Bushfire Management Plan
Subdivision application: Stage 1 of Catalina Grove, Clarkson

Tamala Park Regional Council

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BPAD Bushfire Planning & Design Accredited Practitioner Level 3

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DOCUMENT TRACKING

Project Name	Bushfire Management Plan: Subdivision application: Stage 1 of Catalina Grove, Clarkson
Project Number	20PER-17913
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Reviewed by	Daniel Panickar (BPAD L3 37802)
Approved by	Daniel Panickar (BPAD L3 37802)
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ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Satterley Property Group and Tamala Park Regional Council.

Template 2.8.1

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1. Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Satterley Property Group, on behalf of Tamala Park Regional Council (TPRC) to prepare a Bushfire Management Plan (BMP) to support a subdivision application being prepared for Stage 1 of Catalina Grove, Clarkson (hereafter referred to as the subject site, Figure 1 and Figure 2).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2019; Figure 3), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) and reporting to accompany submission of the subdivision application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC 2017).

This assessment has been prepared by ELA Bushfire Consultant Stephen Moore, with quality assurance undertaken by 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

Some bushfire prone areas also have high biodiversity values. SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values.

The subject site and surrounding Asset Protection Zone (APZ) will be cleared of vegetation as the part of the proposed subdivision. ELA are not aware of any environmental approvals required to facilitate this clearing. If areas of vegetation are required to be retained through environmental planning or approvals, this BMP will be required to be updated.

No revegetation is proposed within the development, however if this changes, it will be addressed in future BMPs.

The proposed Public Open Space within the subject site will be landscaped such that it represents low threat vegetation (Appendix A).

Figure 1: Site Overview

Legend

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

0 100 200 400
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

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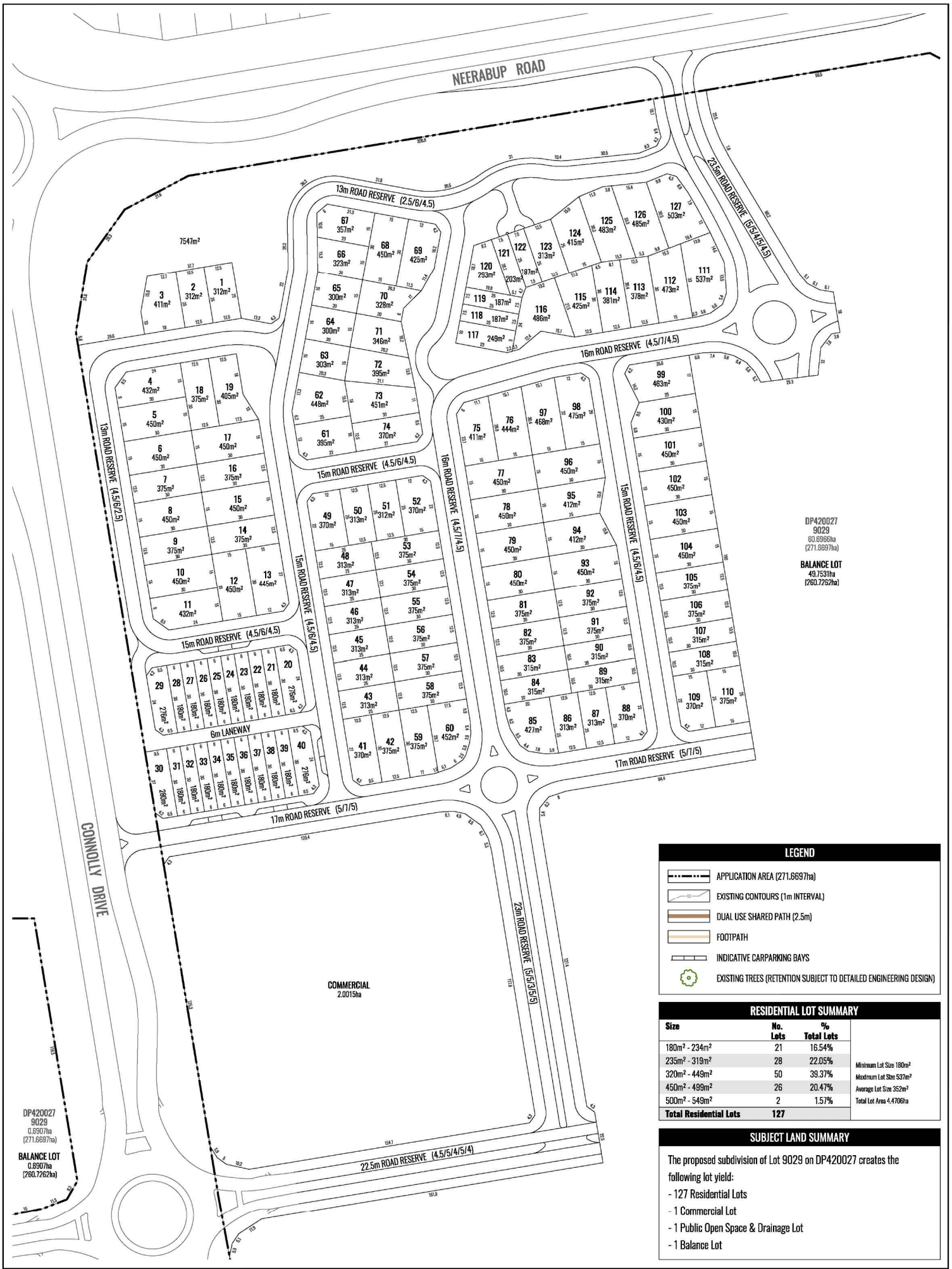
Figure 2: Site Plan



