Bushfire Management Plan:
Structure Plan: East Newman

Creating Communities

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A TETRA TECH COMPANY

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

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DOCUMENT TRACKING

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Template 2.8.1

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Version	**Purpose**
v1	Draft – Submission to client

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1. Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Creating Communities to prepare a Bushfire Management Plan (BMP) to support a Structure Plan for East Newman (hereafter referred to as the subject site, Figure 1). The proposed structure plan will result in an intensification of land use and includes an estimated: 378 current residential lots, 146 proposed redevelopment lots, 13 community use lots, five existing Public Access Ways (PAW), six proposed PAW, one Public Open Spaces (POS) area and five proposed redeveloped POS areas (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 2021 Figure 3), 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 in East Newman within the Shire of East Pilbara between the Great Northern Highway to the east and McLennan Drive and Newman Drive to the west. The subject site is currently comprised of areas of managed parkland vegetation, residential housing and cleared areas as well as classifiable native vegetation and unmanaged, previously cleared areas.

This assessment has been prepared by ELA Bushfire Consultant Maitland Ely 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.

The proposed hospital within the subject site is categorised as a vulnerable land use as per the definitions within the Guidelines. This vulnerable land use has been addressed broadly in this BMP and will be assessed in greater detail in future planning applications (e.g. subdivision or development applications).

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.

Majority of the subject site has been previously cleared with residential housing and Public Open Spaces (POS) areas established. No revegetation is proposed within the development and landscaping will be maintained in a low-threat state. Areas of native vegetation onsite were present with multiple large patches proposed to remain. Changes to this assumption can be addressed through future BMPs prepared to support more detailed planning applications (e.g. subdivision applications etc.).

