

Bushfire Management Plan:  
Subdivision: The Rise Precinct, Shorehaven Estate,  
Alkimos

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**PEET Limited**

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## DOCUMENT TRACKING

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Template 2.8.1

Version control	
Version	Purpose
v1	Draft – Submission to client
v2	Final – for submission with subdivision application

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# 1. Introduction

## 1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by PEET Limited to prepare a Bushfire Management Plan (BMP) to support a subdivision application for The Rise Precinct at Shorehaven Estate, Alkimos (hereafter referred to as the subject site, Figure 1). The proposed development will result in an intensification of land use and involves the development of 342 residential lots and five Public Open Space (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 Alkimos within the City of Wanneroo. Within the subject site there are areas of unmanaged classifiable vegetation and areas of where clearing has occurred for future development. Classifiable remnant vegetation is located throughout the west of the site and beyond, as well as further to the south, outside of the 100 m and 150 m wide assessment areas pertaining to this BMP. Areas to the north, east and south of the site is comprised of residential housing, roads, POS areas and cleared areas with plans for future development.

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.

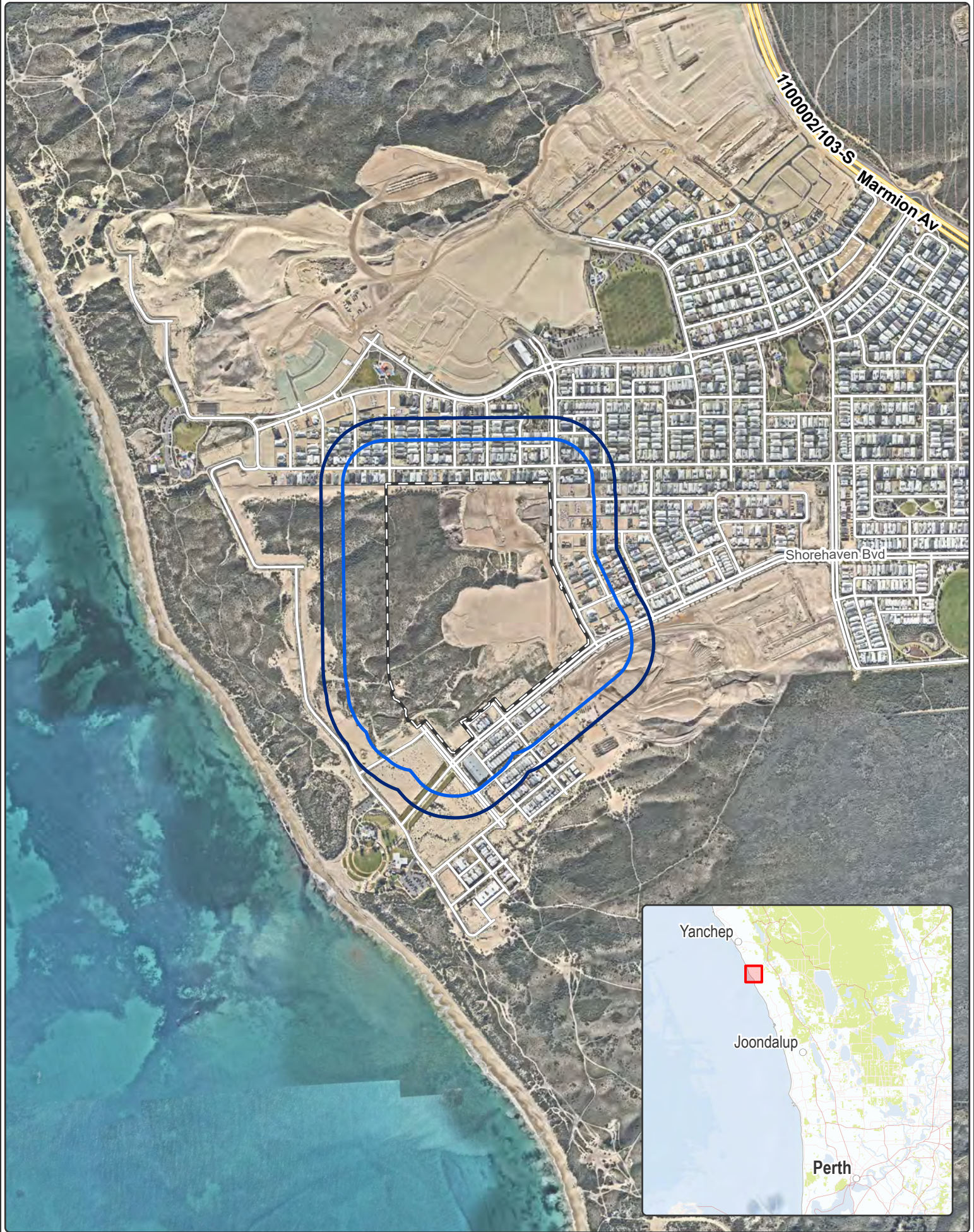
## 1.3 Environmental considerations

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




The subject site will be cleared for development and ELA is not aware of any pending environmental approvals required to facilitate this clearing. In addition to clearing the subject site, all land within 100 m of the subject site, that also occurs within the bounds of Peet Limited's landholdings will be cleared to manage bushfire risk.

