

# Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address:

Site visit: Yes  No

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

Report author or reviewer:

WA BPAD accreditation level (please circle):

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

If accredited please provide the following.

BPAD accreditation number:  Accreditation expiry: Month  Year

Bushfire management plan version number:

Bushfire management plan date: Day  Month  Year

Client/business name:

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		

Is the proposal any of the following (see <a href="#">SPP 3.7 for definitions</a> )?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		
Strategic planning proposal (including rezoning applications)		
High risk land-use		
Vulnerable land-use		


None of the above

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

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

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

Signature of report author or reviewer



Date



# Bushfire Management Plan

Pt Lot 9702 (#10) Enterprise Avenue, Two Rocks

City of Wanneroo

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<b>Planning Stage:</b>	Development Application and LDP Consideration
<b>Planning Development Type:</b>	Construction of Class 4 - 9 buildings and associated amenities.
<b>Bushfire Policy – Specific Development or Use Type:</b>	N/A

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<b>Job Number:</b>	210744
<b>Assessment Date:</b>	14 September 2021
<b>Report Date:</b>	6 October 2021

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**BPP Group Pty Ltd t/a Bushfire Prone Planning**  
**ACN: 39 166 551 784 | ABN: 39 166 551 784**

**Level 1, 159-161 James Street**  
**Guildford WA 6055**

**PO Box 388**  
**Guildford WA 6935**

**08 6477 1144 | admin@bushfireprone.com.au**



## DOCUMENT CONTROL

PREPARATION				
Author:	Ian Macleod (BPAD Level 2 - No. 39131)	<i>Ian Macleod</i>		
Co-Author:	-			
Review/Authorise:	Kathy Nastov (BPAD Level 3 - No. 27794)	<i>K. Nastov</i>		
VERSION HISTORY				
Version	Version Details	Date		
1.0	Original Document Issue	7 October 2021		
-				
BMP (Standard DA-Non-Tourism) Template v8.5				
DISTRIBUTION				
Destination	Version	No. Copies	Hard Copy	Electronic Copy
<b>Person/Business:</b> Mike van Dongen/Encon <b>Email:</b> mike@encon.com.au	1.0		<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Person/Business:</b> <b>Email:</b>			<input type="checkbox"/>	<input type="checkbox"/>
<p><b>Limitation of Liability:</b> The measures contained in this Bushfire Management Plan, are considered to be minimum requirements and they do not guarantee that a building will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating. This is substantially due to the unpredictable nature and behaviour of fire and fire weather conditions. Additionally, the correct implementation of the required bushfire protection measures will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.</p> <p>All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.</p> <p>Notwithstanding anything contained therein, Bushfire Prone Planning will not, except as the law may require, be liable for any loss or other consequences whether or not due to the negligence of their consultants, their servants or agents, arising out of the services provided by their consultants.</p> <p><b>Copyright ©2020 BPP Group Pty Ltd:</b> All intellectual property rights, including copyright, in format and proprietary content contained in documents created by Bushfire Prone Planning, remain the property of BPP Group Pty Ltd. Any use made of such format or content without the prior written approval of Bushfire Prone Planning, will constitute an infringement on the rights of the Company which reserves all legal rights and remedies in respect of any such infringement.</p>				

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## EXECUTIVE SUMMARY

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This Bushfire Management Plan (BMP) is to accompany a Development Application for the Woolworths retail centre located on a portion of Lot 9702 (#10) Enterprise Avenue, Two Rocks in the City of Wanneroo. This BMP will also consider future development on land to the south and west of the Woolworths centre as shown on the Precinct C Local Development Plan.

Two proposed buildings will be assessed with respect to bushfire planning performance. These are the Woolworths and specialty shops retail centre located in the western portion of the development site, and the proposed retail/commercial building located in the north-eastern corner of the site. Future development sites as shown on Figure 1.1 will also be considered with respect to the bushfire protection criteria.

It is expected that the Woolworths site and surrounding roads, located at the northern portion of the Precinct C Local Development Plan, will be developed initially. Future commercial and residential sites as shown on Figure 1.1 will follow at a later date. Construction and management of the surrounding roads and verges will provide separation between native vegetation and the proposed development sites.

The assessments and bushfire protection measures detailed in the BMP, assume that environmental approval will be achieved or clearing permit exemptions will apply. The proposed development can comply with the bushfire protection criteria.

All revegetation on the proposed development sites will comply with the requirements of the Guidelines for Planning in Bushfire Prone Areas Schedule 1: Standards for Asset Protection Zones. An area of Public Open Space will exist to the west of the Woolworths development site and it is expected that this area will also be maintained to a low bushfire threat state.

The proposed Woolworths development, and future development sites on the Precinct C LDP, will provide an area of land within each lot that can be considered suitable for development as BAL-40 or BAL-FZ construction standards will not be required to be applied. This meets the requirements established by Acceptable Solution A1.1 and its associated explanatory note.

Future buildings on the proposed Woolworths development site, and future commercial and residential lots, can be surrounded by an APZ that will ensure the potential radiant heat impact of a bushfire does not exceed 29 kW/m<sup>2</sup> (BAL-29). The required APZ specifications of width, location and management can be achieved. The Asset Protection Zone (APZ) for the proposed two buildings, and future developments, will exist both within and outside the proposed lots. The portions of the required size APZ that exist outside each proposed lot consists of roads and managed road verges.

For this proposal, it is expected that the whole of each future lot and abutting road reserves are to be maintained to a low bushfire threat state. The proposed development consists of commercial lots and small scale housing lots. The commercial lots will consist of buildings, parking areas, loading areas and small areas of managed landscaping. The residential lots are required by the City of Wanneroo Fire Mitigation Notice to be maintained to a low bushfire threat state over the bushfire season.

A small area of Public Open Space and drainage reserve is located to the west of the proposed shopping complex. This area is expected to be landscaped and maintained to a low bushfire threat state by the landowner.

Perimeter roads are to be constructed around the proposed development sites and connecting to Lisford Avenue to the east, and Enterprise Avenue to the north. This road system will provide a minimum of two access/egress routes from each proposed lot. No buildings will be greater than 50 metres from a public road, therefore construction of driveways to bushfire standards is not required.

A reticulated water supply is available to the subject site and hydrants will be installed in locations throughout the development as required by the relevant authorities.

Buildings of Class 4 to Class 9 are not required by the Building Code of Australia (BCA) to be constructed to comply with bushfire performance requirements. As the proposed buildings will be located in a bushfire prone area and may be subject to a bushfire attack, Bushfire Prone Planning recommends that some degree of upgrading be considered to improve the protection for occupants and the building's survivability. At a minimum protection from ember attack should be considered (i.e. constructed to the standard required for BAL-12.5).

# 1 PROPOSAL DETAILS

## 1.1 Description and Associated Plans and Maps

Proponent:	Encon
Bushfire Prone Planning Commissioned to Produce the Bushfire Management Plan (BMP) By:	Encon
For Submission To:	City of Wanneroo
Purpose of the BMP:	To accompany a planning application
Description of the Proposed Development:	
<p>This Bushfire Management Plan (BMP) is to accompany a Development Application for the Woolworths retail centre located on a portion of Lot 9702 (#10) Enterprise Avenue, Two Rocks in the City of Wanneroo. This BMP will also consider future development on land to the south and west of the Woolworths centre as shown on the Precinct C Local Development Plan.</p> <p>Two proposed buildings will be assessed with respect to bushfire planning performance. These are the Woolworths and specialty shops retail centre located in the western portion of the development site, and the proposed retail/commercial building located in the north-eastern corner of the site. Future development sites as shown on Figure 1.1 will also be considered with respect to the bushfire protection criteria.</p>	
Staged Development and Management of Potential Bushfire Hazard Issues	
<p>It is expected that the Woolworths site and surrounding roads, located at the northern portion of the Precinct C Local Development Plan, will be developed initially. Future commercial and residential sites as shown on Figure 1.1 will follow at a later date.</p> <p>Construction and management of the surrounding roads and verges will provide separation between native vegetation and the proposed development sites.</p>	



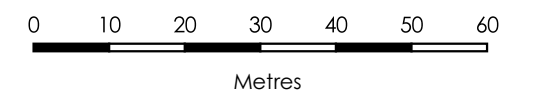
Figure 1.1

# Proposed Development and Precinct C LDP Site Layout

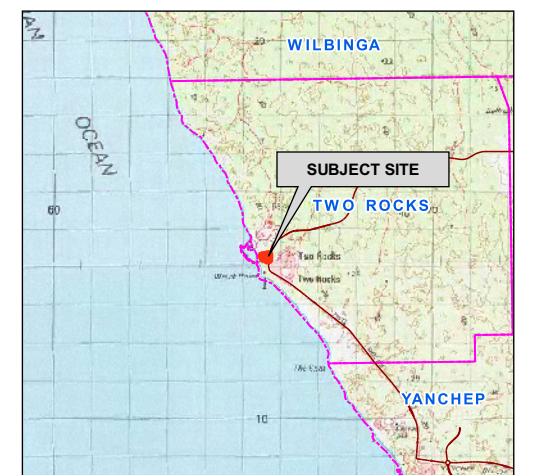
Portion of Lot 9702 on Plan 402964  
10 Enterprise Avenue  
TWO ROCKS  
CITY OF WANNEROO

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

- Subject Site
- Cadastre
- Proposed Buildings
- Parking Area
- Delivery-Loading
- Grocery Pick Up
- Landscaping
- External Area
- POS-Drainage
- Future Commercial Development
- Future Residential Development
- Proposed Road
- Road Verge



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



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map by: Ian Macleod 24-09-2021  
SCALE (A3): 1 : 1000









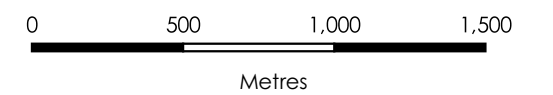
Figure 1.2

### Proposed Development Bushfire Prone Areas

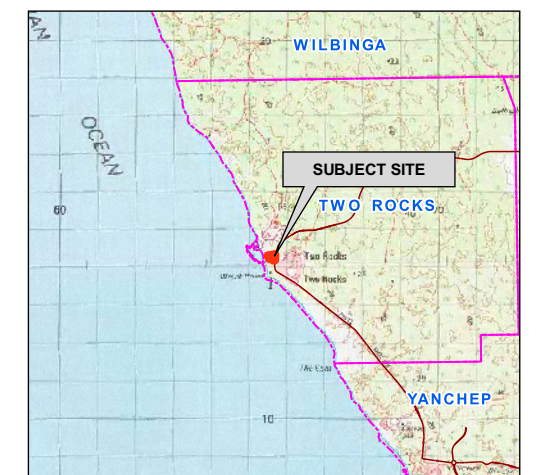
Portion of Lot 9702 on Plan 402964  
10 Enterprise Avenue  
TWO ROCKS  
CITY OF WANNEROO

----- LEGEND -----

-  DFES Stations
-  Bush Fire Prone Areas 2019
-  Subject Site
-  Locality
-  Local Government Area
-  Cadastre



----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map by: Ian Macleod 01-10-2021  
SCALE (A3): 1 : 25000



## 1.2 Existing Documentation Relevant to the Construction of this Plan

This section acknowledges any known reports or plans that have been prepared for previous planning stages, that refer to the subject area and that may or will impact upon the assessment of bushfire risk and/or the implementation of bushfire protection measures and will be referenced in this Bushfire Management Plan.

Table 2.1: Existing relevant documentation.

RELEVANT EXISTING DOCUMENTS		
Existing Document	Copy Provided by Client	Title
Structure Plan	No	
Environmental Report	No	
Landscaping (Revegetation) Plan	Yes	Included in Concept Design-Design Review Panel No. 2
Bushfire Risk Assessments	No	

## 2 ENVIRONMENTAL CONSIDERATIONS

### 2.1 Native Vegetation – Restrictions to Modification and/or Clearing

Many bushfire prone areas also have high biodiversity values. SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values (Guidelines s2.3).

There is a requirement to identify any need for onsite modification and/or clearing of native vegetation and whether this may trigger potential environmental impact/referral requirements under State and Federal environmental legislation. Confirmation that any proposed native vegetation modification and/or clearing is acceptable, should be received from the relevant agencies by the proponent and provided to the bushfire consultant for inclusion in the Bushfire Management Plan if it will influence the required bushfire planning assessments and outcomes. The following table details any potential environmental restrictions of which the author of this report is aware.

Table 2.2: Native vegetation and potential environmental considerations and restrictions.