LEGEND

- APPLICATION AREA (271.6697ha)
- EXISTING CONTOURS (1m INTERVAL)
- DUAL USE SHARED PATH (2.5m)
- FOOTPATH
- INDICATIVE CARPARKING BAYS
- EXISTING TREES (RETENTION SUBJECT TO DETAILED ENGINEERING DESIGN)

RESIDENTIAL LOT SUMMARY

Size	No. Lots	% Total Lots
180m² - 234m²	21	16.54%
235m² - 319m²	28	22.05%
320m² - 449m²	50	39.37%
450m² - 499m²	26	20.47%
500m² - 549m²	2	1.57%
Total Residential Lots	**127**	

Minimum Lot Size 180m²
Maximum Lot Size 537m²
Average Lot Size 352m²
Total Lot Area 4.4706ha

SUBJECT LAND SUMMARY

The proposed subdivision of Lot 9029 on DP420027 creates the following lot yield:

- 127 Residential Lots
- 1 Commercial Lot
- 1 Public Open Space & Drainage Lot
- 1 Balance Lot

PROPOSED SUBDIVISION

Lot 9029 Marmion Avenue, TAMALA PARK - PAGE 1 of 2

For Satterley Property Group (A Tamala Park Regional Council Project)

NORTH

Scale: 1:1500 @ A3

0 15 30 45m

PLAN: TAMCA-3-007 REVISION: A
DATE: 29/03/2021 DRAWN: JP
PROJECTION: PCG 94 PLANNER: TV
DATUM: AHD CHECK: JH

cdp
Town Planning & Urban Design

Unit 2, 464 Murray Street
Perth WA 6000
(08) 6333 1888
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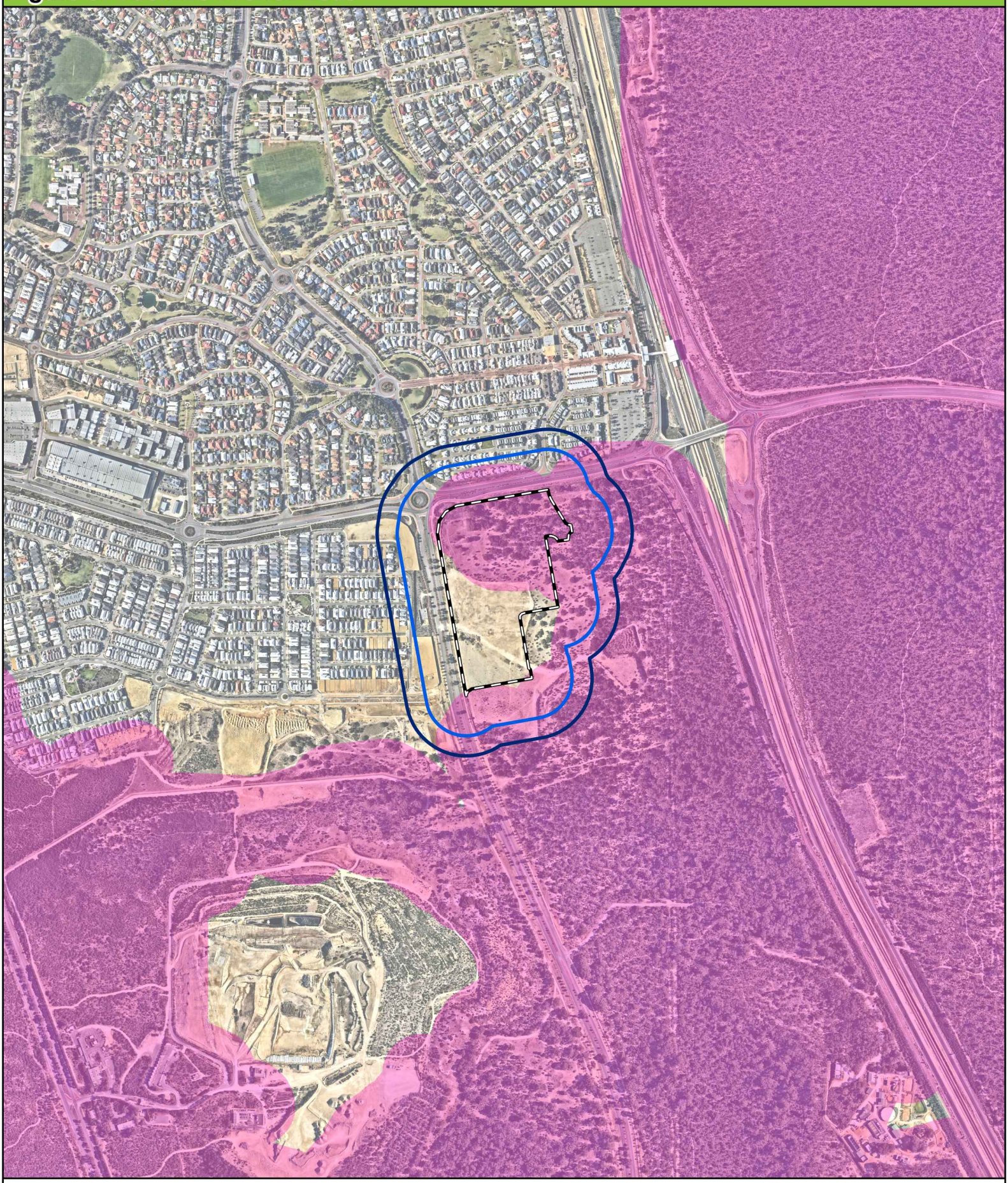
Figure 3: Bushfire Prone Areas



