

Bushfire Management Plan:
Subdivision Application: Lot 21 (81) & Lot 24 (68)
Carosa Road, Ashby

Planning Solutions

DOCUMENT TRACKING

Project Name	Bushfire Management Plan: Subdivision: Lot 21 (81) & Lot 24 (68) Carosa Road, Ashby
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Status	Draft
Version Number	v1
Last saved on	3 April 2023

This report should be cited as 'Eco Logical Australia 2023. *Bushfire Management Plan: Subdivision: Lot 21 (81) & Lot 24 (68) Carosa Road, Ashby.* Prepared for Planning Solutions.

ACKNOWLEDGEMENTS

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Template 2.8.1

Version control	
Version	Purpose
v1	Draft – Submission to client

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1. Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Planning Solutions to prepare a Bushfire Management Plan (BMP) to support a subdivision application for Lot 21 (81) & Lot 24 (68) Carosa Road, Ashby hereafter referred to as the subject site, Figure 1). The proposed subdivision will result in an intensification of land use and involves the development of 73 residential lots and four larger lots that have plans for potential future residential development (Figure 2 & Figure 3).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2021; Figure 4), which triggers bushfire planning requirements *under State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; Western Australian Planning Commission (WAPC) 2015) and reporting to accompany submission of the development application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.4* (the Guidelines; WAPC 2021).

The subject site is located along Carosa Road, Ashby within the City of Wanneroo. Within the subject site there are areas of unmanaged classifiable vegetation, managed vegetation and residential houses. Classifiable remnant vegetation is located on all sides of the subject site, including forest vegetation that is a part of Bush Forever Site 164 abutting the western boundary of the site. Land immediately north and south of the site is predominantly comprised of residential development and managed low threat vegetation.

This assessment has been prepared by ELA Bushfire Consultant Maitland Ely with quality assurance undertaken by Senior Bushfire Consultant Eva Cronin (FPAA BPAD Level 2 Certified Practitioner No. BPAD45482) and Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

1.2 Purpose and application of the plan

The primary purpose of this BMP is to act as a technical supporting document to inform planning assessment. This BMP is also designed to provide guidance on how to plan for and manage the bushfire risk to the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

1.3 Environmental considerations




SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values.

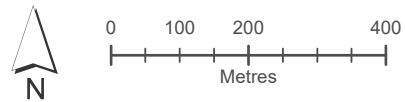
No revegetation is proposed within the development and landscaping will be maintained in a low-threat state.

ELA is not aware of any outstanding environmental approvals required to progress development.



