

EXISTING POWERLINE PYLON

ROAD CONNECTION TO LOT 131 MODIFIED
TO PROVIDE GREATER SEPARATION TO
ORCHIDS AND POWERLINE PYLON

P.S.

Bush Forever

P.O.S.

Bushfire Management Plan

Local Structure Plan

Lots 705 & 707 Armadale Road, Treeby

City of Cockburn

P.O.S.



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Prepared For:
E.W.H Pty Ltd
9 September 2022
Version 4.0

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Document Information

Prepared for: E.W.H Pty Ltd
Project Name: Local Structure Plan
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Bushfire Safety Consulting Pty Ltd

I hereby declare that I am a BPAD accredited bushfire practitioner.	
Accreditation No.	23160
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Date	09/09/2022



Document Control

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Front cover photo: BAL Contour over the site

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EXECUTIVE SUMMARY

This Bushfire Management Plan (BMP) has been prepared to support a proposed Local Structure Plan (LSP) for a portion of Lots 705 and 707 Armadale Road in Treeby. The LSP area is 47.9 hectares in size and herein referred to as ‘the site’. The LSP 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. A large ‘Bush Forever’ Conservation Reserve to the north-west and north-east of the development site is 13.6 ha in size and this connects to the Bush Forever Reserve on the east of the site.

Land immediately to the north and south of the site consists of existing rural residential development on lots 2 to 2.5 hectares in size.

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 and a future school site. Following development, all classified vegetation within the site will be removed or modified into managed POS areas. The POS areas will be landscaped and be classified as low threat vegetation and contain irrigated and maintained turf and garden beds. Long term bushfire hazard exists in the Bush Forever Conservation Reserve within and adjacent to the site to the north and east.

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* V1.4 (WAPC *et.al.* 2021). 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 a to confirm compliance with SPP 3.7 and BAL ratings will be confirmed 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 a portion of Lots 705 and 707 Armadale Road, in Treeby (Figure 1). This area is herein referred to as “the site” and its location is shown in Figure 2. The site is 47.7 hectares (ha) in size and is located within the City of Cockburn, approximately 20 km south of the Perth Central Business District (CBD) and 2.5 kilometres west of the Cockburn City Centre. (Figure 2).

The site is currently zoned ‘Development Contribution Area 13 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 2218m² to 6.7 hectares. A large conservation ‘Bushland Forever’ reserve, approximately 13.6 hectares in size is found to the north-west and north-east of the site. Degraded vegetation also occurs in the Bush Forever Reserve east of the site.

Land to the west and north-west of the proposed LSP site is similarly zoned ‘Development Contribution Area 13 Resource Zone’ and contains both degraded and intact native vegetation.

Rural residential lots are present to the north of the site and vary in size from 2 to 2.5 hectares, with a conservation reserve containing a combination of vegetation classes.

To the south of the site and Armadale Road are additional 2-to-2.5-hectare rural residential lots, with a small conservation reserve along a stream running south.

All proposed lots will have direct driveway entrance onto one of the newly created internal public roads. Egress from the site is supplied by a main internal road that provides access to Armadale Road in the south. Two other internal roads will connect to an adjacent development in the west, and another to the north, providing additional egress in the future. 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: Lots 705 & 707 Armadale Road
Treeby
Assessment date: October, 2019
Prepared by: Bushfire Safety Consulting
Accreditation level: Level 3 BPAD Practitioner
Accreditation number: BPAD 23160
Accreditation expiry date: 31st January, 2023
Date aerial photo: July 2022

**FIGURE 1
LOCAL STRUCTURE
PLAN**

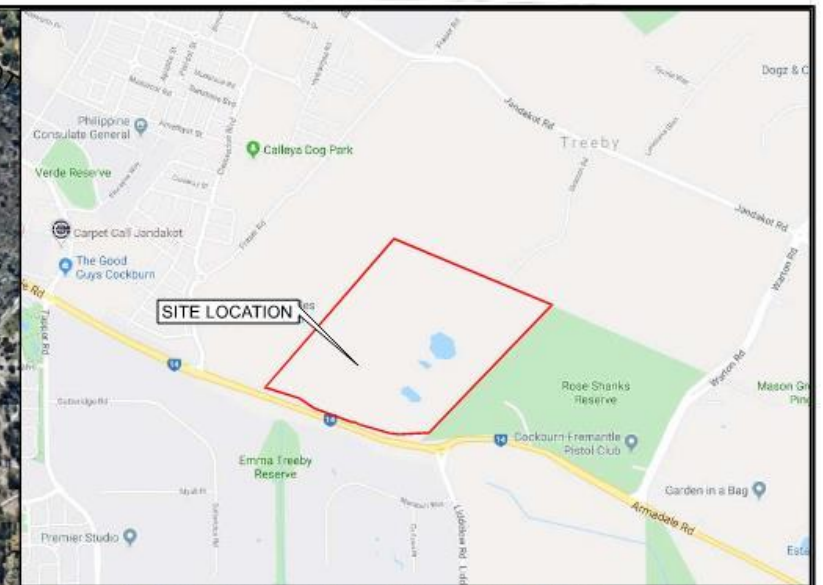
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SCALE 1:4000 @ A3
DATE: AUGUST 2022



