BAL Assessment and Advice Report

Lot 152 Point Henry Road

Bremer Bay, WA 6330

FINAL

23/06/2023

Site Details					
Address:	Lot 152 Point Henry Road Bremer Bay				
Suburb:	Bremer Bay	State:	W.A.	Postcode	6338
Local Government Area:	Shire of Jerramungup				
Description of Building Works:	No construction – BAL assessment and advice for Building Envelope move				
Stage of WAPC Planning	N/A				

Plan Details			
Report / Job Number:	MSC0582	Report Version:	Final
Assessment Date:	6 April 2023	Report Date:	23 June 2023
BPAD Practitioner	Melanie Haymont	Accreditation No.	BPAD 58389
BPAD Practitioner	Kathryn Kinnear (Level 2)	Accreditation No.	BPAD 30794

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1. Introduction

Bio Diverse Solutions (Bushfire Consultants) were commissioned to prepare a Bushfire Attack Level (BAL) assessment report and advice for the relocation of a Building Envelope (BE) at Lot 152 Point Henry Road, Bremer Bay within the Shire of Jerramungup (SoJ). The vegetation within 150m of the BE boundary has been classified to determine the potential BAL-29 developable space available within the BE with the potential shift of the BE.

This report contains an assessment of the surrounding vegetation and a "Developable area" (BAL contour map)indicating the BAL-29 developable space available within the BE. A brief assessment to the WAPC guidelines - Planning in Bushfire Prone Areas (WAPC, 2021) "Bushfire Protection Criteria" (BPC) was also undertaken to assess the overall risk of bushfire to the site, access requirements, management of onsite vegetation and planning issues pertaining to any future developable area.

There is no existing house located on the site and the lot was developed prior to the introduction of the State Planning Policy (SPP) 3.7 (WAPC, 2015), legacy approved sites are often subject to difficulty in achieving compliance with SPP 3.7 or the Guidelines, usually in achieving two-way access on the Point Henry Peninsula.

1.1 Location

The subject site is approximately 102,826m² (10.2826 ha) in size, zoned 'Rural Residential' Shire of Jerramungup Scheme No.2 and located to the south of the Bremer Bay Townsite, in the locality of Point Henry, see Locality Map Figure 1.

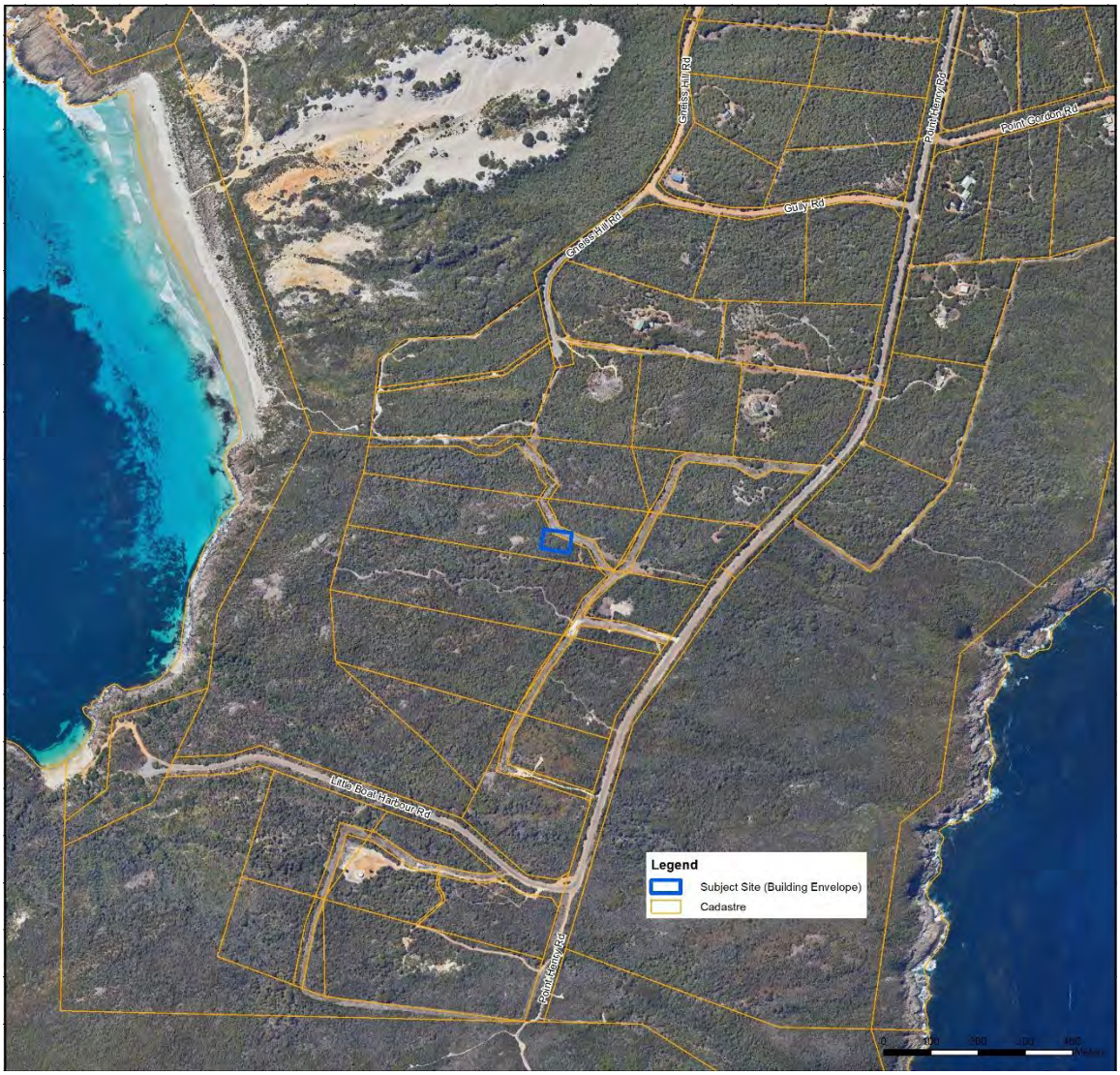


Figure 1: Location Mapping of the subject site.

1.2 Bushfire Prone Area

The publicly released Bushfire Prone Area Mapping (OBRM, 2021) shows that the subject site is located within a Bushfire Prone Area (within 100m of >1ha of bushfire prone vegetation) and as such is subject to a planning assessment of the bushfire risks. Bushfire Prone Area Mapping (OBRM, 2021) is shown in Figure 2.

Figure 2: Map of Bushfire Prone Areas and relevance to subject site (OBRM, 2021).

1.3 Statutory Framework

This document and the recommendations contained within are aligned to the following policy and guidelines:

- *Planning and Development Act 2005*;
- *Planning and Development (Local Planning Scheme) Regulations 2015;*
- State Planning Policy (SPP) 3.7 Planning in Bushfire Prone Areas 2015 (WAPC, 2015);
- Guidelines for Planning in Bushfire Prone Areas, Vers 1.4 (WAPC, 2021);
- *Building Act 2011;*
- *Building Regulations 2012;*
- Building code of Australia (National Construction Code) (NCC, n.d.);
- *Fire and Emergency Services Act 1998*;
- AS3959-2018 "Construction of Buildings in Bushfire Prone Areas" current and endorsed standards;
- *Bushfires Act 1954*; and
- SoJ Fire Management Notice (SOJ, 2022/23).

2 Bushfire Assessment Results

The bushfire assessment for this site has followed the BAL Assessment process and included:

- Vegetation classification to AS3959-2018;
- Assessment of the subject site to 150m from the lot; and
- Allocation of category of BAL to AS3959-2018.

2.1 Assessment Inputs

Bushfire Assessment inputs for the site have been calculated using the Method 1 BAL Assessment procedure as outlined in AS3959-2018. This incorporates the following factors:

- WA adopted Fire Danger Index (FDI), being FDI 80;
- Vegetation Classes;
- Effective Slope under classified vegetation; and
- Distance between proposed development site and classified vegetation.