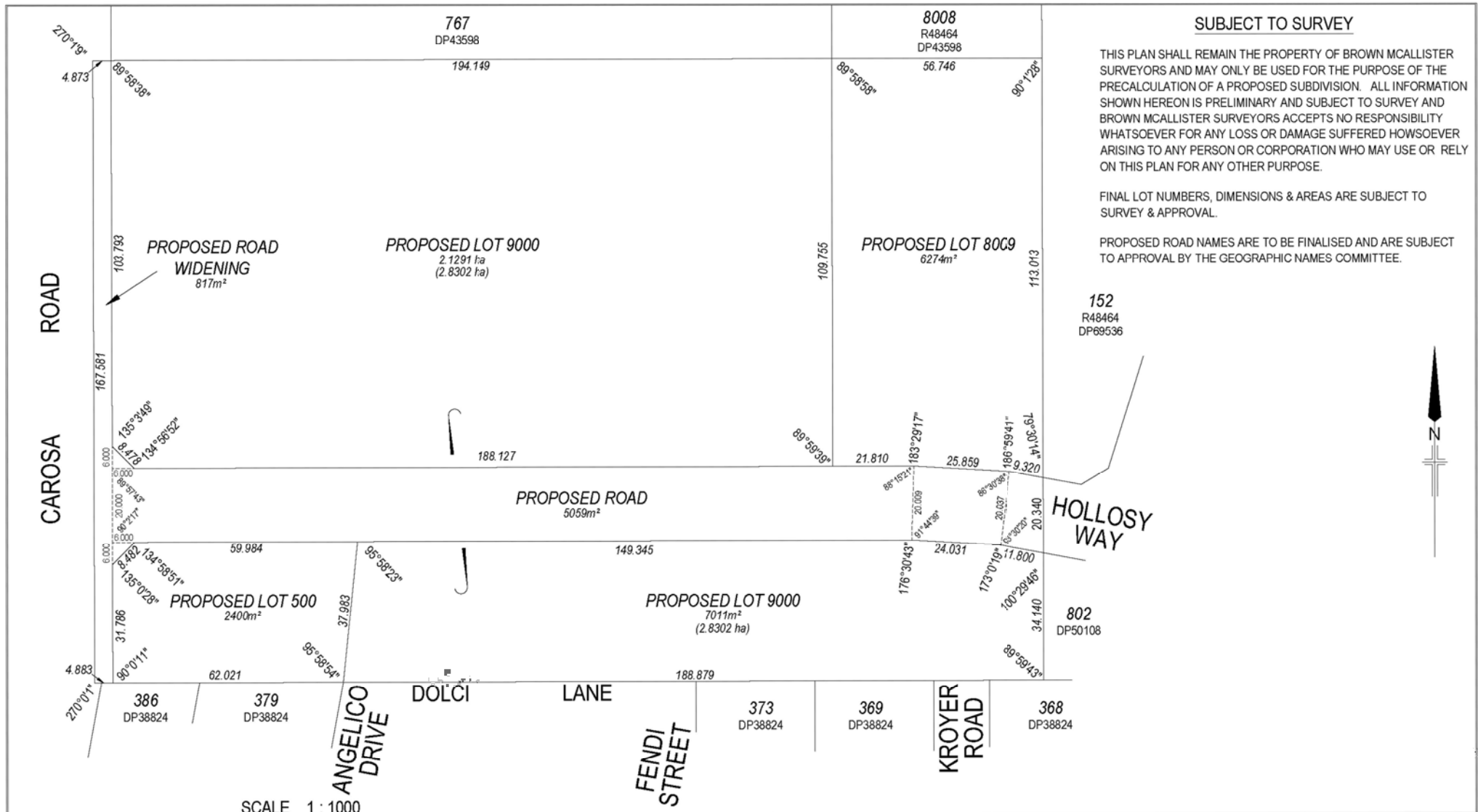
Figure 1: Site Overview

-  Subject site
-  100m site assessment
-  150m site assessment



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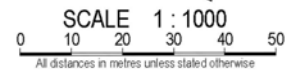


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APPROVED & ISSUED TO CLIENT		20/02/2023	JHUMPHREYS	T PIZZI
No.	DETAILS	DATE	DRAWN	CHECKED

REVISIONS

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SURVEYED	S WILCOX - 02/02/2023
FIELD NOTES	
DRAWN	JHUMPHREYS - 15/02/2023
CHECKED	
REFERENCE	23503-5PC

PRE-CALCULATION PLAN OF LOT 21 ON DIAGRAM 35092
No 81 CAROSA ROAD, ASHBY

DATUM
HORIZONTAL - PCG 94
VERTICAL - AHD

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Client **ENDEAVOUR DEVELOPMENTS [W.A.] PTY LTD**

Figure 2: Site Plan

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PRE-CALCULATION PLAN OF LOT 24 ON DIAGRAM 35092 No 68 CAROSA ROAD, ASHBY

Client: ENDEAVOUR DEVELOPMENTS [W.A] PTY LTD

DATUM
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VERTICAL - AHD

SCALE 1:600

0 6 12 18 24 30

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FIELD NOTES	
DRAWN	J.H.McCAY 15/02/2023
CHECKED	
REFERENCE	23503-4PC