NATIVE VEGETATION MODIFICATION / CLEARING - POTENTIAL ENVIRONMENTAL RESTRICTIONS IDENTIFIED				
Environmental Considerations / Features	Potential Mapping Data Source (SLIP / Local Planning)	Relevant to Proposed Development	Data Applied	Action Required
Onsite clearing of native vegetation is required.		Yes		
Environmental impact/referral requirements under State and Federal environmental legislation may be triggered.		Possible		
National Park / Nature Reserve	DBCA-011	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Conservation Covenant	DPIRD-023	Not Known	Data Not Readily Available to Bushfire Consultant	Proponent to Seek Advice
Bush Forever Site	DPLH-019	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
RAMSAR Wetland	DBCA-010	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Geomorphic and Other Wetland	DBCA-011-019, 040, 043, 044	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Threatened and Priority Ecological Communities (TECs or PECs)	DBCA-038	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None
Threatened and Priority Flora including Declared Rare Flora (DRFs)	DBCA-036	No-Confirmed by Bushfire Consultant	Relevant Database Reviewed by Bushfire Consultant	None

Land Identified as significant through a Local Biodiversity Strategy	LG - Intramaps	Not Known	Data Not Readily Available to Bushfire Consultant	Proponent to Seek Advice
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**Statement of how the identified environmental feature(s) is dealt with in this Bushfire Management Plan (and the location of relevant information):**

The assessments and bushfire protection measures detailed the BMP, assume that environmental approval will be achieved or clearing permit exemptions will apply.

It is advised that the proponent seek further advice from an Environmental Consultant or the WA Department of Biodiversity Conservation and Attractions for further information on the condition and species contained within the proposed development area and the requirement for referral of the proposal.

## Development Design Considerations

Establishing development in bushfire prone areas can adversely affect the retention of native vegetation through clearing associated with the creation of lots and/or asset protection zones. Where loss of vegetation is not acceptable or causes conflict with landscape or environmental objectives, it will be necessary to consider available design options to minimise the removal of native vegetation.

Table 2.3: Development design.

<b>MINIMISE THE REMOVAL OF NATIVE VEGETATION</b>	
Design Option	Assessment / Action
Reduction of lot yield	N/A
Cluster development	N/A
Construct building to a standard corresponding to a higher BAL as per BCA (AS 3959:2018 and/or NASH Standard)	N/A
Modify the development location	N/A
It is expected that the whole of the subject site will be cleared of native vegetation during the development stage.	
<b>IMPACT ON ADJOINING LAND</b>	
Is this planning proposal able to implement the required bushfire protection measures within the boundaries of the land being developed so as not to impact on the bushfire and environmental management of neighbouring reserves, properties or conservation covenants?	Yes
<p>The adjoining land to the proposed development will be road reserves and these will form a portion of the required low bushfire threat areas to provide necessary separation from bushfire prone areas.</p> <p>The required bushfire protection measures for the proposed Woolworths development will not affect lots on the far side of the surrounding roads.</p>	

## 2.2 Retained Vegetation / Re-vegetation / Landscape Plans (including POS)

Riparian zones, wetland/foreshore buffers, road verges and public open space may have plans to re-vegetate or retain vegetation as part of the proposed development. Vegetation corridors may be created between offsite and onsite vegetation and provide a route for fire to enter a development area.

All retained/planned vegetation and its management will be considered in the development of this Bushfire Management Plan.

Is re-vegetation of riparian zones and/or wetland or foreshore buffers and/or public open space a part of this Proposal?	No
There is no Public Open Space within the Woolworths development site. However, a small POS/drainage reserve will be located to the west of the Woolworths site and developed at a later date.	
Is the requirement for ongoing maintenance of existing vegetation in riparian zones and/or wetland or foreshore buffers and/or public open space a part of this Proposal?	No
However, this will be a requirement for the future abutting POS/drainage site.	
Has a landscape plan been developed for the proposed development?	Yes
A landscape design will be provided for the Woolworths development. It is expected that all landscaped areas within the Woolworths development site will be designed and maintained to a low bushfire threat state.	



### 3 POTENTIAL BUSHFIRE IMPACT ASSESSMENT

#### 3.1 Assessment Input

##### 3.1.1 Fire Danger Index (FDI) Applied

AS 3959:2018 Table 2.1 specifies the fire danger index values to apply for different regions. The values used in the model calculations are for the Forest Fire Danger Index (FFDI) and for which equivalent representative values of the Grassland Fire Danger Index (GFDI) are applied as per Appendix B. The values can be modified if appropriately justified.

Table 3.1: Applied FDI Value

FDI VALUE			
Vegetation Areas	As per AS 3959:2018 Table 2.1	As per DFES for the Location	Value Applied
All Vegetation Areas	80	N/A	80

##### 3.1.2 Vegetation Classification and Effective Slope

**Classification:** Bushfire prone vegetation identification and classification has been conducted in accordance with AS 3959:2018 s2.2.3 and the Visual Guide for Bushfire Risk Assessment in WA (DoP February 2016).

When more than one vegetation type is present, each type is identified separately, and the applied classification considers the potential bushfire intensity and behaviour from the vegetation types present and ensures the worst case scenario is accounted for – this may not be from the predominant vegetation type.

The vegetation structure has been assessed as it will be in its mature state (rather than what might be observed on the day). Areas of modified vegetation are assessed as they will be in their natural unmodified state (unless maintained in a permanently low threat, minimal fuel condition, satisfying AS 3959:2018 s2.2.3.2(f) and asset protection zone standards). Vegetation destroyed or damaged by a bushfire or other natural disaster has been assessed on its revegetated mature state.

**Effective Slope:** Refers to the ground slope under each area of classified vegetation and is described in the direction relative to the view from the building or proposed development site. Effective slope is not the same as 'average slope', rather it is the slope which most significantly influences fire behaviour. This slope has a direct and significant influence on a bushfire's rate of spread and intensity.

Where there is a significant change in effective slope under an area of classified vegetation, that will cause a change in fire behaviour, separate vegetation areas will be identified to enable the correct assessment.

When the effective slope, under a given area of bushfire prone vegetation, will be different relative to multiple proposed development sites, then the effective slopes corresponding to the different locations, are separately identified.

#### Planned Re-vegetation/Landscaping Considerations/Public Open Space Management

All revegetation on the proposed development sites will comply with the requirements of the Guidelines for Planning in Bushfire Prone Areas Schedule 1: Standards for Asset Protection Zones (See Appendix 1).

An area of Public Open Space will exist to the west of the Woolworths development site and it is expected that this area will also be maintained to a low bushfire threat state.

Table 3.2: Vegetation classification and effective slope.

ALL VEGETATION WITHIN 150 METRES OF THE PROPOSED DEVELOPMENT				
Vegetation Area	Identified Vegetation Types <sup>1</sup> or Description if 'Excluded'	Applied Vegetation Classification <sup>1</sup>	Effective Slope (degrees) <sup>2</sup> (AS 3959:2018 Method 1)	
			Assessed	Applied Range
1	Low open forest A-04	Class A Forest	0	upslope or flat
2	Open scrub D-14	Class D Scrub	0	upslope or flat
3	Open heath C-11	Class C Shrubland	0	upslope or flat
4	Open scrub D-14	Class D Scrub	3	downslope >0-5
5	Tussock grassland G-22 , Sown pasture G-26 ,	Class G Grassland	3	downslope >0-5
6	Open heath C-11	Class C Shrubland	5-10	downslope >5-10
7	Managed parkland, bitumen parking area, areas recently cleared for development.	Excluded as per Section 2.2.3.2 (e) & (f)	N/A	N/A
Representative photos of each vegetation area, descriptions and classification justification, are presented on the following pages. The areas of classified vegetation are defined, and the photo locations identified on Figure 3.1, the vegetation and topography map.				
Note <sup>1</sup> : Described and classified as per AS 3959:2018 Table 2.3 and Figures 2.3 and 2.4 (A)-(H)				
Note <sup>2</sup> : Effective slope measured as per AS 3959:2018 Section 2.2.5 and Appendix B Part B4				

### VEGETATION AREA 1

<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class A Forest
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<b>Vegetation Types Present:</b>	Low open forest A-04
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<b>Description/Justification:</b>	Eucalypts and some pines, average 10 metres tall, scrub to 5 metres, shrubs to 2 metres, grass understorey.
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Photo ID: 1a

Photo ID: 1b

### VEGETATION AREA 2

<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class D Scrub
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<b>Vegetation Types Present:</b>	Open scrub D-14
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<b>Description/Justification:</b>	Coastal scrub to 5 metres tall, shrubs to 2 metres tall.
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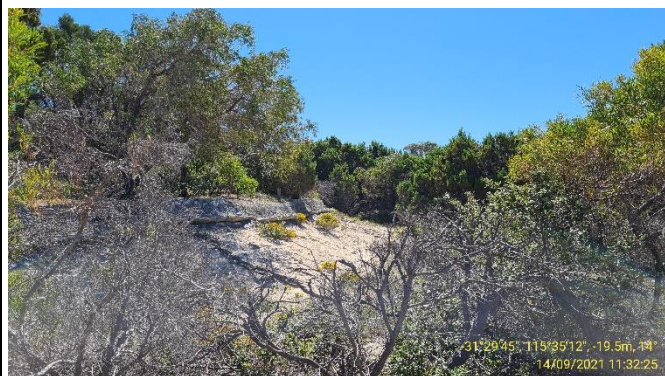





Photo ID: 2a

Photo ID: 2b



VEGETATION AREA 2	
<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class D Scrub
<b>Vegetation Types Present:</b>	Open scrub D-14
<b>Description/Justification:</b>	Coastal scrub regrowth to 6 metres tall, <30% foliage cover, occasional palm trees, grass understorey.
	
Photo ID: 2c	Photo ID: 2d
	
Photo ID: 2e	

**VEGETATION AREA 3**

<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class C Shrubland
<b>Vegetation Types Present:</b>	Open heath C-11
<b>Description/Justification:</b>	Coastal shrubs to 1 metre tall on undulating sand dunes, <30% foliage cover, grass understorey.



Photo ID: 3a



Photo ID: 3b







Photo ID: 3c





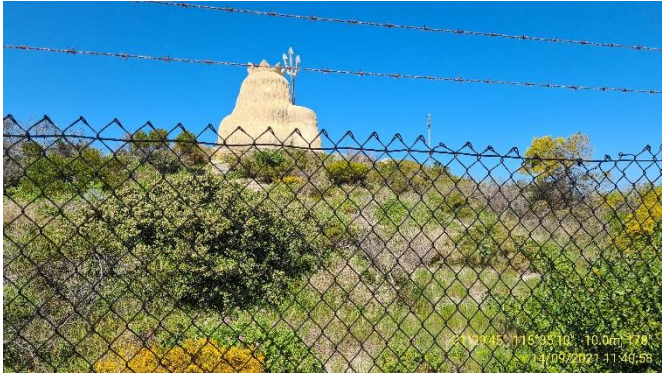

Photo ID: 3d



VEGETATION AREA 4	
<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class D Scrub
<b>Vegetation Types Present:</b>	Open scrub D-14
<b>Description/Justification:</b>	Coastal scrub regrowth to 6 metres tall, <30% foliage cover, grass understorey.
	
Photo ID: 4a	Photo ID: 4b

VEGETATION AREA 5	
<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class G Grassland
<b>Vegetation Types Present:</b>	Sown pasture G-26
<b>Description/Justification:</b>	Partly managed open grassland area.
	
Photo ID: 5a	Photo ID: 5b



VEGETATION AREA 5		
<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class G Grassland	
<b>Vegetation Types Present:</b>	Tussock grassland G-22	Sown pasture G-26
<b>Description/Justification:</b>	Photo 5c: Cleared area with grassy regrowth. Photo 5d: Grasses and sedges and coastal dunes.	
<div style="display: flex; justify-content: space-around;">   </div>		
Photo ID: 5c		Photo ID: 5d
VEGETATION AREA 6		
<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class C Shrubland	
<b>Vegetation Types Present:</b>	Open heath C-11	
<b>Description/Justification:</b>	Coastal shrubs to 1 metre tall, on undulating sand dunes. Occasional isolated scrub. Grass understorey.	
<div style="display: flex; justify-content: space-around;">   </div>		
Photo ID: 6a		Photo ID: 6b

**VEGETATION AREA 6**

<b>AS 3959:2018 Vegetation Classification Applied:</b>	Class C Shrubland
<b>Vegetation Types Present:</b>	Open heath C-11
<b>Description/Justification:</b>	Coastal shrubs to 1 metre tall, on undulating sand dunes. Occasional isolated scrub. Grass understorey.



Photo ID: 6c



Photo ID: 6d



Photo ID: 6e



**VEGETATION AREA 7**

<b>AS 3959:2018 Vegetation Classification Applied:</b>	Excluded as per Section 2.2.3.2 (e) & (f)
<b>Vegetation Types Present:</b>	Low bushfire threat vegetation.
<b>Description/Justification:</b>	Photos 7a & 7b: Managed parkland. Photos 7c & 7d: Driveways and parking areas. Photos 7e & 7f: Areas cleared for development.



Photo ID: 7a



Photo ID: 7b



Photo ID: 7c



Photo ID: 7d



Photo ID: 7e



Photo ID: 7f

**VEGETATION AREA 7**

<b>AS 3959:2018 Vegetation Classification Applied:</b>	Excluded as per Section 2.2.3.2 (e) & (f)
<b>Vegetation Types Present:</b>	Low bushfire threat vegetation.
<b>Description/Justification:</b>	Areas cleared for development.