LEGEND:
SUBJECT LAND
BUSH FOREVER
P.O.S.
PRIMARY SCHOOL

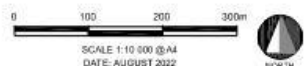
SOURCE OF PHOTOGRAPHY: NEARMAP

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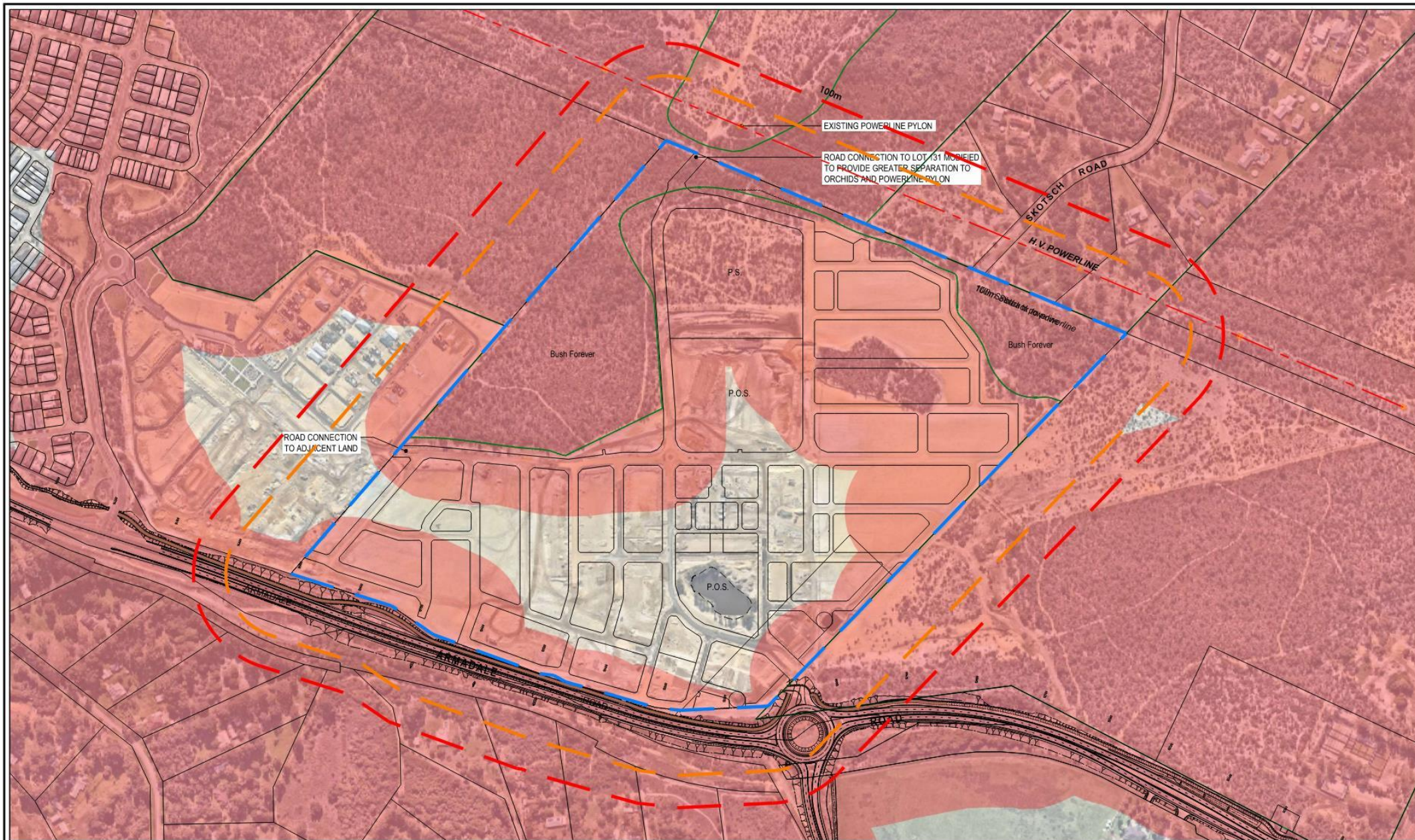
FIGURE 2
SITE LOCATION PLAN



LEGEND
 SUBJECT LAND

Base mapping supplied by Nearnmap & Google Maps

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Date aerial photo: June 2022

FIGURE 3 BUSHFIRE PRONE AREAS

0 50 100 150 200m

NOT TO SCALE @ A3
DATE: AUGUST 2022



LEGEND:

- SUBJECT LAND
- 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

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 2021 V1.4; 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 4).

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.
Policy Measure 6.6	Policy Clause 6.6 applies to vulnerable land use applications. The LSP designates a site for a future primary school and an area zoned "Local Centre" for a future Child Care Centre. Both of these types of developments are considered a 'vulnerable land use' under the policy and a future development application for the school or child care will therefore require a comprehensive emergency evacuation plan to be developed which specifically reflects the needs and circumstances of these facilities.

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

1.1.2 Guidelines for Planning in Bushfire Prone Areas V1.4 (2021)

The Department of Planning has released the *Guidelines for Planning in Bushfire Prone Areas V1.4 (2021)*. The requirements of this document are accommodated within this BMP. The *Guidelines for Planning in Bushfire Prone Areas V 1.4 (2021)* 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.

2 ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation – Modification and Clearing

The development site proposed for residential use, POS areas and a future school is sited on degraded vegetation, which is a result of revegetation following the sand extraction activities which 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 Reserves where the vegetation is protected in perpetuity.

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

2.2 Revegetation/Landscape Plans

There are a number of parks, gardens, sports ovals, educational 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 southern interface with Armadale Road has recently undergone significant civil works, the road has been expanded into two double lanes and a 4m wide dual access path has been sited adjacent to the boundary of the site. The dominant vegetation type being planted between the road and the southern site boundary is groundcovers and prostrate shrubs. This will create a low shrubland vegetation class which has been considered in the method 1 BAL assessment. The road interface at the moment is woodchip mulch only (see photo 31).

There are bare areas and some narrow strips of revegetation and street tree planting between the 4m wide bike path and the proposed 2.4m acoustic wall. These strips are between 2-5 metres wide and not considered a bushfire threat due to the insignificant fire impact they could create.

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 LSP, and the inherent possibility of an 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 V1.4 (2021)*. The broad 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 5).

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 middle storey fuel structure and litter fuels. Foliage cover also exceeds 30%.

Where the canopy of the banksia trees are more separated (less than 30% foliage cover) and the trees exceed 6 metres in height, there is no middle storey vegetation and it consists of predominantly low shrubs or grass fuels. This is classified as Class B Woodland (see photos 10-15). Where the vegetation does not exceed 6 metres and consists of low banksia trees and woollybush shrubs (photos 16-28), class D Scrub is identified. This includes degraded areas with minimal vegetation east and west of the site seen in photos 22-24.

Shrubland is found in a small elevated position in the Bush Forever reserve (photos 29-30) and the low ground covers will mature into a shrubland class of vegetation in Armadale Road Reserve (phot 31). An unvegetated area near the round-about has been classed as shrubland consistent with the ground cover vegetation that dominates in the road reserve. There are minimal areas of grassland (photos 33-34) and the degraded vegetation within the site is predominantly regrowth shrubs (class D Scrub) as seen in Photos 34-35.

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

Vegetation classification or exclusion clause: Class A Forest

Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.



Photo ID: 2 Plot Number: 1 Vegetation classification or exclusion clause: Class A Forest Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.	
Photo ID: 3 Plot Number: 1 Vegetation classification or exclusion clause: Class A Forest Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.	
Photo ID: 4 Plot Number: 1 Vegetation classification or exclusion clause: Class A Forest Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.	
Photo ID: 5 Plot Number: 2 Vegetation classification or exclusion clause: Class A Forest Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.	
Photo ID: 6 Plot Number: 2 Vegetation classification or exclusion clause: Class A Forest Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.	
Photo ID: 7 Plot Number: 2 Vegetation classification or exclusion clause: Class A Forest Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.	

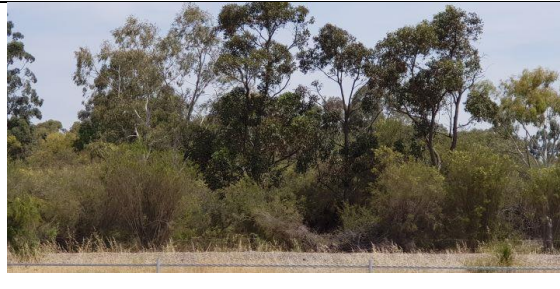
Photo ID: 8 Plot Number: 2 Vegetation classification or exclusion clause: Class A Forest Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.	
Photo ID: 9 Plot Number: 2 Vegetation classification or exclusion clause: Class A Forest Description/justification of classification: Eucalypts and Banksias with isolated Casuarina trees that exceed 6m in height and have a distinct middlestorey fuel layer of shrubs and regrowth trees.	
Photo ID: 10 Plot Number: 3 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia dominated vegetation type with separated canopies less than 30% foliage cover and low shrubs and grassland understorey	
Photo ID: 11 Plot Number: 3 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia dominated vegetation type with separated canopies less than 30% foliage cover and low shrubs and grassland understorey	
Photo ID: 12 Plot Number: 3 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia dominated vegetation type with separated canopies less than 30% foliage cover and low shrubs and grassland understorey	
Photo ID: 13 Plot Number: 4 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia dominated vegetation type with separated canopies less than 30% foliage cover and low shrubs and grassland understorey	