Figure 3: Site Plan

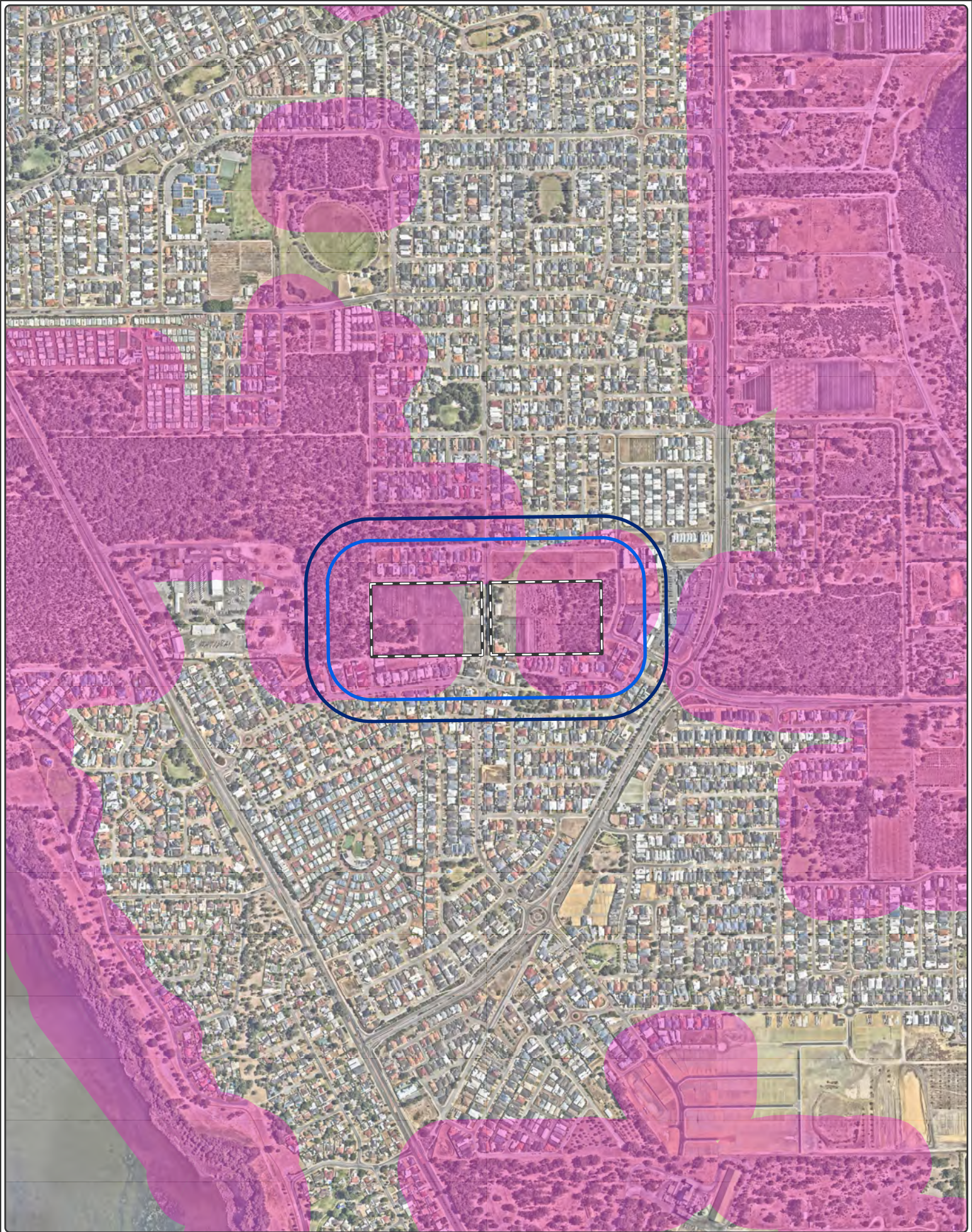




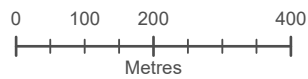


Figure 4: Bushfire prone area

-  Subject site
-  100m site assessment
-  150m site assessment
-  Bushfire Prone Mapping (DFES 2021)



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2. Bushfire assessment results

2.1 Bushfire assessment inputs

The following section is a consideration of spatial bushfire risk and has been used to inform the bushfire assessment in this report.

2.1.1 Fire Danger Index

A blanket Fire Danger Index (FDI) 80 is adopted for Western Australia, as outlined in Australian Standard AS 3959: 2018 *Construction of Buildings in Bushfire Prone Areas* (SA 2018) and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.2 Vegetation classification and slope under vegetation

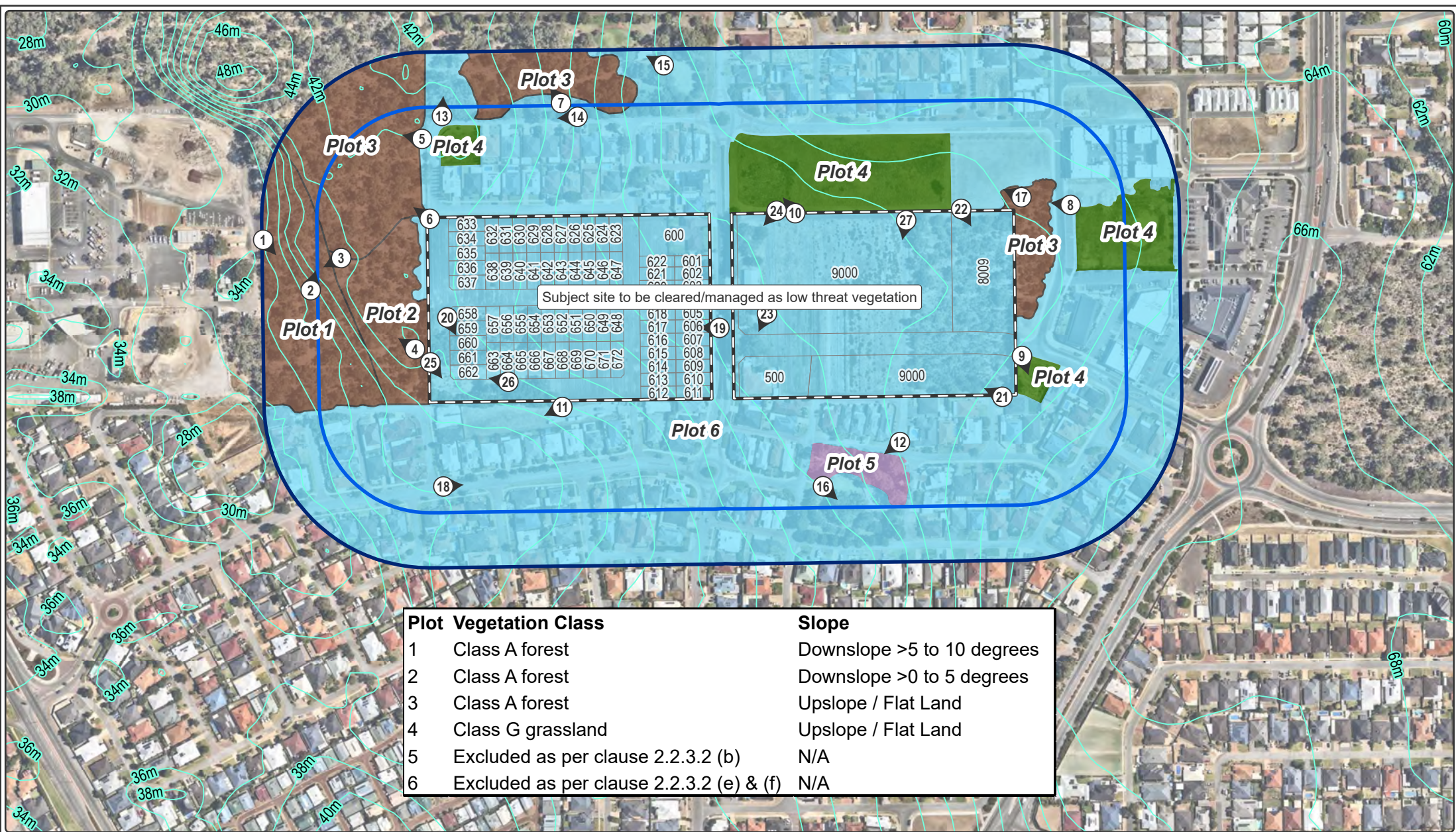
Vegetation and effective slope (i.e. slope under vegetation) within the subject site and surrounding 150 m (the assessment area) were assessed in accordance with the Guidelines and AS 3959: 2018 with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). Site assessment was undertaken on 6 February 2023.