Legend

- Subject site
- 100m site assessment
- 150m site assessment
- Bushfire Prone Mapping (DFES 2019)

0 100 200 400

Metres

Datum/Projection:
GDA 1994 MGA Zone 50

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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 rating of FDI 80 is adopted for Western Australian environments, as outlined in AS 3959–2018 and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.2 Vegetation classification and effective slope

Vegetation within the subject site and surrounding 150 m (the assessment area) was assessed in accordance with the Guidelines and *AS 3959-2018 Construction of Buildings in Bushfire Prone Areas* (SA 2018) with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). ELA undertook a site assessment on 15 January 2021.

The following vegetation classes and exclusions were identified within the assessment area as depicted in Table 1 and Figure 4. Photographs relating to each vegetation type are included in Appendix B**.**

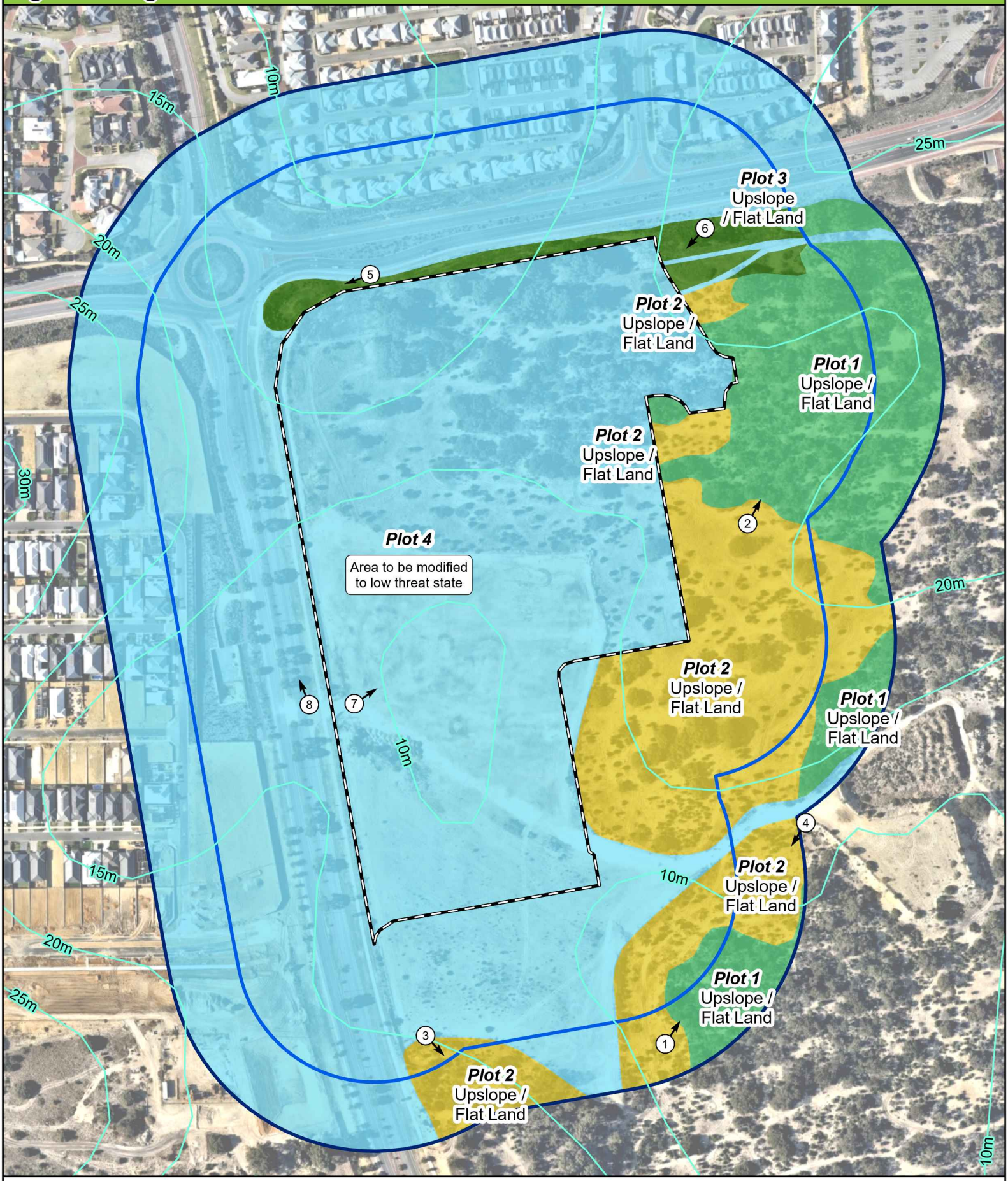
Effective slope under vegetation was assessed for a distance of 150 m from the subject site in accordance with the Guidelines and AS 3959-2018 and is depicted and classified in Table 1 and Figure 4.