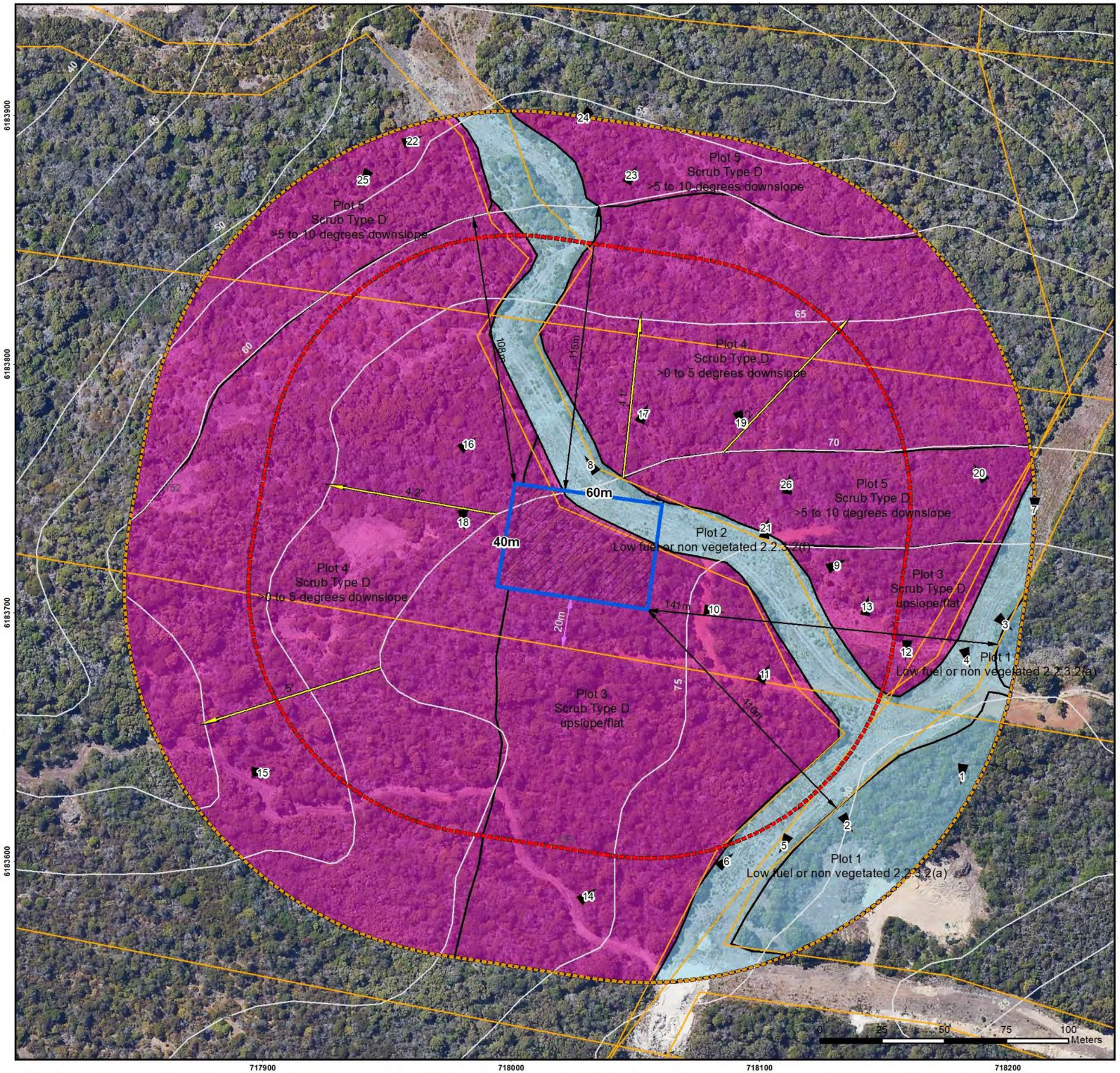
2.1.1 Vegetation Classification

Site assessment occurred on the 6th April 2023 by a Bushfire Practitioner from Bio Diverse Solutions, Melanie Haymont (BPAD 58389). All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in Table 1 and shown on the Site Plan mapping (Figure 3) on the following page.

A summary of the Plot data assessed as per Clause 2.2.3 of AS 3959-2018 is provided below in Table 1, a detailed BAL Assessment is provided in Appendix A.

Table 1: Vegetation Classification Table (in accordance with AS 3959-2018) of the subject site.

Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (e)	N/A
2	Excluded 2.2.3.2 (f)	N/A
3	Scrub Type D	Upslope/flat
4	Scrub Type D	Downslope >0-5 degrees
5	Scrub Type D	Downslope >5-10 degrees



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BPAD Bushfire Planning & Design
Accredited Practitioner Level 2

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:100,000

Legend

- Subject Site (Building Envelope)
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours
- Building Setback
- Separation Distance
- Slopes Degrees
- Photo Point
- Future Low Fuel
- Vegetation/Plot Boundary

Vegetation

- Scrub Type D
- Excluded 2.2.3.2

Scale
1:1,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Gemma Yardly
Lot 152 Point Henry Road
Bremer Bay, WA 6338

Figure 3 Site Plan/BAL Assessment

BAL Assessor	*QA Check*	*Drawn by*
MEH	**BRM**	**GSK**
STATUS	*FILE*	*DATE*
FINAL	**MSC0582**	**23/06/2023**

2.2 Assessment Outputs

A Method 1 BAL calculation has been completed to determine the bushfire threat over the BE, in accordance with AS3959-2018 methodology. The BAL rating gives an indication of the level of bushfire attack (i.e., the radiant heat flux) that may be received by proposed buildings and subsequently informs the standard of building construction required to increase building tolerance to potentially withstand such impacts in line with the assessed BAL. The assessed BAL ratings for the subject site and the existing house are shown below on Table 2 and 3.

The assessed BAL rating for the BE for a possible house location is indicated below in Table 2 and shown on the BAL Contour Plan Figure 5.

Table 2: AS3959 achievable BAL Rating for the for the BE

Plot	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Excluded 2.2.3.2 (e)	N/A	N/A	BAL – LOW
2	Excluded 2.2.3.2 (f)	N/A	N/A	BAL – LOW
3	Scrub Type D	Upslope/flat	>13	BAL – 29
4	Scrub Type D	Downslope >0-5 degrees	>15	BAL – 29
5	Scrub Type D	Downslope >5-10 degrees	>17	BAL – 29
Determined BAL rating for the Building Envelope			BAL – 29	

Assumptions/comments on BAL assessment:

- Method 1 (AS3959-2018) Simplified procedure was used for vegetation classification and BAL Assessment process;
- The BE boundary is subject to a BAL rating of BAL-FZ, due to adjacent onsite vegetation;
- The separation distances required from each vegetation plot to achieve BAL-29 can be found in Table 3;
- A map indicating the BAL-29 development area can be found on Figure 4 BAL Contour Plan;
- With onsite vegetation modification to APZ standards (See Appendix B), the subject site can achieve BAL-29 or lower within the BE;
- The BAL Contour Plan assumes that all vegetation in the BE can be removed/modified to a low threat state and managed in perpetuity, see Future Low Fuel on Site Plan, Figure 3;
- Scrub Type D is deemed an Extreme Bushfire Hazard Level (BHL) (WAPC, 2021); and
- The subject site is located in a Bushfire Prone Area, see Figure 2 (OBRM, 2021).

This report is not a Bushfire Management Plan and does not permit the modification or removal of native vegetation. Shire of Jerramungup Planning approval must be obtained prior to the removal of native vegetation.

Table 3: Separation Distances Required to Achieve BAL-29.