The classified vegetation and effective slope for the site from each of the identified vegetation plots are identified below in Table 1 and Figure 5. Note, the subject site has been excluded as it will be cleared/managed as low threat vegetation for development.

Table 1: Classified vegetation as per AS 3959: 2018

Plot	Vegetation Classification	Effective Slope
1	Class A Forest	Downslope >5 to 10 degrees
2	Class A Forest	Downslope >0 to 5 degrees
3	Class A Forest	All upslopes and flat land (0 degrees)
4	Class G Grassland	All upslopes and flat land (0 degrees)
5	Excluded AS 3959: 2018 2.2.3.2 (b)	-
6	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	-

Photographs relating to each area and vegetation type are included in Appendix A.

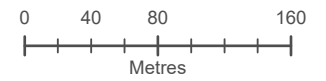


Plot	Vegetation Class	Slope
1	Class A forest	Downslope >5 to 10 degrees
2	Class A forest	Downslope >0 to 5 degrees
3	Class A forest	Upslope / Flat Land
4	Class G grassland	Upslope / Flat Land
5	Excluded as per clause 2.2.3.2 (b)	N/A
6	Excluded as per clause 2.2.3.2 (e) & (f)	N/A

Figure 5: Vegetation Classification

- Subject site
- Lot boundary
- 100m site assessment
- 150m site assessment
- Photo location
- Contour (2m)

- Vegetation classification**
- Class A Forest
 - Class G Grassland
 - Excluded as per clause 2.2.3.2 (b)
 - Excluded as per clause 2.2.3.2 (e) and (f)



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2.2 Bushfire assessment outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959: 2018 and the bushfire assessment inputs in Section 2.1.

2.2.1 BAL assessment

All land located within 100 m of the classified vegetation depicted in Figure 5 is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959: 2018.

A Method 1 BAL assessment (as outlined in AS 3959: 2018) has been completed for the proposed development and incorporates the following factors:

- Fire Danger Index (FDI) rating;
- Vegetation class;
- Slope under classified vegetation; and
- Distance between proposed development area and the classified vegetation.

Based on the identified BAL, construction requirements for proposed buildings can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability.

2.2.2 Method 1 BAL assessment

Table 2 and Figure 6 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed subdivision in accordance with AS 3959: 2018 methodology.

The BAL assessment factors in the subject site being cleared/managed to a low threat state for development. Table 3 displays BAL ratings for each lot within the subject site.

Table 2: Method 1 BAL calculation (BAL contours)

Plot	Vegetation Classification	Effective Slope	Separation distances required				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
1	Class A Forest	Downslope >5 to 10 degrees	<26	26-<33	33-<46	46-<61	61-<100
2	Class A Forest	Downslope >0 to 5 degrees	<20	20-<27	27-<37	37-<50	50-<100
3	Class A Forest	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100
4	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6-<8	8-<12	12-<17	17-<50
5	Excluded AS 3959: 2018 2.2.3.2 (b)	-	No separation distances required – BAL-LOW				
6	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	-	No separation distances required – BAL-LOW				

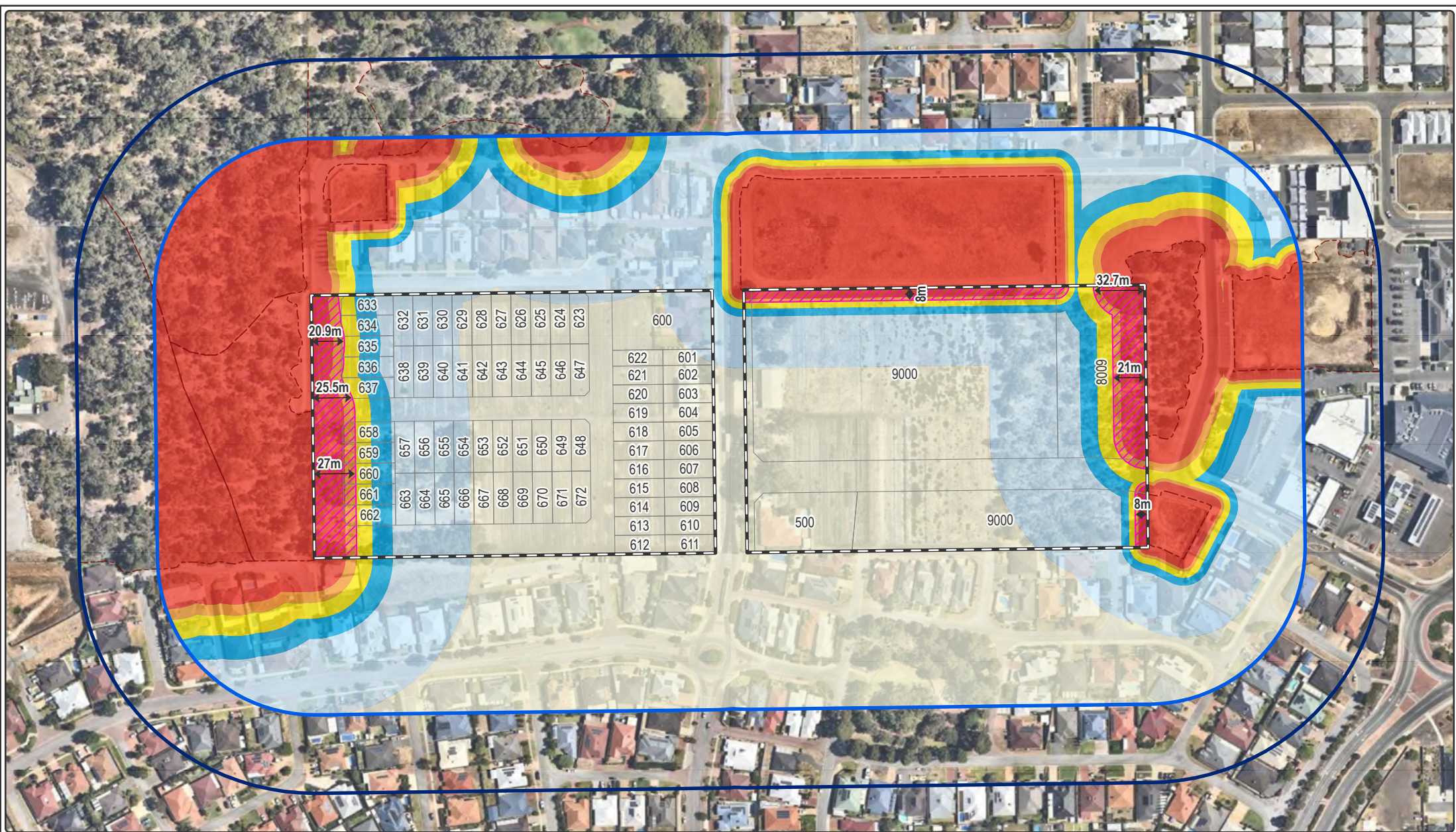
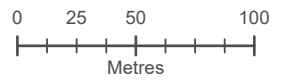