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

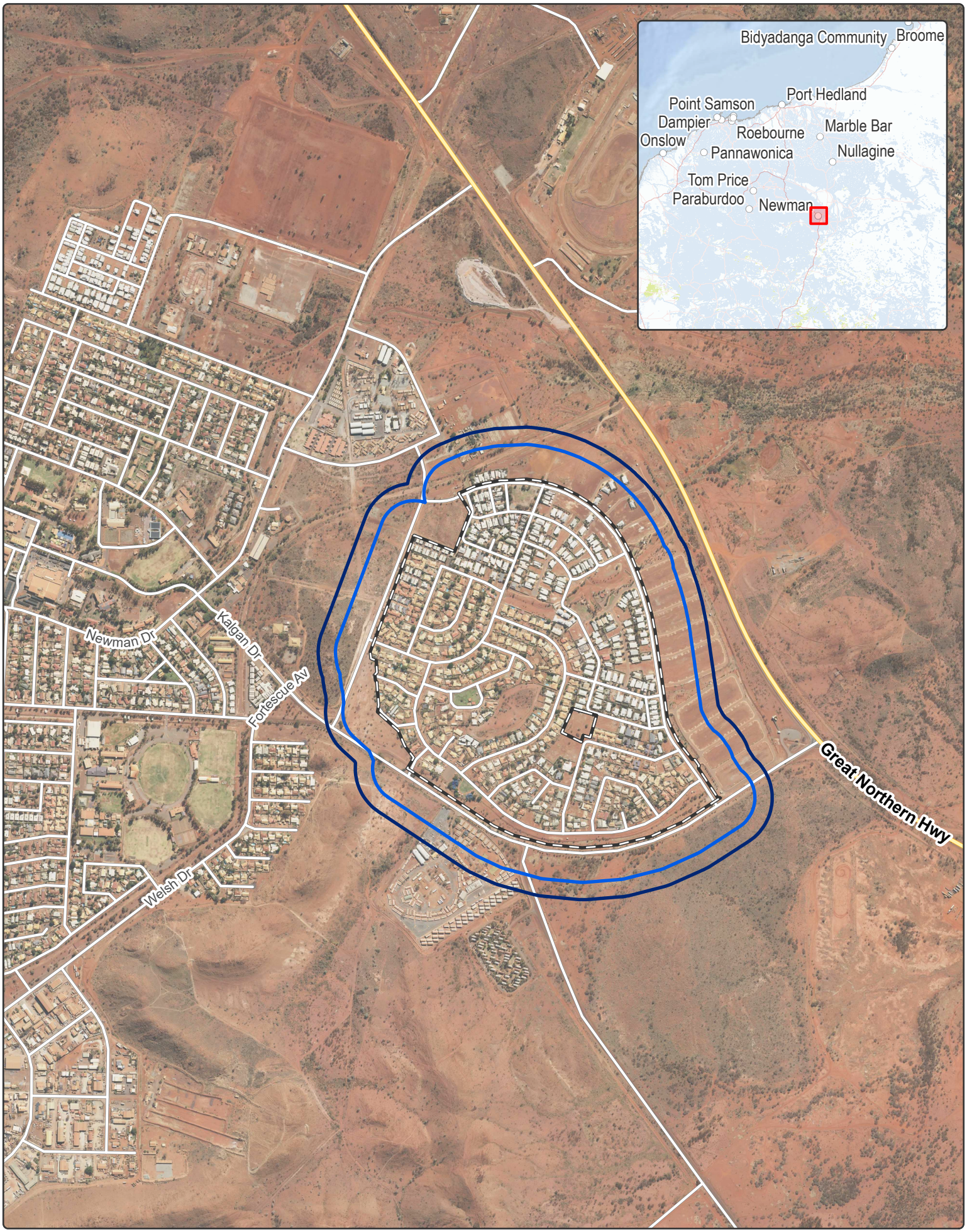

Figure 1: Site Overview

Subject site

100m site assessment

150m site assessment

N

0 125 250 500

Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2622-DD Date: 21/09/2022

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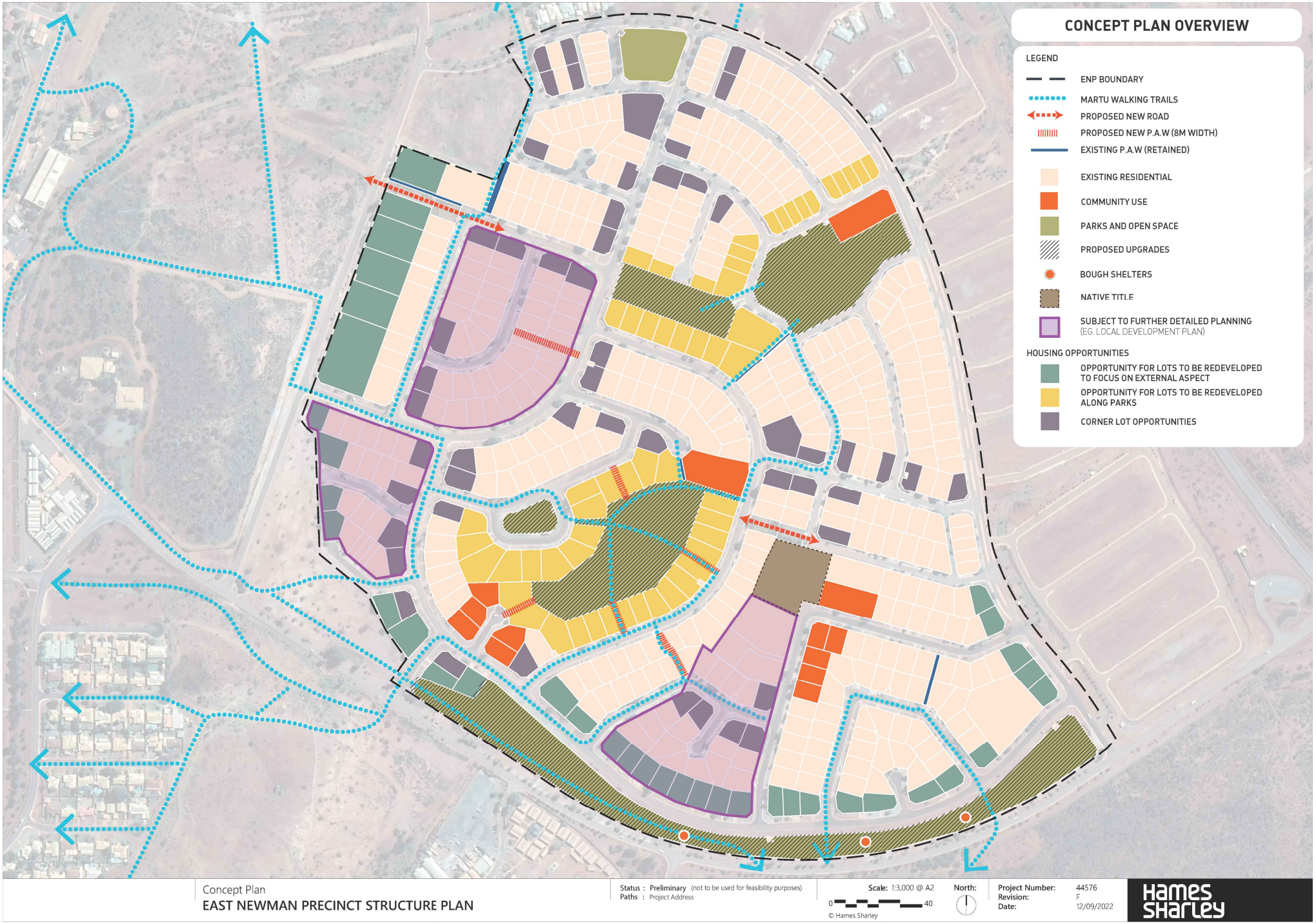

