

Bushfire Management Plan

Local Structure Plan

Lot 5131 Jandakot Road
Treeby
City of Cockburn

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Document Information

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Project Name: Local Structure Plan
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Document Control

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Front cover photo: Structure Plan

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EXECUTIVE SUMMARY

This Bushfire Management Plan (BMP) has been prepared to support a proposed Local Structure Plan (LSP) for Lot 5131 Jandakot Road, Treeby. The LSP area is 64 hectares in size and herein referred to as 'the site'. It proposes urban residential lots and associated infrastructure, with areas of Public Open Space (POS) varying in size and type to be provided throughout the site. Large 'Bush Forever' Conservation Areas are located to the east and west of the site and connect to similar areas to the east of the site.

Land immediately to the west of the site consists of newly constructed urban residential development, while land to the south contains land currently being developed into urban residential dwellings and associated infrastructure. To the east and north-west are existing rural residential lots approximately 2 hectares in size, with undeveloped land to the north.

The LSP provides a guide for residential development within the site and creates a framework for the future urban subdivision of the site into anticipated residential lots and areas of POS. Following development, all classified vegetation within the centre of the site will be removed or modified into managed POS areas. The POS areas will be landscaped and classified as low threat vegetation, containing irrigated and maintained turf with garden beds. Long term bushfire hazard exists in the Bush Forever Conservation Reserve within and adjacent to the site to the east, south and west.

All areas within 150 metres of the site boundary have been assessed for vegetation classification and BAL contours. It has been determined that all proposed future dwellings arising from the LSP will be exposed to BAL-29 or lower and will fall within the acceptable level of risk. There is good vehicular access both within and surrounding the site. A reticulated water supply will be provided and fire hydrants will be installed by the developer/s to meet the specifications of Water Corporation (Design Standard 63) and DFES.

The objective of this BMP is to address bushfire management issues within the LSP. If there is a bushfire within or near the site, implementing this BMP will reduce the threat to residents, property and emergency response personnel. This document sets out the roles and responsibilities of the developer, future residents and the City of Cockburn, and responds to the performance criteria in the *Guidelines for Planning in Bushfire Prone Areas* V1.3 (WAPC *et.al.* 2017). It is important that the measures and procedures outlined in this BMP are adopted across the various stages of the land use planning and dwelling construction approvals processes. At future stages of subdivision, the BMP will be updated or BAL ratings confirmed to ensure compliance with SPP 3.7 and to support building license applications.

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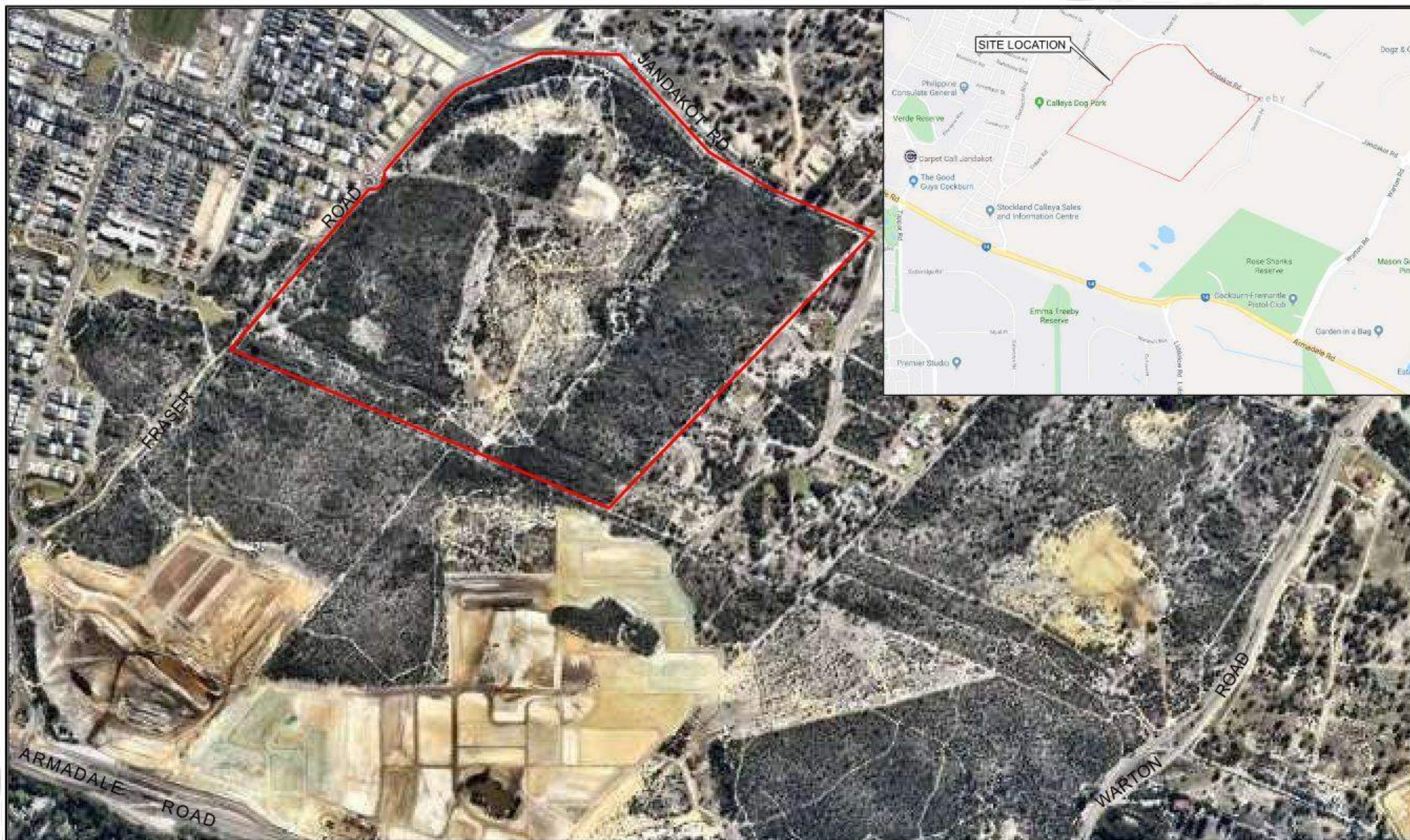
1 PROPOSAL DETAILS

This Bushfire Management Plan (BMP) has been prepared to support a Local Structure Plan (LSP) for Lot 5131 Jandakot Road, Treeby (Figure 1). This area is herein referred to as “the site” and its location is shown in Figure 2. The site is 64.3586 hectares (ha) in size and is located within the City of Cockburn, approximately 20 km south of the Perth Central Business District (CBD) and 2.8 kilometres south-west of the Cockburn City Centre.

The site is currently zoned ‘Development Contribution Area 13 and 15 Resource Zone’ under the City of Cockburn Town Planning Scheme 3, and currently contains a combination of cleared earth, degraded bushland and more intact native vegetation. The LSP proposes a range of residential housing densities, as well as areas of Public Open Space (POS) ranging in size from 9000m² to 1.04 hectares. Large areas of conservation ‘Bushland Forever’ reserve, are found to the both the east and west of the site, and connect to similar conservation areas to the south-west of the site.

Land to the north of the proposed LSP site is similarly zoned ‘Development Contribution Area 13 and 15 Resource Zone’ and contains both degraded and intact native vegetation. Rural residential lots are present to the north-west and east of the site and vary in size from 2 to 2.5 hectares. To the south of the site is urban residential development currently under construction, consisting of residential dwellings and primary school. Newly constructed urban residential development with average lot size of approximately 440m² is present to the west.

All proposed lots will have direct driveway entrance onto one of the newly created internal public roads. Egress from the site is supplied by internal roads that provide access to Solitaire Road at three different locations to the north-west of the site, as well as Jandakot Road to the north-east and to the urban development currently under construction to the south. The fully developed site does not require any permanent Emergency Access Ways (EAW), however during the development of subdivision stages, temporary EAW’s may be required to ensure two access ways are provided at all times.



Location details: Lot 5131 Jandakot Road
Treeby
Assessment date: May, 2021
Prepared by: Bushfire Safety Consulting
Accreditation level: Level 3 BPAD Practitioner
Accreditation number: BPAD 23160
Accreditation expiry date: 31st January, 2022
Date aerial photo: February 2021

FIGURE 2
SITE LOCATION PLAN



LEGEND

 SUBJECT LAND

Base mapping supplied by Nearmap & Google Maps

1.1 Policy and Guidelines

1.1.1 Application of SPP 3.7

The *State Planning Policy No. 3.7: Planning in Bushfire Prone Areas (SPP 3.7)* provides the foundation for land use planning to address bushfire risk management in Western Australia. It is used to inform and guide decision makers, referral agencies and land owners/ proponents to help achieve acceptable bushfire protection outcomes.

The policy contains objectives and policy measures as well as reference to the bushfire protection criteria as outlined in the *Guidelines for Planning in Bushfire Prone Areas (WAPC 2017 V1.3; the 'Guidelines')*. The policy applies to this Local Structure Plan (LSP) proposal because the site is located in a designated bushfire prone area on the WA Map of Bushfire Prone Areas (Figure 3).