Photo ID: 7g



Photo ID: 7h



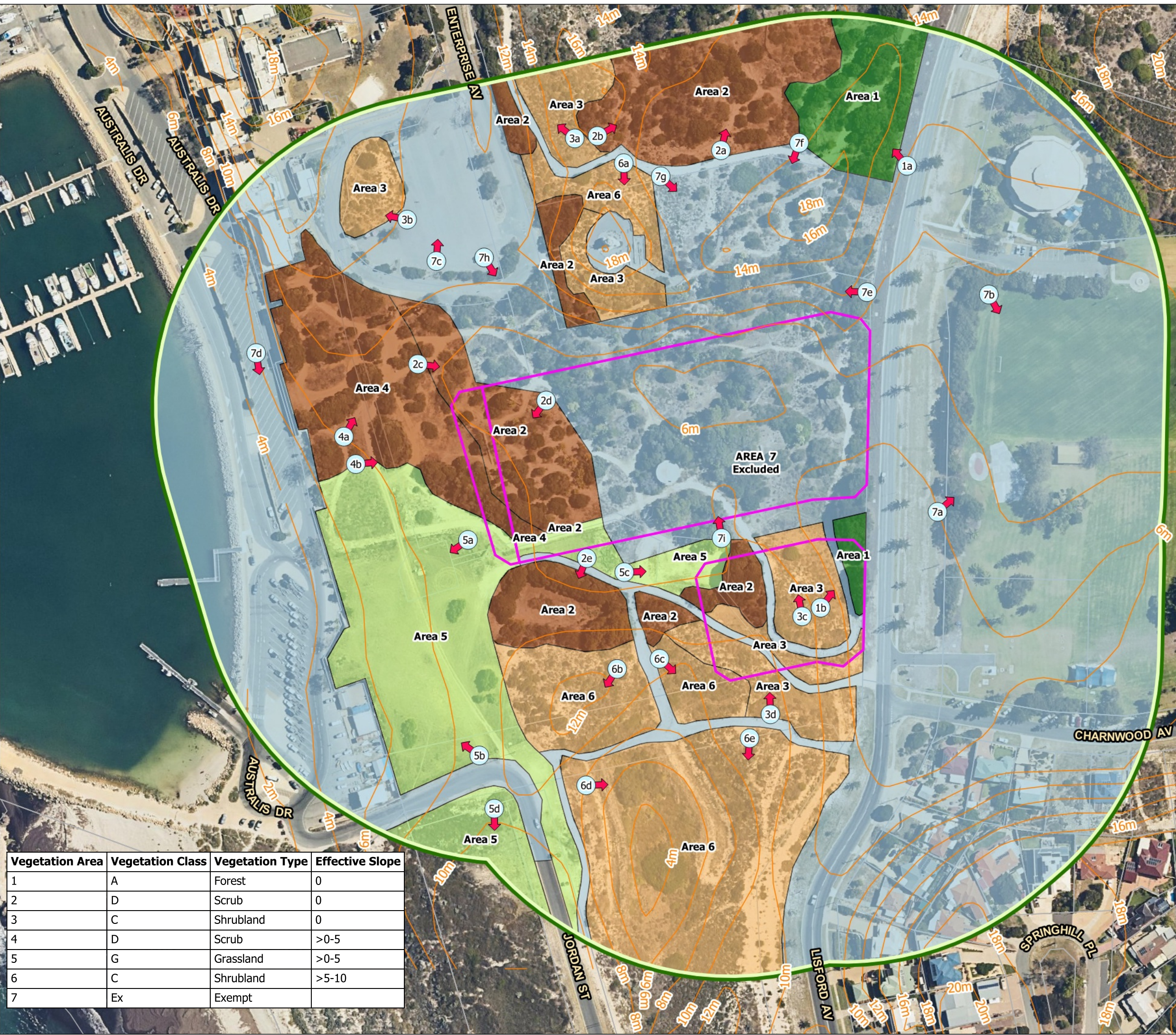
Photo ID: 7i



Figure 3.1

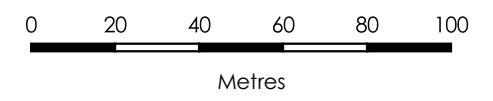
### Existing Topography & Classified Vegetation

Portion of Lot 9702 on Plan 402964  
 10 Enterprise Avenue  
 TWO ROCKS  
 CITY OF WANNEROO

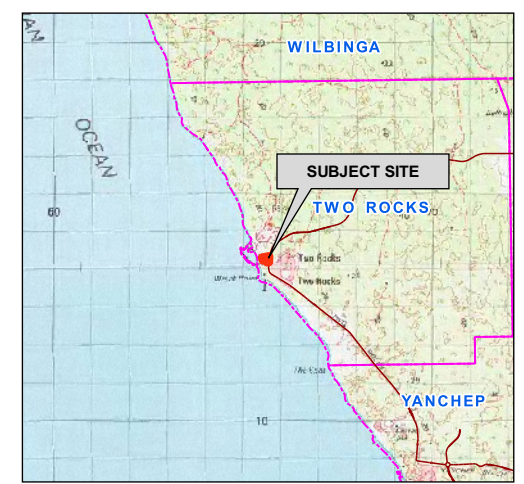


----- LEGEND -----

- Photos
- Elevation (m)
- Subject Site
- 150m\_Assessment\_Area
- Cadastre
- Classified Vegetation**
- Class A - Forest
- Class C - Shrubland
- Class D - Scrub
- Class G - Grassland
- Exclusion 2.2.3.2



----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
 Projection: Universal Transverse Mercator Units: Metre  
 Map by: Ian Macleod 01-10-2021  
 SCALE (A3): 1 : 1800

Vegetation Area	Vegetation Class	Vegetation Type	Effective Slope
1	A	Forest	0
2	D	Scrub	0
3	C	Shrubland	0
4	D	Scrub	>0-5
5	G	Grassland	>0-5
6	C	Shrubland	>5-10
7	Ex	Exempt	

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.



### 3.1.3 Vegetation Separation Distance

The vegetation separation distance is the horizontal distance measured from the relevant parts of an existing building or a future building's planned location (within a lot), to the determined edge of an area of classified vegetation.

This separation distance applied to determining a Bushfire Attack Level (BAL) can be either:

- The measured distance – for which the location of the building relative to the edge of classified vegetation must be known. This will result in single determined BAL that will apply to a building. (The measured distance is a required calculation input); or
- A calculated minimum and maximum distance (range) that will correspond to each individual BAL. The calculated distances provide an indicative (or achievable) BAL for which the determined BAL will be dependent on the known location of the building relative to the edge of classified vegetation.

The calculated range of distances corresponding to each BAL can be presented in different formats (tables or a BAL contour map), dependent on the form of information that is most appropriate for the proposed development/use. These distance ranges corresponding to BAL(s) will be presented in Section 3.2: 'Assessment Output'.

For the proposed development/use, the applicable vegetation separation distances will be presented within the Bushfire Management Plan in this location:

In Section 3.2 'Assessment Output' as a table containing the calculated ranges of distance corresponding to each BAL and illustrated as a BAL Contour Map.

## 3.2 Assessment Output

### UNDERSTANDING THE RESULTS OF THE BUSHFIRE IMPACT ASSESSMENT

#### **Bushfire Attack Levels (BALs) – Their Application in the Building Environment is Different to the Planning Environment**

In the building environment, a **determined BAL** is required for the proposed construction at the building application stage. This is to inform approval considerations and establish the bushfire construction standards that are to apply. An indicative BAL is not acceptable for a building application.

In the planning environment, through the application of SPP 3.7 and associated Guidelines, the deemed to satisfy requirement for a proposed 'development site' or sites (defined by the LPS Amendment Regulations 2015 as "that part of a lot on which a building that is the subject of development stands or is to be constructed"), is that a BAL-29 or lower rating can be achieved once all works associated with the proposal are completed. For planning approval purposes, an **indicative BAL** can provide the required information.

#### **Determined Bushfire Attack Level**

A determined BAL is to apply to an existing building or the 'development site' on which the building is to be constructed and not to a lot or building envelope. Its purpose is to state the potential radiant heat flux to which the building will be exposed, thereby determining the construction standard to be applied.

A determined BAL cannot be given for a future building whose design and position on the lot are unknown or the vegetation separation distance has not been established. It is not until these variables have been fixed that a determined BAL can be stated, and a BAL Certificate can be issued.

The one exception is when a building **of any dimension** can be **positioned anywhere** on a proposed lot (within R-Code building setbacks) or within a defined building envelope, and always remain subject to the same BAL, regardless of the retention of any existing classified vegetation either onsite or offsite.

#### **Indicative Bushfire Attack Level**

If a BAL is not able to achieve 'determined' status it will be an indicative BAL. It indicates the BAL that can be achieved by the proposed development/use. However, it is conditional upon an assessment variable(s) being confirmed at a later stage (e.g. the building location is established/changed, or vegetation is modified/removed to establish the vegetation separation distance).

A BAL certificate cannot be issued for an indicative BAL – unless that BAL cannot vary (refer to 'Determined BAL' above).

In table form, a single or a range of indicative BAL(s) may be presented. If a single indicative BAL is stated for a defined area (i.e. the lot or building envelope), this will be the highest indicative BAL impacting the defined area.

In BAL contour map form (refer to Section 3.2.1), the illustrated BAL contours visually identify areas of land for which if any part of an existing or proposed building is located on that land and within the BAL contours, then the highest BAL affecting that building (or part of the land on which the building will be constructed), will be the indicative BAL that is to apply.

The BAL can only become a determined BAL once the actual location of that building on the land is known and/or the required minimum vegetation separation distance corresponding to the relevant BAL contour is established (refer to Table 3.3).

## 3.2.1 Bushfire Attack Level Results - BAL Contour Map Format

### **INTERPRETATION OF THE BUSHFIRE ATTACK LEVEL (BAL) CONTOUR MAP**

The contour map will present different coloured contour intervals extending from the areas of classified bushfire prone vegetation. These represent the different bushfire attack levels that will exist at varying distances away from the classified vegetation in the event of a bushfire in that vegetation.

The areas of classified vegetation to be considered in developing the BAL contours, are those that will remain as the intended end state of the subject development once earthworks, clearing and/or landscaping and re-vegetation have been completed (or each stage completed).

Each bushfire attack level corresponds to a set range of radiant heat flux that is generated by a bushfire. That range is defined by the AS 3959:2018 BAL determination methodology.

The width of each shaded BAL contour is a diagrammatic representation of the separation distances from the classified vegetation that correspond to each BAL for each separately identified area of classified vegetation. They have been calculated by the application of the unique site variables including vegetation types and structure, ground slope and applied fire weather.

(Refer to Section 3.2 'Understanding the Results of the Bushfire Impact Assessment' for the explanation of how BAL(s) for buildings will be assessed from the BAL Contour Map).

## Construction of the BAL Contours

### **VEGETATION AREAS APPLIED TO THE DEVELOPMENT OF THE BAL CONTOUR MAP**

All identified areas of classified vegetation have been applied with the following exceptions:

1. For Figure 3.4, all classified vegetation within the subject sites (as shown on Fig 3.4) and surrounding road reserves is excluded (See Figure 3.2 – 'Development Extents Stg 1'), and the BAL contours are constructed into the development from any classified vegetation outside these road boundaries; and
2. For Figure 3.5 all classified vegetation within the subject sites (as shown on Fig 3.5) and surrounding road reserves is excluded (See Figure 3.3 – 'Development Extents Stg 1 & 2'), and the BAL contours are constructed into the development from any classified vegetation outside these road boundaries.

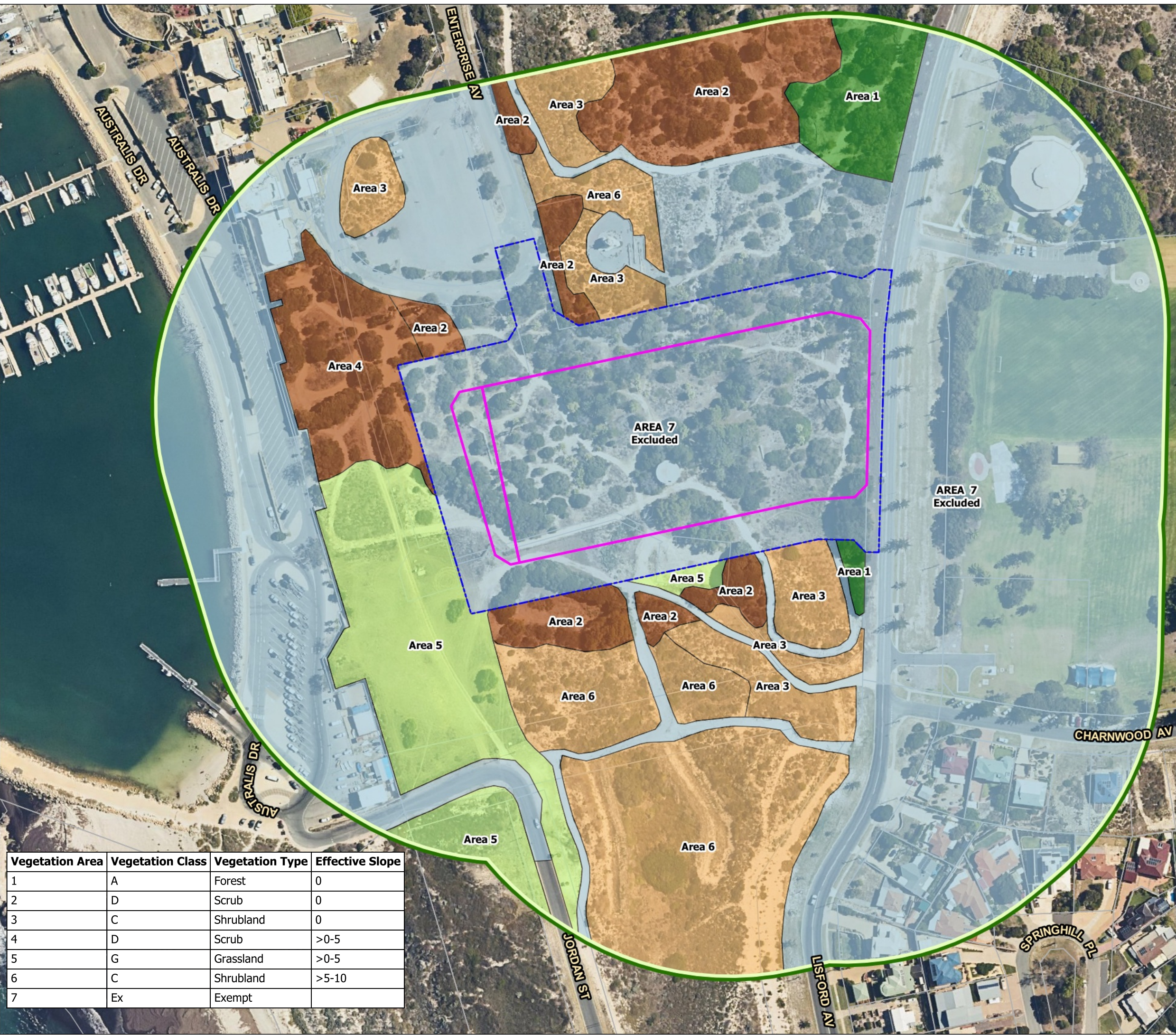
This approach is applied to indicate the achievable bushfire attack levels within the specified development sites and the resultant area of developable land (i.e. subject to BAL-29 or less). It is based on the following assumptions:

1. Any classified vegetation within each lot will be managed by the landowner to meet asset protection zone standards to achieve a low bushfire threat state; and
2. All road reserves surrounding the subject sites will be managed and maintained to a low bushfire threat state.



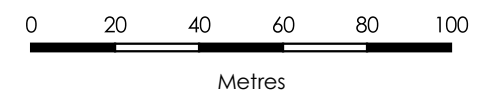
Figure 3.2  
**Topography & Classified  
 Vegetation Post Development  
 Stage 1**

Portion of Lot 9702 on Plan 402964  
 10 Enterprise Avenue  
 TWO ROCKS  
 CITY OF WANNEROO

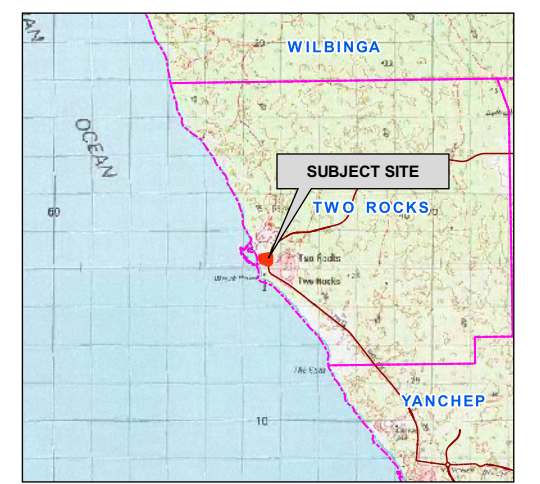


----- LEGEND -----

- Subject Site
  - Development Extents Stg 1
  - 150m\_Assessment\_Area
  - Cadastre
- Classified Vegetation**
- Class A - Forest
  - Class C - Shrubland
  - Class D - Scrub
  - Class G - Grassland
  - Exclusion 2.2.3.2



----- LOCALITY -----



Vegetation Area	Vegetation Class	Vegetation Type	Effective Slope
1	A	Forest	0
2	D	Scrub	0
3	C	Shrubland	0
4	D	Scrub	>0-5
5	G	Grassland	>0-5
6	C	Shrubland	>5-10
7	Ex	Exempt	

AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50  
 Projection: Universal Transverse Mercator Units: Metre  
 Map by: Ian Macleod 01-10-2021  
 SCALE (A3): 1 : 1800

**BUSHFIRE PRONE PLANNING**

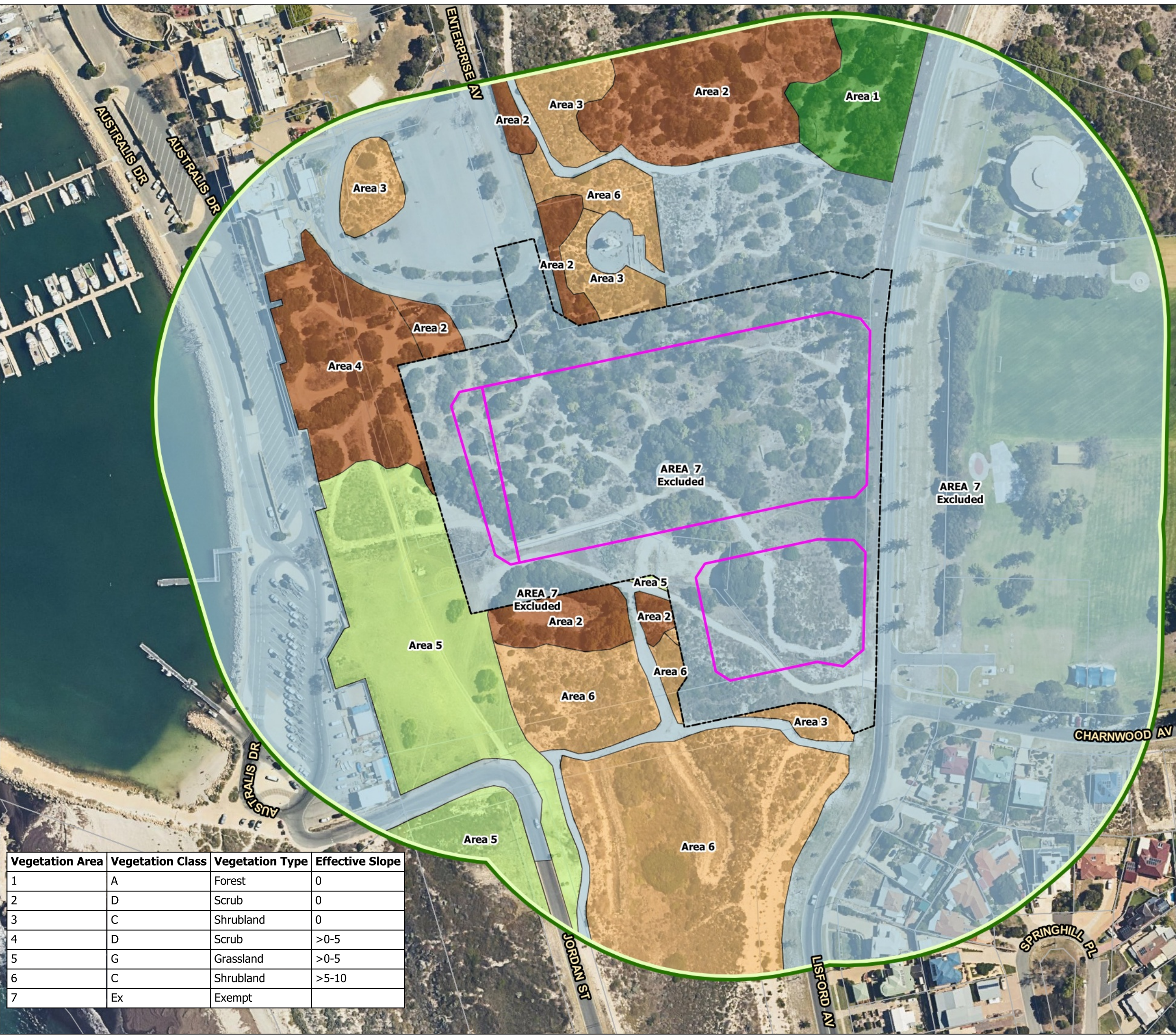
Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors,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



Figure 3.3

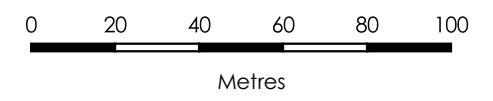
### Topography & Classified Vegetation Post Development Stages 1 and 2

Portion of Lot 9702 on Plan 402964  
 10 Enterprise Avenue  
 TWO ROCKS  
 CITY OF WANNEROO

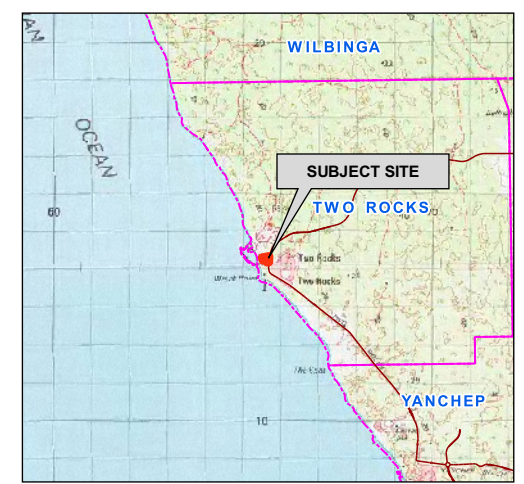


----- LEGEND -----

- Subject Site
  - Development Extents Stgs 1 & 2
  - 150m\_Assessment\_Area
  - Cadastre
- Classified Vegetation**
- Class A - Forest
  - Class C - Shrubland
  - Class D - Scrub
  - Class G - Grassland
  - Exclusion 2.2.3.2



----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
 Projection: Universal Transverse Mercator Units: Metre  
 Map by: Ian Macleod 01-10-2021  
 SCALE (A3): 1 : 1800

Vegetation Area	Vegetation Class	Vegetation Type	Effective Slope
1	A	Forest	0
2	D	Scrub	0
3	C	Shrubland	0
4	D	Scrub	>0-5
5	G	Grassland	>0-5
6	C	Shrubland	>5-10
7	Ex	Exempt	

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## VEGETATION SEPARATION DISTANCES APPLIED

The distances that have been applied to illustrating the width of each BAL contour shown in Figures 3.2 and 3.3 are stated in Table 3.3. These correspond to each Bushfire Attack Level and are specific to the proposed development site.

Table 3.3: Vegetation separation distances applied to construct the BAL contours.

BAL CONTOUR MAP – APPLIED VEGETATION SEPARATION DISTANCES								
Derived from the Application of Method 1 BAL Determination Methodology (AS 3959:2018 Section 2, Table 2.5) <sup>1</sup>								
Vegetation Area	Vegetation Classification	Effective Slope (degree range)	BAL and Corresponding Separation Distance (m)					
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW
1	Class A Forest	upslope or flat	<16	16-<21	21-<31	31-<42	42-<100	>100
2	Class D Scrub	upslope or flat	<10	10-<13	13-<19	19-<27	27-<100	>100
3	Class C Shrubland	upslope or flat	<7	7-<9	9-<13	13-<19	19-<100	>100
4	Class D Scrub	downslope >0-5	<11	11-<15	15-<22	22-<31	31-<100	>100
5	Class G Grassland	downslope >0-5	<7	7-<9	9-<14	14-<20	20-<50	>50
6	Class C Shrubland	downslope >5-10	<8	8-<11	11-<17	17-<25	25-<100	>100

Note<sup>1</sup> All the assessment inputs applied are presented in Section 3.1.