Figure 2: Site Plan

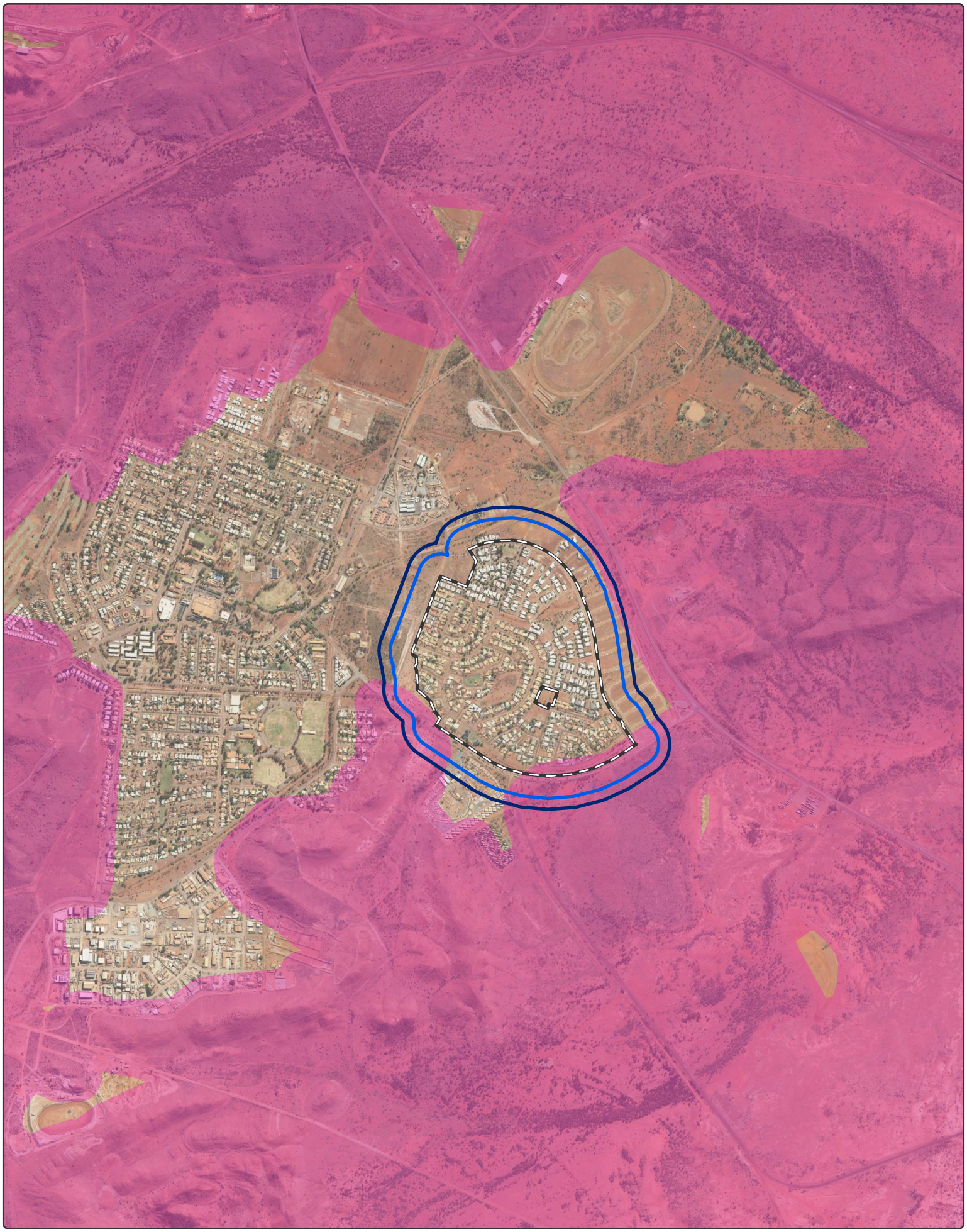

Figure 3: Bushfire Prone Areas

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

N

0 200 400 800
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2622-DD Date: 21/09/2022

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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 July 2022.

The classified vegetation and effective slope for the site / proposed development from each of the identified vegetation plots are identified below in Table 1 and Figure 4.

Table 1: Classified vegetation as per AS 3959: 2018

Plot	Vegetation Classification	Effective Slope
1	Class A Forest	All upslopes and flat land (0 degrees)
2	Class B Woodland	All upslopes and flat land (0 degrees)
3	Class C Shrubland	All upslopes and flat land (0 degrees)
4	Class D Scrub	All upslopes and flat land (0 degrees)
5	Class E Mallee	All upslopes and flat land (0 degrees)
6	Class G Grassland	All upslopes and flat land (0 degrees)
7	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	All upslopes and flat land (0 degrees)