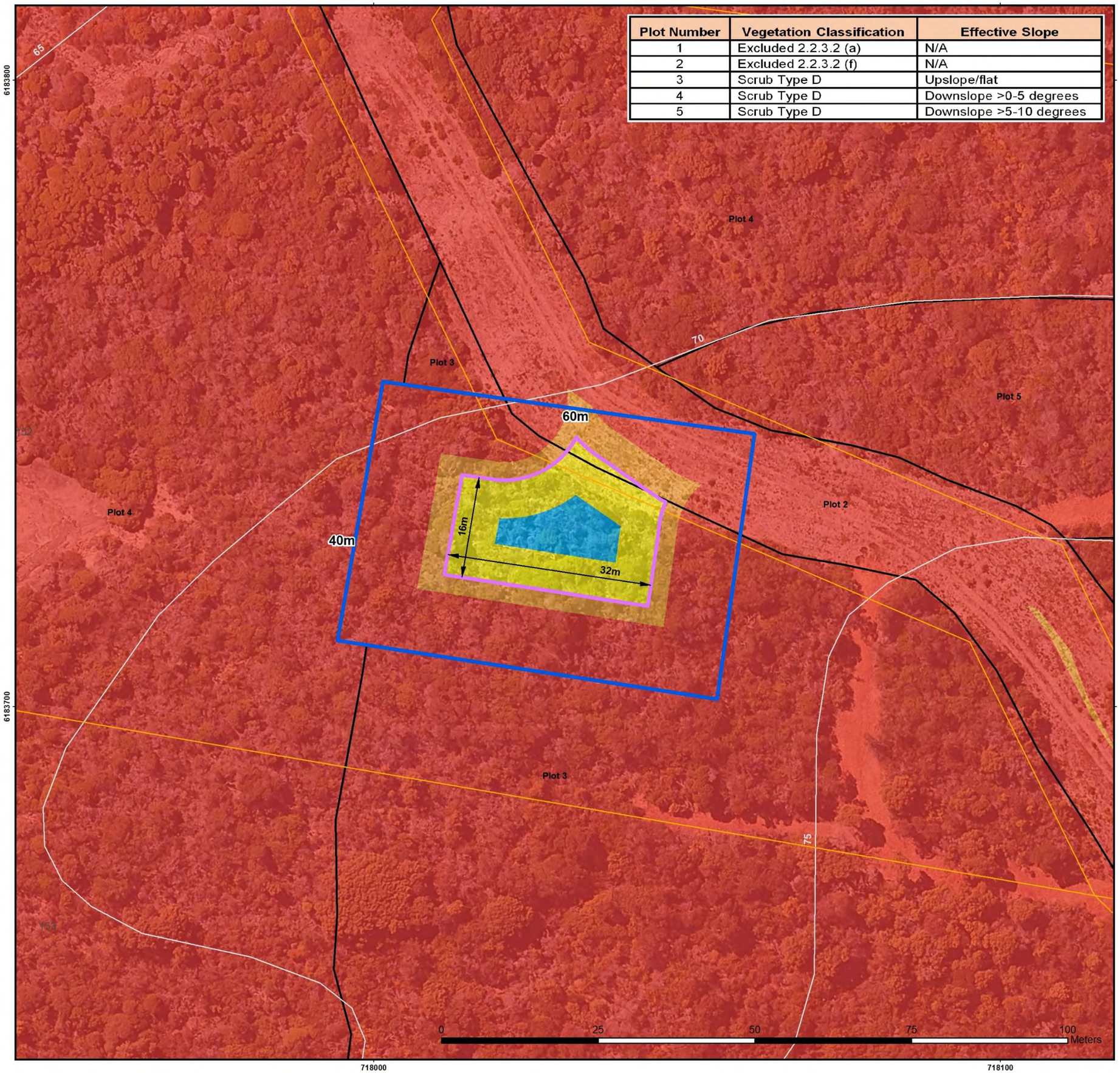
Separation Distances Required to Achieve BAL – 29					
Plot Number	Vegetation Classification	Effective Slope Degrees	Achievable BAL Rating	Current Separation Distance (metres)	Minimum Separation Distance Required (metres)
3	Scrub Type D	Upslope/flat	BAL-29	0	13
4	Scrub Type D	Downslope >0-5 degrees		0	15
5	Scrub Type D	Downslope >5-10 degrees		0	17

Notes on BAL Assessment

The purpose of this assessment is to inform the potential bushfire risk associated with the site prior to the potential movement of the BE. The subject lot was created prior to the enacting provisions of SPP 3.7 and the legacy provisions apply to the development of this site. In the current and endorsed WAPC Planning in bushfire prone areas guidelines (WAPC 2021), the legacy provisions and discretionary decision making can be enacted for existing lots and/or existing habitable buildings created prior to SPP 3.7. With the appropriate approvals, internal vegetation can be modified/removed to lower the BAL rating in the proposed BE. The BAL impacting vegetation from the adjacent land (onsite) can be removed via a planning approval. The map on the following page indicates the available BAL-29 developable space available within the lot if the internal vegetation were to be removed (Figure 4).

Onsite vegetation is under the control of the landowner and therefore can be removed or modified to lower bushfire threat (Note: any proposed vegetation removal may be subject to local government approval, dependent on the lot's specific situation with respect to identified environmental protection areas and the lot size).

Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (f)	N/A
3	Scrub Type D	Upslope/flat
4	Scrub Type D	Downslope >0-5 degrees
5	Scrub Type D	Downslope >5-10 degrees



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BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:100,000

Legend

- Subject Site (Building Envelope)
- Cadastre
- 5m Contours
- Developable Area (625m²)
- Separation Distance
- Vegetation/Plot Boundary

BAL Contours

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

Scale
1:595 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Lot 152 Point Henry Road
Bremer Bay, WA 6338

Figure 4 BAL Contour Plan on BE

BAL Assessor	*QA Check*	*Drawn by*
MEH	**BRM**	**GSK**
STATUS	*FILE*	*DATE*
FINAL	**MSC0582**	**23/06/2023**

3 Identification of Bushfire Hazard Issues

3.1 Additional details relevant to this site

- Lot 152 is approximately 102,826m² in size;
- Lot 152 is zoned 'Rural Residential' under the SoJ LPS No. 2;
- The proposed BE is 60m x 40m allowing 2400m² in the BE;
- All of the BE is assumed to managed in a low fuel state as per APZ standards, Schedule 1 of the WAPC guidelines, see Appendix B;
- The subject site has bushfire prone vegetation internal in the north, east, south and west of the BE, however is located adjacent to a strategic break slashed area;
- External to the BE site there is bushfire prone vegetation to the north, east, south and west;
- Moving the BE to the west (from the original assigned BE area) does still allow BAL-29 or less to be achieved;
- Further developable area could be achieved if the BE was made larger (currently 2,400m²) to 60 x 50m (3000m²);
- The designation of the strategic break is unknown and it is unknown if this can form part of the BE and would need to be considered as part of the proposal;
- A Bushfire Management Plan (BMP) to facilitate the modification and ongoing management of native vegetation within the lot is recommended; and
- See below for a brief assessment against the Bushfire Protection Criteria (BPC).

3.2 Brief Assessment against the Bushfire Protection Criteria

Element 1 Location and Element 2 Siting and Design (Potentially Compliant):

There is BAL-29 developable space available within the proposed new BE, although it is quite limited. It is possible with a larger BE size commensurate with the size of the lot and the slopes prevalent in the landscape. BAL-29 or less can be achieved meeting Acceptable Solution AS 1.1 and AS 2.1.

Element 3 Vehicular Access (Likely-Compliant): For the construction of a single or ancillary Class 1a Habitable Dwelling, the only requirement for this element is for a private driveway and as the total driveway length will be > 70m additional requirements will need to be met. This includes the minimum technical standards for driveways as shown below in Figure 5 and passing lanes (Figure 6) every 200m. If minimum vehicle technical standards are implemented, is likely deemed compliant to AS 3.6.

Element 4 Water (Likely Compliant): Lot 152 is not located within a reticulated area. A stand-alone strategic supply of water for firefighting will be required and shown on future DA plans. Likely compliant to AS4.2.

3.3 Summary

Lot 152 Point Henry Road is a legacy lot created prior to the enacting bushfire provisions of SPP 3.7. This proposal to move the BE has been suggested by the lot owner. The BE is presently subject to BAL-FZ due to onsite vegetation which is deemed as an extreme bushfire hazard level (BHL) risk for building and development. An area of BAL-29 or less can be achieved if the BE area was fully fuel reduced. Further consultation with the Decision Maker (SoJ) is recommended on this property due to the legacy of the lot (created prior to the enacting provisions). A BMP prepared to the WAPC guidelines is recommended to support a planning proposal/DA due to the legacy nature of this lot. This report does not substitute as a BMP and is providing due diligence to the client only. Any representation of this document to support a planning application is not recommended.

This report is not a Bushfire Management Plan and does not permit the modification or removal of native vegetation. Shire of Jerramungup Planning approval must be obtained prior to the removal of native vegetation.