Figure 3.4







# Proposed Development BAL Contour Map Stage 1

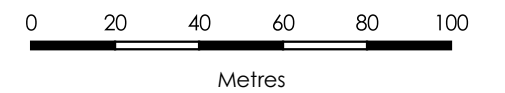
Portion of Lot 9702 on Plan 402964  
10 Enterprise Avenue  
TWO ROCKS  
CITY OF WANNEROO

----- LEGEND -----

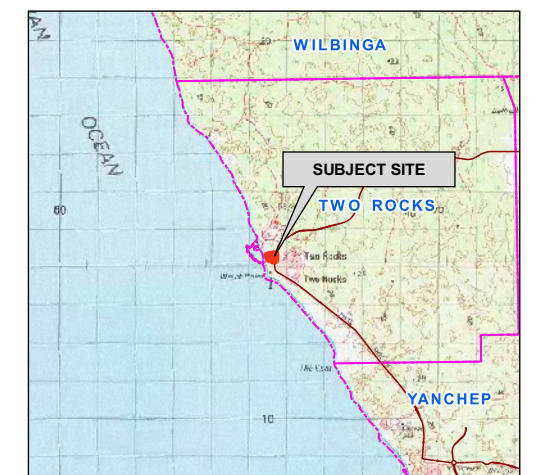
-  Proposed Buildings
-  Subject Site
-  Asset Protection Zone
-  Development Extents Stg 1
-  100m BAL Buffer
-  150m\_Assessment\_Area
-  Cadastre
-  Vegetation Outline Stg 1

**Bushfire Attack Levels**

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

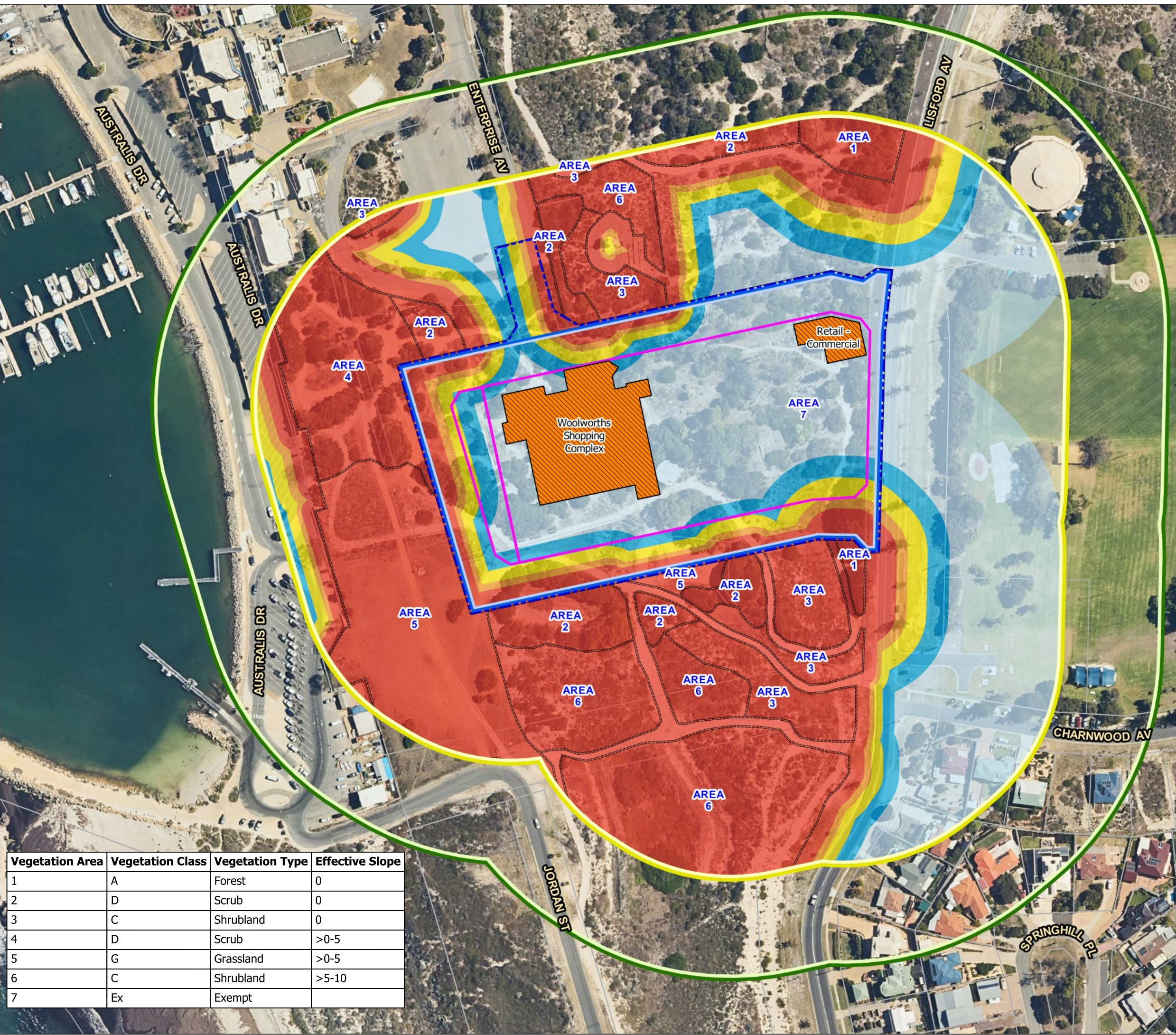


----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map by: Ian Macleod 01-10-2021  
SCALE (A3): 1 : 1800



Vegetation Area	Vegetation Class	Vegetation Type	Effective Slope
1	A	Forest	0
2	D	Scrub	0
3	C	Shrubland	0
4	D	Scrub	>0-5
5	G	Grassland	>0-5
6	C	Shrubland	>5-10
7	Ex	Exempt	



Figure 3.5







# Proposed Development BAL Contour Map Stages 1 and 2

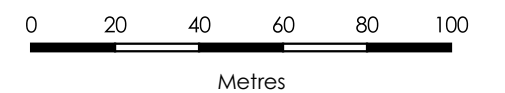
Portion of Lot 9702 on Plan 402964  
10 Enterprise Avenue  
TWO ROCKS  
CITY OF WANNEROO

----- LEGEND -----

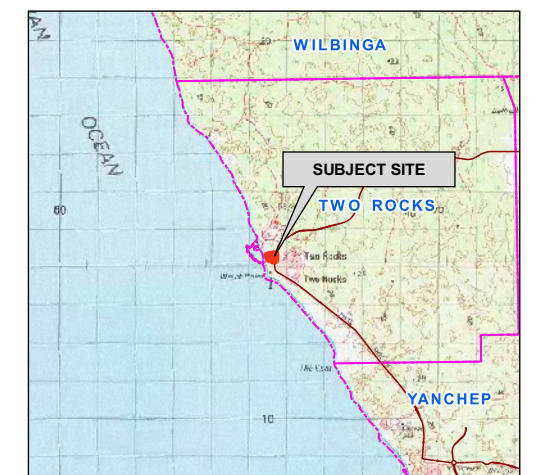
-  Proposed Buildings
-  Future Development Site
-  Subject Site
-  Asset Protection Zone
-  Development Extents Stgs 1 & 2
-  100m BAL Buffer
-  150m\_Assessment\_Area
-  Cadastre
-  Vegetation Outline

**Bushfire Attack Levels**

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



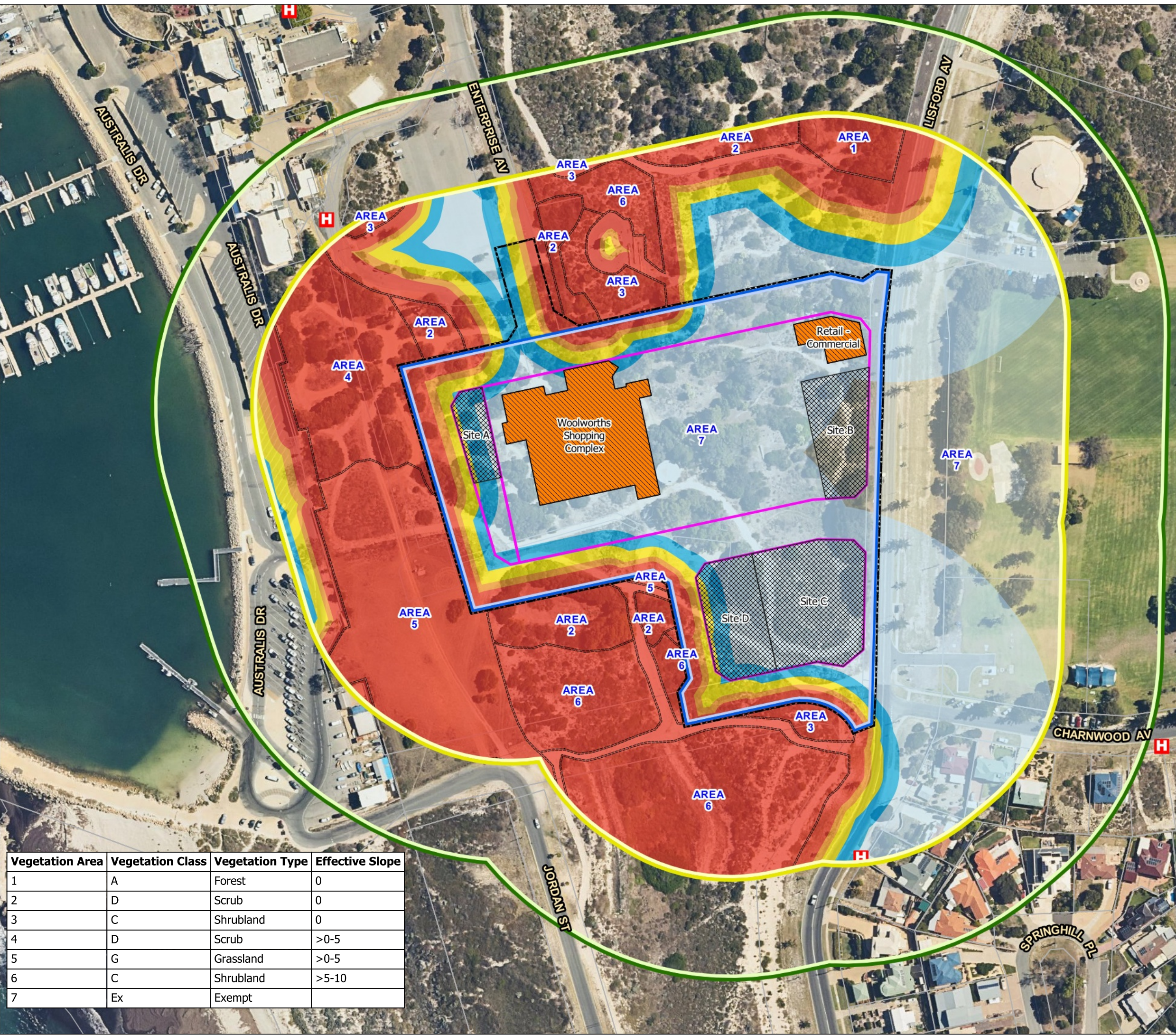
----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50  
Projection: Universal Transverse Mercator Units: Metre  
Map by: Ian Macleod 05-10-2021  
SCALE (A3): 1 : 1800



Vegetation Area	Vegetation Class	Vegetation Type	Effective Slope
1	A	Forest	0
2	D	Scrub	0
3	C	Shrubland	0
4	D	Scrub	>0-5
5	G	Grassland	>0-5
6	C	Shrubland	>5-10
7	Ex	Exempt	

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### 3.2.2 Bushfire Attack Level Results - Derived from The BAL Contour Maps

Table 3.4: Stage 1 Indicative BAL(s) for proposed building works.

BUSHFIRE ATTACK LEVEL FOR PLANNED BUILDINGS	
BAL Determination Methodology Applied <sup>1</sup>	Method 1 as per AS 3959:2018 s2.2.6 and Table 2.5.
Building Description (planned)	Indicative BAL (refer to start of s3.2)
Woolworths Shopping Complex	BAL-19
Retail/Commercial building	BAL-12.5
<i>Note<sup>1</sup> Assessment inputs applied are presented in Section 3.1.</i>	

Table 3.5: Stage 2 Indicative BAL(s) for proposed future development sites.

BUSHFIRE ATTACK LEVEL FOR FUTURE DEVELOPMENT SITES	
BAL Determination Methodology Applied <sup>1</sup>	Method 1 as per AS 3959:2018 s2.2.6 and Table 2.5.
Building Description (Future Development)	Indicative BAL (refer to start of s3.2)
Site A (Commercial)	BAL-29
Site B (Commercial)	BAL-12.5
Site C (Commercial)	BAL-19
Site D (Residential)	BAL-29
<i>Note<sup>1</sup> Assessment inputs applied are presented in Section 3.1.</i>	

## 4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

In response to the Bushfire Management Plan requirements established by Appendix 5 of the Guidelines for Planning in Bushfire Prone Areas (WAPC 2017 v1.3), the following statements are made to assist in the understanding of whether the proposal is likely to be able to comply with the bushfire protection criteria now or in subsequent planning stages.

<b>Spatial Context - Broader Landscape Considerations</b>	
Wider road network and access constraints	Two roads service the settlement of Two Rocks. Two Rocks Road leads south to Yancheep and from there access is available to the major roads of Marmion Avenue and Wanneroo Road. Breakwater Drive heads east from Two Rocks to Indian Ocean Drive. From here access is available south to Wanneroo Road and Perth, or north to Lancelin.  At a local level the proposed development will have roads on all four sides providing multiple access/egress routes for occupants. There is no access constraint for the subject site with regard to what is considered acceptable from a planning perspective.
Proximity of settlements and emergency services	The proposed development is located within the settlement of Two Rocks. The Two Rocks Volunteer Bush Fire Brigade is located approximately 7.5kms east of the subject site on Caraway Loop.
Bushfire prone vegetation types and extent (including conserved vegetation)	Significant extents of bushfire prone vegetation exist across the broader landscape as retained native vegetation. Vegetation types are mainly shrubland, scrub or grassland with small pockets of woodland or forest. Corridors of vegetation run south and east from the subject lot. Large areas of developed residential lands are located to the north and south-east of the site.
Topography and fire behaviour interactions.	The topography is gently undulating. Some areas of flat land exist but most have slopes of zero to five degrees and up to ten degrees. Bushfire rates of spread can double for every ten degrees of upslope while downslopes will slow the rate of spread.
Potential for extreme fire behaviour and pyro convective events.	Possible over the broader landscape due to continuous fuel loads and open areas subject to strong coastal winds.
<b>Environmental Considerations</b>	
Constraints to implementing required and/or additional bushfire protection measures	The environment considerations have not identified any constraints to implementing the required bushfire protection measures.
<b>Provision of Access Within the Subject Site</b>	
Potential constraints	There are no constraints to establishing the required access.
<b>Potential Bushfire Impacts</b>	
Flame and radiant heat and ability to establish an APZ	The proposed development lot size and location of surrounding roads will allow a minimum BAL-29 dimensioned APZ to be established for buildings within the development. This will prevent flame contact from the classified vegetation. Application of the bushfire construction standard will mitigate the risks from radiant heat impact to what is considered an acceptable level.
Embers/firebrands, smoke and fire-driven wind	These will be the major impacts to the subject site. The appropriate protection measures of building construction and strict management of the APZ will mitigate the risk to what is considered an acceptable level.