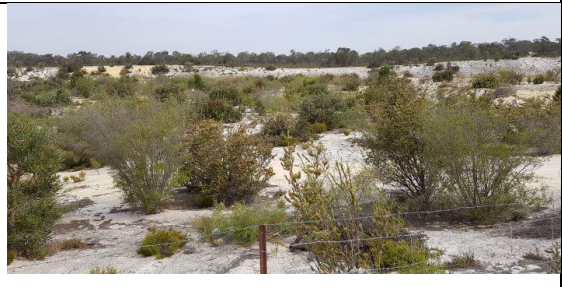
Photo ID: 14 Plot Number: 4 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia dominated vegetation type with separated canopies less than 30% foliage cover and low shrubs and grassland understorey	
Photo ID: 15 Plot Number: 4 Description/justification of classification: Class B Woodland Description/justification of classification: Banksia dominated vegetation type with separated canopies less than 30% foliage cover and grassland understorey	
Photo ID: 16 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Woollybush and regrowth banksia dominated vegetation class in degraded area.	
Photo ID: 17 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Woollybush and banksia dominated vegetation class assessed as less than 6m in height and variety of vegetation heights. Staff is 5m high.	
Photo ID: 18 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Woollybush and banksia dominated vegetation class assessed as less than 6m in height and variety of vegetation heights. Staff is 5m high.	
Photo ID: 19 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Kunzea scrub which will mature to be less than 6m in height.	

Photo ID: 20 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Woollybush and banksia dominated vegetation class assessed as less than 6m in height and variety of vegetation heights.	
Photo ID: 21 Plot Number: 6 Description/justification of classification: Class D Scrub Description/justification of classification: Woollybush and regrowth banksia dominated vegetation class in degraded area.	
Photo ID: 22 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Woollybush and regrowth banksia dominated vegetation class in degraded area.	
Photo ID: 23 Plot Number: 6 Description/justification of classification: Class D Scrub Description/justification of classification: Woollybush shrubs in degraded area.	
Photo ID: 24 Plot Number: 6 Description/justification of classification: Class D Scrub Description/justification of classification: degraded and unvegetated area but likely to revegetate over time into scrub vegetation.	
Photo ID: 25 Plot Number: 6 Description/justification of classification: Class D Scrub Description/justification of classification: Woollybush and banksia dominated vegetation class assessed as less than 6m in height.	

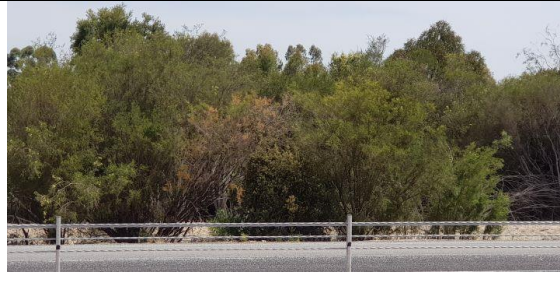
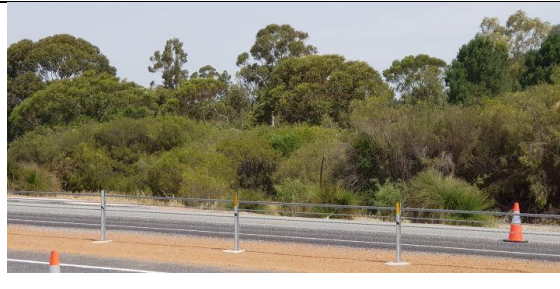
Photo ID: 26 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Kunzea dominated vegetation class assessed as less than 6m in height.	
Photo ID: 27 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Acacia and Kunzea dominated vegetation class assessed as less than 6m in height and variety of vegetation heights.	
Photo ID: 28 Plot Number: 5 Description/justification of classification: Class D Scrub Description/justification of classification: Acacia and Kunzea dominated vegetation class assessed as less than 6m in height and variety of vegetation heights.	
Photo ID: 29 Plot Number: 7 Description/justification of classification: Class C Shrubland Description/justification of classification: Low shrubland vegetation class assessed as less than 2m in height and 100% coverage.	
Photo ID: 30 Plot Number: 7 Description/justification of classification: Class C Shrubland Description/justification of classification: Low shrubs in open woodland area	
Photo ID: 31 Plot Number: 7 Description/justification of classification: Class C Shrubland Description/justification of classification: Woodchip mulch area proposed for low groundcovers in the Armadale Road landscape plan.	

Photo ID: 32 Plot Number: 7 Description/justification of classification: Class C Shrubland Description/justification of classification: Unvegetated area near round about entrance off Armadale road, classed as future low shrubland.	
Photo ID: 33 Plot Number: 8 Description/justification of classification: Class G Grassland Description/justification of classification: Low grasses on slope northwest of site.	
Photo ID: 34 Plot Number: 8 Description/justification of classification: Class G Grassland Description/justification of classification: Grass fuels on the side of Scotch Road and in the adjacent paddock.	
Photo ID: 35 Plot Number: 9 Description/justification of classification: Exclusion clause 2.2.3.2(f) Description/justification of classification: Woollybush and banksia dominated vegetation in degraded area previously used for sand extraction. This area will become a future primary school.	
Photo ID: 36 Plot Number: 10 Description/justification of classification: Exclusion Clause 2.2.3.2e Description/justification of classification: Woollybush and banksia dominated vegetation class inside the site proposed for clearing and residential development.	

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 and Class B Woodland north of the site in the Bush Forever is downslope 0-5 degrees. There is also a gentle downslope of 0-5 degrees west of the future primary school. Slopes east and west of the site have been modified due to sand mining and slopes are generally flat adjacent to development lots. Once development occurs west of the site, the vegetation will be removed and effective slope is irrelevant.

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 B Woodland	Downslope 0-5
4	Class B Woodland	Flat / upslope
5	Class D Scrub	Downslope 0-5
6	Class D Scrub	Flat / upslope
7	Class C Shrubland	Flat / upslope
8	Class G Grassland	Flat / upslope
9	Exclusion Clause 2.2.3.2 (f)	N/A
10	Exclusion Clause 2.2.3.2 (e)	N/A



Location details: Lots 705 & 707 Armadale Road Treeby
 Assessment date: October, 2019
 Prepared by: Bushfire Safety Consulting
 Accreditation level: Level 3 BPAD Practitioner
 Accreditation number: BPAD 23160
 Accreditation expiry date: 31st January, 2023
 Date aerial photo: June 2022

FIGURE 4 - VEGETATION CLASSIFICATION MAP (BAL CONTOUR MAP)

0 50 100 150 200m
 NOT TO SCALE @ A3
 DATE: AUGUST 2022



LEGEND:
 SUBJECT LAND
 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 CLASS A FOREST - DOWNSLOPE 0-5
 PLOT 2 CLASS A FOREST - FLAT/UPSLOPE
 PLOT 3 CLASS B WOODLAND - DOWNSLOPE 0-5
 PLOT 4 CLASS B WOODLAND - FLAT/UPSLOPE
 PLOT 5 - CLASS D SCRUB - DOWNSLOPE 0-5
 PLOT 6 - CLASS D SCRUB - FLAT/UPSLOPE
 PLOT 7 - CLASS C SHRUBLAND - FLAT/UPSLOPE
 PLOT 8 CLASS G GRASSLAND - FLAT/UPSLOPE
 PLOT 9 EXCLUSION CLAUSE 2.2.3(2)
 PLOT 10 - EXCLUSION CLAUSE 2.2.3(2)