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

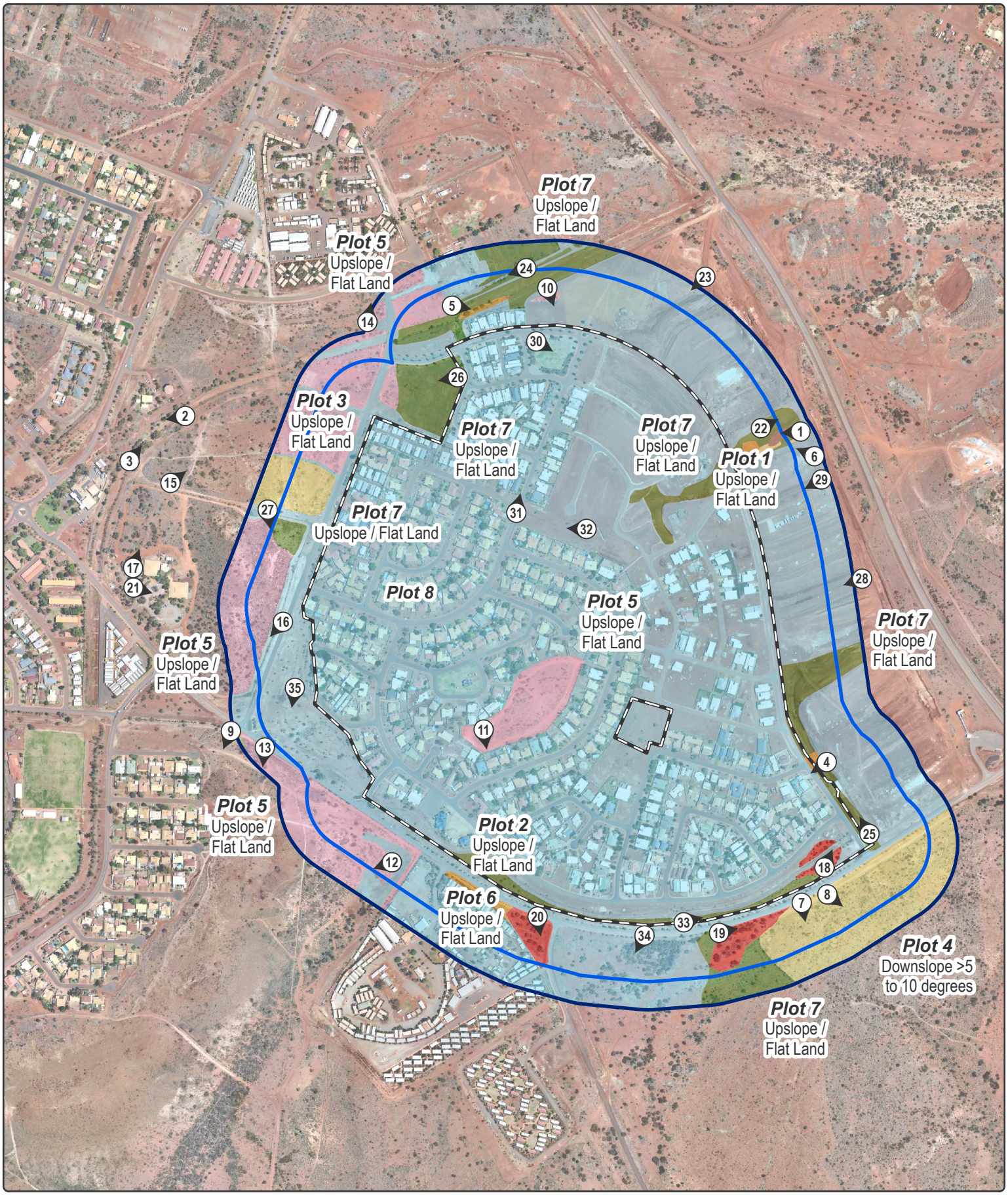

Figure 4: Vegetation Classification

Subject site
100m site assessment
150m site assessment

Vegetation classification

- Class A forest
- Class B woodland
- Class C shrubland
- Class D scrub
- Class E mallee/mulga
- Class G grassland
- Excluded as per clause 2.2.3.2 (e) and (f)

0 80 160 320
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2622-DD Date: 21/09/2022

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:

- 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 structure plan in accordance with AS 3959: 2018 methodology.

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	All upslopes and flat land (0 degrees)	<16	16-<21	21-<31	31-<42	42-<100
2	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10-<14	14-<20	20-<29	29-<100
3	Class C Shrubland	All upslopes and flat land (0 degrees)	<7	7-<9	9-<13	13-<19	19-<100
4	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10-<13	13-<19	19-<27	27-<100
5	Class E Mallee	All upslopes and flat land (0 degrees)	<6	6-<8	8-<12	12-<17	17-<100
6	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6-<8	8-<12	12-<17	17-<50
7	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)	-	No separation distances required – BAL-LOW				

2.3 Identification of issues arising from the BAL assessment

Two lots are subject to BAL-FZ and BAL-40, however both of these are existing properties with established dwellings and reductions to the bushfire risk is not possible due to the classifiable vegetation affecting BALs being situated within an area subject to Native Title.

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.

The subject site has areas of natural vegetation onsite that have not been managed for a number of years. There are several existing fire breaks onsite and plots of vegetations with cleared or gravelled understorey within and surrounding the subject site. In future, management of fuel loads and onsite vegetation may reduce the potential bushfire risk and reduction of radiant heat affecting the development.

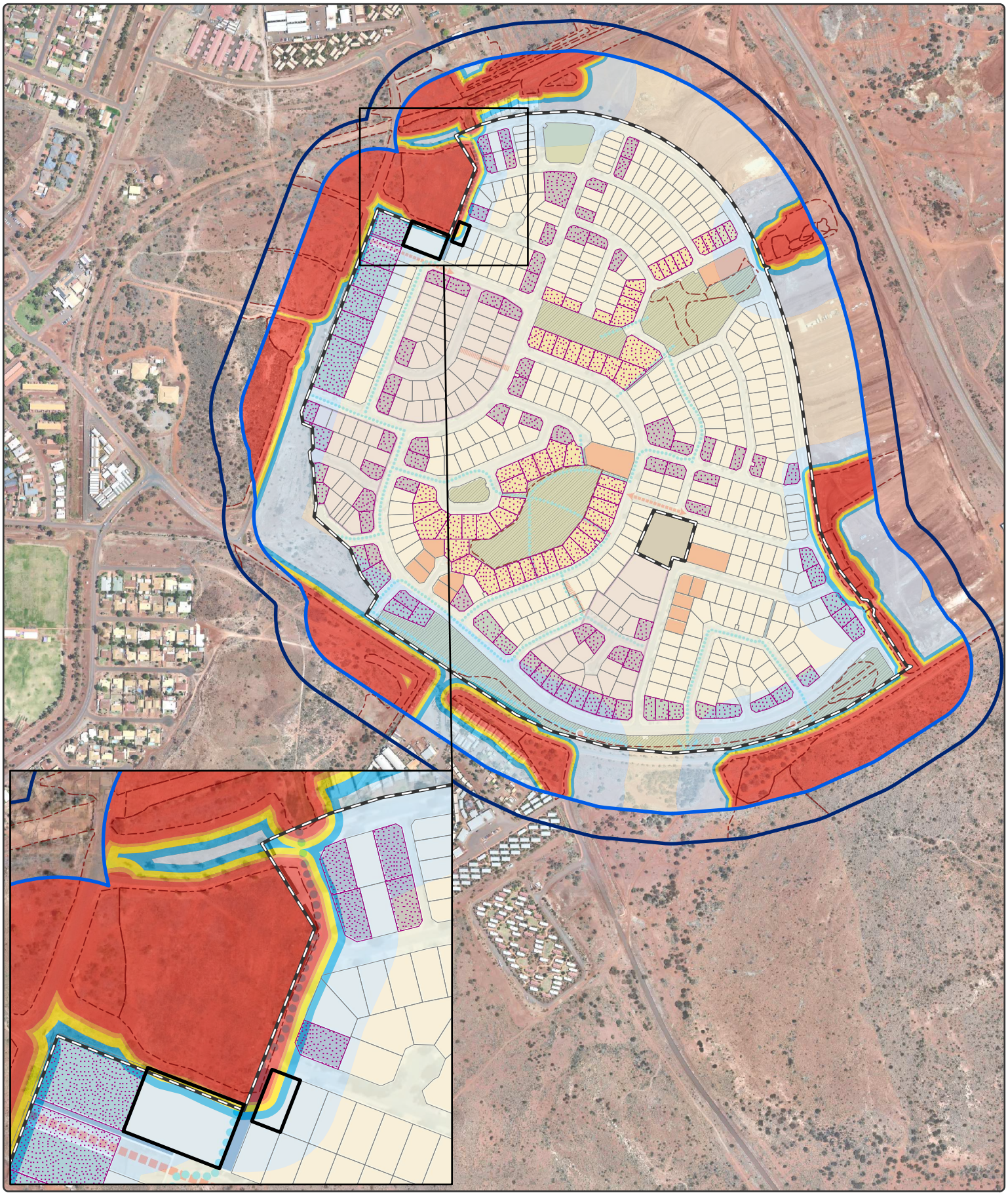

Figure 5: Bushfire Attack Level (BAL) Contours

- Subject site
- 100m site assessment
- 150m site assessment
- Lot boundary
- Housing opportunities
- BAL-40 and BAL-FZ Lots
- Bushfire hazard interface