## 5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA ESTABLISHED BY THE GUIDELINES

For a development application that is not a 'Tourism Land Use' to be considered compliant with SPP 3.7, it must satisfy (achieve) the intent of each of the four elements of the bushfire protection criteria. These criteria are established by the *Guidelines for Planning in Bushfire Prone Areas WAPC 2017 v1.3*). Compliance can be achieved by either:

- Meeting all applicable acceptable solutions corresponding to each element (i.e. the minimum bushfire protection measures that are deemed to satisfy planning requirements); or
- Where an acceptable solution cannot be met, by developing a performance solution that satisfies the established requirements.

### 5.1 Local Government Variations to Apply

Local governments may add to or modify the acceptable solutions of the Bushfire Protection Criteria (BPC) and/or apply technical requirements that vary from those specified in the *Guidelines for Planning in Bushfire Prone Areas (WAPC)*. In such instances, this Proposal will be assessed against these variations and/or any specific local government technical requirements for emergency access and water. Refer to Appendices 2 and 3 for relevant technical requirements.

Will local or regional variations (endorsed by WAPC / DFES) to the applicable acceptable solutions established by the <i>Guidelines</i> or the <i>Position Statement: Tourism land uses in bushfire prone areas WAPC October 2019</i> , apply to this Proposal?	N/A
---	-----

## 5.2 Summary of Assessment Against the Bushfire Protection Criteria

SUMMARISED OUTCOME OF THE ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA					
Element of the Bushfire Protection Criteria	Basis for the Proposal Achieving Full Compliance with SPP 3.7			The Proposal Cannot Achieve Full Compliance with SPP 3.7	
	Acceptable Solutions Met	Achieves the Intent of the Element		Bushfire planning development type that may not require full compliance is applied	An improvement in bushfire performance compared to the existing development is detailed (refer Note 4)
	All applicable solutions are fully met	All applicable solutions are not fully met. A merit based assessment and/or a bushfire performance comparison of the proposals residual risk with that of the residual risk of the acceptable solution is conducted (refer Note 4)	A performance principle-based solution is applied		
1. Location	✓			N/A	
2. Siting and Design of Development	✓				
3. Vehicular Access	✓				
4. Water	✓				
<p>Note: The development proposal has been assessed:</p> <ol style="list-style-type: none"> <li>Against the requirements established in Appendix 4 of the <i>Guidelines for Planning in Bushfire Prone Areas, WAPC 2017 v1.3 (Guidelines)</i>. The Guidelines are found at <a href="https://www.planning.wa.gov.au/8194.aspx">https://www.planning.wa.gov.au/8194.aspx</a>; and</li> <li>Applying the interpretation guidance provided in <i>Position Statement: Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design (WAPC Nov 2019)</i>.</li> <li>Applying any endorsed variations to the Guideline's acceptable solutions and associated technical requirements that have been established by the local government. If known and applicable these have been stated in Section 5.1 with the detail included as an appendix if required by the local government.</li> <li>When non-compliant with SPP 3.7 and when appropriate, by utilising additional compliance pathways that include the application of merit based assessment and comparative bushfire performance. The validity of this approach is derived from relevant decisions made by the responsible authorities (refer Appendix 2).</li> </ol>					

## 5.3 Assessment Detail

Element 1: Location	
<p><b>Intent:</b> To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.</p>	
<p><b>Compliance:</b> How the proposed development achieves the intent of Element 1:</p>	<p>By fully meeting all applicable acceptable solutions established by the bushfire protection criteria (Guidelines v1.3 WAPC 2017)</p>
<p><b>ASSESSMENT (COMPLIANCE) STATEMENTS</b></p>	
<p>For each applicable acceptable solution, the following statements present the results of the assessment of the proposed development/use against the requirements established by the <i>Guidelines (WAPC 2017 v1.3)</i> and apply the interpretation guidance established by the <i>Position Statement: Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design (WAPC Nov 2019)</i>.</p>	
<p><b>Acceptable Solution: A1.1: Development Location</b></p>	
<p><b>ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES</b></p>	
<p>The proposed Woolworths development, and future development sites on the Precinct C LDP, will provide an area of land within each lot that can be considered suitable for development as BAL-40 or BAL-FZ construction standards will not be required to be applied. This meets the requirements established by Acceptable Solution A1.1 and its associated explanatory note.</p>	
<p><b>ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE POSITION STATEMENT</b></p>	
<p>The position statement establishes that:</p> <ul style="list-style-type: none"> <li>• The source of risk (the hazard) to be considered in Element 1 is the “level of bushfire exposure” from the type and extent of bushfire prone vegetation and the topography of the land on which it exists; and</li> <li>• “Consideration should be given to the site context” which includes 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.”</li> </ul> <p>The position statement also recognises:</p> <ul style="list-style-type: none"> <li>• That the proposed development site and its surrounding land may be part of an area “identified for development or intensification of land use prior to the release of SPP 3.7”; consequently</li> <li>• Consideration by decision-makers “should also be given to improving bushfire management of the site and surrounding area, thereby reducing the vulnerability of people property and infrastructure to bushfire”; and</li> <li>• The application of mitigation measures to lessen the risk to the broader area would include improvements to the local road network (including emergency access ways), improvements/additions to firefighting water supply and increasing separation distance from the hazard.</li> </ul>	
<p><b>The Hazard Within the Subject Site</b></p> <p>The proposed lots will be cleared of vegetation during the construction stage. Any revegetation or landscaping on the lots will be designed and maintained to a low bushfire threat state. The greater portion of the Woolworths site is currently clear of vegetation.</p>	



## Element 1: Location

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

Vegetation adjoining the north of the Woolworths site is currently cleared and a road is under construction. Further north is a relatively small area of native vegetation and then developed residential lots.

A small area of scrub, shrub and grassland vegetation sits to the west of the site. Further west is the Two Rocks marina and the Indian Ocean.

Directly east of the development site is an area of public open space consisting of reticulated playing fields and further east are developed residential lots. A corridor of native vegetation sits to the north-east of the subject site and joins larger expanses of bushfire prone vegetation.

To the south of the development site is a corridor of vegetation running along the coast and again joins larger areas of bushfire prone vegetation. South-east of the site sits built up residential areas.

Due to the fragmented layout of bushfire prone vegetation close to the development site there are limited scenarios in which the subject development site is likely to be subject to a significant bushfire event.

## Element 2: Siting and Design of Development

**Intent:** To ensure that the siting and design of development (note: not building/construction design) minimises the level of bushfire impact.

<b>Compliance:</b> How the proposed development achieves the intent of Element 2:	By fully meeting all applicable acceptable solutions established by the bushfire protection criteria (Guidelines v1.3 WAPC 2017)
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### ASSESSMENT (COMPLIANCE) STATEMENTS

For each applicable acceptable solution, the following statements present the results of the assessment of the proposed development/use against the requirements established by the *Guidelines (WAPC 2017 v1.3)* and apply the interpretation guidance established by the *Position Statement: Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design (WAPC Nov 2019)*.

#### Acceptable Solution: A2.1: Asset Protection Zone

#### THE APZ - DEVELOPMENT SITING AND DESIGN PLANNING REQUIREMENTS

The necessary outcome of bushfire planning for development siting and design, is to ensure that a building can be located within the developable portion of any lot (i.e. outside those parts of the lot that form the required R-Code building setbacks, or any other excluded area), and be subject to potential radiant heat from a bushfire not exceeding 29 kW/m<sup>2</sup> (i.e. a maximum BAL of BAL-29).

This will be achieved when the size of the “low fuel area immediately surrounding a building”, the asset protection zone (APZ), is large enough. This requires a certain separation distance to exist between the building and areas of classified vegetation. These are the BAL-29 APZ dimensions and they will vary dependent on site specific parameters.

The APZ should be contained solely within the boundaries of each lot, except in instances where the neighbouring lot(s) or adjacent public land will be managed in a low-fuel state on an ongoing basis, in perpetuity.

Where possible, planning for siting and design should incorporate elements that include non-vegetated areas (e.g. roads/parking/drainage) and/or formally managed areas of vegetation (public open space/recreation areas/services installed in a common section of land), as either part of the required APZ dimensions or to additionally increase separation distances to provide greater protection. These elements create robust and easier managed asset protection zones.

#### THE ASSESSMENT

Future buildings on the proposed Woolworths development site, and future commercial and residential lots, can be surrounded by an APZ that will ensure the potential radiant heat impact of a bushfire does not exceed 29 kW/m<sup>2</sup> (BAL-29). The required APZ specifications of width, location and management can be achieved.

**APZ Width:** The required APZ dimensions to ensure buildings are subject to a maximum BAL of BAL-29 (measured from any external wall or supporting post or column to the edge of the classified vegetation), has been determined in Section 3.2 of this BMP and are:

BAL-29 APZ Dimensions		
Applicable to Following Buildings/Lots:  Woolworths Shopping Complex Retail/Commercial building Future Development Sites	Building to Vegetation Area 1	Minimum 21 metres
	Building to Vegetation Area 2	Minimum 13 metres
	Building to Vegetation Area 3	Minimum 9 metres
	Building to Vegetation Area 4	Minimum 15 metres
	Building to Vegetation Area 5	Minimum 9 metres
	Building to Vegetation Area 6	Minimum 11 metres

**APZ Location:** The Asset Protection Zone (APZ) for the proposed two buildings, and future developments, will exist both within and outside the proposed lots. The portions of the required size APZ that exist outside each proposed lot consists of roads and managed road verges.



## Element 2: Siting and Design of Development

**APZ Management:** It is expected that vegetation on all proposed lots and surrounding road reserves will either be removed or maintained to a low bushfire threat state.

Retained vegetation will be managed in accordance with the technical requirements established by the Schedule 1: 'Standards for Asset Protection Zones (Guidelines)'. The APZ specifications are also detailed in Appendix 1 and the City of Wanneroo may have additional requirements established by their Fire Mitigation Notice.

### **THE APZ – REQUIRED DIMENSIONS TO SATISFY FUTURE BUILDING (AND ONGOING MANAGEMENT)**

It is important for the landowner to be aware that the APZ dimensions that will be required to be physically established and maintained on each lot surrounding relevant future buildings, may be different to those stated above for the BAL-29 APZ - which is the minimum dimension a planning proposal needs to show can be established to comply with SPP 3.7.

For this proposal, it is expected that the whole of each future lot and abutting road reserves are to be maintained to a low bushfire threat state. The proposed development consists of commercial lots and small scale housing lots. The commercial lots will consist of buildings, parking areas, loading areas and small areas of managed landscaping. The residential lots are required by the City of Wanneroo Fire Mitigation Notice to be maintained to a low bushfire threat state over the bushfire season.

A small area of Public Open Space and drainage reserve is located to the west of the proposed shopping complex. This area is expected to be landscaped and maintained to a low bushfire threat state by the landowner.

## Element 3: Vehicular Access

**Intent:** To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.

**Compliance:** How the proposed development achieves the intent of Element 3:

By fully meeting all applicable acceptable solutions established by the bushfire protection criteria (Guidelines v1.3 WAPC 2017)

### ASSESSMENT (COMPLIANCE) STATEMENTS

For each applicable acceptable solution, the following statements present the results of the assessment of the proposed development/use against the requirements established by the *Guidelines (WAPC 2017 v1.3)*.

#### **Acceptable Solution: A3.1: Two Access Routes**

Perimeter roads are to be constructed around the proposed development sites and connecting to Lisford Avenue to the east, and Enterprise Avenue to the north. This road system will provide a minimum of two access/egress routes from each proposed lot.

#### **Acceptable Solution: A3.2: Public Road**

New public roads will be constructed for this development. The construction technical requirements established by the Guidelines will be complied with.

#### **Acceptable Solution: A3.3: Cul-de-sacs (including a dead-end road)**

No cul-de-sacs exist or are planned for this development.

#### **Acceptable Solution: A3.4: Battle-axe**

No battle-axe lots are planned for this development.

#### **Acceptable Solution: A3.5: Private Driveways**

No buildings will be greater than 50 metres from a public road, therefore construction of driveways to bushfire standards is not required.

#### **Acceptable Solution: A3.6: Emergency Access Way**

There are no Emergency Access Ways planned for this development.

#### **Acceptable Solution: A3.7: Fire Service Access Routes**

There are no Fire Service Access Routes planned for this development.

#### **Acceptable Solution: A3.8: Firebreak Width**

The proposed lots will comply with the requirements of the local government annual firebreak notice issued under s33 of the Bush Fires Act 1954.