Table 1: Vegetation classification

Plot	Vegetation classification	Effective slope
1	Class B woodland	Upslope / flat land (0 degrees)
2	Class D scrub	Upslope / flat land (0 degrees)
3	Class G grassland	Upslope / flat land (0 degrees)
4	Excluded under clause 2.2.3.3 (e) and (f)	Upslope / flat land (0 degrees)

Vegetation outside of the subject site to the east will be cleared and maintained as low threat vegetation as part of the subdivision works to form a required APZ. This clearing is depicted in Figure 5.

Figure 4: Vegetation Classification



Legend

- Subject site
- 100m site assessment
- 150m site assessment
- Contour (5m)
- Photo location

Vegetation classification

- Class B woodland
- Class D scrub
- Class G grassland
- Excluded as per clause 2.2.3.2 (e) and (f)

0 25 50 100
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

N

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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 4 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:

- State adopted 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 5 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed development in accordance with AS 3959-2018 methodology.

Table 2: Method 1 BAL Calculation (BAL contours)

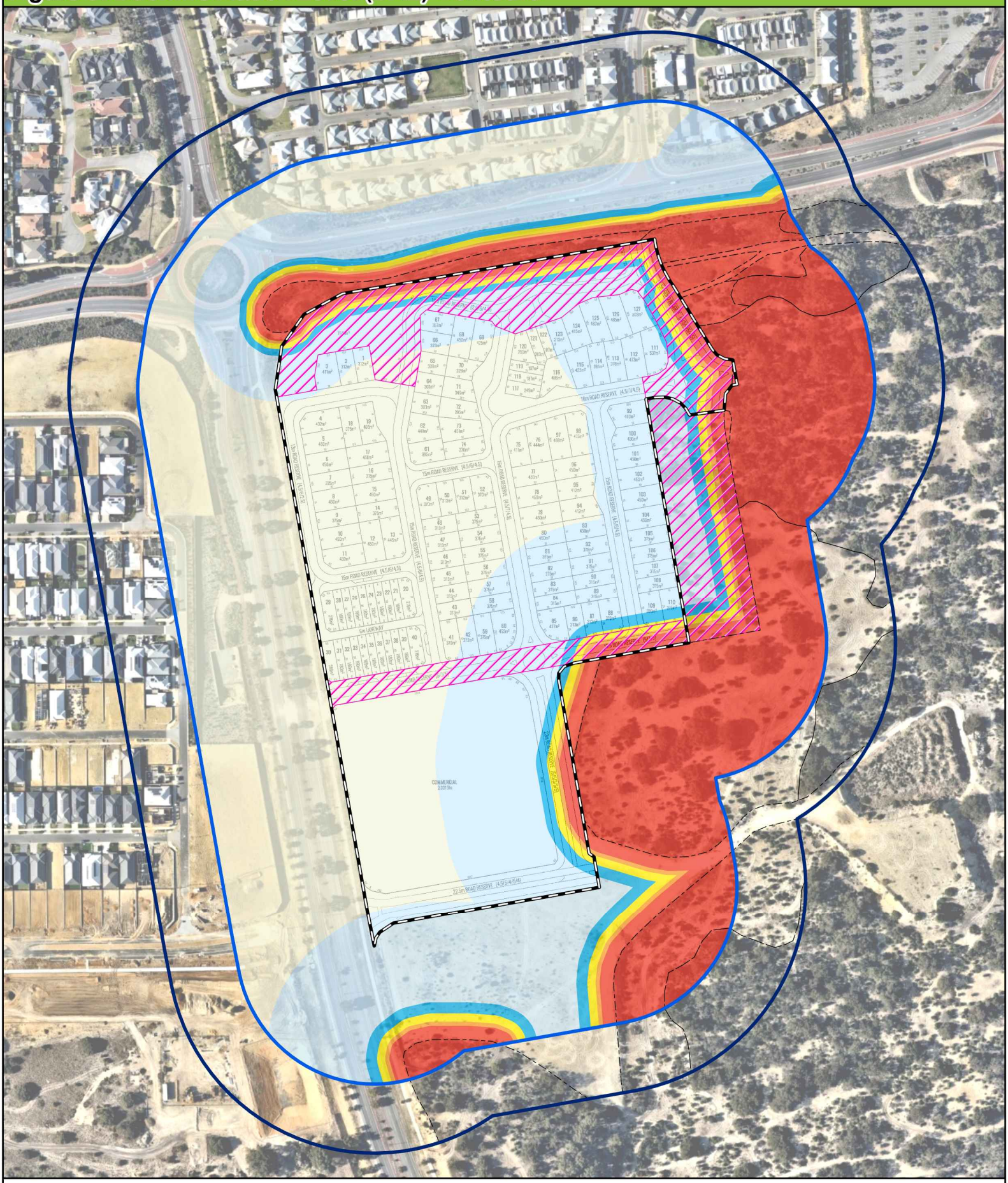
Plot and vegetation classification	Effective slope	Hazard separation distance (m)	BAL rating	Proposed development
Plot 1 Class B woodland	Upslope / flat land	<10	BAL-FZ	No development proposed in this area
		10-<14	BAL-40	No development proposed in this area
		14-<20	BAL-29	No development proposed in this area
		20-<29	BAL-19	Development proposed in this area
		29-<100	BAL-12.5	Development proposed in this area
Plot 2 Class D scrub	Upslope / flat land	<10	BAL-FZ	No development proposed in this area
		10-<13	BAL-40	No development proposed in this area
		13-<19	BAL-29	Development proposed in this area
		19-<27	BAL-19	Development proposed in this area
		27-<100	BAL-12.5	Development proposed in this area
Plot 3 Class G grassland	Upslope / flat land	<6	BAL-FZ	No development proposed in this area
		6-<8	BAL-40	No development proposed in this area
		8-<12	BAL-29	No development proposed in this area
		12-<17	BAL-19	No development proposed in this area
		17-<50	BAL-12.5	Development proposed in this area
Plot 4 Excluded as per clause 2.2.3.2 (e) and (f) of AS 3959-2018	N/A			