4 Disclaimer

The recommendations and measures contained in this assessment report are based on the information available at the time of writing following the instructions of the regulatory authorities and following the requirements of the Australian Standards 3959-2018 – Building in Bushfire Prone Areas, WAPC State Planning Policy 3.7 (WAPC, 2015), WAPC Guidelines for Planning in Bushfire Prone Areas vers 1.4 (WAPC, 2021), and applying best practise as described by Fire Protection Association Australia. These are considered the minimum standards required to balance the protection of the dwellings and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire, people injured, or fatalities occur either at the site or while evacuating. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed development are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the bushfire consultant has no control. Notwithstanding anything contained within, the consultant/s will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the bushfire consultant) arising out of the services rendered by the consultant.

AS3959-2018 disclaimer: It should be borne in mind that the measures contained within this Standard (AS3959-2018) cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather condition.

Building to AS3959-2018 is a standard primarily concerned with improving the ability of buildings in designated bushfire prone areas to better withstand attack from bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself (AS3959, 2018).

5 Certification

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level (s) stated in this document have been prepared in accordance with the requirements of AS 3959-2018 and the Guidelines for Planning in Bushfire Prone Areas Ver 1.4 (WAPC, 2021).

SIGNED, ASSESSOR: .....  ..... DATE: 23/06/2023

Kathryn Kinnear, Bio Diverse Solutions

Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD-30794)

REVISION RECORD

Revision	Prepared By	Summary	Reviewed By	Date
Draft Id	Kathryn Kinnear	Internal QA review	Jason Benson	23/06/2023
Final Id	Kathryn Kinnear	Internal Technical Review	Jason Benson	23/06/2023
Final Id	Kathryn Kinnear	Final Issued to Client		23/06/2023

6 References

AS3959-2018 Australian Standard, *Construction of buildings in bushfire-prone areas*, Building Code of Australia, Primary Referenced Standard, Australian Building Codes Board and Standards Australia.

Shire of Jerramungup Fire Management Notice 2022/2023, accessed from: www.jerramungup.wa.gov.au

Office of Bushfire Risk management (OBRM) (2021). Map of Bushfire Prone Areas. Data retrieved from State Land Information Portal (SLIP) https://maps.slip.wa.gov.au/landgate/bushfireprone/

Western Australian Planning Commission (WAPC) (2015) State Planning Policy 3.7 Planning in Bushfire Prone

Western Australian Planning Commission (WAPC) (2021). *Guidelines for Planning in Bushfire Prone Areas Version 1.4.* Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.

7 Appendices

Appendix: A: Assessment of Vegetation

Appendix B: WAPC Asset Protection Zone (APZ) standards to apply

Appendix A

Assessment of Vegetation

Bushfire Attack Level Assessment Report

Prepared by a BPAD Accredited Practitioner

Fire Protection Association Australia Life Property Environment

S 3959 BAL Assessment Report

This report has been prepared by an Accredited BPAD Practitioner using the Simplified Procedure (Method 1) as detailed in Section 2 of AS 3959 – 2018. FPA Australia makes no warranties as to the accuracy of the information provided in the report. All enquiries related to the information and conclusions presented in this report must be made to the BPAD Accredited Practitioner.

Property Details and Description of Works

Address Details	**Unit no**	**Street no**	**Lot no**	**Street name / Plan Reference**	
		N/A	152	Point Henry Road	
	Suburb			**State**	**Postcode**
	Bremer Bay			WA	6338
Local government area	Shire of Jerramungup				
Main BCA class of the building	N/A	**Use(s) of the building**		No Construction – BAL Assessment and Due Diligence to relocate Building Envelope	
Description of the building or works	No Construction – BAL Assessment and Due Diligence to relocate Building Envelope				

Report Details

Report / Job Number	Report Version	Assessment Date	Report Date
MSC0582	Final	6 April 2023	6 June 2023

BPAD Accredited Practitioner Details

Name
Melanie Haymont BPAD 58389 (L1)

Company Details
Bio Diverse Solutions
29 Hercules Crescent
Albany WA 6330.

I hereby declare that I am a BPAD accredited bushfire practitioner.

Accreditation: No. BPAD 58389

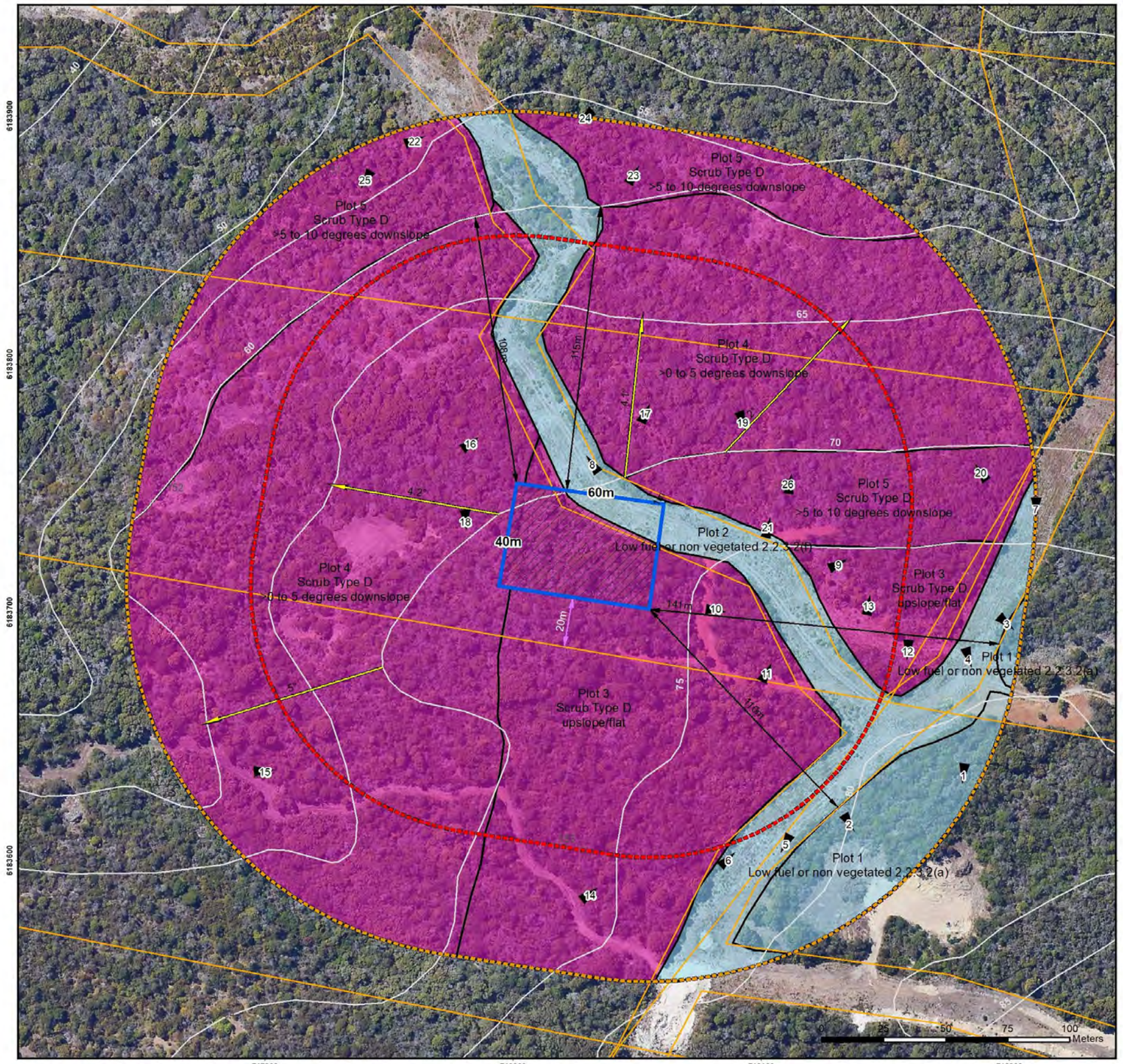
Signature:

Date: 23rd June 2023

Authorised Practitioner Stamp

Reliance on the assessment and determination of the Bushfire Attack Level contained in this report should not extend beyond a period of 12 months from the date of issue of the report. If this report was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated report issued.

Site Assessment & Site Plans The site assessment of this site was undertaken on 6 April 2023 by a BPAD Accredited Practitioner for the purpose of determining the Bushfire Attack Level in accordance with AS 3959 - 2018 Simplified Procedure (Method 1).