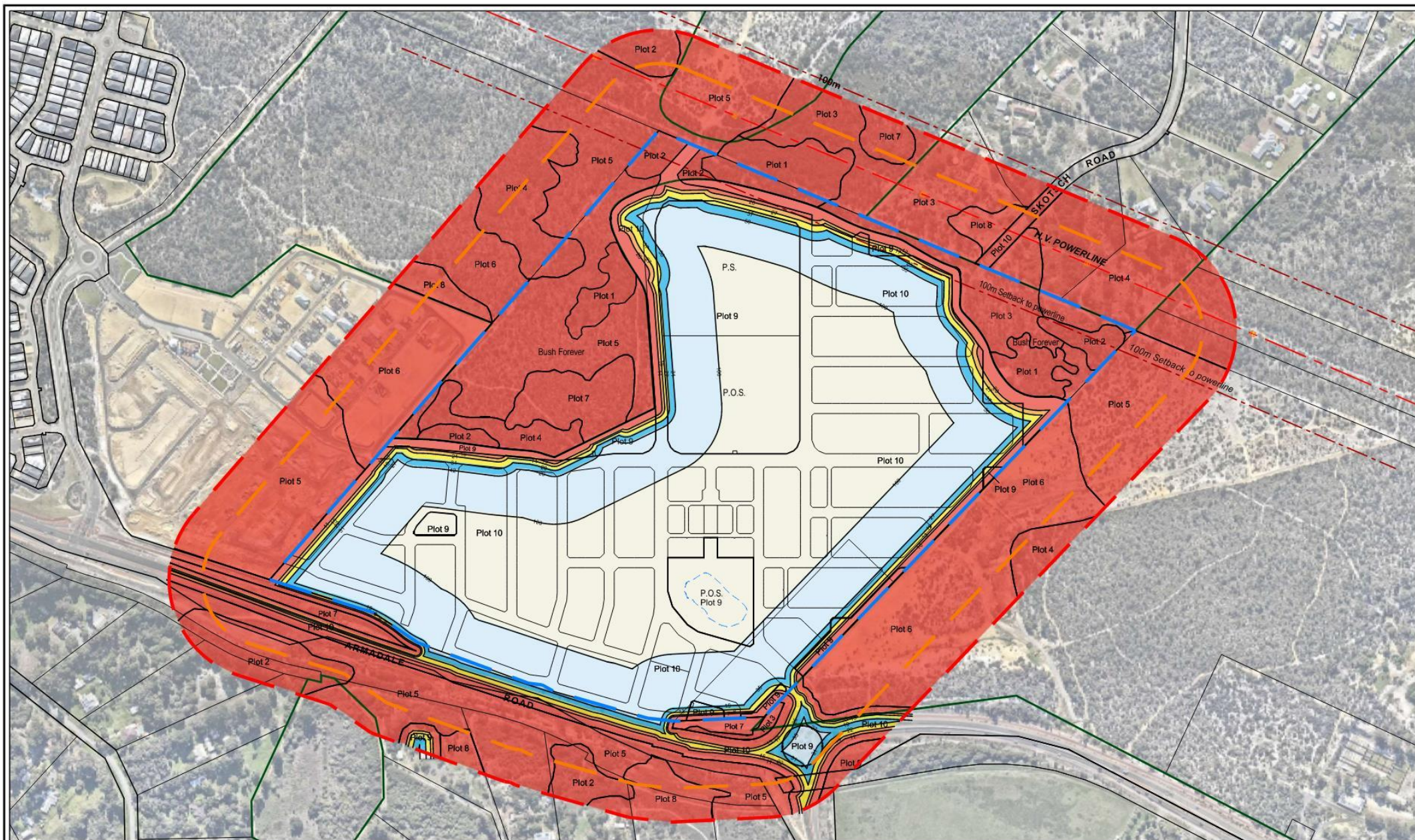
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3.2 Assessment Outputs

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.

Table 3. Summary of assessment outputs

LSP Interface	Plot No	Applied Vegetation Classification	Effective slope	Development lots	Minimum Separation Distance	Highest BAL Contour On Lots
North & West	1	Class A Forest	Downslope 0-5	Residential	27 m	BAL – 29
	2	Class A Forest	Flat/upslope	Future Primary School	18m road reserve 3m internal	BAL-29
	3	Class B Woodland	Downslope 0-5	Residential	21m	BAL – 29
	4	Class B Woodland	Flat/upslope	Residential	25m	BAL – 19
	5	Class D Scrub	Downslope 0-5	POS	18m	BAL – 29
	7	Class C Shrubland	Flat/upslope	Residential	42m	BAL-12.5
South & East	3	Class B Woodland	Downslope 0-5	Residential	18m	BAL-29
	5	Class D Scrub	Downslope 0-5	Residential	36m	BAL-12.5
	6	Class D Scrub	Flat/upslope	Residential	16m	BAL-29
	7	Class C Shrubland	Flat/upslope	Residential	13m	BAL-19



Location details: Lots 705 & 707 Armadale Road
Treeby

Assessment date: October, 2019

Prepared by: Bushfire Safety Consulting

Accreditation level: Level 3 BPAD Practitioner

Accreditation number: BPAD 23160

Accreditation expiry date: 31st January, 2022

Date aerial photo: June 2022

FIGURE 5
BAL CONTOUR PLAN

0 50 100 150 200m

NOT TO SCALE @ A3

DATE: AUGUST 2022



LEGEND:

■ SUBJECT LAND

■ 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

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4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

Classified vegetation in the Bush Forever reserve to the north of the developable site will pose a long-term hazard to the adjacent residents and future school. Vegetation south of Armadale Road is similarly a long-term hazard. The vegetation west of the site is degraded, contains lower quantities of fine fuels and is a temporary hazard until removed permanently.

The vegetation east of the site is similarly degraded, contains lower quantities of fine fuels and is contained within the Bush Forever Conservation Reserve. As this area revegetates, Class d Scrub will further mature and will continue to be a long-term hazard to the site.

This bushfire threat to the proposed development will comply with SPP 3.7 and the *Guidelines for Planning in Bushfire Prone Areas V1.4 (2021)* based on the establishment of a perimeter Asset Protection Zone where required in the perimeter roads 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 1.4 (2021)*. 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 V1.4 (2021)*. The compliance checklist is provided in Table 4 and spatial representation of the bushfire management strategies are illustrated in Figure 7.

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 each does achieve a rating of BAL-29 or lower. All habitable buildings within the Amendment area (proposed 'Local Centre') will need to achieve a BAL-29 rating or below.
Element 2: siting and Design	A2.1 Asset Protection Zone (APZ)	A temporary and perimeter APZ is sited on the perimeter road reserves and adjacent landscape POS areas provide an additional low fuel managed setback to development. 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. The temporary APZ on the far western boundary is required as long as the vegetation remains adjacent to the site. Residential development is restricted in this zone until the vegetation is permanently cleared and the requirement for the temporary APZ is removed. Dwellings within 100 metres of classified vegetation will be managed in accordance with APZ standards (see Appendix 1). The future development in the Amendment area is to provide a permanent APZ to achieve a BAL rating of BAL-29 or below for all habitable buildings in the future.
Element 3: Vehicular Access	A3.1 Public Roads	The public roads to be created, as well as surrounding existing roads, comply with minimum public road standards outlined in Appendix 2.
	A3.2a Multiple access routes	Public road access is provided in two different directions with access from the site directly onto Armadale Road to the east and west and options onto Warton Road to the north and Lidelow Road to the south from Armadale Road. A second access way is to be developed from the northern end of the subdivision which will access Jandakot Road. Standards are met.
	A3.2b Emergency access way	Not applicable.
	A3.3 Through roads	Standards are met.
	A3.4a Perimeter roads	Not applicable
	A3.4b Fire service access route	The site is surrounded by roads and there are no Fire Service Access Routes proposed or required.
	A3.5 Battle-axe access legs	Not applicable
	A3.6 Private driveways	There are no private driveways proposed that are longer than 50m.
Element 4: Water	A4.1 Identification of future water supply	Water supply provided.