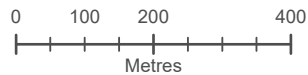
No revegetation is proposed within the subject site. The proposed POS areas, streetscapes and road verges will be maintained as low-threat vegetation.

Any changes to these factors will be addressed in a BMP addendum or similar.



**Figure 1: Site Overview**

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

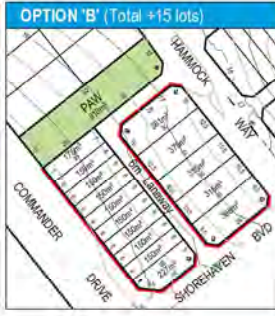


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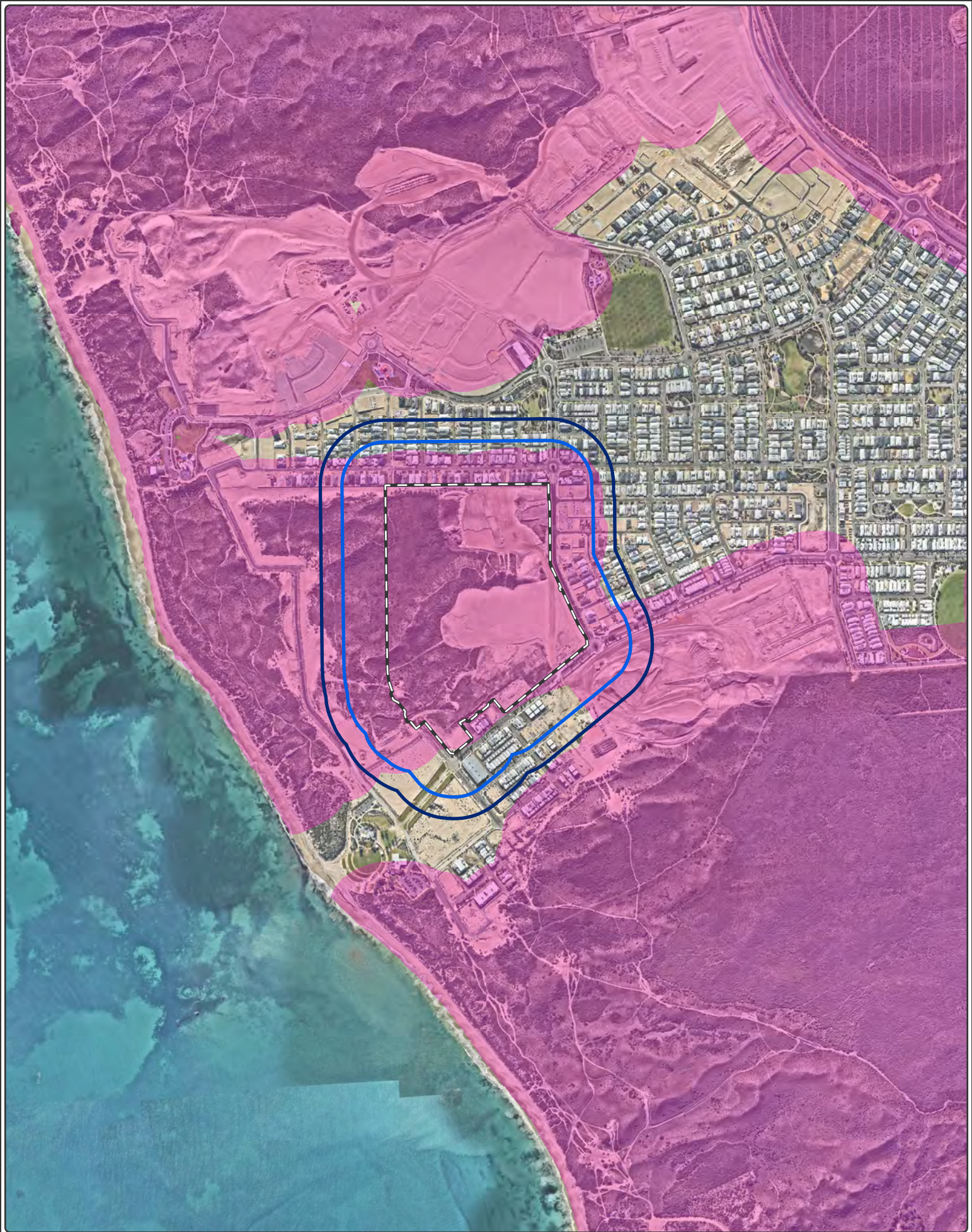
YIELD	
Traditional Lots -	333 lots
Cottage Lots -	9 lots
<b>Total -</b>	<b>342 lots</b>







The information herein is provided for general information only and is not intended to constitute an offer of any financial product or service. It is subject to change without notice and should not be relied upon for any specific purpose. The information is provided for general information only and is not intended to constitute an offer of any financial product or service. It is subject to change without notice and should not be relied upon for any specific purpose.