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BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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Overview Map Scale 1:100,000

Legend

- Subject Site (Building Envelope)
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours
- Building Setback
- Separation Distance
- Slopes Degrees
- Photo Point
- Future Low Fuel
- Vegetation/Plot Boundary

Vegetation

- Scrub Type D
- Excluded 2.2.3.2

Scale
1:1,500 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Site Plan / BAL Assessment

BAL Assessor	*QA Check*	*Drawn by*
MEH	BRM	GSK
STATUS	*FILE*	*DATE*
FINAL	MSC0582	23/06/2023

Vegetation Classification

All vegetation within 150m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID:	1	**Plot:**	1
Vegetation Classification or Exclusion Clause			
Excludable - 2.2.3.2(a) >100m from site			
Description / Justification for Classification			
Location: Southeast and east of the subject site. **Separation Distance:** 110m to the southeast, 141m to the east. **Description:** Areas of classified vegetation >100m from the subject site. Excluded as per AS3959 exclusion clause 2.2.3.2 (a). **Photo description**: View to the south towards classifiable vegetation, located greater than 100m from the subject site to the east-southeast.			

Photo ID:	2	**Plot:**	1 cont.
Vegetation Classification or Exclusion Clause			
Excludable - 2.2.3.2(a) >100m from site			
Description / Justification for Classification			
Additional Photo of Plot 1. **Photo description:** View to the south-southeast towards classifiable vegetation, located greater than 100m from the subject site to the southeast.			

Photo ID:	3	Plot:	1 cont.

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(a) >100m from site

Description / Justification for Classification

Additional Photo of Plot 1.

Photo description: View to the southeast towards classifiable vegetation, located greater than 100m from the subject site to the east.

Photo ID:	4	Plot:	2

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(f) Low Threat Vegetation

Description / Justification for Classification

Location: North, northwest, east, southeast, and internal to the subject site.

Description: Vegetation managed in a low threat state including slashed breaks.

As per exclusion clause 2.2.3.2 (f) of AS3959-2018.

Photo description: View to the south-southeast along a strategic break, located to the east of the subject site.

Photo ID:	5	Plot:	2 cont.

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(f) Low Threat Vegetation

Description / Justification for Classification

Additional Photo of Plot 2.

Photo description: View facing south-southwest along the strategic break, located to the southeast of the subject site.

Photo ID:	6	Plot:	2

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(f) Low Threat Vegetation

Description / Justification for Classification

Additional Photo of Plot 2.

Photo description: View to the northeast along the strategic break, located to the southeast of the subject site.

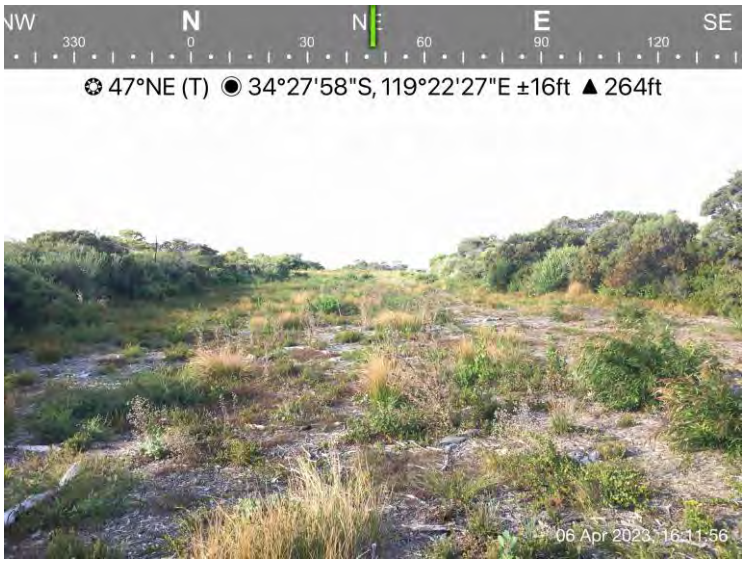


Photo ID:	7	Plot:	2 cont.

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(f) Low Threat Vegetation

Description / Justification for Classification

Additional Photo of Plot 2.

Photo description: View to the south along the strategic break, located to the east of the subject site.

Photo ID:	8	Plot:	2 cont.

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(f) Low Threat Vegetation

Description / Justification for Classification

Additional Photo of Plot 2.

Photo description: View to the northwest along the strategic break, located internally to the subject site.

Photo ID:	9	Plot:	3

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Location: Internal to the subject site in the northwest, west, southwest, south, southeast and east. External to the south, southeast and east.

Separation Distance: 0m.

Description: Coastal Scrub consisting of low Peppermint trees, Acacias, Spyridium, Leucopogon, Adenanthos, Hibbertia, grasses and sedges.

Average vegetation height: <4m. Occasional peppermint tree up to 6m due to edge effect.

Vegetation Coverage: 10-30% foliage cover.

Available fuel loading: 25t/ha.

Effective slope: Upslope/flat.

Photo description: View to the east-northeast towards scrub vegetation, located to the east of the subject site.

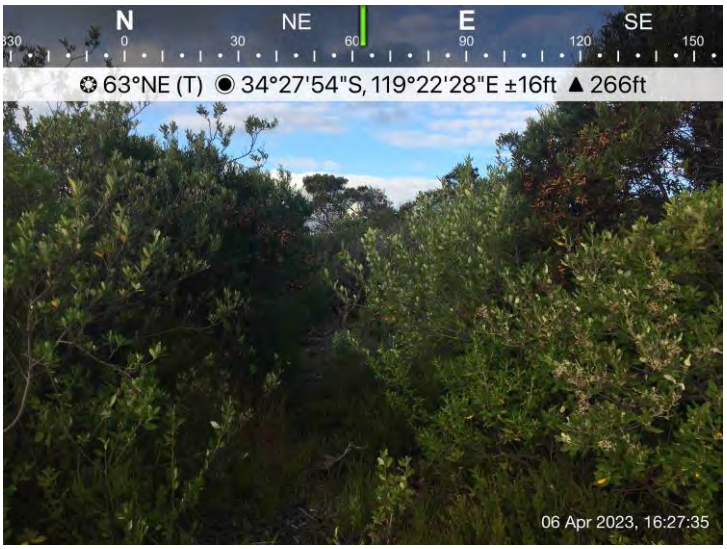


Photo ID:	10	Plot:	3 cont.
Vegetation Classification or Exclusion Clause			
Class D Scrub - Closed scrub (Tall heaths) D-13			
Description / Justification for Classification			
Additional Photo of Plot 3. **Photo description:** View to the east towards scrub vegetation, located to the east of the subject site.			

Photo ID:	11	Plot:	3 cont.
Vegetation Classification or Exclusion Clause			
Class D Scrub - Closed scrub (Tall heaths) D-13			
Description / Justification for Classification			
Additional Photo of Plot 3. **Photo description:** View to the north-northeast towards scrub vegetation, located to the southeast of the subject site.			

Photo ID:	12	Plot:	3
Vegetation Classification or Exclusion Clause			
Class D Scrub - Closed scrub (Tall heaths) D-13			
Description / Justification for Classification			
Additional Photo of Plot 3. **Photo description:** View to the south towards scrub vegetation, located to the east of the subject site.			

Photo ID:	13	Plot:	3 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 3.

Photo description: View to the north towards scrub vegetation 3, located to the east of the subject site.

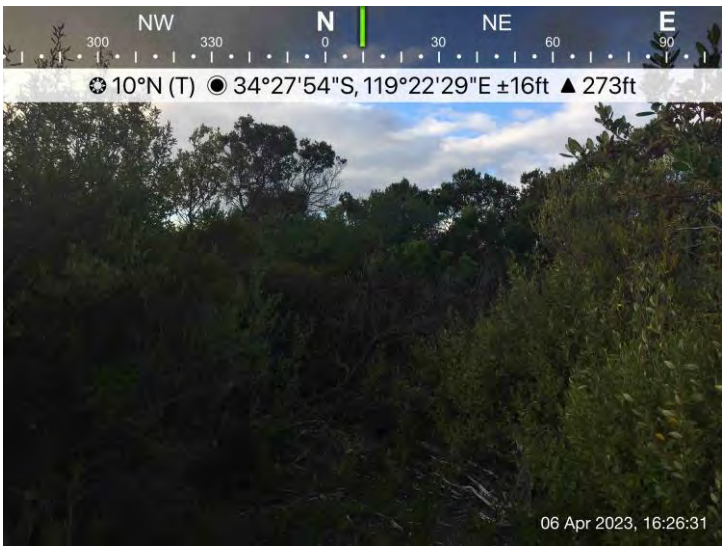


Photo ID:	14	Plot:	3 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 3.