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

22PER2622-DD Date: 21/09/2022

N

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3. Assessment against the Bushfire Protection Criteria

3.1 Compliance

The proposed structure plan is required to comply with policy measures 6.2, 6.3 and 6.6 (for the proposed hospital only) 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 structure plan in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

Table 3 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 6 where relevant.

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

Bushfire Protection Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location	☒	☐	☐	Two existing properties with establish dwellings are subject to BAL-FZ and BAL-40. Reduction of bushfire risk to these lots is not possible due to the classifiable vegetation affecting BALs being situated within an area subject to Native Title. The remaining existing lots, all proposed redevelopment lots and community use lots within the subject site will be location in an area subject to BAL rating of ≤BAL-29 (Figure 6). Please refer to A3.2 below for further details regarding remaining remnant vegetation. The proposed development is considered to be compliant with A1.1 as all newly proposed lots are situated within areas subject to BAL ratings ≤BAL-29.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	☒	☐	☐	The proposed development can accommodate APZs sufficient for the potential radiant heat flux to not exceed 29K/m² for all redevelopment and community use lots 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. Two existing lots are subject to BAL-FZ and BAL-40, however this risk cannot be lowered as discussed above in A1.1. The proposed development is considered to be compliant with A2.1 as all newly proposed lots are situated within areas that can accommodate an APZ ensuring that BAL exposure is limited to ≤BAL-29.
Element 3: Vehicular access	☒	☐	☐	The subject site is accessed via existing public roads. The Guidelines do not prescribe values for the

Bushfire Protection Criteria	AS	PS	N/A	Comment
A3.1 Public Roads				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's assessment identified that all of the surrounding roads 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. Vehicular access technical requirements in accordance with the Guidelines are detailed in Appendix C. No public roads are proposed as a part of this development. The proposed development is considered to be compliant with A3.1.
A3.2a Multiple access routes	☒	☐	☐	Two access routes from the subject site to two suitable destinations are available via the existing public road network (Figure 6). Kalgan Drive and McLennan Drive extend away from the subject site and either directly connect up with the Great Northern Highway (Kalgan Drive) or through the extension Cowra Drive and Newman Drive. Great Northern Highway extends off to the North and South. Please refer to A3.1 above for details regarding vehicular access technical requirements for public roads. The proposed development is considered to be compliant with A3.2a.
A3.2b Emergency Access way	☐	☐	☒	No emergency access ways are required or proposed.
A3.3 Through-roads	☒	☐	☐	All roads currently present within subject site are through roads, and no new roads are proposed as a part of this development. The proposed development is considered to be compliant with A3.3.
A3.4a Perimeter roads	☒	☐	☐	Current roads present within the subject site formulate a perimeter road. The proposed development is considered to be compliant with A3.4.
A3.4b Fire service access route	☐	☐	☒	No fire-fire service access routes are required or proposed.
A3.5 Battle-axe access legs	☐	☐	☒	No battle-axe properties are proposed as a part of this development.

Bushfire Protection Criteria	AS	PS	N/A	Comment
A3.6 Private driveways	☐	☐	☒	This acceptable solution does not apply to Structure Plans where lot layout is known.
Element 4: Water A4.1 Identification of future water supply	☐	☐	☒	This acceptable solution does not apply to Structure Plans where lot layout is known.
A4.2 Provision of water for firefighting purposes	☒	☐	☐	Existing reticulated water is present within the area. ELA assume the hydrants and the existing reticulated water supply present in the area likely complies with Water Corporations Design Standard DS 63 Water Reticulation Standard, however, recommend this is confirmed with the Water Corporation, where possible. Hydrants within the surrounding residential development are generally spaced approximately 100 m apart) as depicted in Figure 6. The proposed development is considered to be compliant with A4.2.
Element 5: Vulnerable tourism land uses	☐	☐	☒	This development application is not considered vulnerable tourism land use. Element 5 is not applicable to this proposed development.

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

3.2 Additional Bushfire Requirements

Future development of the proposed WDLAC Youth Hospital will require an updated BMP and Bushfire Emergency Evacuation Plan.

At this stage of planning, there are no detailed revegetation or landscaping plans for the subject site, and it has been assumed that these areas will be maintained in a low-threat state. Changes to this assumption can be addressed through future BMPs prepared to support more detailed planning applications (e.g. subdivision applications etc.).