2.3 Identification of issues arising from the BAL assessment

Vegetation outside of the subject site, to the east will be cleared and maintained as low threat vegetation as part of the subdivision works to form a required APZ. The developer owns the landholdings within this proposed clearing area. The proposed clearing area will be managed as an APZ or in such a way that results in vegetation being able to be excluded as per clause 2.2.3.2 of AS 3959-2018 until the land is developed for residential purposes and the bushfire threat is removed. Following this management, all lots within the subject site will be exposed to BAL ratings of ≤BAL-29.

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.

Figure 5: Bushfire Attack Level (BAL) Contours



Legend

- Subject site
- 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

0 25 50 100
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

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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.

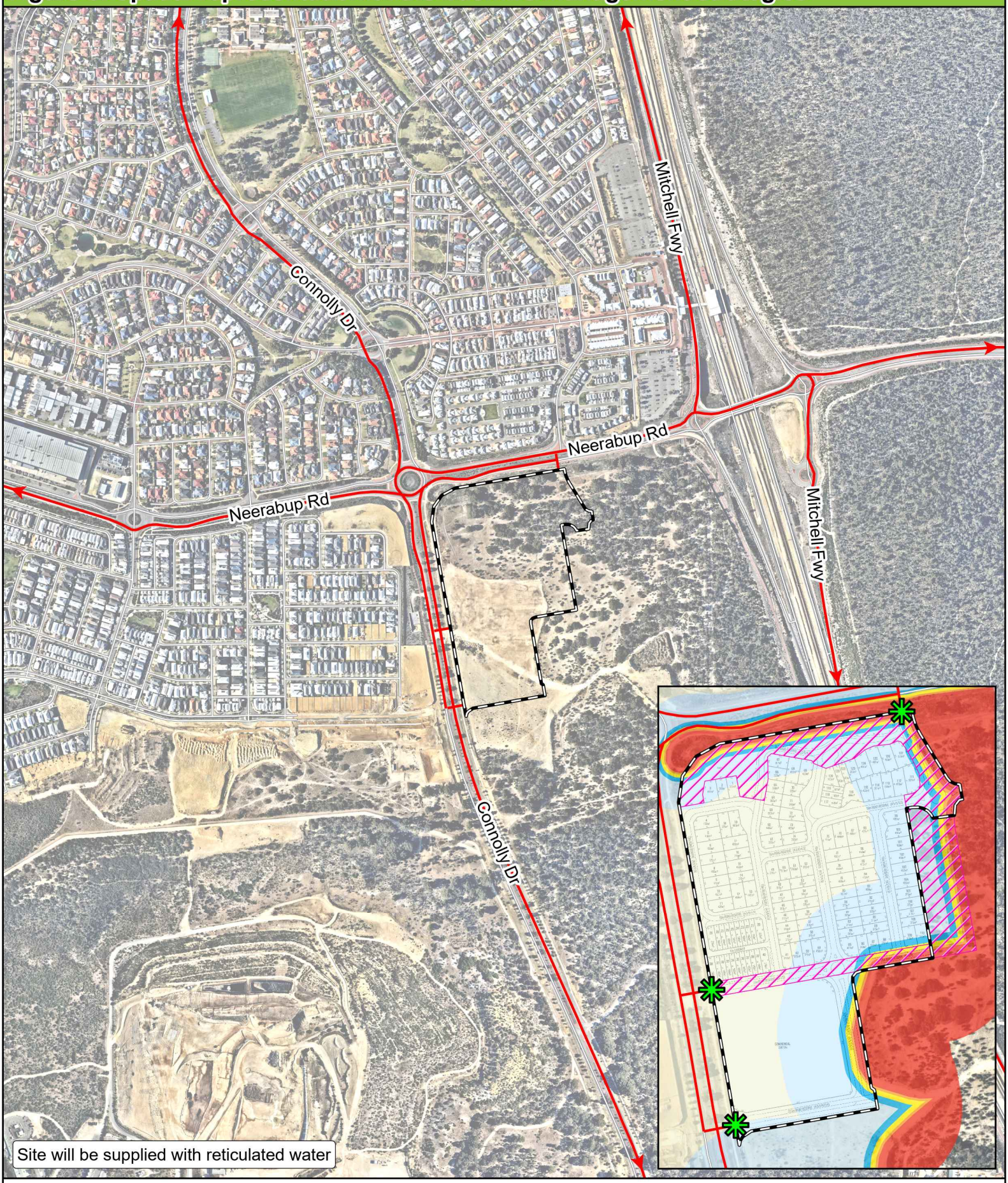
In response to the above requirements of SPP 3.7 and the Guidelines, bushfire management measures, as outlined, have been devised for the proposed development in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 3: Summary of solutions used to achieve bushfire performance criteria

Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location	☒	☐	☐	Post-clearing and development, all proposed residential lots will be located in areas subject to BAL ratings of BAL-29 or lower (Figure 5; Figure 6). The proposed development is considered to be compliant with A1.1.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	☒	☐	☐	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 2017; Figure 6;Appendix C) The APZ can be contained within the boundaries of the lot or managed in perpetuity in a low fuel state. The proposed development is considered to be compliant with A2.1.