The following policy measures will need to comply with SPP 3.7:

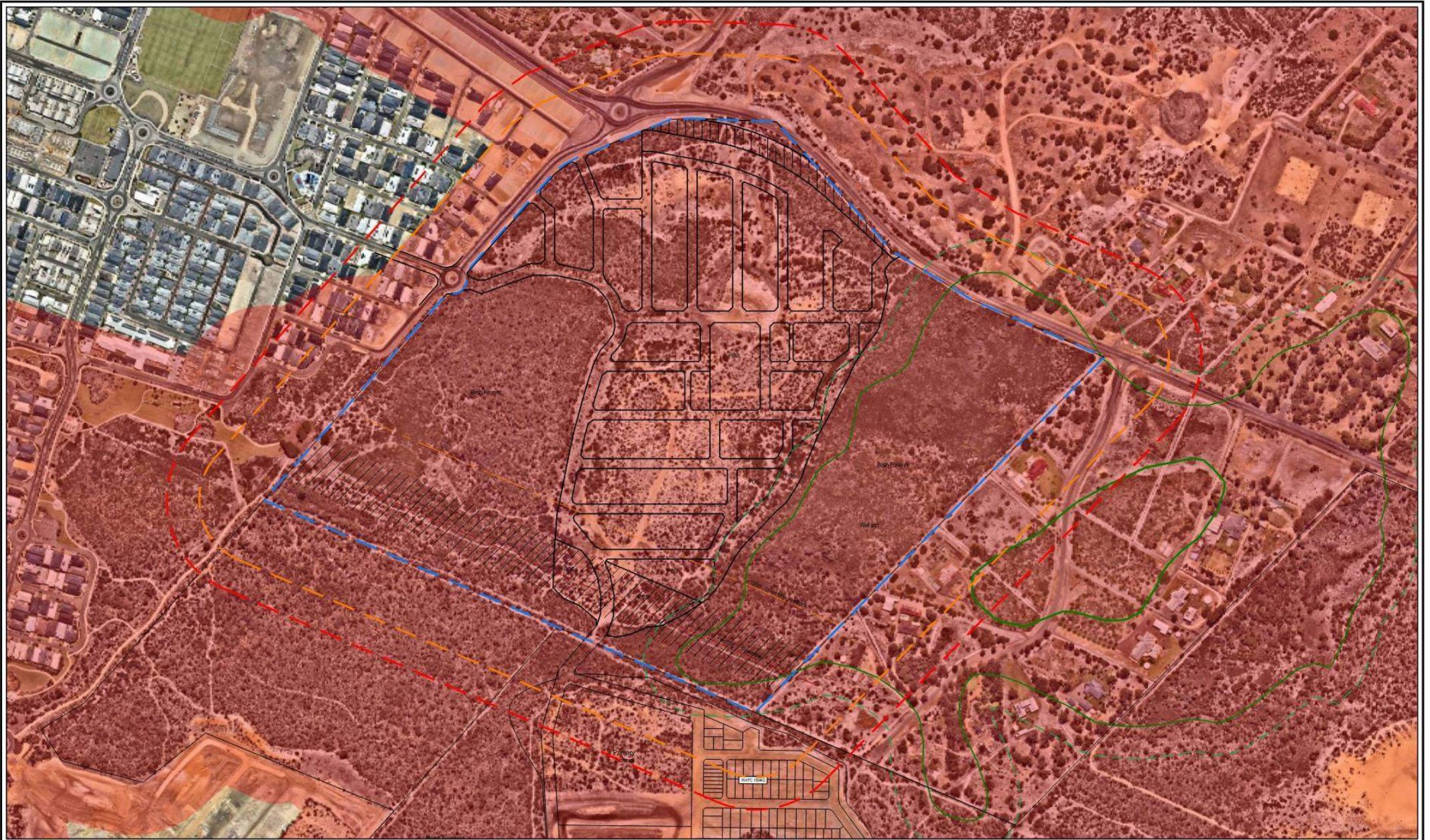
Table 1. Policy measures

Policy Measure 6.2	The site is located within a designated bushfire prone area (Figure 3) and will have a Bushfire Hazard Level above low and a Bushfire Attack Level rating above BAL-LOW.
Policy Measure 6.4	Policy 6.4 applies meaning the LSP application will be accompanied by: - BAL Contour Plan; - BAL ratings; - Identification of relevant issues; and - Demonstration of compliance with the guidelines.

The proposal does not contain proposed minor, unavoidable or vulnerable development, and does not contain high-risk land use under *SPP 3.7*.

1.1.2 Guidelines for Planning in Bushfire Prone Areas V1.3 (2017)

The Department of Planning has released the *Guidelines for Planning in Bushfire Prone Areas V1.3 (2017)*. The requirements of this document are accommodated within this BMP. The *Guidelines for Planning in Bushfire Prone Areas V 1.3 (2017)* is intended to inform and guide decision makers, referral authorities and proponents to achieve acceptable bushfire protection outcomes, including expectations at the different stages of planning.



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**FIGURE 3
BUSHFIRE PRONE
AREAS MAP**

0 50 100 150 200 250m
SCALE 1:6000 @ A3
DATE: MAY 2021



LEGEND

- ▬ ▬ SUBJECT SITE
- ▬ ▬ ASSESSMENT AREA (150m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE
- ▬ ▬ ASSESSMENT AREA (100m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE
- ▬ ▬ BUSHFIRE PRONE AREAS

SOURCE OF PHOTOGRAPHY: NEARMAP

2 ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation – Modification and Clearing

The development site proposed for residential use and POS areas is sited on degraded land, which is a result of sand extraction activities that have previously occurred on the site. The development impact is concentrated in this degraded area and the more intact areas of undisturbed vegetation are contained in the Bush Forever Conservation Reserves where the vegetation is protected in perpetuity.

There are no environmental restrictions to limit future development of the site.

2.2 Revegetation/Landscape Plans

There are a number of landscaped parks, drainage areas, gardens and nature areas proposed within and around the perimeter of the site. The landscape design, plant selection and maintenance regime has thoroughly considered how to minimise and manage bushfire threat. The plans are found in Appendix 4. The key design features of the landscaped areas is the use of irrigation, low groundcovers, turf and clear stemmed trees. Hardscaped areas such as paths, walls and recreation sites are located throughout to ensure vegetation is not continuous and fine fuels are separated in the maintained garden beds.

The establishment and maintenance of all landscaped low threat POS areas will involve the following in perpetuity:

- Under pruning of shrubs, scrub and trees of all fine fuels (<6mm) 2 metres from ground level
- Annually removing leaf litter, accumulated fine fuels and dead plants and/or plant material.
- Keeping garden beds irrigated and turf areas mown and grass green.
- Pruning to keep clumps of trees and shrubs separated from one another.
- Removal of weeds and regenerating Eucalypts, Acacia and other native plants not intended to be included as part of the landscape plans.

The northern interface with Jandakot Road will involve a completely new road constructed by the developer and no revegetation will be introduced to threaten the site. No details are yet developed for the road development.

3 BUSHFIRE ASSESSMENT RESULTS

Bushfires are common in the City of Cockburn and local brigades respond to numerous bushfires in the district annually. This BMP plays a critical role in ensuring that the proposed development, and the inherent increase in usage and intensity of the land, appropriately mitigates the risk from bushfire.

3.1 Assessment Inputs

The methodology used to assess the site is outlined in the *Guidelines for Planning in Bushfire Prone Areas V1.3 (2017)*. The broad road and lot layout is known, and a strategic level bushfire hazard assessment is not required. A post development vegetation classification plan is provided, and a BAL Contour plan is provided in accordance with Appendix 3 of the guidelines.

Assessing bushfire threat at the site-specific level requires evaluating the predominant class of vegetation on the site and surrounding area for a minimum of 150 m, as shown in the Vegetation Classification Map (Figure 4).

3.1.1 Vegetation Classification

The vegetation surrounding the site consists of pockets of Class A Forest (photos 1-10) which is dominated by a mixture of eucalypts, Banksia trees and Casuarina trees with a defined middlestorey fuel structure and litter fuels. Foliage cover also exceeds 30%.

Where the banksia trees grow on more exposed sites, the canopies are more separated (less than 30% foliage cover) and the trees exceed 6 metres in height, there is no middlestorey vegetation and it consists of predominantly low shrubs or grass fuels. This is classified as Class B Woodland. Where the vegetation does not exceed 6 metres and consists of shrubs and woollybush, Class D Scrub is identified.

Shrubland is found in a small areas near the wetlands east of the site position in the Bush Forever reserve.

The vegetation plots on and surrounding the site, and within 150 metres of the site boundary, are found in Figure 4 with plot descriptions below.