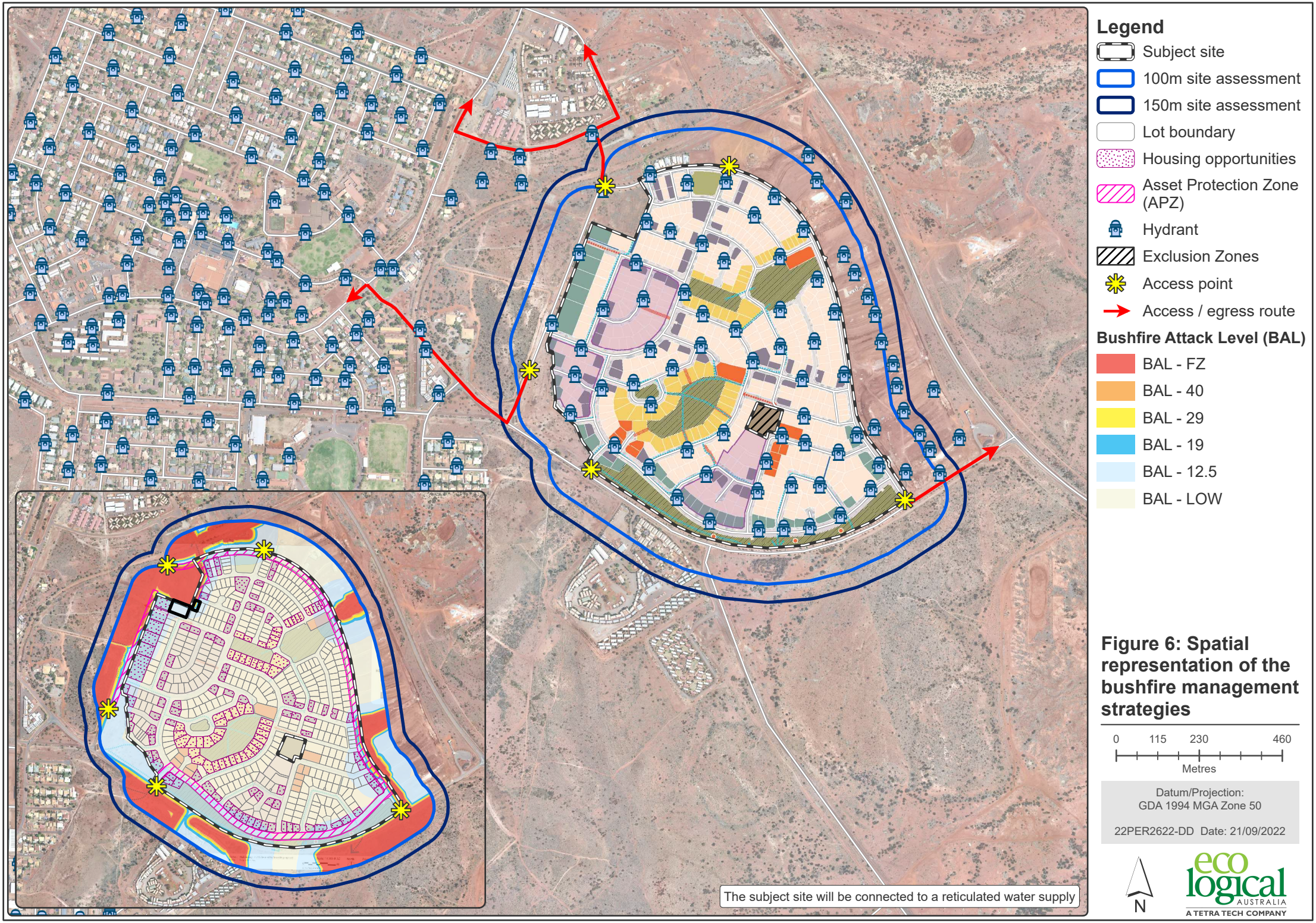


Figure 6: Spatial representation of the bushfire management strategies

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. This BMP has been prepared as a strategic guide to demonstrate how development compliance will be delivered at future planning stages in accordance with the Guidelines. In this respect, management measures documented in Section 3, where applicable, will be incorporated into development design as early as possible and confirmed through subdivision design. Therefore, aside from the revision of this BMP or preparation of a BMP addendum to accompany future subdivision applications, there are no further items to implement, enforce or review at this stage off the planning process.

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 structure plan. As such, the proposed structure plan 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), 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

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

Standards Australia (SA), 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), 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

Photo Point 1

Classified vegetation within this plot is comprised of trees that could grow up to 30 m high with foliage cover >30%. Understory is comprised of shrubs and grasses.

2 m height pole present within the associated photo.

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

Plot	1	Classification or Exclusion Clause	Class A Forest

Photo Point 2

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

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

Plot	2	Classification or Exclusion Clause	Class A Forest

Photo Point 3

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

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

Plot 2	Classification or Exclusion Clause	Class B Woodland

Photo Point 4

Classified vegetation within this plot is comprised of trees that can grow up between 10 m and 30 m tall with 10%-30% foliage cover. Understory is comprised of grasses.

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

Plot 2	Classification or Exclusion Clause	Class B Woodland

Photo Point 5

Classified vegetation within this plot is comprised of trees 10 m and 30 m tall with 10%-30% foliage cover. Understory is comprised of grasses.

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

Plot 3	Classification or Exclusion Clause	Class C Shrubland

Photo Point 6

Classified vegetation within this plot is comprised of shrubs <2 m high with greater than 30% foliage cover. Isolated solo standing trees present within this plot.

2 m height pole present within the associated photo.

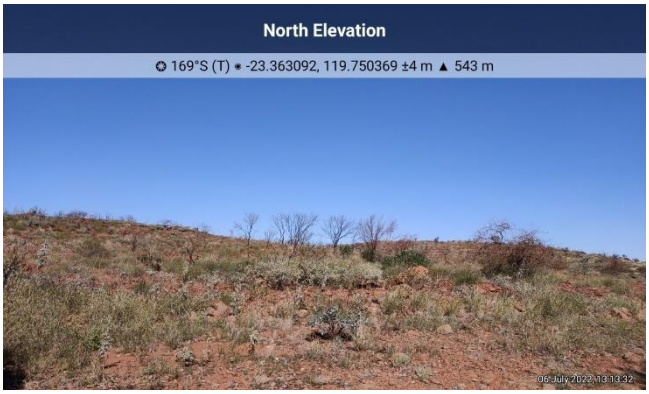
Slope under this vegetation was assessed as upslope/flat land.