Element 3: Vehicular access A3.1 Two access routes	☒	☐	☐	The subject site will be serviced by a minimum of three access routes to and from the subject site. Access is comprised of: • Two formal access routes onto Connolly Drive; and • One formal access route onto Neerabup Road (Figure 6) All roads will comply with requirements outlined in the Guidelines (Appendix D). The proposed development is considered to be compliant with A3.1.

Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 3: Vehicular access A3.2 Public road	☒	☐	☐	All public roads will comply with vehicular access requirements in the Guidelines (Appendix D). The proposed development is considered to be compliant with A3.2.
Element 3: Vehicular access A3.3 Cul-de-sac	☐	☐	☒	No cul-de-sacs are proposed as part of this development.
Element 3: Vehicular access A3.4 Battle-axe	☐	☐	☒	No battle axe lots are proposed.
Element 3: Vehicular access A3.5 Private Driveway longer than 50 m	☐	☐	☒	No private driveways longer than 50 m are proposed.
Element 3: Vehicular access A3.6 Emergency Access way	☐	☐	☒	No Emergency Access Ways are proposed or required as part of this development.
Element 3: Vehicular access A3.7 Fire-service access routes	☐	☐	☒	No fire service access routes are proposed or required as part of this development.
Element 3: Vehicular access A3.8 Firebreak width	☐	☐	☒	No firebreaks are proposed or required as part of this development.
Element 4: Water A4.1 Reticulated areas	☒	☐	☐	The subject site has a reticulated water supply that will be extended to all proposed lots. The proposed development is considered to be compliant with A4.1. A4.2 and A4.3 are not applicable to this proposed development.