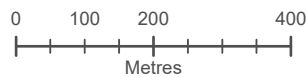


Figure 2: Site Plan



**Figure 3: Bushfire Prone Areas**

-  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 31 August 2022.

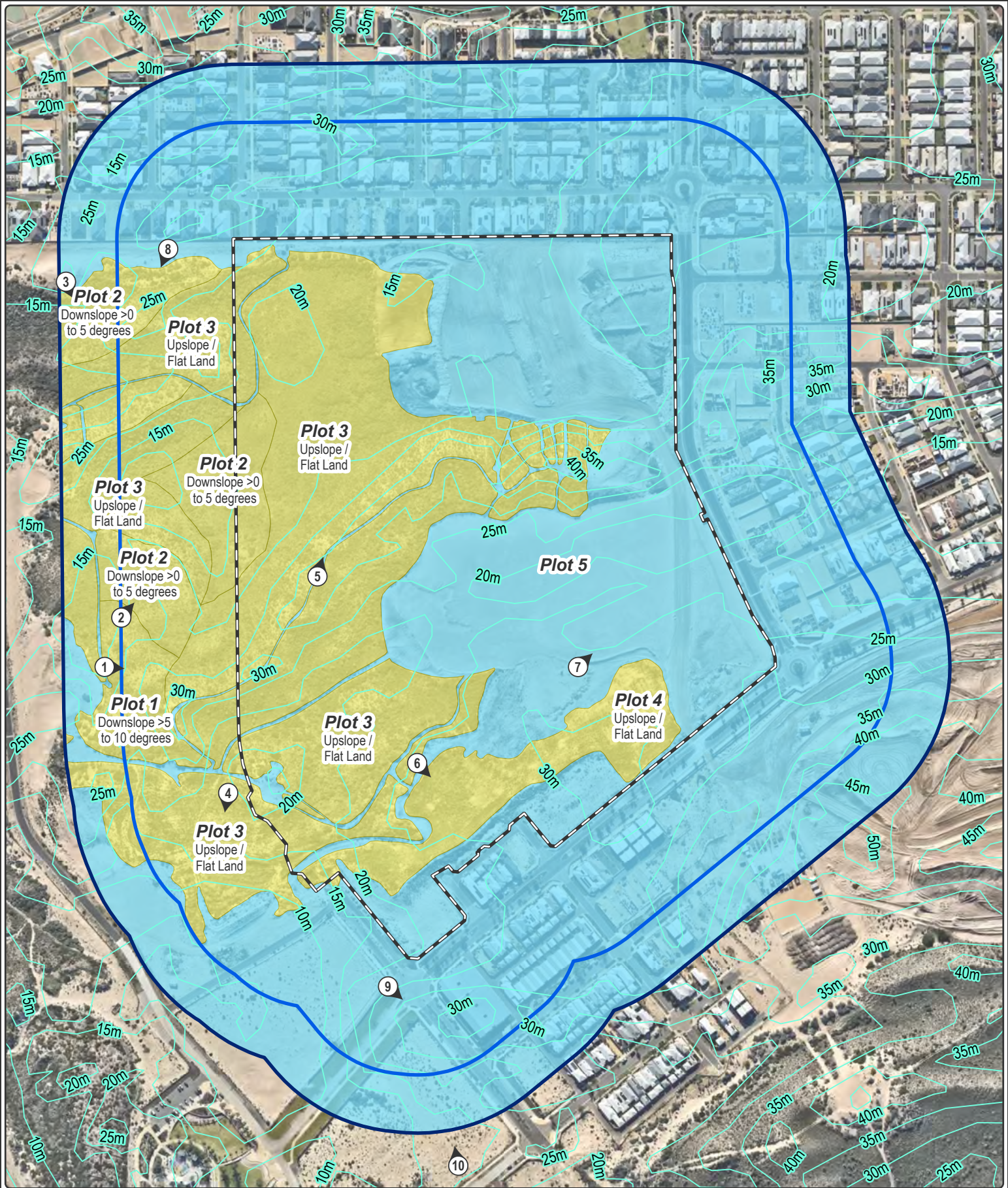
The classified vegetation and effective slope for the site from each of the identified vegetation plots are identified below in Table 1 and Figure 4.