Plot 3	Classification or Exclusion Clause	Class C Shrubland

Photo Point 7

Classified vegetation within this plot is comprised of shrubs <2 m high with 10% to 30% foliage cover. Isolated shrubs greater than 2 m high present within this plot.

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



Plot 3	Classification or Exclusion Clause	Class C Shrubland

Photo Point 8

Classified vegetation within this plot is comprised of shrubs <2 m high with 10% to 30% foliage cover. Isolated shrubs greater than 2 m high present within this plot.

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

Plot 3	Classification or Exclusion Clause	Class C Shrubland

Photo Point 9

Classified vegetation within this plot is comprised of shrubs <2 m high with 10% to 30% foliage cover. Isolated shrubs greater than 2 m high present within this plot.

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

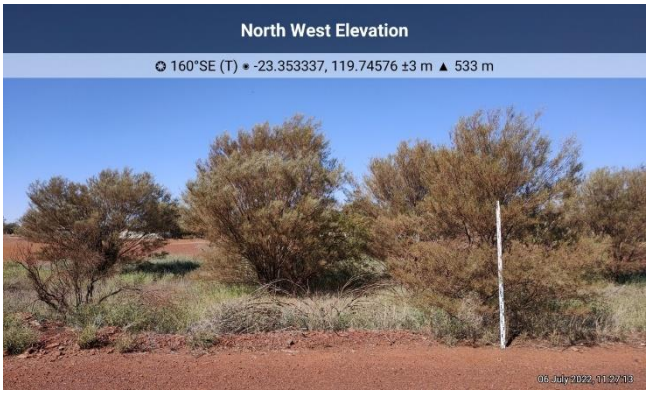
Plot 4	Classification or Exclusion Clause	Class D Scrub

Photo Point 10

Classified vegetation within this plot is comprised of shrubs >2 m high with 10% to 30% foliage cover.

2 m height pole present within the associated photo.

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



Plot 4	Classification or Exclusion Clause	Class D Scrub

Photo Point 11

Classified vegetation within this plot is comprised of shrubs >2 m high with 10% to 30% foliage cover.

2 m height pole present within the associated photo.

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

Plot 4	Classification or Exclusion Clause	Class D Scrub

Photo Point 12

Classified vegetation within this plot is comprised of shrubs either currently or will grow >2 m high with 10% to 30% foliage cover.

2 m height pole present within the associated photo.

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

Plot	4	Classification or Exclusion Clause	Class D Scrub

Photo Point 13

Classified vegetation within this plot is comprised of shrubs >2 m high with 10% to 30% foliage cover.

2 m height pole present within the associated photo.

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

Plot	4	Classification or Exclusion Clause	Class D Scrub

Photo Point 14

Classified vegetation within this plot is comprised of shrubs >2 m high with 10% to 30% foliage cover. Isolated solo standing trees present within this plot.

2 m height pole present within the associated photo.

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

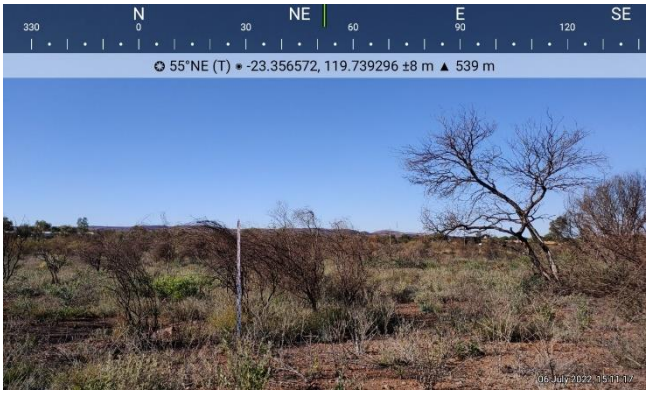
Plot	4	Classification or Exclusion Clause	Class D Scrub

Photo Point 15

Classified vegetation within this plot is comprised of shrubs >2 m high with 10% to 30% foliage cover.

2 m height pole present within the associated photo.

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



Plot 4	Classification or Exclusion Clause	Class D Scrub

Photo Point 16

Classified vegetation within this plot is comprised of shrubs >2 m high with 10% to 30% foliage cover.

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

Plot 4	Classification or Exclusion Clause	Class D Scrub

Photo Point 17

Classified vegetation within this plot is comprised of shrubs >2 m high with 10% to 30% foliage cover. Isolated solo standing trees present within this plot.

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

Plot 5	Classification or Exclusion Clause	Class E Mallee

Photo Point 18

Classified vegetation within this plot is comprised of low trees >2 m high with<30% foliage cover. Understory is comprised of sparse grasses.

2 m height pole present within the associated photo.

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

Plot 5	Classification or Exclusion Clause	Class E Mallee

Photo Point 19

Classified vegetation within this plot is comprised of low trees >2 m high with<30% foliage cover. Understory is comprised of sparse grasses.

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

Plot 5	Classification or Exclusion Clause	Class E Mallee

Photo Point 20

Classified vegetation within this plot is comprised of low trees >2 m high with<30% foliage cover. Understory is comprised of sparse grasses.

2 m height pole present within the associated photo.

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

Plot 5	Classification or Exclusion Clause	Class E Mallee

Photo Point 21

Classified vegetation within this plot is comprised of low trees >2 m high with<30% foliage cover. Understory is comprised of sparse grasses.

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

Plot 6	Classification or Exclusion Clause	Class G Grassland

Photo Point 22

Classified vegetation within this plot is comprised of grasses.

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

Plot 6	Classification or Exclusion Clause	Class G Grassland

Photo Point 23

Classified vegetation within this plot is comprised of grasses.

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

Plot 6	Classification or Exclusion Clause	Class G Grassland

Photo Point 24

Classified vegetation within this plot is comprised of grasses with some isolated windbreak trees comprising <10% foliage cover.