Photo description: View to the northeast towards scrub vegetation, located to the south of the subject site.

Photo ID:	15	Plot:	4

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Location: West, southwest, north, and northeast of the subject site.

Separation Distance: 0m to the west.

Description: Coastal Scrub consisting of low Peppermint trees, acacias, Acacias, Spyridium, Leucopogon, Adenanthos, Hibbertia, grasses and sedges.

Average vegetation height: <4m. Occasional peppermint tree up to 6m due to edge effect.

Vegetation Coverage: 10-30% foliage cover.

Available fuel loading: 25t/ha.

Effective slope: Downslope >0 to 5 degrees.

Photo description: View facing east towards scrub vegetation, located to the southwest of the subject site.

Photo ID:	16	Plot:	4 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 4.

Photo description: View facing northeast towards scrub vegetation, located to the northwest of the subject site.

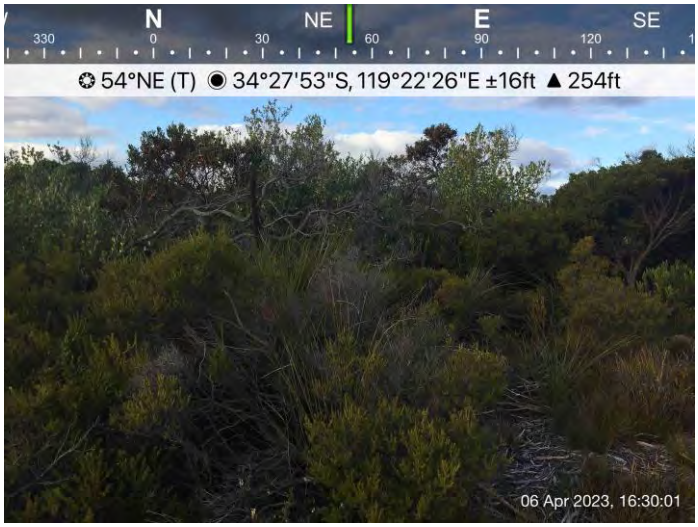


Photo ID:	17	Plot:	4 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 4.

Photo description: View facing north-northeast towards scrub vegetation, located to the north of the subject site.

Photo ID:	18	Plot:	4 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 4.

Photo description: View facing south towards scrub vegetation, located to the west of the subject site.

Photo ID:	19	Plot:	4 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 4.

Photo description: View facing south-southeast towards scrub vegetation, located to the northeast of the subject site.

Photo ID:	20	Plot:	5

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Location: East, north, northeast, and northwest of the subject site.

Separation Distance: 1m.

Description: Coastal Scrub consisting of low Peppermint trees, Acacias, Spyridium, Leucopogon, Adenanthos, Hibbertia, grasses and sedges.

Average vegetation height: <4m. Occasional peppermint tree up to 6m due to edge effect.

Vegetation Coverage: 10-30% foliage cover.

Available fuel loading: 25t/ha.

Effective slope: Downslope >5 to 10 degrees

Photo description: View facing northwest towards scrub vegetation, located to the east of the subject site.

Photo ID:	21	Plot:	5 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 5.

Photo description: View facing north-northeast towards scrub vegetation, located to the east of the subject site.

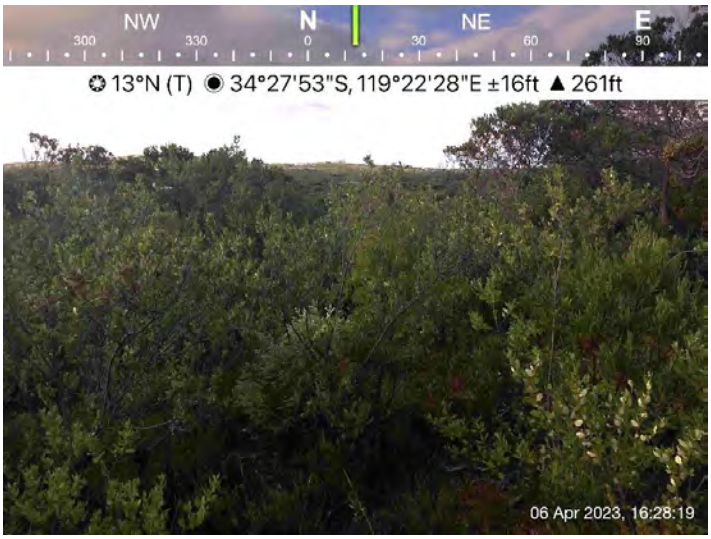


Photo ID:	22	Plot:	5 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 5.

Photo description: View facing east-northeast towards scrub vegetation, located to the northwest of the subject site.

Photo ID:	23	Plot:	5 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 5.

Photo description: View facing north-northeast towards scrub vegetation, located to the north of the subject site.

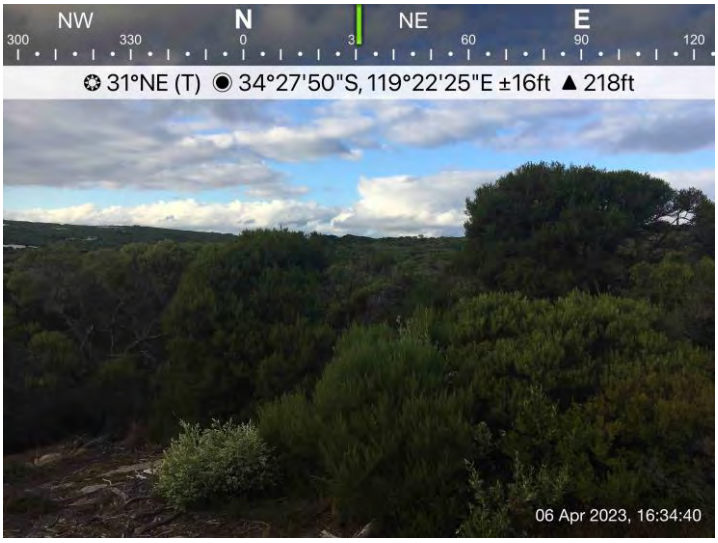


Photo ID:	24	Plot:	5 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 5.

Photo description: View facing southwest towards scrub vegetation, located to the north of the subject site.

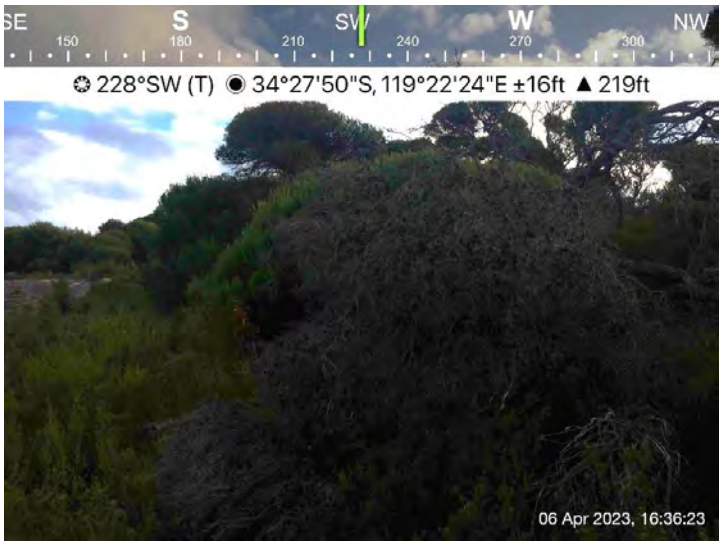


Photo ID:	25	Plot:	5 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 5.

Photo description: View facing south-southwest towards scrub vegetation, located to the north-northwest of the subject site.