Photo ID: 1 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	
Photo ID: 2 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	

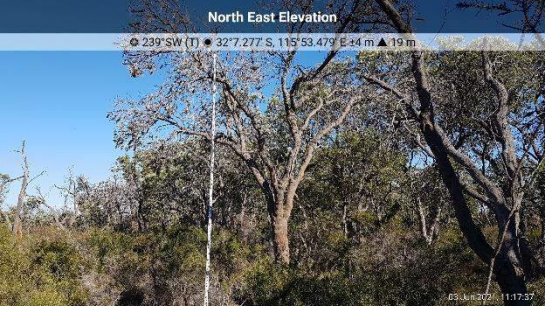
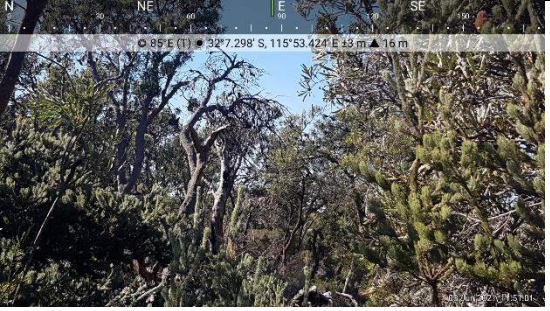
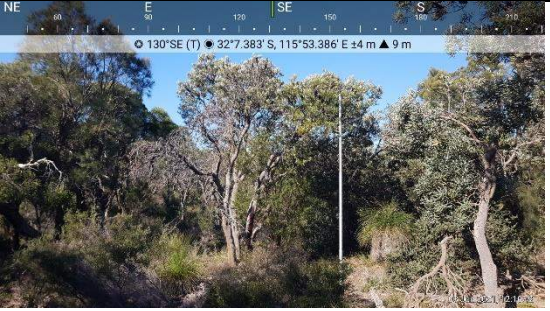
Photo ID: 3 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey..	 North East Elevation 239°SW (T) • 32°7.277' S, 115°53.479' E ±4 m ▲ 19 m 03 Jun 2021 11:17:37
Photo ID: 4 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 85°E (T) • 32°7.298' S, 115°53.424' E ±4 m ▲ 16 m 03 Jun 2021 11:18:04
Photo ID: 5 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 130°SE (T) • 32°7.383' S, 115°53.386' E ±4 m ▲ 9 m 03 Jun 2021 11:18:57
Photo ID: 6 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 153°SE (T) • 32°7.412' S, 115°53.366' E ±4 m ▲ 11 m 03 Jun 2021 12:28:58
Photo ID: 7 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 156°SE (T) • 32°7.466' S, 115°53.321' E ±4 m ▲ 19 m 16 Jun 2021 13:22:32

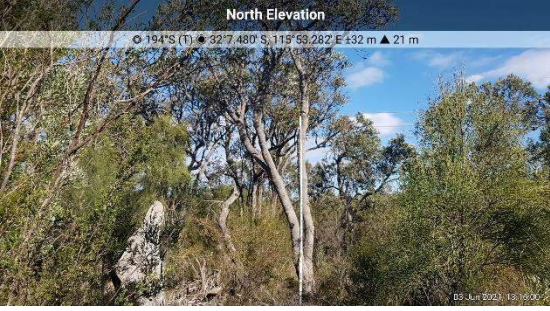
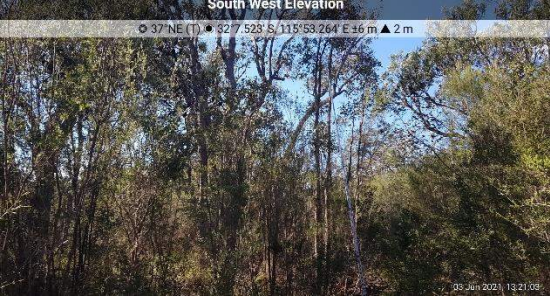
Photo ID: 8 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 North Elevation $\odot 194^{\circ}\text{S (T)} \bullet 32^{\circ}7.480' \text{ S, } 115^{\circ}59.282' \text{ E } \pm 32 \text{ m } \blacktriangle 21 \text{ m}$ 03 Jun 2021, 13:10:00
Photo ID: 9 Plot Number: 1 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 South West Elevation $\odot 37^{\circ}\text{NE (T)} \bullet 32^{\circ}7.523' \text{ S, } 115^{\circ}53.264' \text{ E } \pm 6 \text{ m } \blacktriangle 2 \text{ m}$ 03 Jun 2021, 13:21:08
Photo ID: 10 Plot Number: 2 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 East Elevation $\odot 272^{\circ}\text{W (T)} \bullet 32^{\circ}7.377' \text{ S, } 115^{\circ}53.142' \text{ E } \pm 4 \text{ m } \blacktriangle 16 \text{ m}$ 03 Jun 2021, 13:46:24
Photo ID: 11 Plot Number: 2 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 East Elevation $\odot 268^{\circ}\text{W (T)} \bullet 32^{\circ}7.350' \text{ S, } 115^{\circ}53.136' \text{ E } \pm 4 \text{ m } \blacktriangle 12 \text{ m}$ 03 Jun 2021, 13:48:17
Photo ID: 12 Plot Number: 2 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	 94°E (T) $\bullet 32^{\circ}7.394' \text{ S, } 115^{\circ}53.403' \text{ E } \pm 3 \text{ m } \blacktriangle -5 \text{ m}$ 03 Jun 2021, 13:50:42

Photo ID: 13 Plot Number: 2 Description/justification of classification: Class A Forest Description/justification of classification: Banksia dominated vegetation type with occasional jarrah and marri tree with shrubland understorey.	
Photo ID: 14 Plot Number: 3 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres high	
Photo ID: 15 Plot Number: 3 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres high	
Photo ID: 16 Plot Number: 3 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres high	
Photo ID: 17 Plot Number: 3 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres high	
Photo ID: 18 Plot Number: 3 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres high	

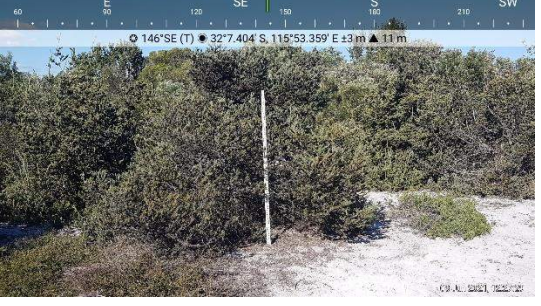
Photo ID: 19 Plot Number: 3 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres high	
Photo ID: 20 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres high	
Photo ID: 21 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 22 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 23 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	

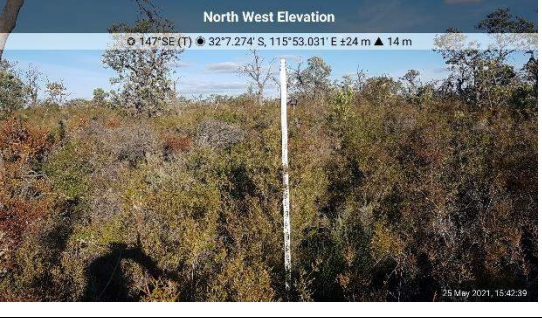
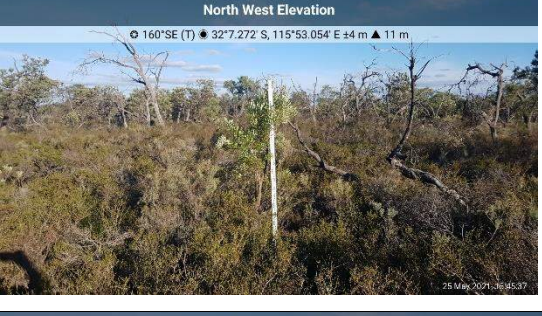
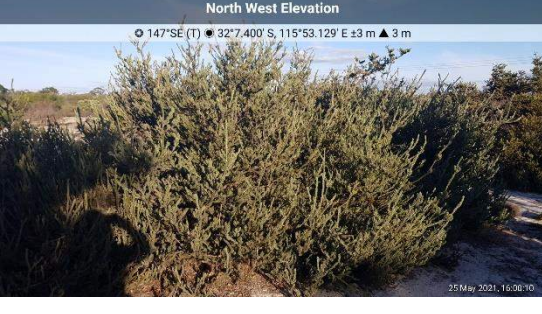
Photo ID: 24 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 25 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 26 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 27 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 28 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	

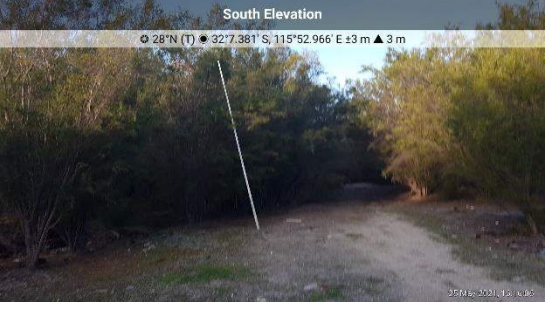
Photo ID: 29 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 30 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 31 Plot Number: 4 Description/justification of classification: Class D Scrub Description/justification of classification: Vegetation 2-3 metres	
Photo ID: 32 Plot Number: 5 Description/justification of classification: Class B Woodland Description/justification of classification: isolated trees in degraded area north of Jandakot road	
Photo ID: 33 Plot Number: 5 Description/justification of classification: Class B Woodland Description/justification of classification: isolated trees in degraded area north of Jandakot road	