	A4.2 Provision of water for firefighting purposes	The development will be provided with a reticulated water supply, together with fire hydrants that will be installed by the developer to meet the standard specifications of Water Corporation (Design Standard DS 63) and DFES. The development has access to a reticulated water supply. Hydrants will be spaced according to the Water Corporation’s No. 63 Water Reticulation Standard.
Element 5: Vulnerable Tourism Land Uses	A5.1 Siting and Design	Not applicable

Table 4. Compliance Table

5.2 Additional Management Strategies

A perimeter APZ will be established and maintained in the road reserve along the northern and eastern boundary which ensures that all future lots 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 7.



REQUIREMENTS

1. A permanent perimeter APZ will be established over the road reserve on the northern and eastern interface adjacent to the Bush Forever Reserve. This ensures that lots on this interface are exposed to BAL-29 or less.
2. A temporary APZ is sited on the western boundary and construction of dwellings is restricted until such time as adjacent vegetation is permanently removed or managed.
3. 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).
4. Revegetation in Armadale Road Reserve has been assessed as low shrubland due to the establishment of ground covers that will mature where woodchip mulch currently exists.
5. Proposed internal and external roads provide excellent egress within and from the site. Armadale Road is a major transport route and the site will be connected to future development areas to the north and west.
6. 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.
7. The 'Local Centre' Zoning could accommodate a vulnerable land use in the future which will trigger the preparation of an Emergency Evacuation Plan under SPP 3.7.

LEGEND:

- SUBJECT LAND
- POS
- PRIMARY SCHOOL
- PERIMETER APZ BETWEEN SITE AND BUSHFIRE HAZARD
- TEMPORARY PERIMETER APZ BETWEEN SITE AND HAZARD ON FUTURE DEVELOPMENT SITE TO THE WEST
- BAL-29/BAL-40 RADIANT FLUX LINE
- LOCAL CENTRE

FIGURE 6 - SPATIAL REPRESENTATION OF BUSHFIRE MANAGEMENT STRATEGIES



0 50 100 150 200 250m
SCALE 1:6000 @ A3
DATE: AUGUST 2022



Location details:	Lots 705 & 707 Armadale Road Treeby
Assessment date:	October, 2019
Prepared by:	Bushfire Safety Consulting
Accreditation level:	Level 3 BPAD Practitioner
Accreditation number:	BPAD 23160
Accreditation expiry date:	31st January, 2023
Date aerial photo:	June 2022

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 2021 V1.4). However, community bushfire safety is a shared responsibility between governments, fire agencies, communities and individuals.

The proposed LSP 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 lots will be exposed to < 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

Standards Australia. 2018. 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.

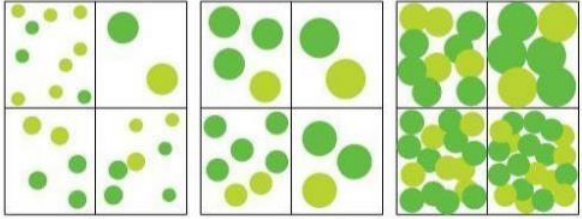
Western Australian Planning Commission (WAPC). 2021. Guidelines for Planning in Bushfire Prone Areas. December 2021 V1.4. Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.



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 Plans for the site
- Appendix 5: Armadale Road Landscape Plans

Appendix 1: Asset Protection Zone Standards

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES	
OBJECT	REQUIREMENT
Fences within the APZ	Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	- Should be managed and removed on a regular basis to maintain a low threat state. - Should be maintained at <2 tonnes per hectare (on average). - Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	- Trunks at maturity should be a minimum distance of six metres from all elevations of the building. - Branches at maturity should not touch or overhang a building or powerline. - Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. - Canopy cover within the APZ should be <15 per cent of the total APZ area. - Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. Figure 19: Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	- Should not be located under trees or within three metres of buildings. - Should not be planted in clumps >5 square metres in area. - Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	- Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. - Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
Grass	- Grass should be maintained at a height of 100 millimetres or less, at all times. - Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	- Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. - The pressure relief valve should point away from the house. - No flammable material within six metres from the front of the valve. - Must sit on a firm, level and non-combustible base and be secured to a solid structure.

Appendix 2: Vehicle Access Technical Requirements

Table 6: Vehicular access technical requirements

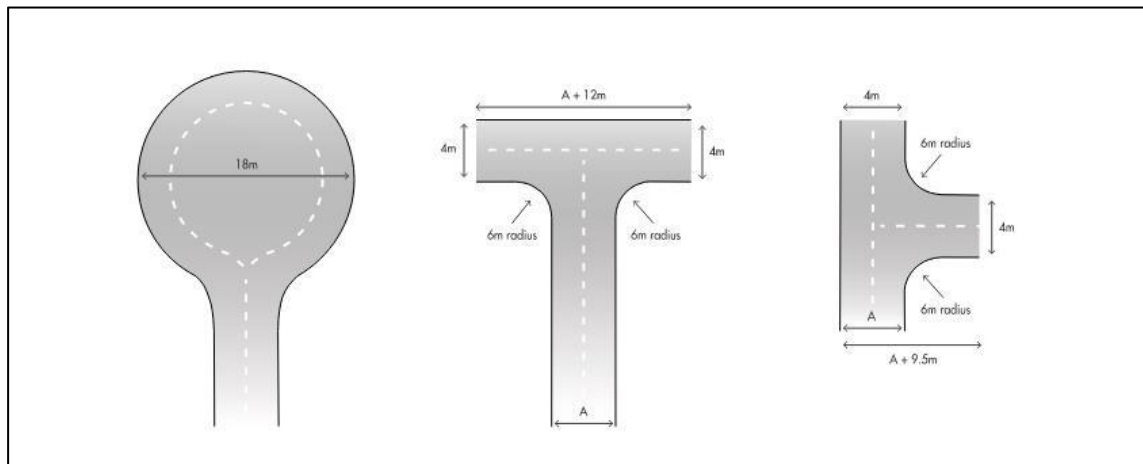
TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way ¹	3 Fire service access route ¹	4 Battle-axe and private driveways ²
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road ³	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road ³		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

¹ To have crossfalls between 3 and 6%.

² Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

³ Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle.