Figure 6: Bushfire Attack Level (BAL) Contour

- Subject site
- Lot boundary
- 100m site assessment
- 150m site assessment

- Bushfire hazard interface
- Asset Protection Zone (APZ)

- Bushfire Attack Level (BAL)**
- BAL - FZ
 - BAL - 40
 - BAL - 29
 - BAL - 19
 - BAL - 12.5
 - BAL - LOW



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Table 3: BAL rating for proposed building within the subject site

Proposed building	Plot most affecting BAL rating	Separation Distance (m)	BAL Rating
Lots 658-662, 8009 & 9000	Plot 3	0	BAL-FZ
Lots 634-637	Plot 2	25.7	BAL-40
Lot 633	Plot 3	23.7	BAL-29
Lots 600-601, 623-626, 628-632, 638-641, 654-657 & 663-666	Plot 4	18.3	BAL-12.5
Lots 602-622, 627, 642-647, 648-653, 667-672 & 500	-	-	BAL-LOW

2.3 Identification of issues arising from the BAL assessment

There are 12 lots present within the subject site that are subject to BAL ratings >BAL-29. However, all of these lots can accommodate building envelopes in areas ≤BAL-29 through lot setbacks (indicated as Asset Protection Zones in Figure 6).

Should there be any changes in development design or vegetation/hazard extent that requires a modified bushfire management response, then the above BAL ratings will need to be reassessed for the affected areas and documented in a brief addendum to this BMP.

3. Assessment against the Bushfire Protection Criteria

3.1 Compliance

The proposed subdivision is required to comply with policy measures 6.2 and 6.4 of SPP 3.7 and the Guidelines. Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire risk management measures, as outlined, have been devised for the proposed subdivision in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 4 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summarises how the intent of each Bushfire Protection Criteria has been achieved. No Performance Solutions (PS) have been proposed for this proposal. These management measures are depicted in Figure 7 where relevant.

Table 4: Summary of solutions used to achieve bushfire protection criteria

Bushfire Protection Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The majority of the proposed lots within the subject site will be located in an area subject to BAL ratings of ≤BAL-29 (Figure 6 & Figure 7). 12 lots proposed as a part of the subdivision are subject to BAL ratings of >BAL-29. The proposed lots will contain setbacks to accommodate these BAL ratings and allow for future buildings to be subject to BAL ratings ≤BAL-29 (depicted in Figure 6 & Figure 7). The proposed subdivision is considered to be compliant with A1.1.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The proposed development has an APZ sufficient for the potential radiant heat flux to not exceed 29kW/m ² and will be managed in accordance with the requirements of 'Standards for Asset Protection Zones' (WAPC 2021; Appendix B). The APZ can be contained within the boundaries of the lot or managed in perpetuity in a low fuel state. The proposed subdivision is considered to be compliant with A2.1.
Element 3: Vehicular access A3.1 Public Roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The subject site is accessed directly via Tadema Road which connects up with Carosa Road. The Guidelines do not prescribe values for the trafficable (carriageway/pavement) width of public roads as they should be in accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Austroad Standards and/or any applicable standard in the local government area. ELA are not traffic/civil engineers so cannot comment on whether these existing roads comply with Local Government Guidelines for Subdivisional Development (IPWEA Subdivision Guidelines), Liveable Neighbourhoods, Austroad standards and/or any applicable standards for the local government area.