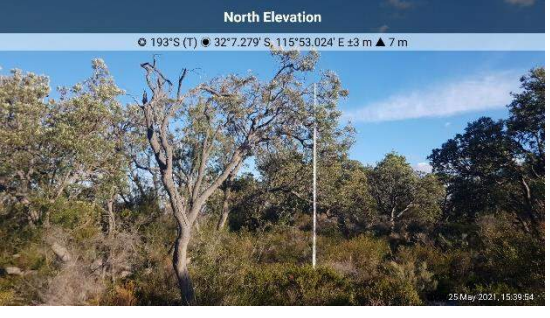
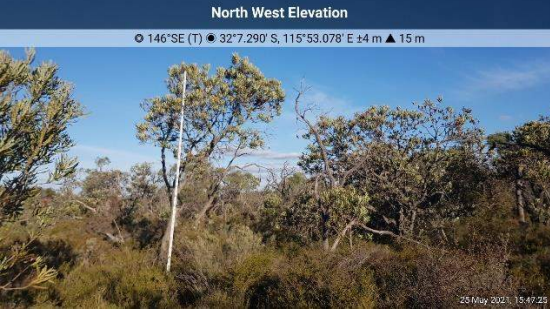
Photo ID: 34 Plot Number: 6 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia and isolated jarrah trees over low shrubland	 North Elevation 193°S (T) 32°7.279' S, 115°53.024' E ±3 m ▲ 7 m 25 May 2021, 15:39:54
Photo ID: 35 Plot Number: 6 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia and isolated jarrah trees over low shrubland	 North West Elevation 146°SE (T) 32°7.290' S, 115°53.078' E ±4 m ▲ 15 m 25 May 2021, 15:47:25
Photo ID: 36 Plot Number: 6 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia and isolated jarrah trees over low shrubland	 North Elevation 187°S (T) 32°7.304' S, 115°53.106' E ±3 m ▲ 13 m 25 May 2021, 15:48:49
Photo ID: 37 Plot Number: 6 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia and isolated jarrah trees over low shrubland	 West Elevation 85°E (T) 32°7.355' S, 115°52.897' E ±16 m ▲ 3 m 25 May 2021, 16:24:26
Photo ID: 38 Plot Number: 6 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia and isolated jarrah trees over low shrubland	

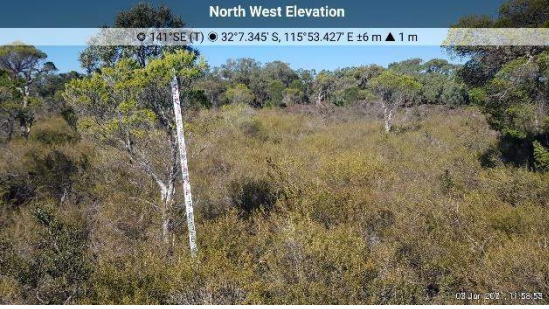
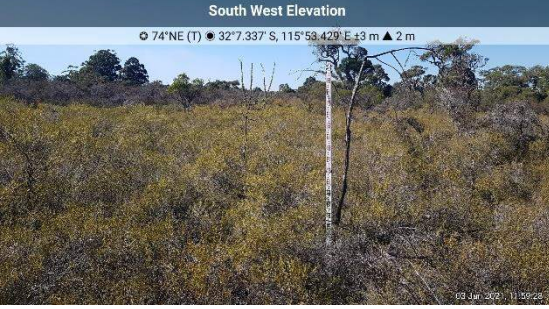
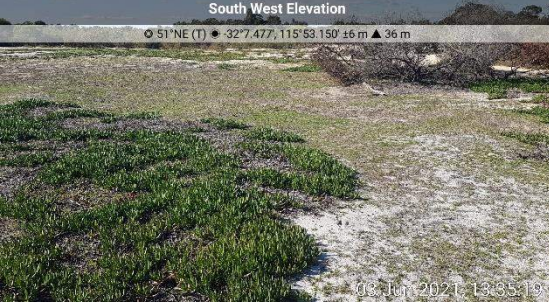
Photo ID: 39 Plot Number: 7 Description/justification of classification: Class C Shrubland Description/justification of classification: vegetation less than 2m in height but connect fuels horizontally	
Photo ID: 40 Plot Number: 7 Description/justification of classification: Class C Shrubland Description/justification of classification: vegetation less than 2m in height but connect fuels horizontally	
Photo ID: 41 Plot Number: 7 Description/justification of classification: Class C Shrubland Description/justification of classification: vegetation less than 2m in height but connect fuels horizontally	
Photo ID: 42 Plot Number: 8 Description/justification of classification: Class G Grassland Description/justification of classification: Grass, weeds, pigface and low groundcovers	
Photo ID: 43 Plot Number: 8 Description/justification of classification: Class G Grassland Description/justification of classification: Grass, weeds, pigface and low groundcovers	

Photo ID: 44 Plot Number: 8 Description/justification of classification: Class G Grassland Description/justification of classification: Grass, weeds, pigface and low groundcovers	
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3.1.2 Effective Slope

The effective slope of the landscape surrounding the site is the slope that will affect the behaviour of an approaching bushfire. The effective slope under the Class A Forest in Plot 1, Class D Scrub in Plot 3 and Class B Woodland in Plot 5 is downslope 0-5 degrees on the immediate eastern interface with the site.

Immediately south and west of the site, the landscape rises gently or is flat. Internally the slopes within the site reflect a disturbed area where sand has been extracted and revegetated resulting in a n undulating surface. The effective slope under surrounding classified vegetation is found in Table 2 and Figure 4.

Table 2. Summary of vegetation type and effective slope

Vegetation Area/ Plot	Applied Vegetation Classification	Effective Slope under the Classified Vegetation (degrees)
1	Class A Forest	Downslope 0-5
2	Class A Forest	Flat / upslope
3	Class D Scrub	Downslope 0-5
4	Class D Scrub	Flat / upslope
5	Class B Woodland	Downslope 0-5
6	Class B Woodland	Flat / upslope
7	Class C Shrubland	Flat / upslope
8	Class G Grassland	Downslope 0-5
9	Class G Grassland	Flat / upslope
10	Exclusion Clause 2.2.3.2 (f)	N/A
11	Exclusion Clause 2.2.3.2 (e)	N/A



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**FIGURE 4 - VEGETATION
CLASSIFICATION MAP
(BAL CONTOUR MAP)**

0 50 100 150 200 250m
SCALE 1:6000 @ A3
DATE: JUNE 2021



LEGEND

■ SUBJECT SITE
■ ASSESSMENT AREA (150m) FROM THE
EXTERNAL BOUNDARY OF THE SUBJECT SITE
■ ASSESSMENT AREA (100m) FROM THE
EXTERNAL BOUNDARY OF THE SUBJECT SITE

SOURCE OF PHOTOGRAPHY: NEARMAP

■ PLOT 1 - FOREST - DOWNSLOPE 0-5
■ PLOT 2 - FOREST - FLAT / UPSLOPE
■ PLOT 3 - CLASS D SCRUB - DOWNSLOPE 0-5
■ PLOT 4 - CLASS D SCRUB - FLAT / UPSLOPE
■ PLOT 5 - CLASS B WOODLAND - DOWNSLOPE 0-5
■ PLOT 6 - CLASS B WOODLAND - FLAT / UPSLOPE
■ PLOT 7 - CLASS C SHRUBLAND - FLAT / UPSLOPE
■ PLOT 8 - CLASS G GRASSLAND - DOWNSLOPE 0-5
■ PLOT 9 - CLASS G GRASSLAND - FLAT / UPSLOPE
■ PLOT 10 - EXCLUSION CLAUSE 2.2.3.2(i)
■ PLOT 11 - EXCLUSION CLAUSE 2.2.3.2(i)
■ PLOT 12 - EXCLUSION CLAUSE 2.2.3.2(b)