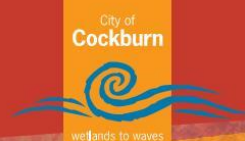


Appendix 3: City of Cockburn Fire Control Order

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

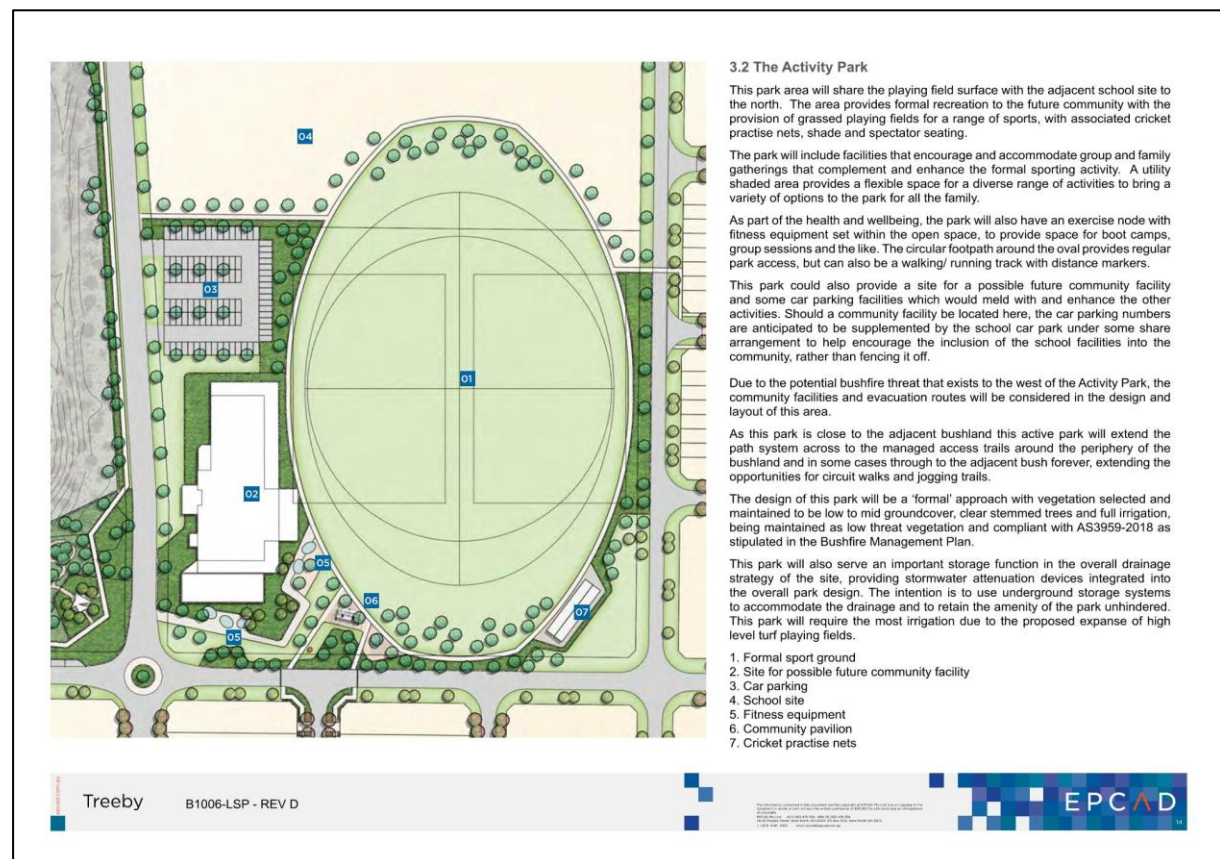
Failing to comply with this Fire Control Order will result in a penalty of up to \$5,000. A person in default is also liable whether prosecuted or not to pay the costs of performing the work directed by a City's Authorised Officer.

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

Appendix 4: Landscape Masterplan and POS Management



Appendix 4: Landscape Masterplan and POS Management



The Lake Park

The location of this park was determined by the location of an existing lake and associated vegetation which we consider to have amenity value. The design intent is to retain and enhance both features and to exploit all the positive aspects of amenity that a lake brings from attracting wildlife, to the visual interest and the sound of water.

The intention is to formalise the edges of the existing water body, depending on the current situation. Where trees exist, there will be careful integration of low walls, boulders or rock pitching to make the slopes safe, with low shrub planting and limited access to these areas through the use of fences. Other clear areas will have higher wall finishes with balustrades to allow a close relationship with the water in complete safety. This combination of treatments and the meandering footpath provides a circular walk around the lake, sometimes up close, sometimes further away, to give a variety of views and experiences.

Cascades into the lake would provide water circulation with the bonus of the visual and audio amenity value.

The spaces in and around this lake will have a variety of uses, from low key quiet spaces beneath existing trees with yoga decks and reclined seating through to more active spaces of educational play and activity for all ages, bringing old and young together. The park is intended to have something for everyone.

Although this park is separate to the periphery areas of classified vegetation, we have still considered the local bushfire threat that could be created in the retention of the existing trees around the lake. All new vegetation will be fully irrigated and species chosen as low to mid groundcovers, with clear stemmed trees and maintained formally as low threat vegetation and compliant with AS3959-2018 as stipulated in the Bushfire Management Plan.

From this park there are two important links: north through to the activity park and south across to the sales office.

The sales office is where the inclusion of a pop up facility such as a café is proposed and the hope is to strongly link this facility with the park and to secure a more permanent local business of this nature in the future. The inclusion of a small community edible garden would be a positive addition to this space.

The strong connection north to the activity park will be accentuated using arbors, shade trees and feature sculptural elements to provide legibility and easy access between the reserves. The idea is to encourage walking and connectivity in shaded comfort wherever possible.

1. Retained lake with cascade
2. Multi-use play and amenity for all ages
3. Quiet and relaxing area for all ages
4. Strong green link between parks
5. Pop up cafe and community hub

Treeby

B1006-LSP - REV D

Prepared for: Treeby
 Prepared by: EPCAD
 Date: 10/01/2024
 Project: B1006-LSP - REV D

EPCAD



The Arrival Experience

The southern entry to this community is designed to immediately influence road traffic to slow down and to bring an instant character narrative of a green, lush, calm place that is in contrast to the Armadale Road left behind.

The road layout is specifically designed to bifurcate around a group planting of large trees, and is slightly raised to slow traffic and to give the feeling that the trees were there first. This instantly provides a sense of shade and green aspect to the arrival experience.

Small parks lay to either side of this entry and are the start point to the circular walks around the community, with gateway entry walls bringing legibility. These walks (cycleways) connect into the main Armadale Road cycleway. The use of walls, art and paving, together with cascading plants and lush tree and shrub species combine to bring a sense of oasis.

Planting to the bund along Armadale Road is unfortunately outside the lot boundary and so negotiations will have to take place to make any changes to the bunds at this entry. As the bund treatment is outside our control, the arrival area and internal linear vegetation has been designed to be more formal, with full irrigation and maintained as low threat vegetation compliant with the Bushfire Management Plan. The hope is to achieve some ability to influence the shrub planting to the new bund, to try to bring some synergy between the two landscape environments.

1. Bifurcated road with mature tree planting
2. Road treatment to slow traffic
3. Gateway park to circuit walks
4. Cascading wall and plant treatment



Feature wall with wall out and cascading plants.

Forming wall with cascading plants. Feature artwork with Balala name out of center door.