**Table 1: Classified vegetation as per AS 3959: 2018**

Plot	Vegetation Classification	Effective Slope
1	Class C Shrubland	Downslope >5 to 10 degrees
2	Class C Shrubland	Downslope >0 to 5 degrees
3	Class C Shrubland	All upslopes and flat land (0 degrees)
4	Class C Shrubland	All upslopes and flat land (0 degrees)
5	Excluded AS 3959-2009 2.2.3.2 (e) & (f)	-

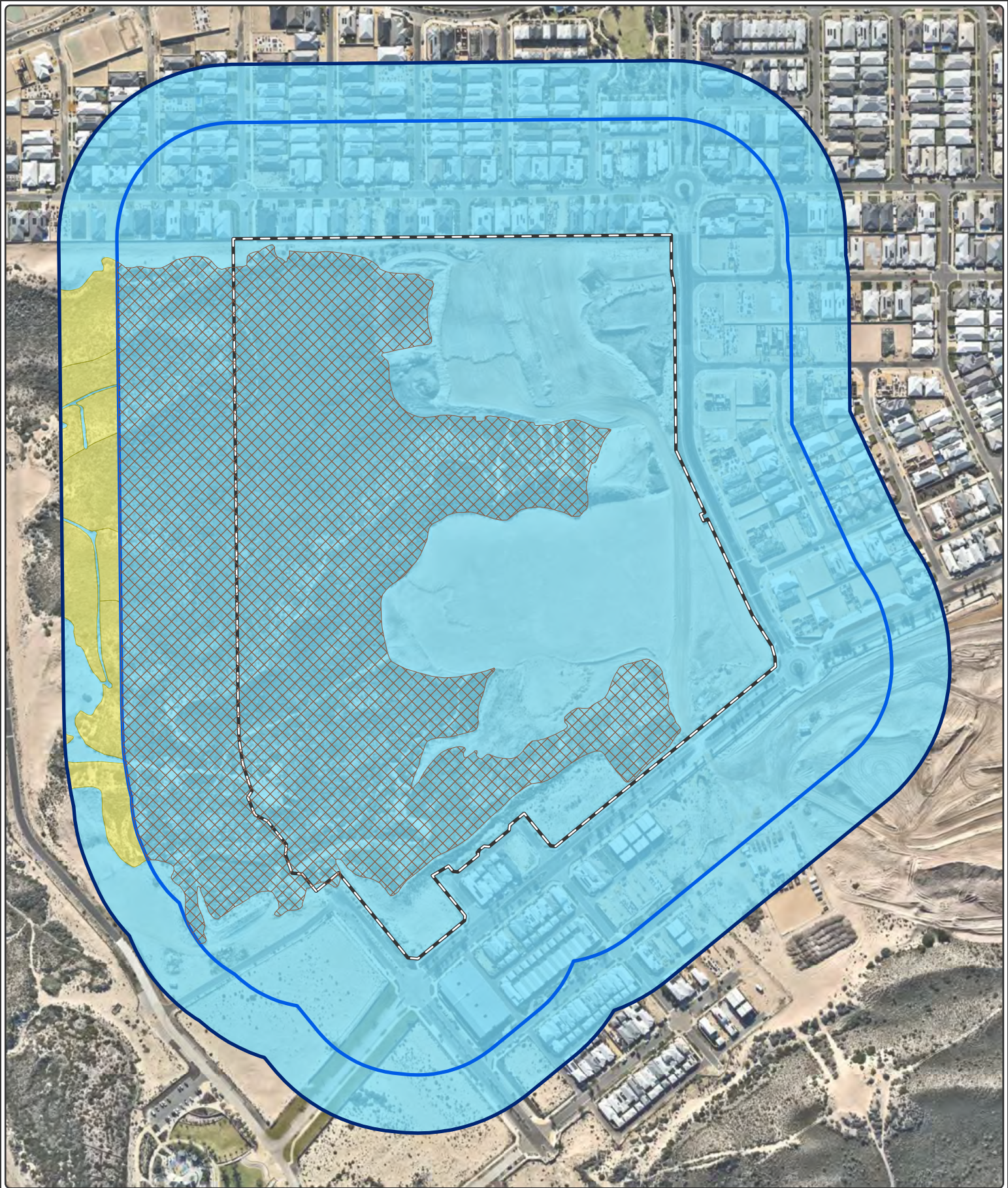
Photographs relating to each area and vegetation type are included in Appendix A.

Vegetation within 100 m of the western boundary of the subject site, that also occurs within the bounds of Peet Limited's landholdings will be cleared and/or maintained as excluded vegetation in accordance with clause 2.2.3.2 of AS 3959: 2018 as part of the subdivision works. A 'post-vegetation clearing' vegetation class map depicting this is provided in Figure 5.