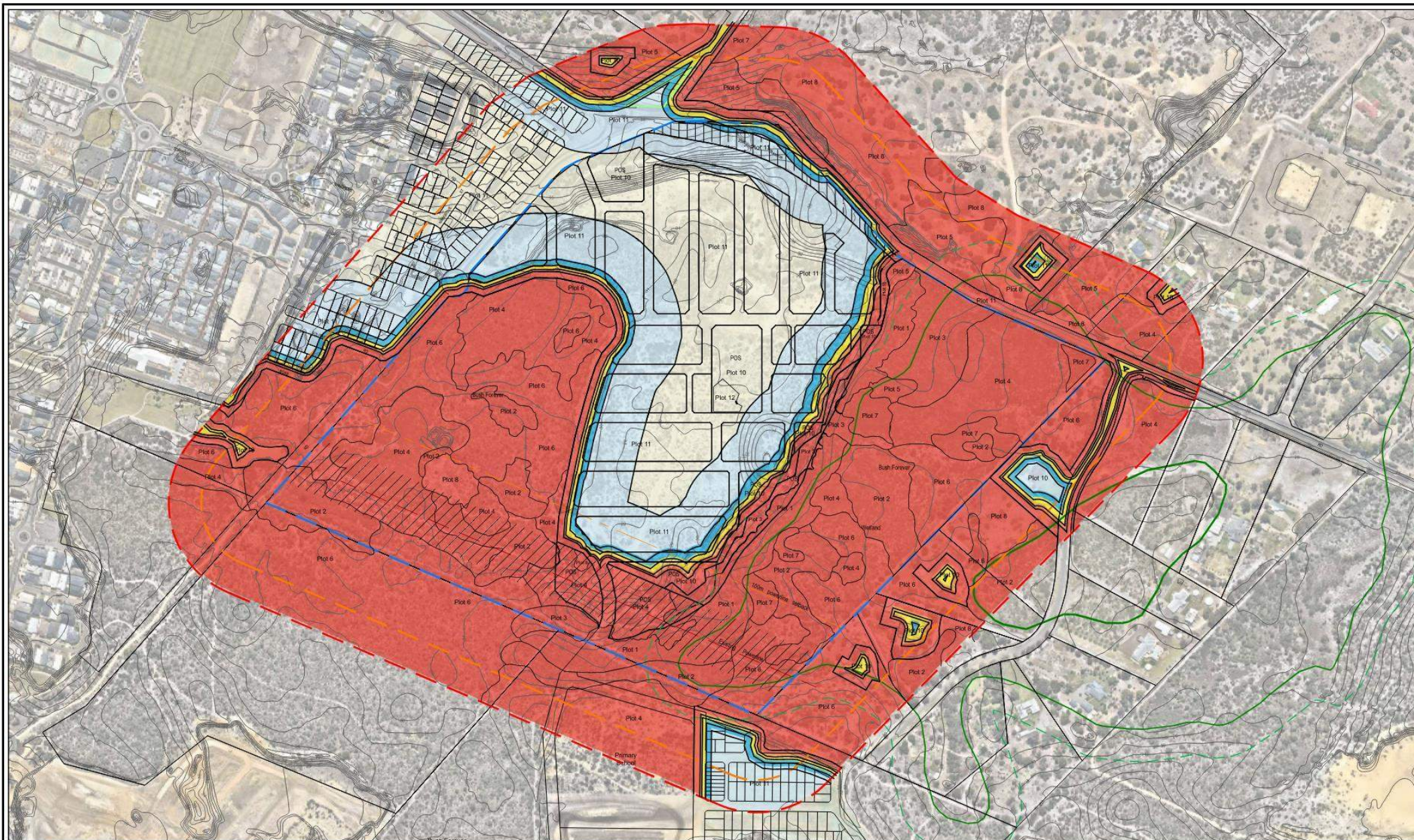
 **bushfire safety**
CONSULTING
Science. Culture. Solutions.
PO BOX 84 STONEVILLE WA 6081
Mob: 0429 949 202
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3.2 Assessment Outputs

A post-development BAL contour assessment was undertaken according to Appendix 3 of the Guidelines and the results are found in Figure 6. A method 1 BAL Assessment was undertaken to determine the BAL contours impacting the site and the outputs are provided in Table 3 and shown in Figure 5.

Table 3. Summary of assessment outputs

LSP Interface	Plot No	Applied Vegetation Classification	Effective slope	Development lots	Minimum Separation Distance	Highest BAL Contour On developable lots
West	6	Class B Woodland	Flat/upslope	Residential	15 m road reserve	BAL – 29
	4	Class D Scrub	Flat/upslope	Residential	15 m road reserve	BAL – 29
South	4	Class D Scrub	Flat/upslope	Residential	15 m road reserve	BAL – 29
East	1	Class A Forest	Downslope 0-5	Residential	18m road reserve 9m lot internal	BAL – 29
	3	Class D Scrub	Downslope 0-5	Residential	18 road reserve	BAL – 29
	5	Class B Woodland	Downslope 0-5	Residential	18 road reserve	BAL-29
North	5	Class B Woodland	Downslope 0-5	Residential	32 metres in Jandakot Road	BAL-19
	8	Class G Grassland	Downslope 0-5	Residential	32 metres in Jandakot Road	BAL-12.5



Location details: Lot 5131 Jandakot Road
Treeby
Assessment date: May, 2021
Prepared by: Bushfire Safety Consulting
Accreditation level: Level 3 BPAD Practitioner
Accreditation number: BPAD 23160
Accreditation expiry date: 31st January, 2022
Date aerial photo: February 2021

FIGURE 5
BAL CONTOUR MAP

0 50 100 150 200 250m

SCALE 1:6000 @ A3
DATE: JUNE 2021



LEGEND

- SUBJECT SITE
- ASSESSMENT AREA (150m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE
- ASSESSMENT AREA (100m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE

SOURCE OF PHOTOGRAPHY: NEARMAP

INDICATIVE BUSHFIRE ATTACK LEVELS

- BAL LOW
- BAL 12.5
- BAL 19
- BAL 29
- BAL 40
- BAL FLAME ZONE

4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

Classified vegetation in the Bush Forever Reserve to the west, south and east of the developable area of the site will pose a long-term hazard to the adjacent residents. Vegetation north of Jandakot Road is likely to be a short-term hazard.

The bushfire hazard surrounding the proposed development is mitigated with compliance with SPP 3.7 and the *Guidelines for Planning in Bushfire Prone Areas V1.3 (2017)* based on the establishment of a perimeter road and Asset Protection Zone and landscaped parks and reserves.

5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA

The Local Structure Plan illustrated in **Figure 1** provides details about the nature of any future proposed urban land use. This BMP outlines strategies for compliance with the bushfire protection criteria based on the LSP.

This report adopts an acceptable solution and performance-based system of control for each Bushfire Protection Criteria. This methodology is consistent with Appendix 4 of the *Guidelines for Planning in Bushfire Prone Areas, Version 1.3 (2017)*. The management issues are:

- Location of the development
- Siting and Design of Development
- Vehicular access.
- Water

5.1 Compliance Table

Acceptable solutions are proposed for all of the Bushfire Protection Criteria and each illustrates a means of satisfactorily meeting the corresponding performance criteria. Land use planning bushfire risk mitigation strategies are comprehensively detailed in the following sections by providing responses to the performance criteria that fulfil the intent of the bushfire hazard management issues outlined in the *Guidelines for Planning in Bushfire Prone Areas V1.3 (2017)*. The compliance checklist is provided in Table 4 and spatial representation of the bushfire management strategies are illustrated in **Figure 6**.

Table 4. Compliance Table

Bushfire Protection Criteria	Method of compliance	Proposed bushfire management strategies
	Acceptable Solutions	
Element 1: Location	A1.1 Development Location	The Method 1 BAL Assessment in this report demonstrates the classified vegetation in the area surrounding the site does impact the proposed lots, but all lots can accommodate dwellings that achieve a rating of BAL-29 or lower. Some perimeter lots are exposed to BAL-19 and BAL-12.5.
Element 2: siting and Design	A2.1 Asset Protection Zone (APZ)	A perimeter APZ sited on the perimeter road reserve in addition to landscape POS areas provide a low fuel managed setback between bushfire hazard and residential lots. All internal POS areas within the site will be established in a low threat condition, with irrigated turf and mulched garden beds, and maintained in accordance with the details provided in Section 2.2 of this BMP. The APZ, consisting of the perimeter road reserve will achieve minimum APZ standards outlined in Appendix 1. Dwellings within 100 metres of classified vegetation will be managed in accordance with APZ standards (see Appendix 1).
Element 3: Vehicular Access	A3.1 Two access routes	All lots have direct driveway access onto one of many internal public roads. There are three connections onto Solitaire Road in the west, one intersection with Jandakot Road in the north and one to a new development under construction to the south. Multiple access routes are achieved and all subdivision stages will require to comply with a minimum two access ways.
	A3.2 Public Road	Existing public roads surrounding the site and proposed roads comply with minimum public road standards outlined in Appendix 2.
	A3.3 Cul-de-sac	There is a 124 metre cul-de-sac proposed in the north-east of the site. The cul-de-sac will comply with standards outlined in Appendix 2 and contain a compliant turn around for fire-fighting appliances.
	A3.4 Battle-axe	There are no battle axes proposed.
	A3.5 Private driveway longer than 50 metres	There are no private driveways longer than 50m proposed.