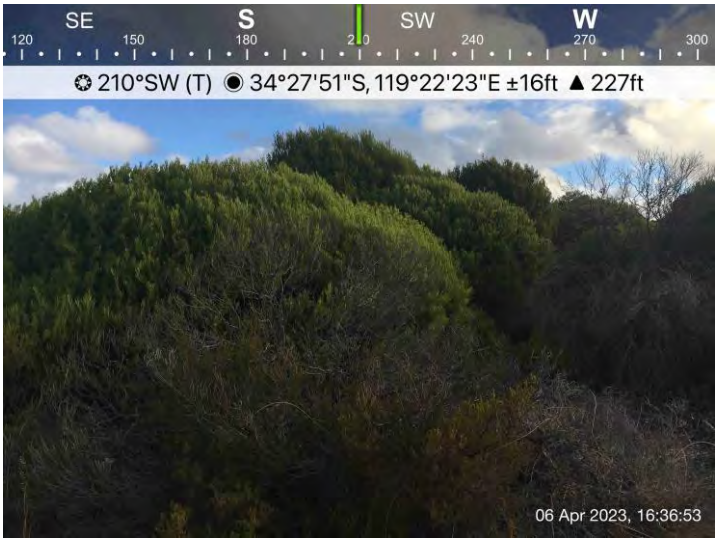


Photo ID:	26	Plot:	5 cont.

Vegetation Classification or Exclusion Clause

Class D Scrub - Closed scrub (Tall heaths) D-13

Description / Justification for Classification

Additional Photo of Plot 5.

Photo description: View facing north towards scrub vegetation, located to the east of the subject site.

Relevant Fire Danger Index

The fire danger index for this site has been determined in accordance with Table 2.1 or otherwise determined in accordance with a jurisdictional variation applicable to the site.

Fire Danger Index			
FDI 40 ☐	FDI 50 ☐	FDI 80 ☒	FDI 100 ☐
Table 2.7	*Table 2.6*	*Table 2.5*	*Table 2.4*

Potential Bushfire Impacts

The potential bushfire impact on the Proposed Building envelope from each of the identified vegetation plots are identified below.

Plot	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	Excludable – Clause 2.2.3.2(a)	-	>100	BAL-LOW
2	Excludable – Clause 2.2.3.2(f)	-	N/A	BAL-LOW
3	Class D Scrub	All upslopes and flat land (0 degrees)	0	BAL-FZ
4	Class D Scrub	Downslope >0 to 5 degrees	0	BAL-FZ
5	Class D Scrub	Downslope >5 to 10 degrees	1	BAL-FZ

Table 1: BAL Analysis

Determined Bushfire Attack Level (BAL)

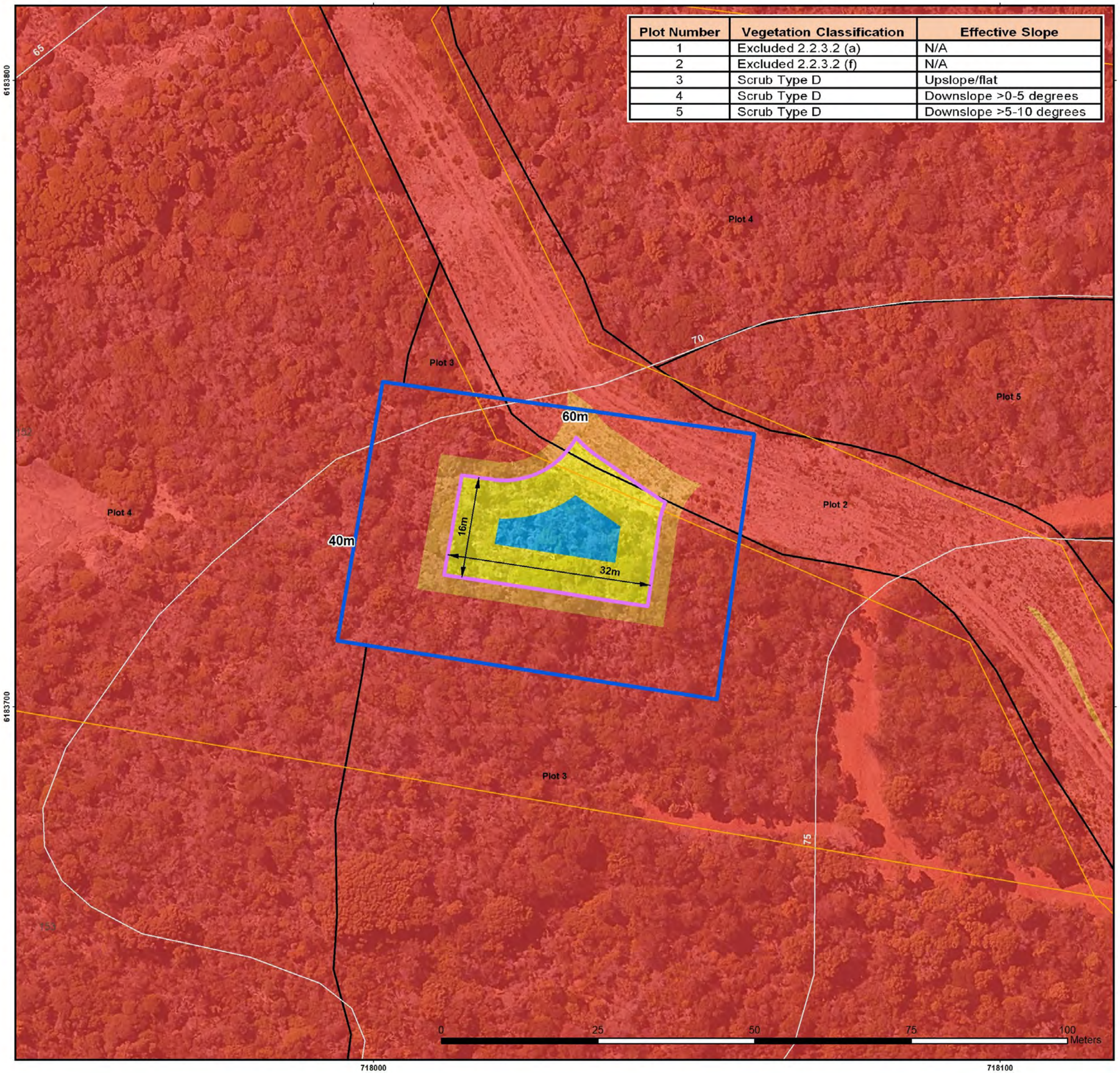
The Determined Bushfire Attack Level (highest BAL) for the site / proposed development has been determined in accordance with clause 2.2.6 of AS 3959-2018 using the above analysis.

Determined Bushfire Attack Level	**BAL – FZ**

Note: The purpose of this assessment is to indicate the bushfire impacts of adjusting the building envelope on Lot 152 Point Henry Road. In its current location, the subject site (indicative building envelope) is impacted by a Bushfire Attack Level of BAL-FZ. However, in conducting the assessment, it was determined that with onsite vegetation modification, a lower BAL Rating is achievable within the building envelope and lot boundary. An indicative BAL contour Plan (as shown over the page outlines BAL-29 or less is achievable on a proposed building located in the future BE.

Note: Shire of Jerramungup planning approval must be obtained prior to any vegetation removal/modification.