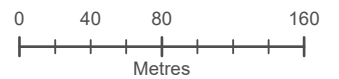
**Figure 4: Vegetation Classification - Pre-Development**

Subject site	<b>Vegetation classification</b>	0 40 80 160 Metres
100m site assessment	Class C shrubland	
150m site assessment	Excluded as per clause 2.2.3.2 (e) and (f)	Datum/Projection: GDA 1994 MGA Zone 50
Contour (5m)		22PER3524-SM Date: 14/09/2022
Photo location		<b>eco logical</b> AUSTRALIA A TETRA TECH COMPANY



**Figure 5: Vegetation Classification - Post-Development**

- |   |  |
|---|--|
|  Subject site         |  Vegetation to be cleared for development   |
|  100m site assessment | <b>Vegetation classification</b>   |
|  150m site assessment |  Class C shrubland                          |
|   |  Excluded as per clause 2.2.3.2 (e) and (f) |



Datum/Projection:  
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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

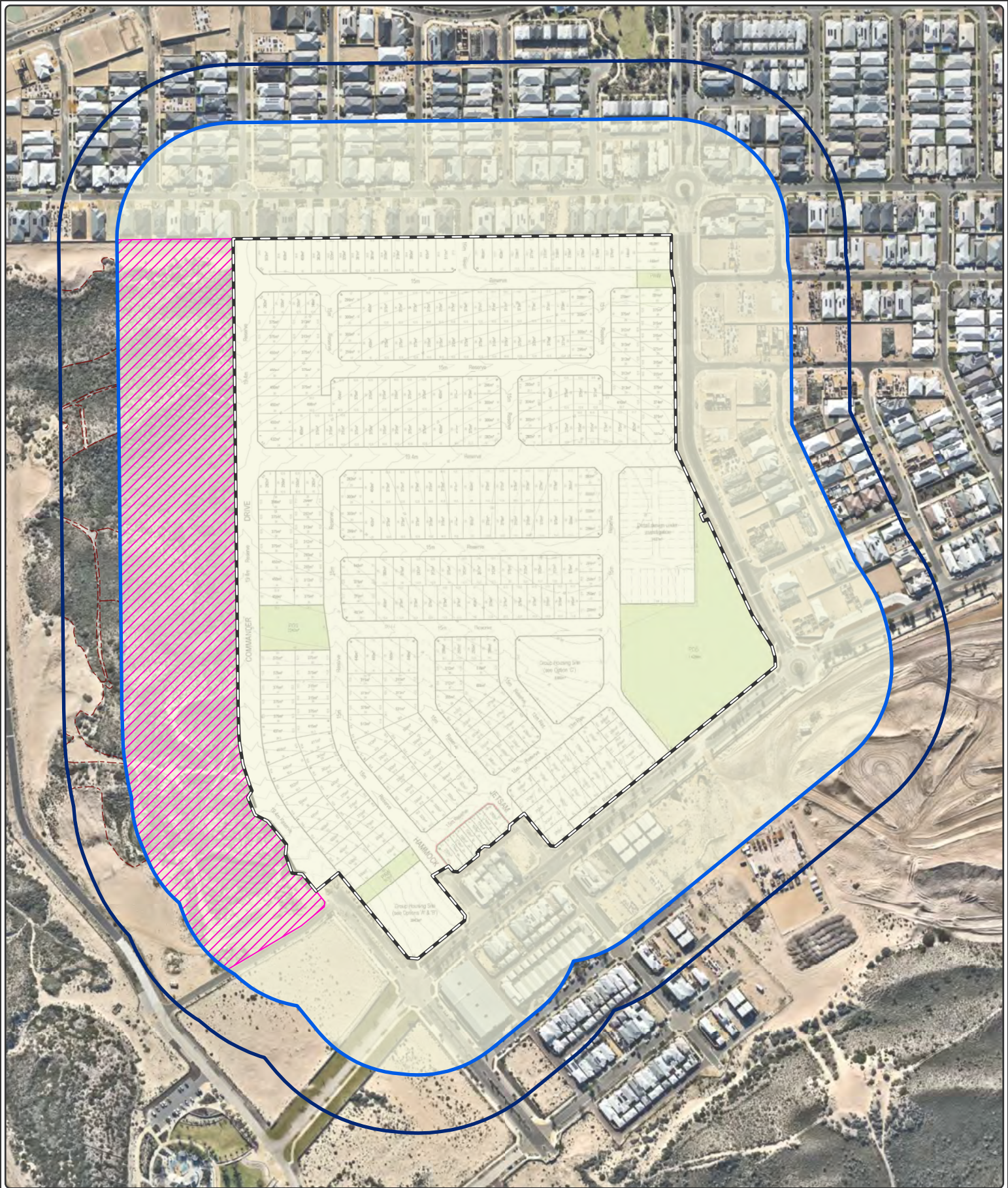
Figure 6 displays the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed development in accordance with AS 3959: 2018 methodology.

The BAL assessment factors in clearing and management of vegetation on the property and within the 100 m assessment area as depicted in Figure 5. As no classified vegetation will remain within 100 m of the subject site, all land within the 100 m assessment area can be excluded under clause 2.2.3.2 of AS 3959: 2018, resulting in an outcome of **BAL-LOW for all lots** within the subject site.