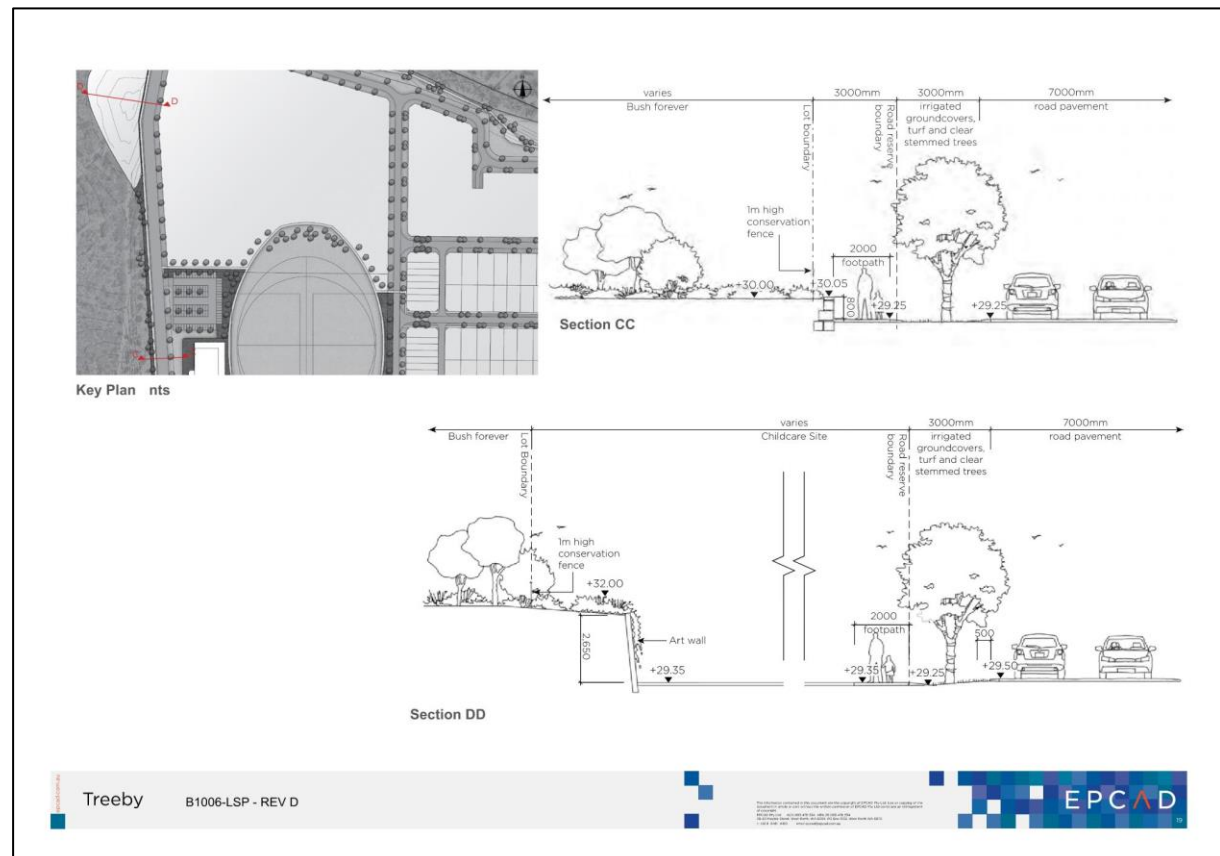
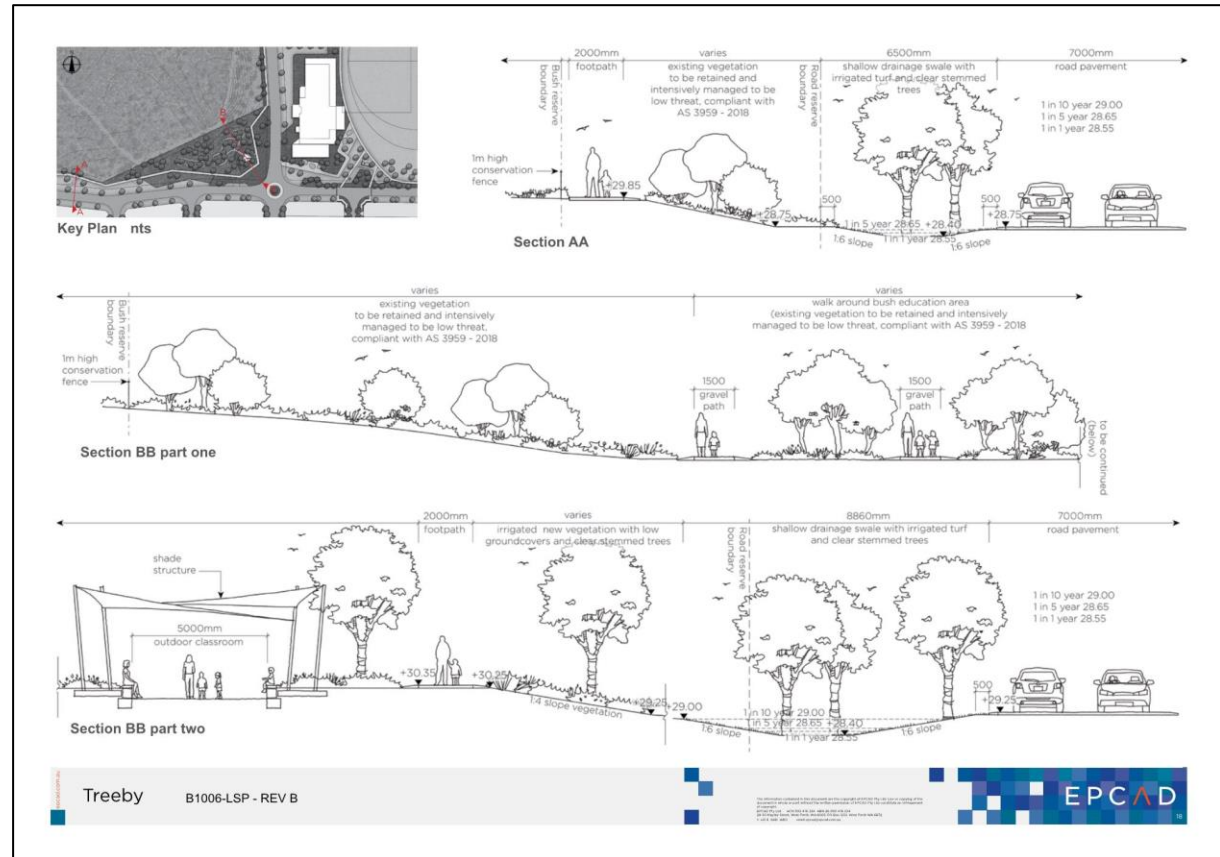
Treeby

B1006-LSP - REV D

Prepared for: Treeby
 Prepared by: EPCAD
 Date: 10/01/2024
 Project: B1006-LSP - REV D

EPCAD

Appendix 4: Landscape Masterplan and POS Management





Streetscapes

One of the main drivers for a successful community lies in the streets. This is where people live, where their neighbour is and where the community develops. One of the main focus areas in this landscape masterplan is in rethinking the street design.

There has been interesting research into the design of streets and the opportunities to make them slower, safer and more people friendly. Also the identity of a street and the need to feel like it is a welcome experience to the residents. It is the crux of the neighbourhood.

In our climate, the user comfort value of any walking experience is so important. Streets that offer little tree cover can be too hostile and harsh to encourage any major walking or perambulating activity and so shade is paramount. Getting people using the streets more regularly to get to their local park enables residents to meet their neighbours, stop and chat, or sit and relax. Also, a mature tree canopy developed within a 10 to 15 year period can reduce the ambient urban temperature by 2-4 degrees with knock on benefits to reduce power consumption for air conditioning etc.