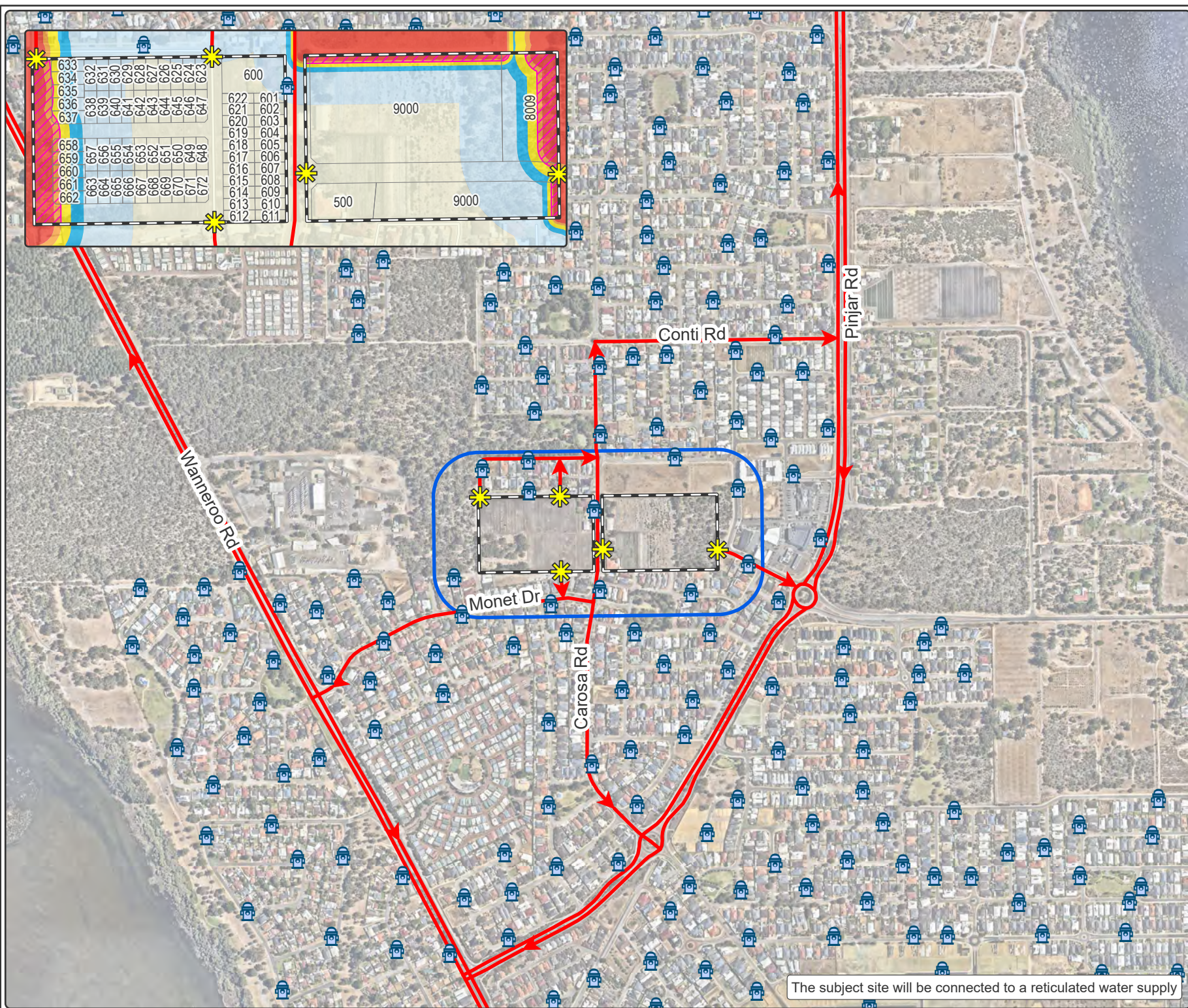
Bushfire Protection Criteria	AS	PS	N/A	Comment
				<p>ELAs assessment, however, has identified that the roads surrounding the development are bitumen with estimated width of the sealed surface achieving a minimum width of 6 m and therefore consider the existing road network would provide suitable access and egress for the community and emergency services personnel in the event of a bushfire.</p> <p>ELAs understanding is that as of the time of this report all proposed roads within the subject site will be designed and constructed to Liveable Neighbourhoods Standards.</p> <p>Vehicular access technical requirements in accordance with the Guidelines are detailed in Appendix C.</p> <p>The proposed subdivision is considered to be compliant with A3.1.</p>
A3.2a Multiple access routes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Two access routes to/from the subject site are available (Figure 7). Refer to A3.1 above for details regarding vehicular access technical requirements for public roads.</p> <p>The proposed subdivision is considered to be compliant with A3.2a.</p>
A3.2b Emergency Access way	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No emergency access ways are required or proposed.
A3.3 Through-roads	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>None of the proposed roads within the subject are no through roads.</p> <p>A3.3 is not applicable to this proposed subdivision.</p>
A3.4a Perimeter roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>All proposed residential lots abutting bushfire hazards are/will be separated from these hazards by perimeter roads.</p> <p>Future design for the four balance lots on the eastern portion of the subject site will ensure that perimeter roads are created between proposed residential lots and adjacent bushfire hazards.</p> <p>The proposed subdivision is considered to be compliant with A3.4.</p>
A3.4b Fire service access route	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>No fire service access route is required as all classified vegetation can be accessed through the existing/proposed road network.</p> <p>A3.4b is not applicable to this proposed subdivision.</p>
A3.5 Battle-axe access legs	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>No battle-axe properties are proposed as a part of this subdivision.</p> <p>A3.5 is not applicable to this proposed subdivision.</p>
A3.6 Private driveways	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The acceptable solution is not applicable to subdivision applications.
A4.2 Provision of water for firefighting purposes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Existing reticulated water is present within the area and the subject site will be connected to this water supply.</p> <p>There are multiple nearby hydrants located north, east and south of the subject site (Figure 7). ELA assumes the surrounding network of hydrants meet Water</p>

Bushfire Protection Criteria	AS	PS	N/A	Comment
				<p>Corporation specifications given they are established and within the Perth metropolitan area.</p> <p>The proposed subdivision is considered to be compliant with A4.2.</p>
Element 5: Vulnerable tourism land uses	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>This development application is not considered vulnerable tourism land use. Element 5 is not applicable to this proposed subdivision.</p>

NOTE – AS- ACCEPTABLE SOLUTION, PS- PERFORMANCE SOLUTION, N/A- NOT APPLICABLE

3.2 Additional Bushfire Requirements

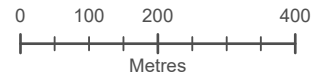
All landscaping areas within the subject site will be maintained in accordance with Standards for Asset Protection Zones (Appendix B).