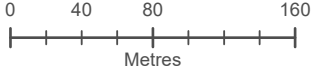










## 2.3 Identification of issues arising from the BAL assessment



Vegetation within 100 m of the subject site, that also occurs within the bounds of Peet Limited's landholdings will be cleared and/or maintained as excluded vegetation in accordance with clause 2.2.3.2 of AS 3959: 2018 as part of the subdivision works. The proposed clearing area will be managed as an Asset Protection Zone (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-LOW.

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 6: Bushfire Attack Level (BAL) Contours - Post-Development**

 Subject site	<b>Bushfire Attack Level (BAL)</b>	 <p>Datum/Projection: GDA 1994 MGA Zone 50</p> <p>22PER3524-SM Date: 14/09/2022</p>
 100m site assessment	 BAL - FZ	
 150m site assessment	 BAL - 40	
 Asset Protection Zone (APZ)	 BAL - 29	
 Bushfire hazard interface	 BAL - 19	
	 BAL - 12.5	
	 BAL - LOW	

### 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 2 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 2: 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"/>	All proposed Lots within the subject site are located in areas subject to BAL ratings of BAL-LOW (Figure 6, Figure 7).  The proposed development 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 subdivision has an APZ sufficient for the potential radiant heat flux to not exceed 29K/m <sup>2</sup> for existing dwellings (Figure 7) 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.

Bushfire Protection Criteria	AS	PS	N/A	Comment
Element 3: Vehicular access A3.1 Public Roads	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>The subject site is accessed via existing public roads. 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.</p> <p>ELA understands the proposed internal road network will be designed to comply with IPWEA Subdivision Guidelines.</p> <p>ELA's assessment identified that all of the surrounding roads are bitumen with estimated width of the sealed surface achieving a minimum width of <math>\geq 6</math> 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).</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 from the subject site to two suitable destinations are available via the existing public road network (Figure 7). Shorehaven Boulevard extends east away from the subject before connecting with Marmion Avenue which continues off to the north and the south. Please 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>No-through roads are not proposed within the subject site.</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>Post-development there will be no bushfire hazards abutting the subject site. Notwithstanding this however, perimeter roads will be established/already exist. Within the subject site there is one proposed perimeter road, which will run along the western boundary connecting up with the current northern and southern boundary roads, namely Celeste Street to the north and Shorehaven boulevard to the south. Heath avenue, an existing road already runs along the eastern boundary and can be used as a perimeter road.</p> <p>The proposed subdivision is considered to be compliant with A3.4a.</p>

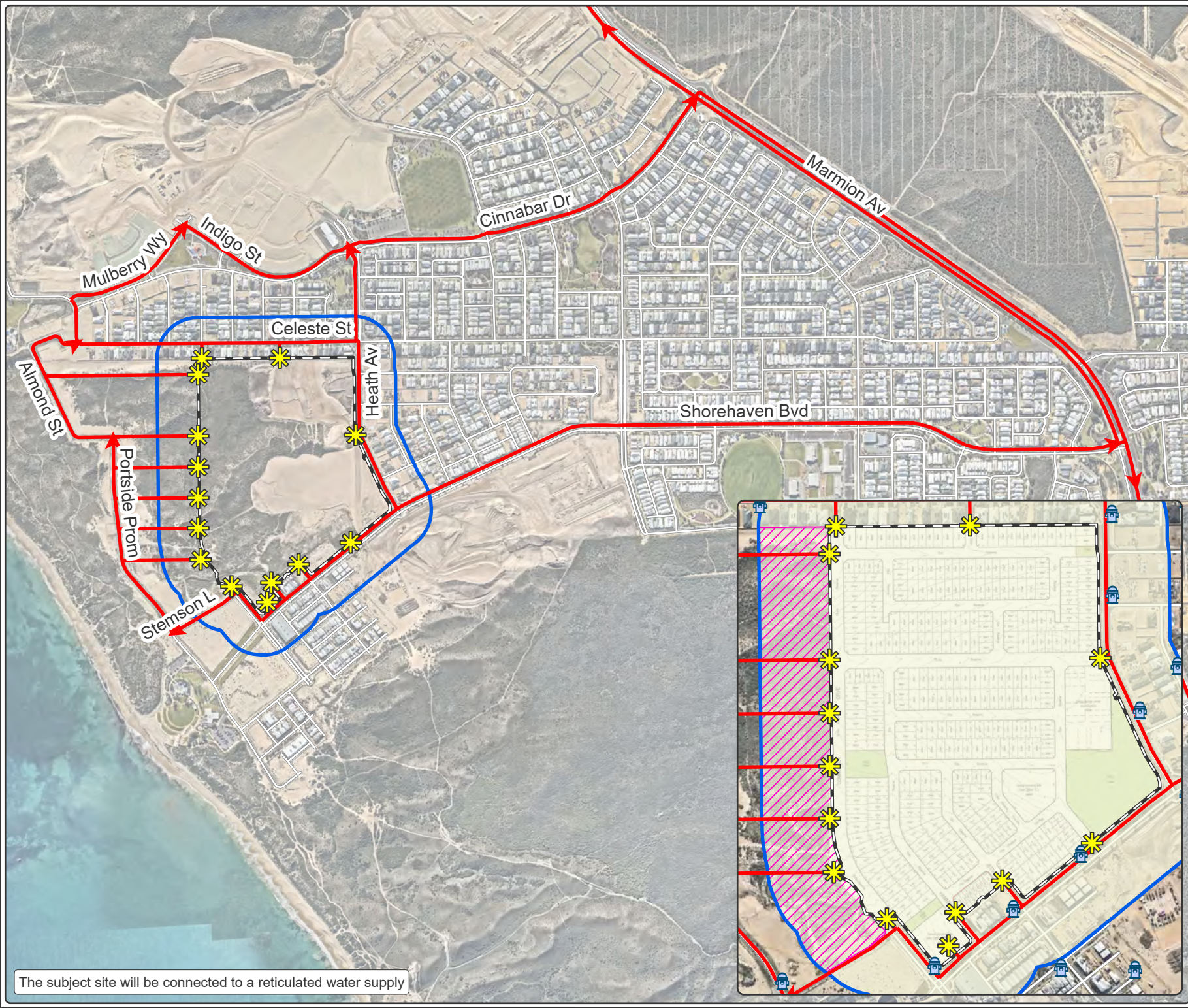
Bushfire Protection Criteria	AS	PS	N/A	Comment
A3.4b Fire service access route	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No fire service access route is required as all classified vegetation can be accessed through the existing/proposed road network.  A3.4b is not applicable to this proposed subdivision.
A3.5 Battle-axe access legs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No battle-axe properties are proposed as a part of this subdivision.  A3.5 is not applicable to this proposed subdivision.
A3.6 Private driveways	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This acceptable solution is not applicable to subdivision applications.
Element 4: Water	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This acceptable solution is not applicable to subdivision applications.
A4.1 Identification of future water supply	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This 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"/>	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 200 m apart as depicted in Figure 7.  The proposed subdivision is considered to be compliant with A4.2.
Element 5: Vulnerable tourism land uses	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	This subdivision application is not considered vulnerable tourism land use. Element 5 is not applicable to this proposed subdivision.