Figure 6: Spatial representation of the bushfire management strategies



Legend

- Subject site
- Access point *(Refer to inset)
- Access / egress route
- Asset Protection Zone (APZ)

Bushfire Attack Level (BAL)

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

0 75 150 300
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

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4. Implementation and enforcement

Implementation of the BMP applies to Tamala Park Regional Council and City of Wanneroo 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 4. 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 4: Proposed work program

No	Bushfire management measure	Responsibility
Prior to issue of Titles		
1	Clear and maintain APZs depicted in Figure 6	Tamala Park Regional Council and City of Wanneroo
2	Ensure that APZs (to achieve BAL ratings ≤BAL-29 for all proposed lots) are cleared around each stage of subdivision if the entirety of the development depicted in Figure 6 is not developed in a single stage.	Tamala Park Regional Council
3	Provide reticulated water supply to each lot	Tamala Park Regional Council
4	Construct all public roads as per the design in Figure 6 and to the standards in the Guidelines.	Tamala Park Regional Council
5	Place Section 165 notification on title of all Lots within Bushfire Prone Areas	Tamala Park Regional Council
6	Comply with current City of Wanneroo fire control order	Tamala Park Regional Council
Prior to sale or occupancy		
7	Maintain APZs to standards in Appendix C	Tamala Park Regional Council until development completion
8	Construct future buildings to relevant construction standard in AS 3959–2018.	Builders
9	Comply with current City of Wanneroo fire control order	Tamala Park Regional Council until development completion
Ongoing management		
10	Maintain APZs to standards in Appendix C	Individual landowners (within property) City of Wanneroo (within public reserves)
11	Comply with current City of Wanneroo fire control order	Individual landowners (within property) City of Wanneroo (within 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 development. As such, the proposed development is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.

6. References

Department of Fire and Emergency Services (DFES). *2019. Map of Bush Fire Prone Areas, [Online]*, Government of Western Australia, available from: http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx

Department of Planning (DoP). 2016. *Visual guide for bushfire risk assessment in Western Australia*. DoP, Perth.

Standards Australia. 2018. *Construction of buildings in bushfire-prone areas, AS 3959-2018*. SAI Global, Sydney.

Western Australian Planning Commission (WAPC). 2015. *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. WAPC, Perth.

Western Australian Planning Commission (WAPC). 2017. *Guidelines for Planning in Bushfire Prone Areas Version 1.3 (including appendices).* WAPC, Perth.

Appendix A - Landscaping Plan

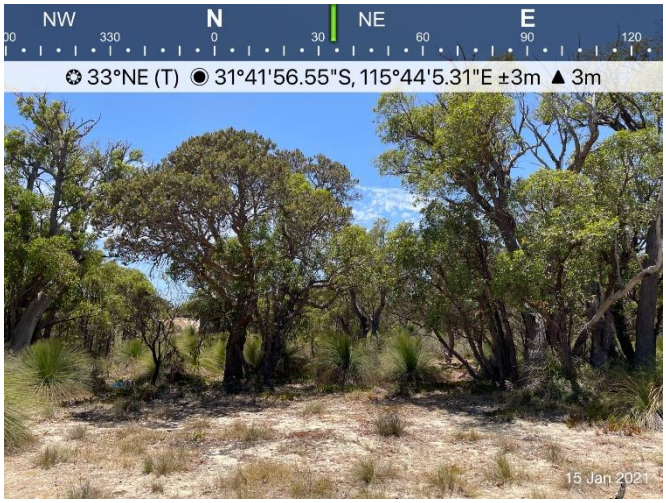
Appendix B - Classified Vegetation Photos

Plot	1	Classification or Exclusion Clause	Class B woodland

Photo Point 1

Classified vegetation within this plot is comprised of trees 10m-30m tall with approximately 10%-30% foliage cover over tall shrubs.

Slope under the vegetation has been assessed as upslope/flat land.



Plot	1	Classification or Exclusion Clause	Class B woodland

Photo Point 2

Classified vegetation within this plot is comprised of trees 10m-30m tall with approximately 10%-30% foliage cover over tall shrubs.

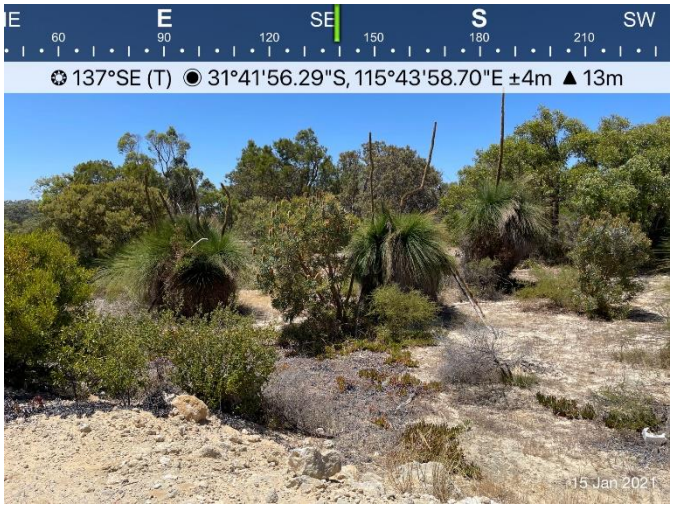
Slope under the vegetation has been assessed as upslope/flat land.