## Element 4: Water

**Intent:** To ensure water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.

**Compliance:** How the proposed development achieves the intent of Element 4:

By fully meeting all applicable acceptable solutions established by the bushfire protection criteria (Guidelines v1.3 WAPC 2017)

### ASSESSMENT (COMPLIANCE) STATEMENTS

For each applicable acceptable solution, the following statements present the results of the assessment of the proposed development/use against the requirements established by the *Guidelines (WAPC 2017 v1.3)*.

#### **Acceptable Solution: A4.1: Reticulated Areas**

A reticulated water supply is available to the subject site and hydrants will be installed in locations throughout the development as required by the relevant authorities.

#### **Acceptable Solution: A4.2: Non-Reticulated Areas**

N/A

#### **Acceptable Solution: A4.3: Non-Reticulated Areas – Individual Lots**

N/A

## 5.4 Recommended Additional Bushfire Protection Measures

The following bushfire protection measures are to be implemented and maintained. They are additional to those established by the relevant acceptable solutions applied to the proposed subdivision, development or use.

The relevant acceptable solutions are those against which this planning proposal has been assessed in Section 5.3 of this Bushfire Management Plan.

### 5.4.1 Recommended Additional Measures to Improve Bushfire Performance

Buildings of Class 4 to Class 9 are not required by the Building Code of Australia (BCA) to be constructed to comply with bushfire performance requirements. As the proposed buildings will be located in a bushfire prone area and may be subject to a bushfire attack, Bushfire Prone Planning recommends that some degree of upgrading be considered to improve the protection for occupants and the building's survivability. At a minimum protection from ember attack should be considered (i.e. constructed to the standard required for BAL-12.5).



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

Table 6.1: BMP Implementation responsibilities prior to occupancy or building.

Landowner (Developer) - Prior to Occupancy or Building	
No.	Implementation Actions
1	<p>The local government may condition a development application approval with a requirement for the landowner/proponent to register a notification onto the certificate of title and deposited plan.</p> <p>This will be done pursuant to Section 70A <i>Transfer of Land Act 1893</i> as amended ('Factors affecting use and enjoyment of land, notification on title'). This is to give notice of the bushfire hazard and any restrictions and/or protective measures required to be maintained at the owner's cost.</p> <p>This condition ensures that:</p> <ol style="list-style-type: none"> <li>1. Landowners/proponents are aware their lot is in a designated bushfire prone area and of their obligations to apply the stated bushfire risk management measures; and</li> <li>2. Potential purchasers are alerted to the Bushfire Management Plan so that future landowners/proponents can continue to apply the bushfire risk management measures that have been established in the Plan.</li> </ol>
2	<p>Prior to building and post planning approval, the entity responsible for having the BMP prepared should ensure that anyone listed as having responsibility under the Plan has endorsed it and is provided with a copy for their information and informed that it contains their responsibilities. This includes the landowners/proponents (including future landowners where the Plan was prepared as part of a subdivision approval), local government and any other authorities or referral agencies ('Guidelines' s4.6.3).</p>
3	<p>Prior to building establish the Asset Protection Zone (APZ) surrounding the proposed development, as shown in Figures 3.4 and 3.5.</p> <p>Establish the APZ to the standards established by the Guidelines (refer to Appendix 1) or as varied by the local government through their Firebreak Notice. This is the responsibility of the developer.</p>
4	<p>Prior to occupation of the development, the development is to be compliant with the City of Wanneroo Fire Mitigation Notice issued under s33 of the Bushfires Act 1954.</p> <p>This may include specifications for asset protection zones that differ from the Guideline's APZ Standards, with the intent to better satisfy local conditions. When these are more stringent than those created by the Guidelines, or less stringent and endorsed by the WAPC and DFES, they must be complied with. Refer to Appendix 1.</p>
5	<p>Prior to occupancy, public roads are to be constructed and hydrants established to the standards stated in the BMP.</p>
6	<p>To implement and maintain, the additional bushfire protection measure contained in Section 5.4 of this Bushfire Management Plan, in addition to the measures that are established by the acceptable solutions.</p>
7	<p>Prior to any building work, inform the builder of the existence of this Bushfire Management Plan and the responsibilities it contains, regarding the required construction standards. This will be:</p> <ul style="list-style-type: none"> <li>• The standard corresponding to the determined BAL, as per the bushfire provisions of the Building Code of Australia (BCA); and/or</li> <li>• A higher standard because the BMP establishes that the construction standard is to correspond to a higher BAL as an additional bushfire protection measure.</li> </ul>

Table 6.2: Ongoing management responsibilities for the Landowner/Occupier.

Landowner/Occupier - Ongoing	
No.	Ongoing Management Actions
1	Maintain the Asset Protection Zone (APZ) surrounding the proposed development, as shown in Figures 3.4 and 3.5. Maintain the APZ to the standards established by the Guidelines (refer to Appendix 1) or as varied by the local government through their Firebreak Notice. This is the responsibility of the developer.
2	Comply with the City of Wanneroo Fire Mitigation Notice issued under s33 of the Bush Fires Act 1954. This may include specifications for asset protection zones that differ from the Guideline's APZ Standards, with the intent to better satisfy local conditions. When these are more stringent than those created by the Guidelines, or less stringent and endorsed by the WAPC and DFES, they must be complied with. Refer to Appendix 1.
3	Maintain vehicular access routes within the lots.
4	Ensure that any builders (of future structures on the lot) are aware of the existence of this Bushfire Management Plan and the responsibilities it contains regarding the application of construction standards corresponding to a determined BAL.
5	Ensure all future buildings the landowner has responsibility for, are designed and constructed in full compliance with: <ul style="list-style-type: none"> <li>1. the requirements of the WA Building Act 2011 and the bushfire provisions of the Building Code of Australia (BCA); and</li> <li>2. with any identified additional requirements established by this BMP or the local government.</li> </ul>

Table 6.3: Ongoing management responsibilities for the Local Government.

Local Government - Ongoing	
No.	Ongoing Management Actions
1	Monitor landowner compliance with the Bushfire Management Plan and the annual Fire Mitigation Notice.
2	The adjoining road reserves to be managed to ensure the vegetation remains as low threat vegetation, in accordance with AS3959:2018.



## APPENDIX 1: TECHNICAL REQUIREMENTS FOR ONSITE VEGETATION MANAGEMENT

### A1.1 Requirements Established by the Guidelines – Standards for Asset Protection Zones

(Source: Guidelines for Planning in Bushfire Prone Areas - WAPC 2017 v1.3 Appendix 4, Element 2, Schedule 1 and Explanatory Note E2.1)

#### DEFINING THE ASSET PROTECTION ZONE (APZ)

**Description:** An APZ is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level (by reducing fuel loads). The width of the required APZ varies with slope and vegetation and varies corresponding to the BAL rating determined for a building (lower BAL = greater dimensioned APZ).

For planning applications, the minimum sized acceptable APZ is that which is of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m<sup>2</sup> (BAL-29). It will be site specific.

For subdivision planning, design elements and excluded/low threat vegetation adjacent to the lot(s) can be utilised to achieve the required vegetation separation distances and therefore reduce the required dimensions of the APZ within the lot(s).

**Defendable Space:** The APZ includes a defendable space which is an area adjoining the asset within which firefighting operations can be undertaken to defend the structure. Vegetation within the defendable space should be kept at an absolute minimum and the area should be free from combustible items and obstructions. The width of the defendable space is dependent on the space, which is available on the property, but as a minimum should be 3 metres.

**Establishment:** The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity.

The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

*[Note: Regardless of whether an Asset Protection Zone exists in accordance with the acceptable solutions and is appropriately maintained, fire fighters are not obliged to protect an asset if they think the separation distance between the dwelling and vegetation that can be involved in a bushfire, is unsafe.]*

#### Schedule 1: Standards for APZ

**Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.

**Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.

**Fine Fuel Load:** combustible dead vegetation matter less than 6 mm in thickness reduced to and maintained at an average of two tonnes per hectare (example below).

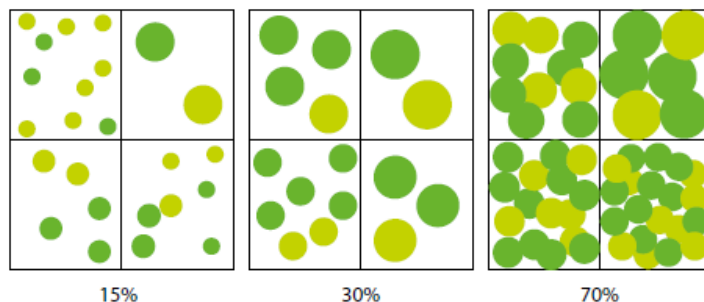


Example: Fine fuel load of 2 t/ha

(Image source: Shire of Augusta Margaret River's Firebreak and Fuel Reduction Hazard Notice)

**Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy. Diagram below represents tree canopy cover at maturity.

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



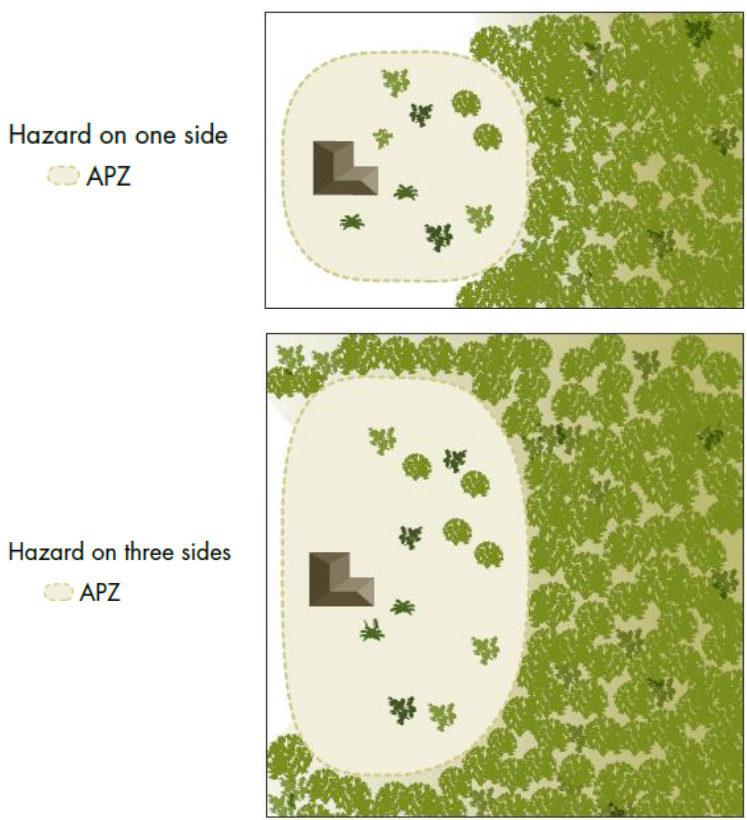
(Source: Guidelines for Planning in Bushfire Prone Areas 2017, Appendix 4)

**Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m<sup>2</sup> in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.

**Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 mm in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.

**Grass:** should be managed to maintain a height of 100 mm or less.

The following example diagrams illustrate how the required dimensions of the APZ will be determined by the type and location of the vegetation.





## A1.2 Requirements Established by the Local Government – the Firebreak Notice

The local government's current Firebreak Notice is available on their website, at their offices and is distributed as ratepayer's information. It must be complied with.

These requirements are established by the local government's Firebreak Notice created under s33 of the Bushfires Act 1954 and issued annually (potentially with revisions). The Firebreak Notice may include additional components directed at managing fuel loads, accessibility and general property management with respect to limiting potential bushfire impact.

If Asset Protection Zone (APZ) specifications are defined in the Firebreak Notice, these may differ from the Standards established by the Guidelines, with the intent to better satisfy local conditions. When these are more stringent than those created by the Guidelines, or less stringent and endorsed by the WAPC and DFES, they must be complied with.

The APZ dimensions to be physically established and maintained, will be based on which of the following establishes the larger APZ dimension:

- The dimensions corresponding to the determined BAL of a building (refer to Section 3.2 explanation of the 'planning' versus 'building' requirements and 'indicative' versus 'determined' BAL(s)); or
- The APZ dimensions established by the local government's Firebreak Notice.

## A1.3 Requirements Recommended by DFES – Property Protection Checklists

Further guidance regarding ongoing/lasting property protection (from potential bushfire impact) is presented in the publication 'DFES – Fire Chat – Your Bushfire Protection Toolkit'. It is available from the Department of Fire and Emergency Services (DFES) website.

## A1.4 Requirements Established by AS 3959:2018 – 'Minimal Fuel Condition'

This information is provided for reference purposes. This knowledge will assist the landowner to comply with Management Requirement No. 3 set out in the Guidance Panel at the start of this Appendix. It identifies what is required for an area of land to be excluded from classification as a potential bushfire threat.