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).





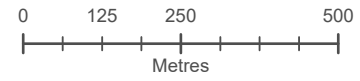
**Legend**

- Subject site
- 100m site assessment
- 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 3. 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 3: Proposed work program**

No	Bushfire management measure	Responsibility
<b>Prior to issue of Titles</b>		
1	Ensure all proposed lots are located outside of areas subject to BAL-FZ and BAL-40 as per the design in Figure 7.	Developer
	Clear Asset Protection Zones as depicted in Figure 7.	Developer
2	Ensure that 100 m wide APZs are cleared and maintained around each stage of subdivision if the entirety of the development depicted in Figure 7 is not developed in a single stage.	Developer
3	Extend reticulated water supply to all lots and install hydrants in accordance with Water Corporation standards.	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
<b>Prior to occupancy</b>		
6	Ensure all APZs are implemented and maintained.	Developer
7	Construct proposed buildings to relevant construction standard in AS 3959-2018.	Developer
<b>Ongoing management</b>		
8	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 (CoW), 2022, Important Fire Mitigation Notice, [Online], available from: [City of Wanneroo Firebreak Notice 2022.pdf](#)

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.

## Appendix A – Classified Vegetation Photos

Plot	Classification or Exclusion Clause	Class C Shrubland
1	<p><b>Photo Point 1</b></p> <p>Classified vegetation within this plot is comprised of shrubs &lt;2 m high with greater than 30% foliage cover. Vegetation is predominantly comprised of <i>Melaleuca</i>, <i>Acacia</i> and other coastal species.</p> <p>Slope under the vegetation has been assessed as downslope &gt;5-10°.</p>	
2	<p><b>Photo Point 2</b></p> <p>Classified vegetation within this plot is comprised of shrubs &lt;2 m high with greater than 30% foliage cover. Vegetation is predominantly comprised of <i>Melaleuca</i>, <i>Acacia</i> and other coastal species.</p> <p>Slope under the vegetation has been assessed as downslope &gt;0-5°.</p>	
2	<p><b>Photo Point 3</b></p> <p>Classified vegetation within this plot is comprised of shrubs &lt;2 m high with greater than 30% foliage cover. Vegetation is predominantly comprised of <i>Melaleuca</i>, <i>Acacia</i> and other coastal species.</p> <p>Slope under the vegetation has been assessed as downslope &gt;0-5°.</p>	

**Plot 3 Classification or Exclusion Clause Class C Shrubland**

**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 *Melaleuca*, *Acacia* and other coastal species.

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



**Plot 3 Classification or Exclusion Clause Class C Shrubland**

**Photo Point 5**

Classified vegetation within this plot is comprised of shrubs <2 m high with greater than 30% foliage cover. Vegetation is predominantly comprised of *Melaleuca*, *Acacia* and other coastal species.