Plot	2	Classification or Exclusion Clause	Class D scrub

Photo Point 3

Classified vegetation within this plot is comprised of shrubs >2 m high with greater than 30% foliage cover. Vegetation is predominantly comprised of exotic shrubs and grasses.

Slope under the vegetation has been assessed as upslope/flat land.



Plot 2	Classification or Exclusion Clause	Class D scrub

Photo Point 4

Classified vegetation within this plot is comprised of shrubs >2 m high with greater than 30% foliage cover. Vegetation is predominantly comprised of exotic shrubs and grasses.

Slope under the vegetation has been assessed as upslope/flat land.

Plot 3	Classification or Exclusion Clause	Class G grassland

Photo Point 5

Classified vegetation within this plot is comprised of exotic grasses.

Slope under the vegetation has been assessed as upslope/flat land.

Vegetation cover is very limited, however as the land is outside of the control of the developer, a conservative classification has been adopted.

Plot 3	Classification or Exclusion Clause	Class G grassland

Photo Point 6

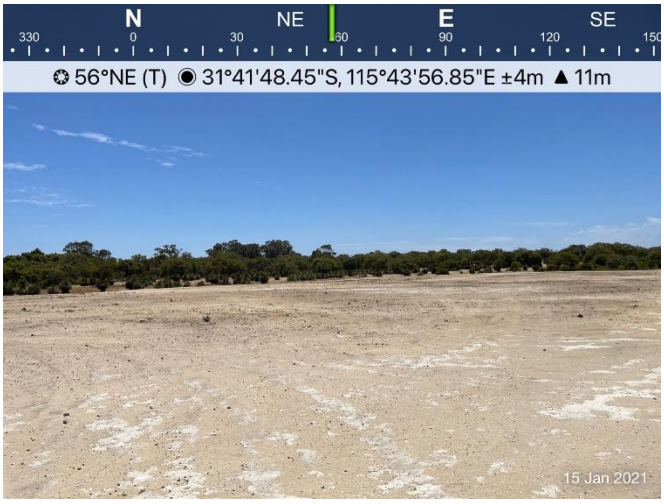
Classified vegetation within this plot is comprised of exotic grasses.

Slope under the vegetation has been assessed as upslope/flat land

Plot	4	Classification or Exclusion Clause	Excluded – clause 2.2.3.2 (e) & (f)

Photo Point 7

This plot has been excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2018. This photo depicts the subject site and surrounding development.



Plot	4	Classification or Exclusion Clause	Excluded – clause 2.2.3.2 (e) & (f)

Photo Point 8

This plot has been excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2018. This photo depicts roads and a managed nature strip adjacent to the subject site.

Appendix C - Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas v 1.2* (WAPC 2017).

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 are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used
- Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors
- Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare
- Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy (**Figure 7**).

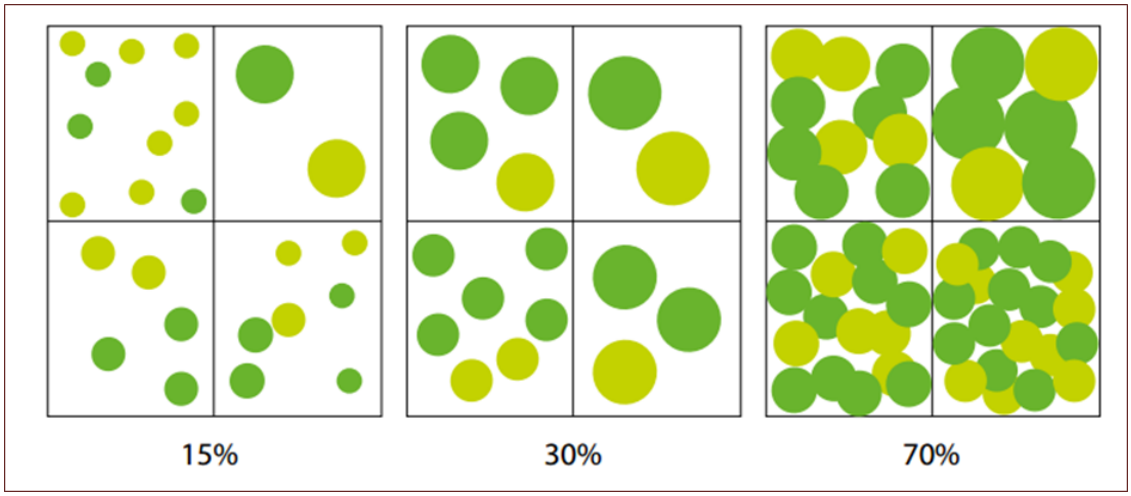


Figure 7: Illustrated tree canopy cover projection (WAPC 2017)

- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

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.

Appendix D - Vehicular access technical requirements (WAPC 2017)

Technical requirements	Public road	Cul-de-sac	Private driveway	Emergency access way	Fire service access route
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal distance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 m	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius	8.5	8.5	8.5	8.5	8.5
* Refer to E3.2 Public roads: Trafficable surface					

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