Plot Number	Vegetation Classification	Effective Slope
1	Excluded 2.2.3.2 (a)	N/A
2	Excluded 2.2.3.2 (f)	N/A
3	Scrub Type D	Upslope/flat
4	Scrub Type D	Downslope >0-5 degrees
5	Scrub Type D	Downslope >5-10 degrees



Albany Office:
29 Hercules Crescent
Albany, WA 6330
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Denmark Office:
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Denmark, WA 6333
(08) 9848 1309

Esperance Office:
2A/113 Dempster Street
Esperance, WA 6450
(08) 9072 1382

BPAD Bushfire Planning & Design

BIO DIVERSE SOLUTIONS

Overview Map Scale 1:100,000

Legend

- Subject Site (Building Envelope)
- Cadastre
- 5m Contours
- Developable Area (625m²)
- Separation Distance
- Vegetation/Plot Boundary

BAL Contours

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

Scale
1:595 @ A3
GDA MGA 2020 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2022
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

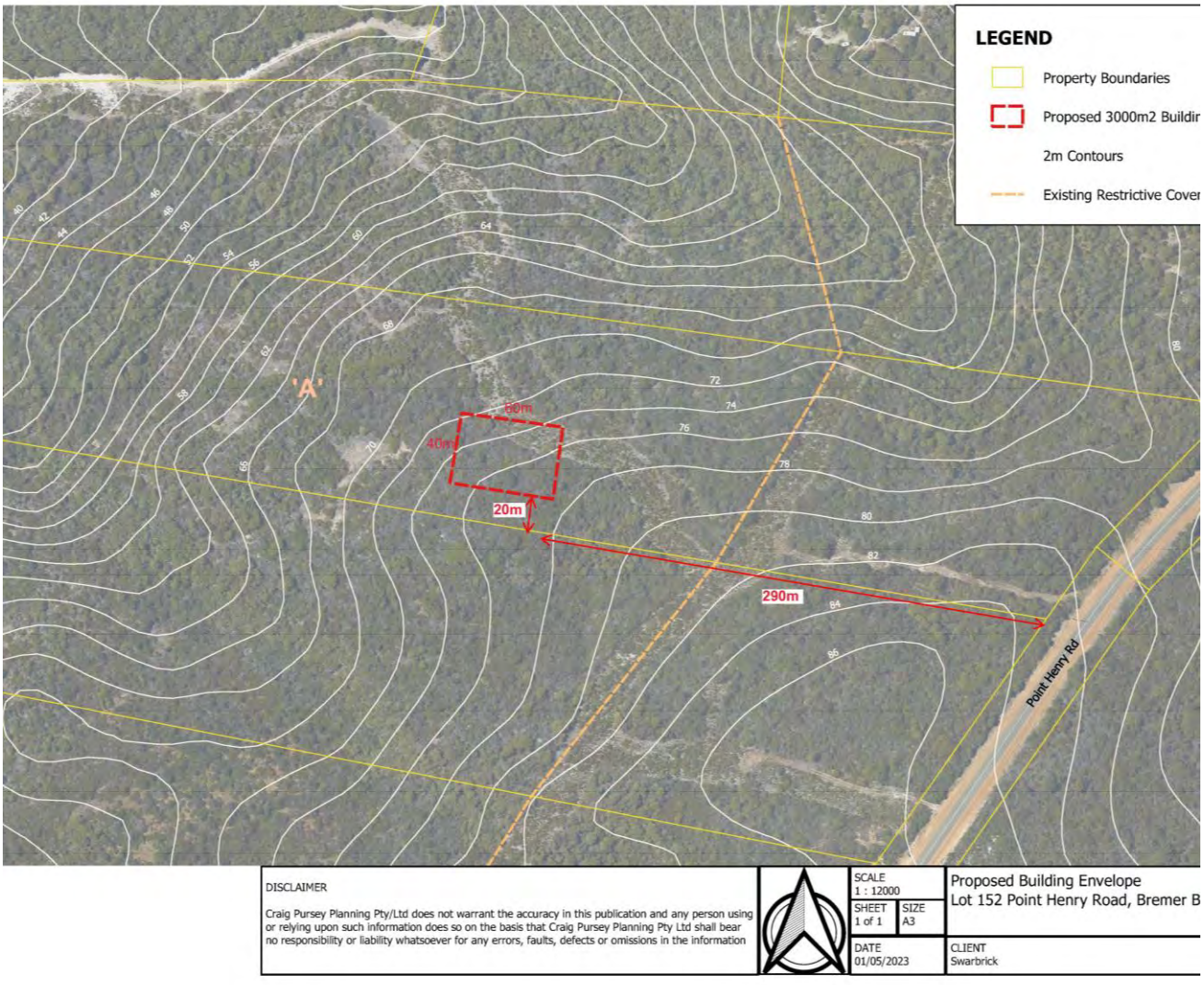
CLIENT
Gemma Yardly
Lot 152 Point Henry Road
Bremer Bay, WA 6338

BAL Contour on BE

BAL Assessor	*QA Check*	*Drawn by*
MEH	**BRM**	**GSK**
STATUS	*FILE*	*DATE*
FINAL	**MSC0582**	**23/06/2023**

Appendix 1: Plans and Drawings

Plans and drawings relied on to determine the bushfire attack level		
Drawing / Plan Description Lot 152 Point Henry Road		
Job Number N/A	**Revision** N/A	**Date of Revision** N/A



Appendix 2: Additional Information / Advisory Notes					
Separation Distances Required to Achieve BAL – 29					
Plot Number	Vegetation Classification	Effective Slope Degrees	Achievable BAL Rating	Current Separation Distance (metres)	Minimum Separation Distance Required (metres)
3	Class D Scrub	All upslopes and flat land (0 degrees)	BAL-29	0	13
4	Class D Scrub	Downslope >0 to 5 degrees		0	15
5	Class D Scrub	Downslope >5 to 10 degrees		0	17

Additional details relevant to this project:

- Lot 152 is approximately 102826m² in size;
- Lot 152 is zoned 'Rural Residential';
- Lot 152 is subject to the requirements of Shire Jerramungup Local Planning Scheme No. 2
- The subject site is impacted by onsite vegetation;
- The subject site is currently impacted by a BAL-rating of BAL-FZ due to onsite vegetation;
- With onsite vegetation modification, the subject site can achieve BAL-29 or lower within the BE;
- This report contains the separation distances required for the subject site to achieve BAL-29; and
- A BAL contour Plan has been provided indicating the vegetation that would require removal/modification for a future proposed building to achieve BAL-29.

Shire of Jerramungup planning approval must be obtained prior to any vegetation removal/modification.

BAL Calculation is based on the "Method 1" of AS3959-2018. Separation distances were measured in the field to surface fuel loads with a Nikon Forestry Pro. Effective Slopes measured in the field with a Nikon Forestry Pro and verified with AHD contour analysis in GIS mapping. See Site Plan Page 2.

Refer to attached WAPC extract from the current and endorsed guidelines regarding an Asset Protection Zone (APZ) in Appendix 5. This is information for the lot owners regarding long -term maintenance of a lot/building in a bushfire prone area. All areas surrounding the building should be maintained as per APZ standards associated with the BAL setback assigned to the lot/building. Any setback associated to a BAL setback distance is to apply APZ **standards at all times**. Failure of the building owner to do so will void the BAL Assessment as defined in this document.

Builders under contract are to ensure this full BAL documentation/report is given to the lot owner.

AS3959-2018 disclaimer
The survivability of buildings is also dependant on a combination of measures such as landscaping, water supplies, access, building design and maintenance. Care should also be exercised when siting and designing for these measures when constructing a building under this Standard.
(AS3959, 2018)

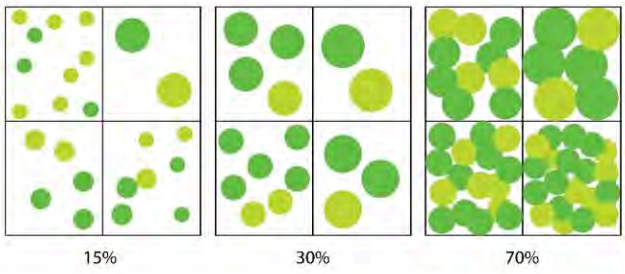
This Standard is primarily concerned with improving the ability of buildings in designated bushfire-prone areas to better withstand attack form bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself.
(AS3959-2018)

DISCLAIMER
The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959-2018 – Building in Bushfire Prone Areas. These are considered the minimum standards required to balance the protection of the proposed dwelling and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed dwelling are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire protection consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.

Appendix 3: Asset Protection Zone (APZ) standards to apply for long term management of BAL setbacks

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

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.

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
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.

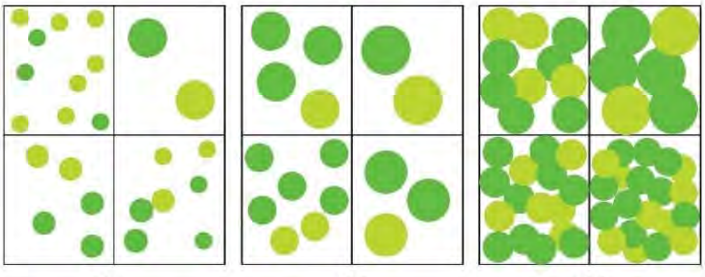
** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

Appendix B

Schedule 1 WAPC Asset Protection Zone (APZ) standards to apply

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

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.

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
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.

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