- Legend**
- Subject site
 - 100m site assessment
 - Lot boundary
 - Asset Protection Zone (APZ)
 - Hydrant
 - Access point
 - Access / egress route

- Bushfire Attack Level (BAL)**
- BAL - FZ
 - BAL - 40
 - BAL - 29
 - BAL - 19
 - BAL - 12.5
 - BAL - LOW

Figure 7: Spatial representation of the bushfire management strategies



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The subject site will be connected to a reticulated water supply

4. Implementation and enforcement

Implementation of the BMP applies to the developer, future owners within the subject site and the local government to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in Section 3, as well as a works program, is provided in Table 5. These measures will be implemented to ensure the ongoing protection of life and property assets is achieved. Timing and responsibilities are also defined to assist with implementation of each measure.

Table 5: Proposed work program

No	Bushfire management measure	Responsibility
Prior to issue of Titles		
1	Ensure that APZs are cleared around each stage of subdivision if the entirety of the development depicted in Figure 7 is not developed in a single stage	Developer
2	Extend reticulated water supply to appropriate areas	Developer
3	Ensure all APZs depicted in Figure 7 are established and maintained	Developer
4	Place Section 165 Notification on Title for all lots within Bushfire Prone Areas.	Developer
5	Construct road network as per plan in Figure 7	Developer
6	Provide reticulated water supply to all lots and hydrants in accordance with Figure 7	Developer
Prior to occupancy		
7	Ensure all APZs depicted in Figure 7 are established and maintained.	Developer
8	Construct proposed building to relevant construction standard in AS 3959: 2018.	Developer
Ongoing management		
9	Maintain APZs to the standard in the Guidelines	Owners / City of Wanneroo (in public reserves)

5. Conclusion

In the author's professional opinion, the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed subdivision. As such, the proposed subdivision is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.

6. References

City of Wanneroo, 2023, Firebreaks, [Online], available from: [Firebreaks - City of Wanneroo](#)

Department of Fire and Emergency Services (DFES), 2021, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: <http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx>

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Western Australian Planning Commission (WAPC), 2021, *Guidelines for Planning in Bushfire Prone Areas Version 1.4 (including appendices)*, WAPC, Perth.

Western Australian Planning Commission (WAPC), 2019, *A guide to developing a Bushfire Emergency Evacuation Plan, October 2019*.

Appendix A – Classified Vegetation Photos

Plot 1	Classification or Exclusion Clause	Class A Forest
<p>Photo Point 1</p> <p>Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.</p> <p>Slope under this plot was assessed as downslope >5 to 10 degrees.</p>		
<p>Photo Point 2</p> <p>Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.</p> <p>Slope under this plot was assessed as downslope >5 to 10 degrees.</p>		
<p>Photo Point 3</p> <p>Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.</p> <p>Slope under this plot was assessed as downslope >5 to 10 degrees.</p>		

Plot 2 Classification or Exclusion Clause Class A Forest

Photo Point 4

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as downslope >0 to 5 degrees.



Plot 3 Classification or Exclusion Clause Class A Forest

Photo Point 5

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.



Plot 3 Classification or Exclusion Clause Class A Forest

Photo Point 6

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.



Plot 3 Classification or Exclusion Clause Class A Forest

Photo Point 7

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.



Plot 3 Classification or Exclusion Clause Class A Forest

Photo Point 8

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.



Plot 4 Classification or Exclusion Clause Class G Grassland

Photo Point 9

Classified vegetation within this plot is comprised of grasses.

Slope under this plot was assessed as upslope/flat land.



Plot 4 Classification or Exclusion Clause Class G Grassland

Photo Point 10

Classified vegetation within this plot is comprised of grasses.

Slope under this plot was assessed as upslope/flat land.



Plot 4 Classification or Exclusion Clause Class G Grassland

Photo Point 11

Classified vegetation within this plot is comprised of grasses.

Slope under this plot was assessed as upslope/flat land.



Plot 5 Classification or Exclusion Clause Excluded AS3959: 2018 2.2.3.2 (b)

Photo Point 12

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (b) due to the total area of patch being less than 1 ha and not within 100 m of other classifiable vegetation (plot 5 in post-clearance).