Element 3: Vehicular Access (cont)	A3.6 Emergency access way	The fully developed site does not require any permanent Emergency Access Ways (EAW), however during the development of subdivision stages, temporary EAW's may be required to ensure two access ways are provided at all times.
	A3.7 Fire Emergency access routes	There are no fire emergency access ways proposed.
	A3.8 Firebreak width	Compliance will be achieved with the current City of Cockburn Fire Control Order (Appendix 3).
Element 4: Water	A4.1 Reticulated areas	Reticulated water will be provided to the entire development. Fire hydrants will be spaced according to Water Corporation and DFES standards and provide emergency services with access to an adequate water supply.
	A4.2 Non-reticulated areas	Not applicable
	A4.3 Individual lots within non-reticulated areas	Not applicable

5.2 Additional Management Strategies

A perimeter APZ will be established and maintained in the road reserve around the site on the western, southern and eastern boundary which ensures that all future lots and developable areas will be exposed to BAL-29 or lower. In addition, vegetation in POS areas within the site will be established and maintained in low threat condition as per Section 2.2.

A summary of management strategies is outlined in Figure 6.

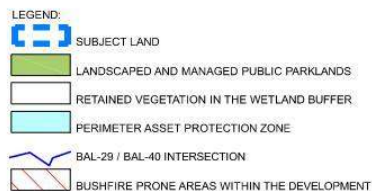


FIGURE 6 - SPATIAL REPRESENTATION OF BUSHFIRE MANAGEMENT STRATEGIES

REQUIREMENTS

1. A permanent perimeter APZ will be established over the road reserve on all interfaces, the developable area is separated from bushfire hazard with public roads on all sides. This ensures that lots and dwellings on this interface are exposed to BAL-29 or less.
2. The internal and perimeter POS areas have been planned with bushfire threat considerations. All will be irrigated with highly managed gardens established with plant species carefully selected and hardscaping designed to ensure bushfire threat is maintained in a low threat condition. POS management will include removal of dead fine fuels (leaf litter, twigs etc), removal of weeds including regenerating Eucalypts and Wattles not part of the landscaping plan (herbicide application and hand removal as required), tree pruning for safety and amenity (including removal of lower branches to 2 metres from ground level), pruning to keep large shrubs separated, removal of dead and diseased plants, mulch top-ups, and rubbish removal. This management regime will ensure the POS areas remain classified as Exclusion Clause 2.2.3.2 (f).
3. The drainage area will contain sedges and is less than 1ha in size and separated from other areas of classified vegetation by > 100 metres
4. Proposed internal and external roads provide excellent egress within and from the site. Jandakot Road is a major transport route and the site will be connected to Solitaire Road in the west and development areas to the south.
5. The area is provided with a reticulated water supply. The provision of scheme water together with fire hydrants will meet the specifications of Water Corporation Design Standard DS63 and DFES requirements. The Water Corporation is responsible for all hydrant repairs.
6. Dwellings constructed in the Bushfire Prone Areas will comply with AS3959 standards.
7. Permanent bushfire hazard will exist in the bush forever Reserves east and west of the site.

6 RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

Table 5 outlines the broad ongoing responsibilities, actions and associated works that need to be undertaken by the future Developer / Proponent or Land Owner and the City of Cockburn. An accredited Bushfire Planning Practitioner will need to be engaged at Subdivision Application stage to update the BMP and assess the development against all of the Bushfire Protection Criteria and SPP 3.7.

Table 5. Responsibility for bushfire measures

DEVELOPER / PROPONENT / LANDOWNER	
LSP, SUBDIVISION STAGE AND ONGOING MANAGEMENT	
1	Ensure the POS areas are designed and established to a low threat condition with fuel loads and fuel structures managed as outlined in the landscape plans and section 2.2.
2	At subdivision stage, update the BMP and ensure compliance with SPP 3.7 and the guidelines.
3	At subdivision stage, ensure vegetation within the site is removed and managed in a low threat condition within 100 metres of the subdivision boundaries where possible and confirm BAL ratings for individual lots prior to the creation of titles.
4	Install the public roads to standards outlined in Appendix 2.
5	Ensure the site complies with the City of Cockburn's Fire Control Order as published.
6	Ensure any future construction of buildings comply with AS 3959:2018 as and when required.
7	Update the Bushfire Management Plan as requested by the City of Cockburn if it has reason to believe site conditions have substantially changed, or new methodologies or practice are adopted as identified in future revisions of the "Guidelines".
CITY OF COCKBURN – ONGOING MANAGEMENT	
8	Maintain public roads to appropriate standards and ensure compliance with the City of Cockburn's Fire Control Order.
9	Provide fire prevention and preparedness advice to landowners upon request, including the <i>Homeowners Bush Fire Survival Manual, Prepare, Act, Survive</i> (or similar suitable documentation) and the City of Cockburn's Fire Control Order.

7 CONCLUSION

This Plan provides acceptable solutions and responses to the performance criteria that fulfil the intent of the bushfire hazard management issues outlined in the Guidelines for Planning in Bushfire Prone Areas (WAPC 2017 V1.3). However, community bushfire safety is a shared responsibility between governments, fire agencies, communities and individuals.

The development is located in the bushfire prone area (i.e. within 100 m of classified vegetation) and risk is reduced via compliance with *AS 3959:2018* standards.

Future developable lots will be exposed to less than 29 kW/m². A minimum of two vehicular access options is achieved, and fire hydrant requirements for fire-fighting are met. The proposed development will fall within the acceptable level of risk.

REFERENCES

DFES. (2017). *PREPARE. ACT. SURVIVE.*

[http://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/BushfireManualsandGuides/DE
S_Bushfire-Prepare_Act_Survive_Booklet.pdf](http://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/BushfireManualsandGuides/DE
S_Bushfire-Prepare_Act_Survive_Booklet.pdf)

Standards Australia. 2009. Construction of buildings in bushfire-prone areas (Amendments 1-3), AS 3959-2009, Standards Australia International Ltd, Sydney

Western Australian Planning Commission (WAPC). 2017. Guidelines for Planning in Bushfire Prone Areas. December 2017 V1.3. Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.

Western Australian Planning Commission (WAPC). 2015b. State Planning Policy No. 3.7: planning in Bushfire Prone Areas (SPP3.7). December 2015. Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.



APPENDICES

- Appendix 1: Asset Protection Zone Standards
- Appendix 2: Vehicular Access Technical Requirements
- Appendix 3: City of Cockburn's Fire Control Order
- Appendix 4: Landscape Masterplans

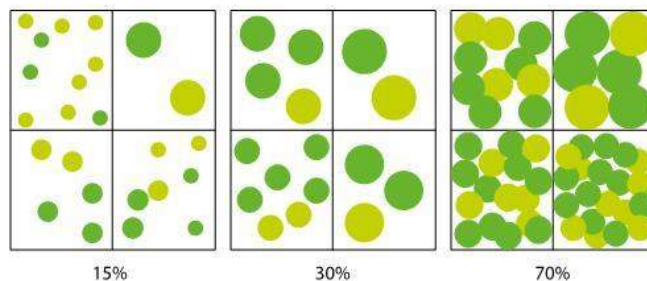
Appendix 1: Asset Protection Zone Standards

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **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 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **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.

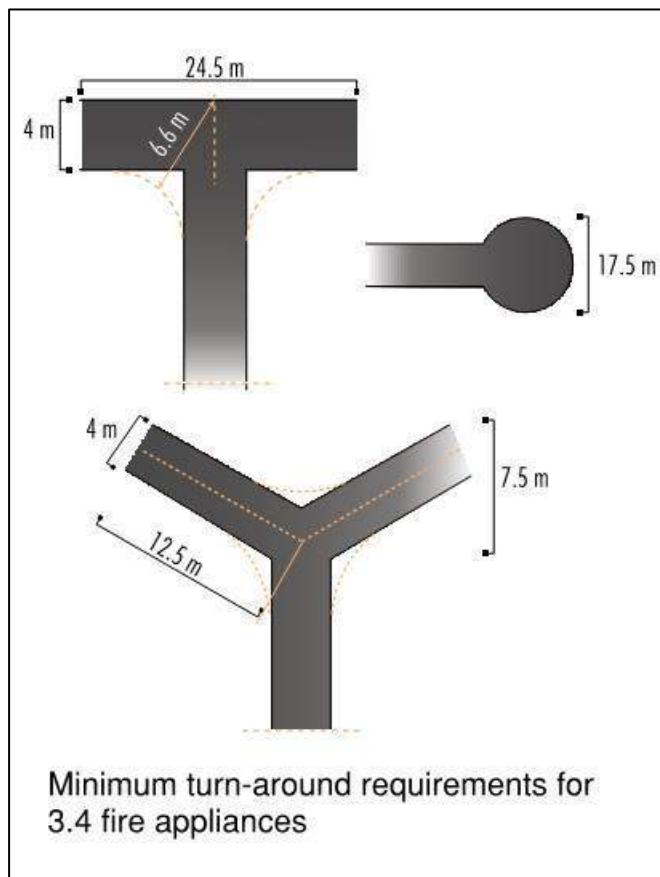
Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **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 5m² 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 millimetres 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 millimetres or less.

