. Final determination of the dimensions will require that any indicative or conditional BAL becomes a 'Determined' BAL.										
Comments: None required.										

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.

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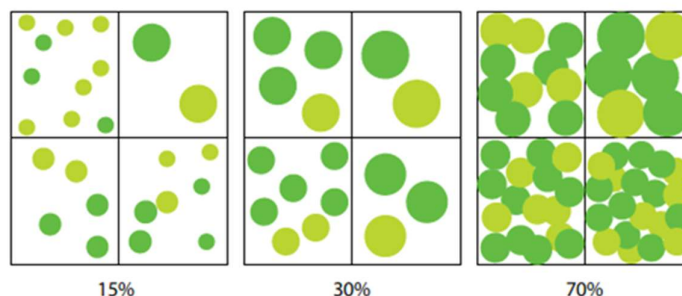


ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	<ul style="list-style-type: none"> • Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	<ul style="list-style-type: none"> • Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	<ul style="list-style-type: none"> • Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.

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



Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	<ul style="list-style-type: none"> • Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	<ul style="list-style-type: none"> • Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
Grass	<ul style="list-style-type: none"> • Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	<ul style="list-style-type: none"> • Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	<ul style="list-style-type: none"> • Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

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

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

Refer to the firebreak / 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.

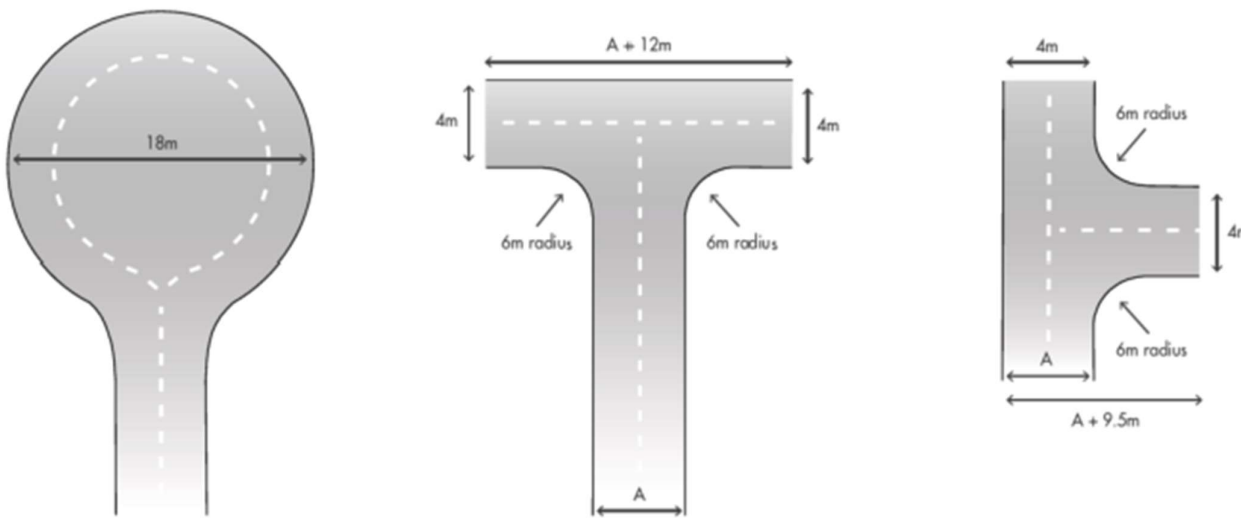
NOTES:

- 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 ¹	Fire Service Access Route ¹	Battle-axe and Private Driveways ²
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum Horizontal clearance (m)	N/A	6	6	6
Minimum Vertical clearance (m)	4.5			
Minimum weight capacity (t)	15			
Maximum Grade Unsealed Road ³	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum Grade Sealed Road ³		1:7 (14.3%)		
Maximum Average Grade Sealed Road		1:10 (10%)		
Minimum Inner Radius of Road Curves (m)		8.5		
Turnaround Area Dimensions for No-through Road, Battle-axe Legs and Private Driveways ⁴				
				
Passing Bay Requirements for Battle-axe leg and Private Driveway				
When the access component length is greater than the stated maximum, passing bays are required every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum 6m).				
Emergency Access Way – Additional Requirements				
Provide a through connection to a public road, be no more than 500m in length, must be signposted and if gated, gates must be open the whole trafficable width and remain unlocked.				
¹ To have crossfalls between 3 and 6%.				
² Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.				
³ Dips must have no more than a 1 in 8 (12.5% or 7.1 degree) entry and exit angle.				
⁴ The turnaround area should be within 30m of the main habitable building.				

APPENDIX D: TECHNICAL REQUIREMENTS FOR FIREFIGHTING WATER SUPPLY

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 <10,000m² 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 m² (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.