*"Australian Standard - AS 3959:2018 Section 2.2.3.2: Exclusions - Low threat vegetation and non-vegetated areas:*

*The Bushfire Attack Level shall be classified BAL-LOW where the vegetation is one or a combination of the following:*

- a) Vegetation of any type that is more than 100m from the site.*
- b) Single areas of vegetation less than 1ha in area and not within 100m of other areas of vegetation being classified vegetation.*
- c) Multiple area of vegetation less than 0.25ha in area and not within 20m of the site or each other or other areas of vegetation being classified vegetation.*
- d) Strips of vegetation less than 20m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20m 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**, (means insufficient fuel available to significantly increase the severity of a bushfire attack – for example, recognisable as short cropped grass to a nominal height of 100mm), 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 (single row of trees)."*

## APPENDIX 2: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

Each local government may have their own standard technical requirements for emergency vehicular access, and they may vary from those stated in the Guidelines.

When required, these are stated in Section 5.1 of this bushfire management plan.

### Requirements Established by the Guidelines – The Acceptable Solutions

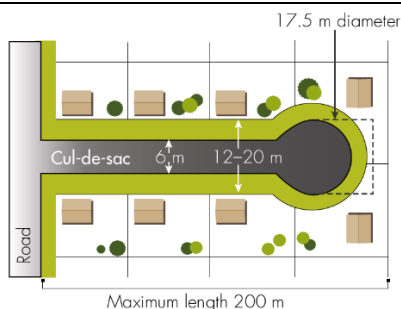
(Source: Guidelines for Planning in Bushfire Prone Areas WAPC 2017 v1.3, Appendix 4)

#### VEHICULAR ACCESS TECHNICAL REQUIREMENTS - PART 1

##### Acceptable Solution 3.3: Cul-de-sacs (including a dead-end road)

Their use in bushfire prone areas should be avoided. Where no alternative exists then the following requirements are to be achieved:

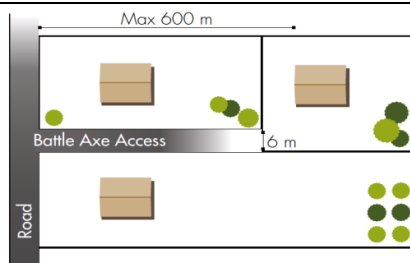
- Maximum length is 200m. If public emergency access is provided between cul-de-sac heads (as a right of way or public access easement in gross), the maximum length can be increased to 600m provided no more than 8 lots are serviced and the emergency access way is less than 600m in length;
- Turnaround area requirements, including a minimum 17.5m diameter head to allow type 3.4 fire appliances to turn around safely;
- The cul-de-sac connects to a public road that allows for travel in two directions; and
- Meet the additional design requirements set out in Part 2 of this appendix.



##### Acceptable Solution 3.4: Battle-axe

Their use in bushfire prone areas should be avoided. Where no alternative exists then the following requirements are to be achieved:

- Maximum length 600m and minimum width 6m; and
- Comply with minimum standards for private driveways.





## VEHICULAR ACCESS TECHNICAL REQUIREMENTS - PART 1

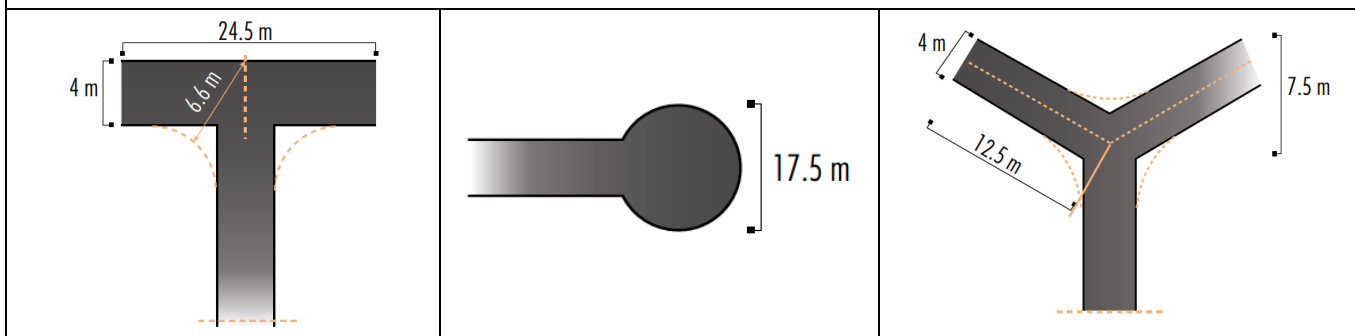
### Acceptable Solution 3.5: Private Driveways

The following requirements are to be achieved:

- The design requirements set out in Part 2 of this appendix; and

Where the house site is more than 50 metres from a public road:

- Passing bays every 200 metres with a minimum length of 20 metres and a minimum width of two metres (ie combined width of the passing bay and constructed private driveway to be a minimum six metres);
- Turn-around areas every 500 metres and within 50 metres of a house, designed to accommodate type 3.4 fire appliances to turn around safely (ie kerb to kerb 17.5 metres);
- Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes; and
- All weather surface (i.e. compacted gravel, limestone or sealed).

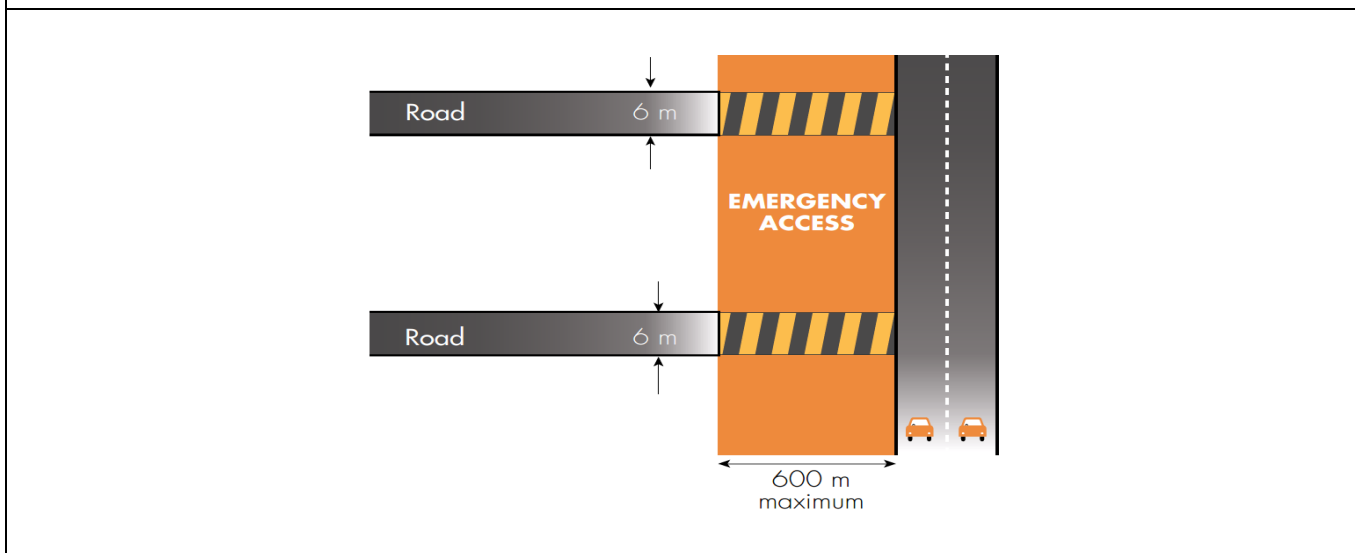


### Acceptable Solution 3.6: Emergency Access Way

An access way that does not provide through access to a public road is to be avoided bushfire prone areas.

Where no alternative exists, an emergency access way is to be provided as an alternative link to a public road during emergencies. The following requirements are to be achieved:

- No further than 600 metres from a public road;
- Must be signposted including where they ajoin public roads;
- Provided as a right of way or public access easement in gross;
- Where gates are used they must not be locked and they must be a minimum width of 3.6 metres with design and construction approved by local government (refer to the example in this appendix); and
- Meet the additional design requirements set out in Part 2 of this appendix.



## VEHICULAR ACCESS TECHNICAL REQUIREMENTS - PART 1

### Acceptable Solution 3.7: Fire Service Access Routes (Perimeter Roads)

Are to be established to provide access within and around the edge of subdivision and related development and to provide direct access to bushfire prone areas for firefighters and link between public road networks for firefighting purposes. Fire service access is used during bushfire suppression activities but can also be used for fire prevention work. The following requirements are to be achieved:

- No further than 600 metres from a public road (driveways may be used as part of the designated fire service access);
- Dead end roads not permitted;
- Allow for two-way traffic (i.e. two 3.4 fire appliances);
- Provide turn-around areas designed to accommodate 3.4 fire appliances and to enable them to turn around safely every 500m (i.e. kerb to kerb 17.5 metres);
- All weather surface (i.e. compacted gravel, limestone or sealed) and have erosion control measures in place;
- Must be adequately sign posted;
- Where gates are used, they must be a minimum width of 3.6 metres with design and construction approved by local government (refer to the example in this appendix) and may be locked (use a common key system);
- Meet the additional design requirements set out in Part 2 of this appendix;
- Provided as right of ways or public access easements in gross; and
- Management and access arrangements to be documented and in place.

### Acceptable Solution 3.8: Firebreak Width

Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three meters or to the level as prescribed in the local firebreak notice issued by the local government.

## VEHICULAR ACCESS TECHNICAL REQUIREMENTS - PART 2

Technical Component	Vehicular Access Types				
	Public Roads	Cul-de-sacs	Private Driveways	Emergency Access Ways	Fire Service Access Routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	4.5	4.5	4.5	4.5
Maximum grade <50 metres	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum cross-fall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5

\* A six metre trafficable surface does not necessarily mean paving width. It could, for example, include four metres of paving and one metre of constructed road shoulders. In special circumstances, where 8 lots or less are being serviced, a public road with a minimum trafficable surface of four metres for a maximum distance of ninety metres may be provided subject to the approval of both the local government and DFES.



## APPENDIX 3: TECHNICAL REQUIREMENTS FOR FIREFIGHTING WATER

### Reticulated Areas

[Source: Guidelines for Planning in Bushfire Prone Areas WAPC 2017 v1.3, Appendix 4, Element 4]

The Water Corporation's 'No 63 Water Reticulation Standard' is deemed to be the baseline criteria for developments and should be applied unless local water supply authority's conditions apply.

The requirement is to supply a reticulated water supply and fire hydrants, in accordance with the technical requirements of the relevant water supply authority and DFES.

Key specifications in the most recent version/revision of the design standard include:

- **Residential Standard** – hydrants are to be located so that the maximum distance between the hydrants shall be no more than 200 metres.
- **Commercial Standard** – hydrants are to be located with a maximum of 100 metre spacing in Industrial and Commercial areas.
- **Rural Residential Standard** – where minimum site areas per dwelling is 10,000 m<sup>2</sup> (1ha), hydrants are to be located with a maximum 400m spacing. If the area is further subdivided to land parcels less than 1ha, then the residential standard (200m) is to be applied.

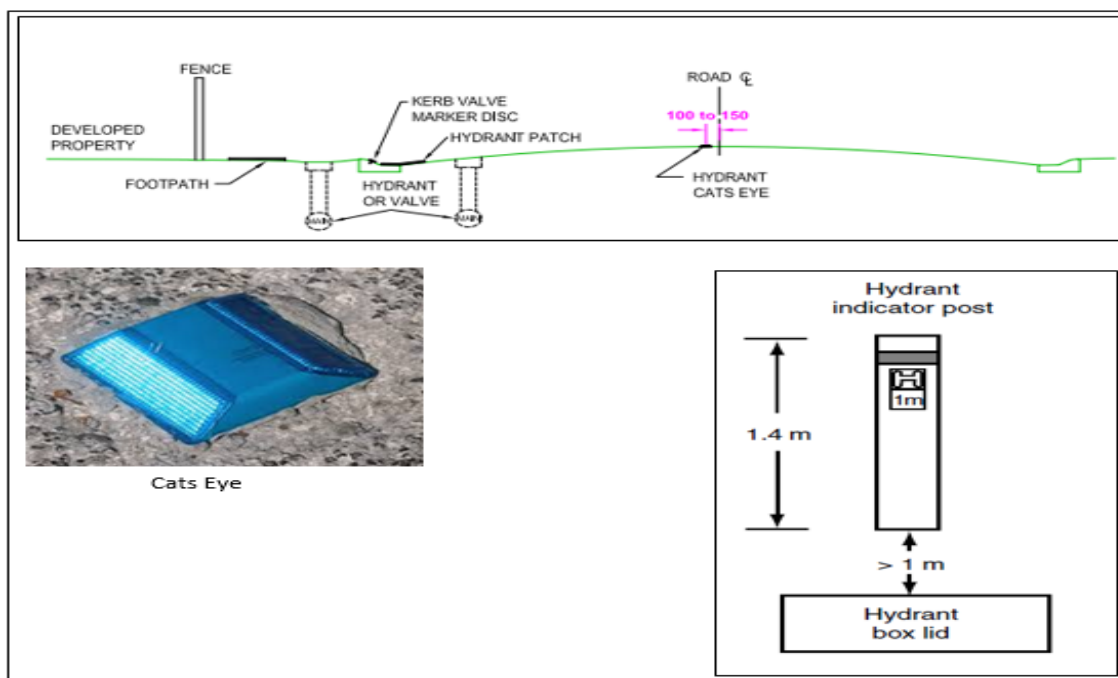


Figure A4.1: Hydrant Location and Identification Specifications