Appendix 2: Vehicle Access Technical Requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 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	N/A	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 crossfall	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
*Refer to E3.2 Public roads: Trafficable surface					



Appendix 3: City of Cockburn Fire Control Order

City of Cockburn Fire Control Order

Effective from 10 May 2018

First and Final Notice



Pursuant to Section 33 of the Bush Fires Act 1954 owners or occupiers of land situated within the City of Cockburn are required by law to comply with the prescribed Fire Control Order here within.

Definitions

Authorised Officer	A person appointed by the City of Cockburn Chief Executive Officer as an authorised person/officer to exercise the powers and duties set out in the Local Government Act 1995, Bush Fires Act 1954 and Local Law(s).
Flammable Material	Any dead or dry grass, vegetation, substance, object, thing or material (except living flora including live and/or habitat standing trees) that may or is likely to catch fire and burn or any other thing deemed by an Authorised Officer to be capable of combustion.
Maintained Grass	Soil covered land, planted with grasses or other durable plants, maintained green and less than 50mm in height.
Prohibited Burning Time	The time of each year where it is unlawful to set fire to the bush at any time. This time is normally from 1 December of each year until and including 31 March of the following year. This time may be amended, subject to prevailing seasonal conditions.
Restricted Burning Time	The time of each year where it is unlawful to set fire to the bush without a valid Permit to Set Fire To The Bush issued by an Authorised Officer. This period normally is from 1 April until and including 31 May and from 1 October until and including 30 November of any year. This time may be amended, subject to the prevailing seasonal conditions.
Unrestricted Burning Time	The time of each year where it is lawful to set fire to the bush at any time, in areas zoned rural under the Metropolitan Region Scheme. This time normally is from 1 June until and including 30 September. This time may be amended, subject to the prevailing seasonal conditions.
Firebreak Time	The time of each year where fire hazard reduction works must be maintained as specified in this Fire Control Order. This time is 1 November of each year until and including 15 April of the following year.
Structure	A building, as defined in the Building Codes of Australia (BCA) may be made up of a number of classes if it has a mixed use.

1. All property (vacant or developed) – less than 4,047m²

To reduce the fire hazard on your land and to comply with the requirements of this Fire Control Order you are required to;

- 1.1 Have all flammable materials such as dry grass and weeds slashed, mown or trimmed down by other means to a maximum height of 50mm across the entire property for the duration of this Firebreak Time; and
- 1.2 Remove all dead vegetation.

2. All property (vacant or developed) – 4,047m² or greater

To reduce the fire hazard on your land and to comply with the requirements of this Fire Control Order you are required to;

- 2.1 Construct a firebreak (as defined within section 3 of this order) immediately inside all external property boundaries, this includes those adjacent to roads, drains, rail reserves and any public open space reserves; and
- 2.2 Remove all dead vegetation surrounding and over all habitable structures to a radius of 3 metres except living trees, shrubs, maintained grass and gardens under cultivation.

3. Firebreak Specifications

A firebreak is an area of land cleared of flammable material, installed to minimise the spread or extension of a fire and to provide suitable access for fire fighting vehicles. The standards of a compliant firebreak are as follows;

- 3.1 A firebreak must be constructed of bare earth, stone, or sealed surfaces and be clear of all flammable materials to create a 3 metre wide trafficable surface;
- 3.2 Maintained grass may occupy a firebreak;
- 3.3 Overhanging branches must be pruned to provide a 4 metre vertical clearance above the full width of the 3 metre firebreak surface; and
- 3.4 A firebreak must be a continuous trafficable surface for a fire fighting vehicle, clear of any obstructions and must not terminate in a cul-de-sac (dead end).

4. Additional Works

Regardless of land size and location, the City of Cockburn or its Authorised Officer(s) may require you to undertake additional work(s) on your property to improve access and/or undertake further works where in the opinion of that Authorised Officer(s), these works would be conducive to preventing the outbreak and/or the spread or extension of a fire.

5. Fire Control Order Variations

A variation will be considered where the owner and/or occupiers believe it is impractical to meet the compliance requirements of this Fire Control Order.

Approved structure's occupying a firebreak will not require a variation approval. However, a firebreak will be required to be installed as close as practical around the approved structure.

If approved, variations will be valid in perpetuity, unless a new variation has been approved or the property changes ownership.

The City of Cockburn reserves the right to review, amend or revoke an existing variation in writing at any time. Should a request to vary the Fire Control Order requirements on your property not be approved in writing, this Fire Control Order must be complied with as applicable in its entirety.

6. Burning

During the declared Prohibited Burning Time owners and/or occupiers must not undertake any bush or garden refuse burning activities.

During the declared Restricted Burning Time only, owners and/or occupiers may:

- 6.1 Apply for a permit to burn the bush for bush fire risk mitigation purposes, by following the conditions imposed on a permit to burn as issued by an Authorised Officer.
- 6.2 In areas zoned rural by the Metropolitan Region Scheme you may undertake burning of leaves, tree branches, and other dry vegetation in piles no larger than 1m³ in size, without a permit to burn, subject to the following conditions:
 - 6.2.1 No flammable material (other than that being burned) is to be within 5m of the fire at any time while the fire is burning;
 - 6.2.2 The fire is lit between 6pm and 11pm and is completely extinguished before midnight on the same day;
 - 6.2.3 At least one person is present at the site of the fire at all times until it is completely extinguished; and
 - 6.2.4 When the fire is no longer required, the person ensures that the fire is completely extinguished by the application of water or earth.

During the Unrestricted Burning Time, owners and/or occupiers in areas zoned rural under the Metropolitan Region Scheme may burn garden refuse and set fire to bush on their land without a permit 'To Set Fire To The Bush'. Burning of the bush must be in accordance with all relevant State legislative requirements.

Burning of garden refuse in areas not zoned rural shall not be undertaken within the City of Cockburn, unless approved by an Authorised Officer.

Burning of household waste is prohibited in all areas of the City of Cockburn.

7. Penalties

Failing to comply with this Fire Control Order will result in a penalty of up to \$5,000. A person in default is also liable whether prosecuted or not to pay the costs of performing the work directed by a City's Authorised Officer.

Any owner and/or occupier who engages a contractor to undertake works on their behalf is responsible to ensure that the works completed meet the requirements of this Fire Control Order.

Any Fire Control Order previously published by the City of Cockburn in the Government Gazette or in any Western Australian newsprint is hereby revoked.

By Order of Council

Document Set ID: 7874932
Version: 1.0, Version Date: 12/10/2018

The City of Cockburn Fire Control Order is available in Chinese, Portuguese, Italian and Croatian by contacting the City on 08 9411 3444.

Appendix 4: Landscape Masterplans





3.2 The Central Activity Park

This park area will provide active recreation to the future community with the provision of large grassed areas for family cricket, kick about and general use, combined with a network of footpaths and associated tree planting for extensive shade.

The park will include facilities that encourage and accommodate group and family gatherings. Shade structures, barbecue and picnic facilities will complement and enhance the open grass activity areas, adjacent to a flexible bespoke play area for all ages.

As part of the health and wellbeing, the park will also have relaxation areas, set within the open space to provide areas of calm repose, relaxation and the like. The footpaths around the park provides regular park access, but path linkages to the east and west, out to the linear parklands will be accentuated with mature tree planting to shade pedestrians and to provide legibility and easy access between the reserves. The idea is to encourage walking and connectivity in shaded comfort wherever possible.

The design of this park will be a 'formal' approach with vegetation selected and maintained to be low to mid groundcover, turf, clear stemmed trees and full irrigation as detailed on page 23. Hardscaped areas such as paths, walls and recreational nodes are located throughout to ensure vegetation is not continuous and fine fuels are separated in the maintained shrub beds. All areas will be maintained as low threat vegetation and compliant with AS3959-2018 as stipulated in the Bushfire Management Plan.

This park will also serve an important storage function in the overall drainage strategy of the site, providing stormwater attenuation devices integrated into the overall park design. The intention is to be innovative in the use of swales and other WSUD treatments to accommodate the drainage and to reduce the impact on the amenity of the park. This park will require the most irrigation due to the proposed expanse of turf.

1. Large open grass kick-about area
2. Shade structures with barbecue and picnic facilities
3. Multi-generational play area
4. Viewing deck
5. Relaxation areas
6. Shade trees
7. Drainage swales (1,615m²) with a combination of gravels, littoral plants and groundcovers.



The Northern Park

The location of this park was to act as a buffer to the development, exploiting the ground rise and commanding some good views across to the south of the site and beyond. The design intent is to retain and enhance as many existing features as possible, where levels permit.

This park is designed to be low key recreation, with a meandering circular footpath linking a variety of uses, both passive and active.

The northern part of the park is informal, with a vegetated buffer against the busy Jandakot Road, but retaining view corridors out to the north and to the Bush Forever in the distant east and south.