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (f)

Photo Point 13

This area has been excluded under 2.2.3.2 (f) of AS 3959: 2018. Vegetation present is regarded as low threat due to factors such as flammability, moisture content or fuel load and includes managed landscapes. Remanent vegetation present is comprised of managed landscaping.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (f)

Photo Point 14

This area has been excluded under 2.2.3.2 (f) of AS 3959: 2018. Vegetation present is regarded as low threat due to factors such as flammability, moisture content or fuel load and includes managed landscapes. Remanent vegetation present is comprised of parkland.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e) & (f)

Photo Point 15

This area has been excluded under 2.2.3.2 (e) and (f) of AS 3959: 2018. The area comprises on non-vegetated areas such as a playground and footpaths as well as surrounding low threat remanent vegetation that is comprised of parkland and managed landscaping.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (f)

Photo Point 16

This area has been excluded under 2.2.3.2 (f) of AS 3959: 2018. Vegetation present is regarded as low threat due to factors such as flammability, moisture content or fuel load and includes managed landscapes. Remanent vegetation present is comprised of parkland.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (f)

Photo Point 17

This area has been excluded under 2.2.3.2 (f) of AS 3959: 2018. Vegetation present is regarded as low threat due to factors such as flammability, moisture content or fuel load and includes managed landscapes. Remanent vegetation present is comprised of parkland.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e) & (f)

Photo Point 18

This area has been excluded under 2.2.3.2 (e) and (f) of AS 3959: 2018. The area comprises on non-vegetated areas such as a roads, footpaths and residential housing as well as surrounding low threat remanent vegetation that is comprised of landscaping and gardens.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (f)

Photo Point 19

This area has been excluded under 2.2.3.2 (f) of AS 3959: 2018. Vegetation present is regarded as low threat due to factors such as flammability, moisture content or fuel load and includes managed landscapes. Remanent vegetation present is comprised of managed yard.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 20

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses and juvenile trees.

Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (e) due to all remnant vegetation present being cleared.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 21

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (e) due to all remnant vegetation present being cleared.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 22

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (e) due to all remnant vegetation present being cleared.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 23

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (e) due to all remnant vegetation present being cleared.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 24

Classified vegetation within this plot is comprised of trees up to 30 m tall with foliage cover of 30% to 70%. Understorey is comprised of multi-tiered layers of vegetation consisting of a mixture of grasses, juvenile trees and shrubs.

Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (e) due to all remnant vegetation present being cleared.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 25

Classified vegetation within this plot is comprised of shrubs greater than 2 m high with >30% foliage cover. 2 m height pole present within the associated photo. Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (e) due to all remnant vegetation present being cleared.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 26

Classified vegetation within this plot is comprised of grasses.

Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (e) due to all remnant vegetation present being cleared.



Plot 6 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 27

Classified vegetation within this plot is comprised of grasses.

Slope under this plot was assessed as upslope/flat land.

*Post-clearance this patch of vegetation can be excluded under Clause 2.2.3.2 (e) due to all remnant vegetation present being cleared.



Appendix B – Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas v 1.4* (WAPC 2021).

Every habitable building is to be surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

a. Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL-29) in all circumstances.

b. Location: the APZ should be contained solely within the boundaries of the lot on which a building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).

c. Management: the APZ is managed in accordance with the requirements of ‘*Standards for Asset Protection Zones*’ (below):

- Fences within the APZ:
 - Should be constructed from non-combustible materials 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); and
 - Mulches should be non-combustible (e.g. 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 overhand 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; and
 - 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.

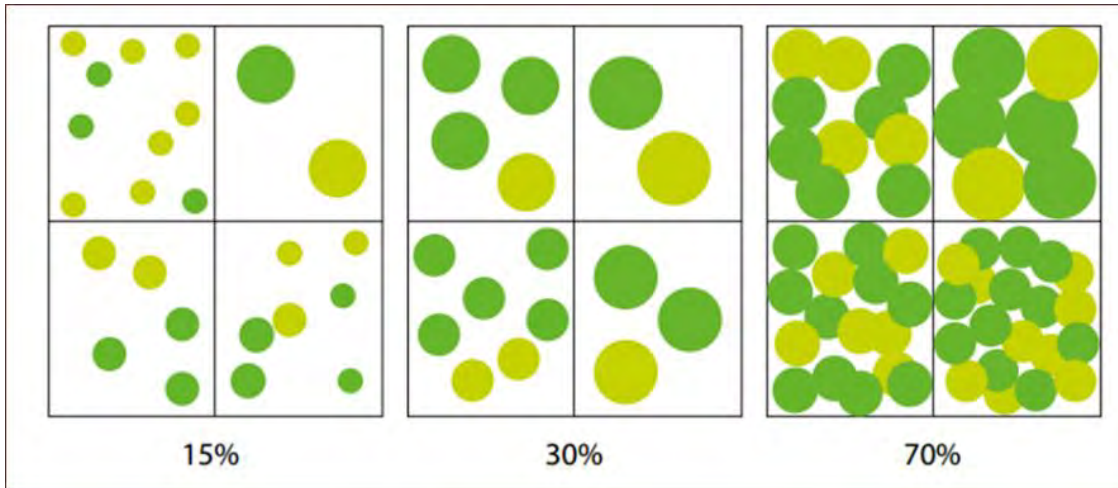


Figure 8: Illustrated tree canopy cover projection (WAPC 2021)

- Shrub and scrub 0.5 metres to six metres in height (shrub or 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; and
 - 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; and
 - 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; and
 - 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; and
 - Must site on a firm, level and non-combustible base and be secured to a solid structure.

Additional notes

The Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. Hazard separation in the form of using subdivision design elements or excluded and low threat vegetation adjacent to the lot may be used to reduce the dimensions of the APZ within the lot.

The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

Plant flammability, landscaping design and maintenance should also be considered for trees, shrub, scrub and ground covers within the APZ. Please refer to explanatory notes 'E2 Managing an Asset Protection Zone (APZ) to a low threat state,' 'E2 Landscaping and design of an asset protection zone,' and 'E2 Plant flammability' in the Guidelines for further information relating to APZ standards.

Appendix C - Vehicular access technical requirements (WAPC 2021)

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

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