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



**Plot 4 Classification or Exclusion Clause Class C Shrubland**

**Photo Point 6**

Classified vegetation within this plot is comprised of regrowing grasses, herbs and shrubs <2 m high with greater than 30% foliage cover. Whilst this vegetation is most resemblant of Class G grassland, a conservative approach was taken to account for potential regeneration and a Class C shrubland classification was applied.

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



**Plot 5 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)**

**Photo Point 7**

Excluded – clause 2.2.3.2 (e) & (f) of AS 3959: 2018.  
 Cleared areas and sand dunes.



**Plot 5 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e)**

**Photo Point 8**

Excluded – clause 2.2.3.2 (e) & (f) of AS 3959: 2018.  
 Cleared areas and sand dunes.

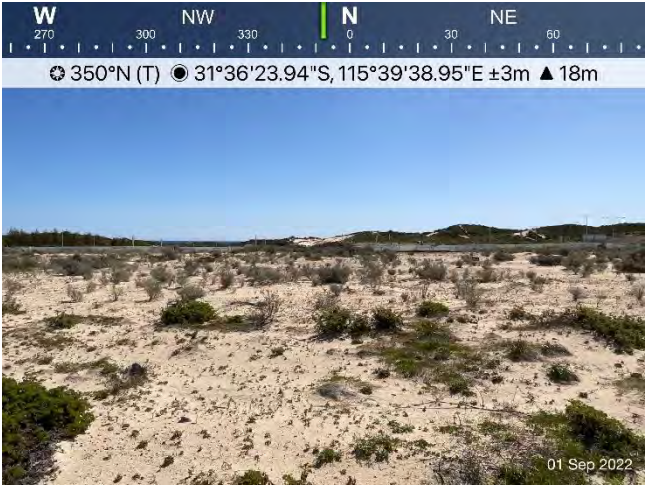


**Plot 5 Classification or Exclusion Clause Excluded AS 3959: 2018 2.2.3.2 (e) & (f)**

**Photo Point 9**

Excluded – clause 2.2.3.2 (e) & (f) of AS 3959: 2018.  
 Developed areas and maintained turf.



Plot	5	Classification or Exclusion Clause	Excluded AS 3959: 2018 2.2.3.2 (e) & (f)
<b>Photo Point 10</b>	Excluded – clause 2.2.3.2 (e) & (f) of AS 3959: 2018. Previously cleared areas about to be developed.		



## 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/m<sup>2</sup> (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.

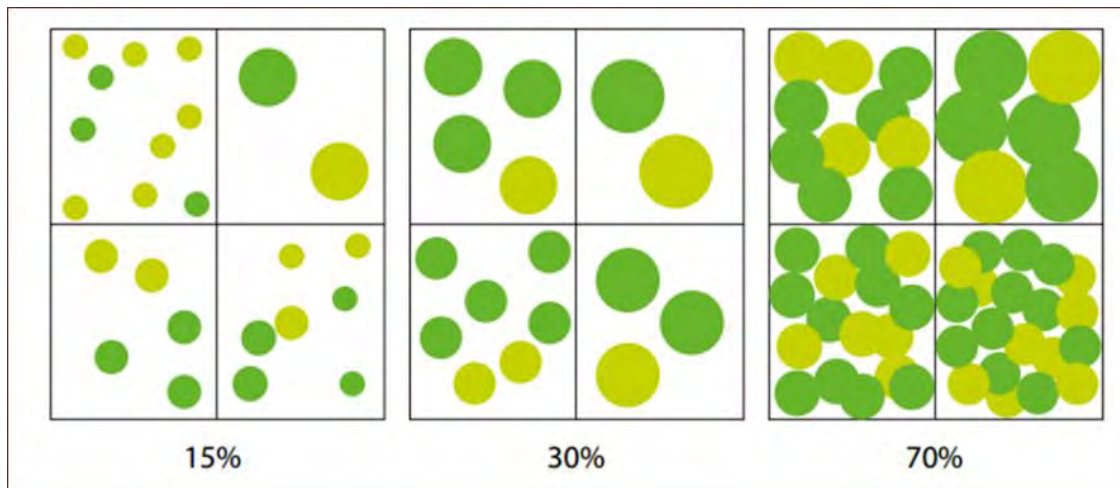


Figure 8: Illustrated tree canopy cover projection (WAPC 2021)

- 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 with 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 <sup>1</sup>	Fire service access route <sup>1</sup>	Battle-axe and private driveways <sup>2</sup>
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 <sup>3</sup>	As outlined in the IPWEA Subdivision Guidelines		1:10 (10%)	
Maximum grade sealed road <sup>3</sup>	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	

<sup>1</sup> To have crossfalls between 3 and 6 %.

<sup>2</sup> 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.

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