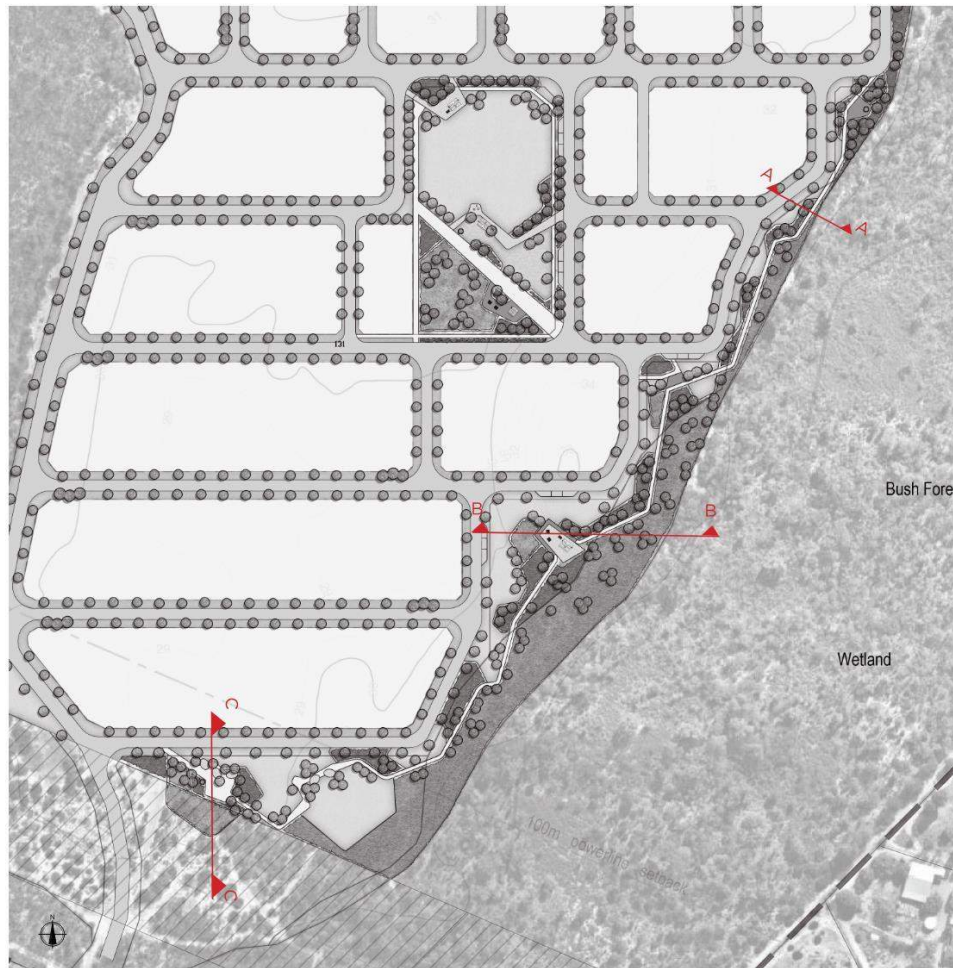
In the south, shade structures with picnic facilities sit within an activity hub alongside bespoke, low key nature play and a mini pump track for older children.

Fitness equipment nodes occur along the circular route to encourage the health and wellbeing aspect of the parks, with room for boot camps or organised fitness and the like in the open grass areas.

Shade trees are extensive within the park to encourage walking and connectivity in shaded comfort wherever possible.

The park will be maintained to be low to mid groundcover, turf, clear stemmed trees and full irrigation as detailed on page 23. Hardscaped areas such as paths, walls and recreational nodes are located throughout to ensure vegetation is not continuous and fine fuels are separated in the maintained shrub beds. All areas will be maintained as low threat vegetation and compliant with AS3959-2018 as stipulated in the Bushfire Management Plan.

1. Shade structures with picnic facilities
2. Mini pump track
3. Bespoke, low key nature play for all ages
4. Fitness equipment along the track
5. Open grass areas for various activities



Park Interface with Bush Forever

The extensive areas of bush forever retained around this development area will be a precious passive resource for the community. The positioning of some parks alongside the wetland buffer and Bush Forever provides the ability to create a continuous linear green link to the full extent of the eastern boundary, which provides both recreational amenity and protection to the important existing vegetation.

These linear parkways will accommodate walks and punctuating nodes that form a component of the broader recreation path network. These parkways are intended as being a more 'controlled' landscape experience of low groundcovers, turf and clear stemmed trees.

Nodes within linear space will include elements such as outdoor class rooms that relate to the values that can be observed within the bushland. Such nodal points will be located in positions that optimise their use. Selected areas will be retained bush within the buffer zone, managed and used to educate people on the importance of the bush environment, with safe access using compacted gravel paths and boardwalks.

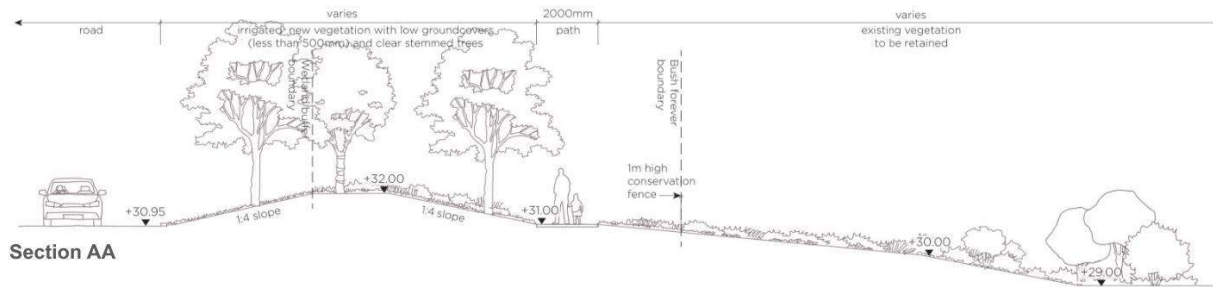
The larger POS areas open out into activity nodes with potential shade structures, seating, low key play and relaxation zones. They also accommodate key stormwater drainage as an integral component of the overall design. The drainage basins are all less than 0.25Ha.

All POS and road verge areas will be maintained to be low to mid groundcover, turf, clear stemmed trees and full irrigation as detailed on page 23. The main north/south path creates a distinct break between landscape areas with walls and recreational nodes located throughout to ensure vegetation is not continuous and fine fuels are separated in the maintained shrub beds. All areas will be maintained as low threat vegetation and compliant with AS3959-2018 as stipulated in the Bushfire Management Plan.

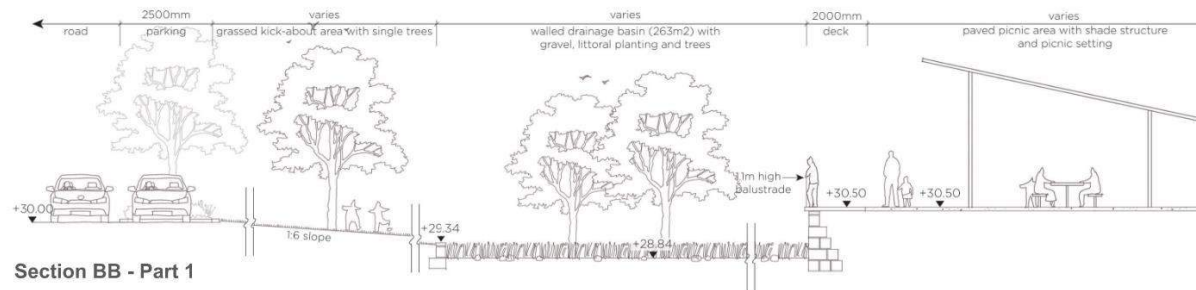
By designating routes and providing interpretive material it can be ensured that the reserves are valued by the community for passive recreation, but not degraded by uncontrolled access. Walking tracks through the reserve will utilise informal trails that are already present in order to avoid clearing of new tracks.

Management of public access through the area will be achieved utilising:

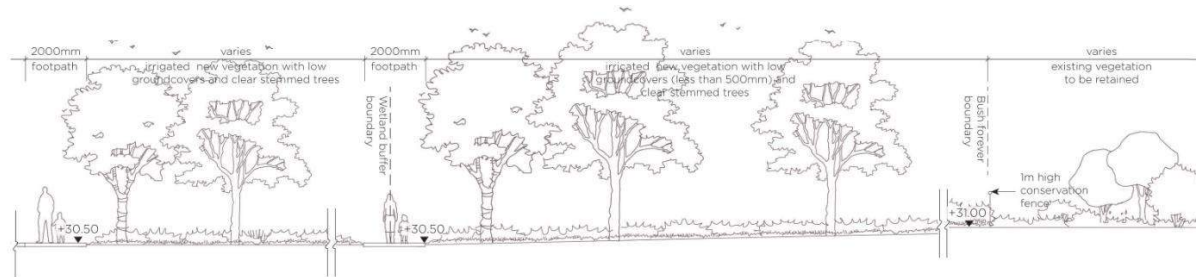
- Signage (both informative and interpretive)
- Passive surveillance where practicable from adjacent residences
- Conservation fencing preventing uncontrolled access to bushland (post and wire)
- Stabilised footpaths
- Interpretive and directional signage



Section AA



Section BB - Part 1



Section BB - Part 2