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

Plot 6	Classification or Exclusion Clause	Class G Grassland

Photo Point 25

Classified vegetation within this plot is comprised of grasses with some isolated trees comprising <10% foliage cover.

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

Plot 6	Classification or Exclusion Clause	Class G Grassland

Photo Point 26

Classified vegetation within this plot is comprised of grasses.

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

Plot 6	Classification or Exclusion Clause	Class G Grassland

Photo Point 27

Classified vegetation within this plot is comprised of grasses with some isolated trees comprising <10% foliage cover.

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

Plot	7	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)

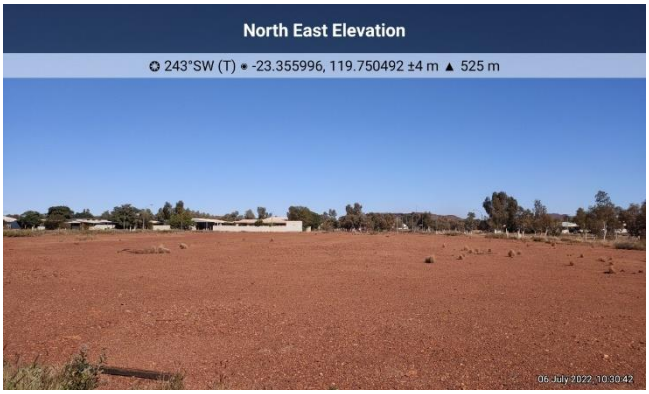
Photo Point 28

This area has been excluded under 2.2.3.2 (e) & (f) of AS 3959: 2018. The area comprised of non-vegetated areas such as roads and cleared areas covered in gravel. Vegetation present is regarded as low threat due to factors such as flammability, moisture content and fuel load.

Plot	7	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 29

Non-vegetated area that has been excluded under 2.2.3.2 (e) of AS 3959: 2018. The area comprises of cleared areas for future development, currently comprised of gravel.



Plot	7	Classification or Exclusion Clause	Excluded AS 3959A: 2018 2.2.3.2 (f)

Photo Point 30

Vegetation present in the area has been excluded under 2.2.3.2 (f) of AS 3959: 2018. The area comprised of managed parkland that is regarded as low threat due to factors such as flammability, moisture content or fuel load.

Plot	7	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)

Photo Point 31

This area has been excluded under 2.2.3.2 (e) & (f) of AS 3959: 2018. The area comprised of non-vegetated areas such as roads and residential buildings. Vegetation present is regarded as low threat due to factors such as flammability, moisture content and fuel load and is managed landscaping and gardens.

Plot	7	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)

Photo Point 32

This area has been excluded under 2.2.3.2 (e) & (f) of AS 3959: 2018. The area comprised of non-vegetated areas such as cleared areas covered in gravel. Vegetation present is regarded as low threat due to factors such as flammability, moisture content and fuel load and is comprised of isolated patches within drainage line.

Plot	7	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e)

Photo Point 33

Non-vegetated area that has been excluded under 2.2.3.2 (e) of AS 3959: 2018. The area comprises of cleared areas for future development, currently comprised of gravel.

Plot	7	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)

Photo Point 34

This area has been excluded under 2.2.3.2 (e) & (f) of AS 3959: 2018. The area comprised of non-vegetated areas such as cleared areas. Vegetation present is regarded as low threat due to factors such as flammability, moisture content and fuel load and isolated trees with no understory present.

Plot	7	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)

Photo Point 35

This area has been excluded under 2.2.3.2 (e) & (f) of AS 3959: 2018. The area comprised of non-vegetated areas such as cleared areas covered in gravel. Vegetation present is regarded as low threat due to factors such as flammability, moisture content and fuel load and is comprised of isolated patches.

Appendix B – Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas v 1.3* (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).

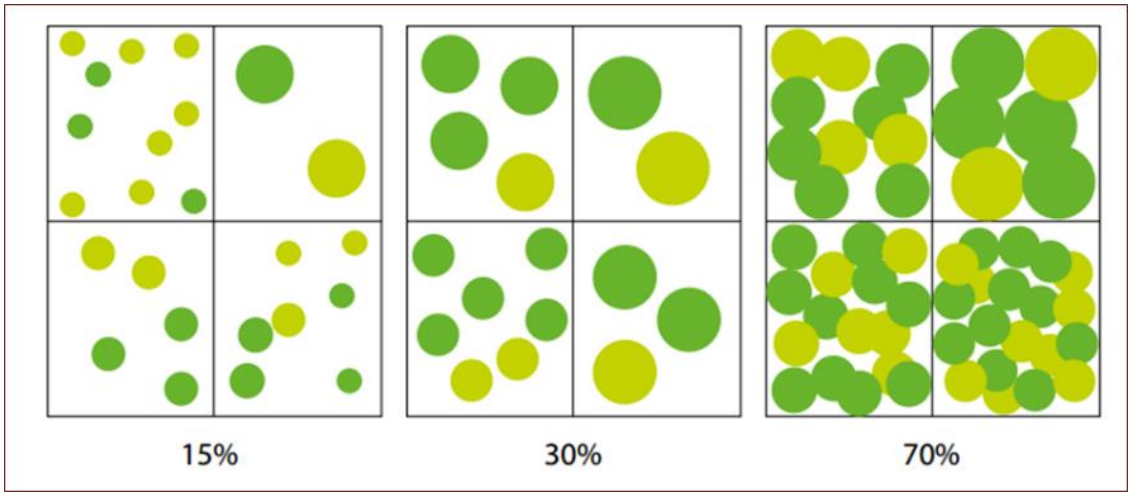


Figure 7: Illustrated tree canopy cover projection (WAPC 2017)

- **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 5m^2 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 C - Vehicular access technical requirements (WAPC 2017)

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

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