The intent of this design is to widen the verge wherever there are side lots, to enable large street tree planting for instant shade and identity to the streetscape. This also slows traffic to make the street safer, and provides a wider area to bring in elements of interest to the street. Perhaps a bird bath on one corner, a hopscotch game, a simple seat, book exchange box or piece of art. Bollards could be decorated or designed to pick out the street name and bring a sense of ownership to the street. The design would be improved with an element of shrub planting, but if maintenance was considered an issue, trees could be within permeable paving or bonded gravels. If required, these areas could also be used as underground storage for drainage at source.

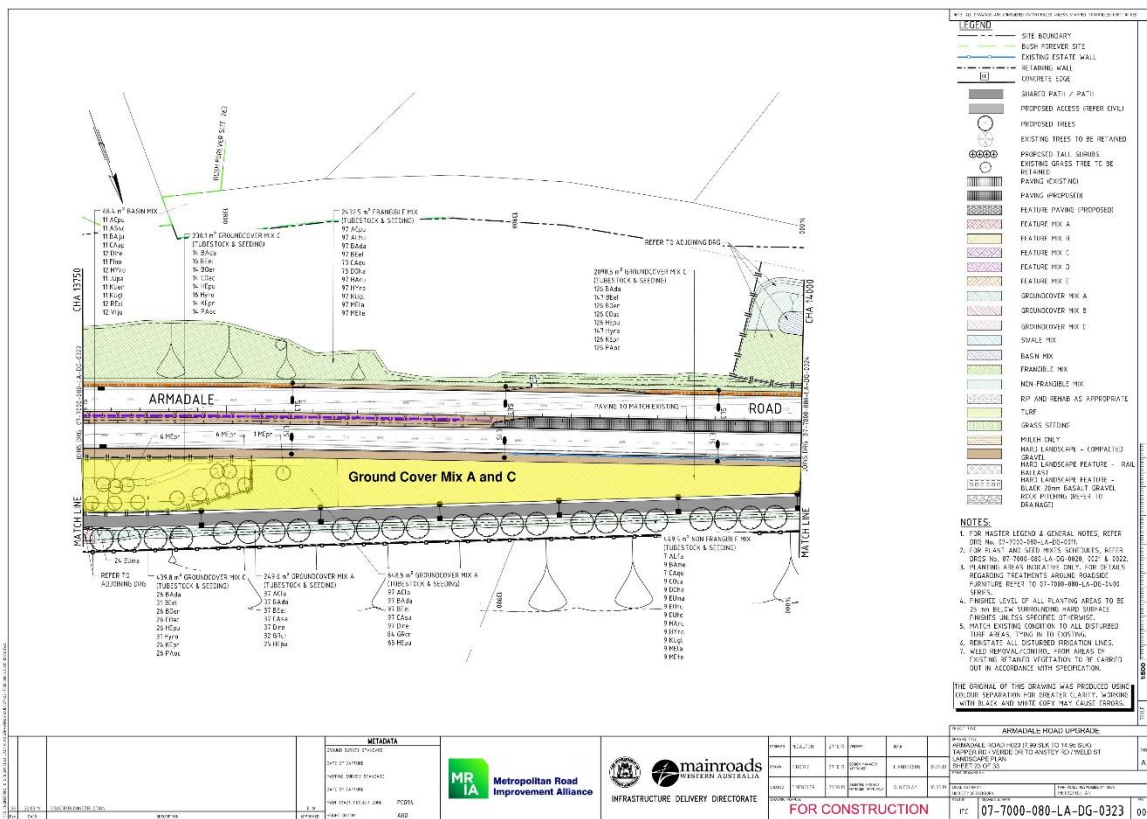
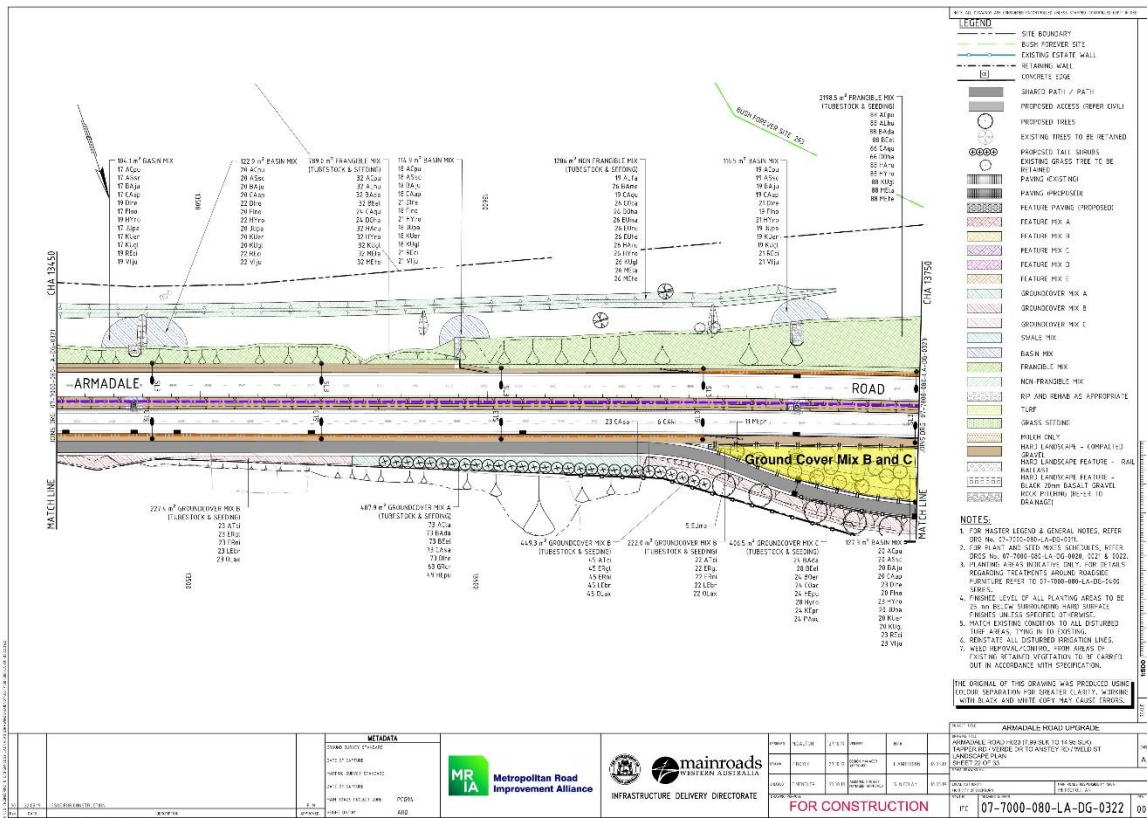
In addition, to meander the road pavement slightly in one location within the reserve to enlarge the verge for group planting in the middle of that same street, again takes away the usual stark, straight street profile with single lot trees.

If there are existing trees in a development, we try to retain and work around them, which creates some of the best street outcomes. We are reversing this and accommodating new large trees as though they were there already to bring that same point of interest to the street.

Supplemented with the usual street trees, this approach should bring more shade to the street and bring a different aspect to the street on day one, making them more user friendly.

Each street should develop its own character and sense of place.

Appendix 5: Armadale Road Landscape Plans



[illegible]