



Bushfire Management Plan

Shorehaven Blvd North BMP

Prepared for
Peet Limited

30 October 2018



DOCUMENT TRACKING

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Contents

1	Introduction	5
1.1	Proposal details	5
1.2	Purpose and application of the plan	5
1.3	Environmental considerations	5
2	Bushfire assessment results	8
2.1	Bushfire assessment inputs.....	8
2.1.1	General	8
2.1.2	Fire Danger Index.....	8
2.1.3	Vegetation classification	8
2.1.4	Topography and slope under vegetation.....	8
2.2	Bushfire assessment outputs	10
2.2.1	Bushfire Attack Level (BAL) assessment	10
2.2.2	Method 1 BAL assessment.....	10
2.3	Identification of issues arising from the BAL assessment	10
3	Assessment against the Bushfire Protection Criteria	12
3.1	Compliance.....	12
3.2	Additional management strategies	13
4	Implementation and enforcement	15
	References	17
	Appendix A Plates	18
	Appendix B Standards for Asset Protection Zones	23
	Appendix C Vehicular access technical requirements (WAPC 2017)	25

List of figures

Figure 1: Site Overview	6
Figure 2: Bushfire Prone Areas	7
Figure 3: Vegetation Classification.....	9
Figure 4: Bushfire Attack Level (BAL) Contours	11
Figure 5: Spatial representation of the bushfire management strategies	14
Figure 6: Illustrated tree canopy cover projection (WAPC 2017).....	23

List of tables

Table 1: Summary of solutions used to achieve bushfire performance criteria	12
Table 2: Proposed work program	15

1 Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Peet Alkimos Pty. Ltd. to prepare a Bushfire Management Plan (BMP) to support a subdivision application being prepared for Shorehaven Blvd North, Alkimos (hereafter referred to as the subject site; **Figure 1**).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2017; **Figure 2**), 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 Senior Bushfire Consultant, Daniel Panickar (FPAA BPAD Level 2 Certified Practitioner No. BPAD37802-L2).

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

The subject site has not been cleared of native vegetation, however, approval to clear vegetation has been facilitated by the subdivision approval. All classified vegetation within the subject site will be removed or managed to a low threat standard as part of future residential development in accordance with the subdivision layout. Furthermore, classified vegetation within 100 m of proposed lots within the subject site and within landholdings in Peet's ownership will be managed to a low threat standard until residential development progresses in these areas. There is no requirement for any environmental approvals for this development to proceed.

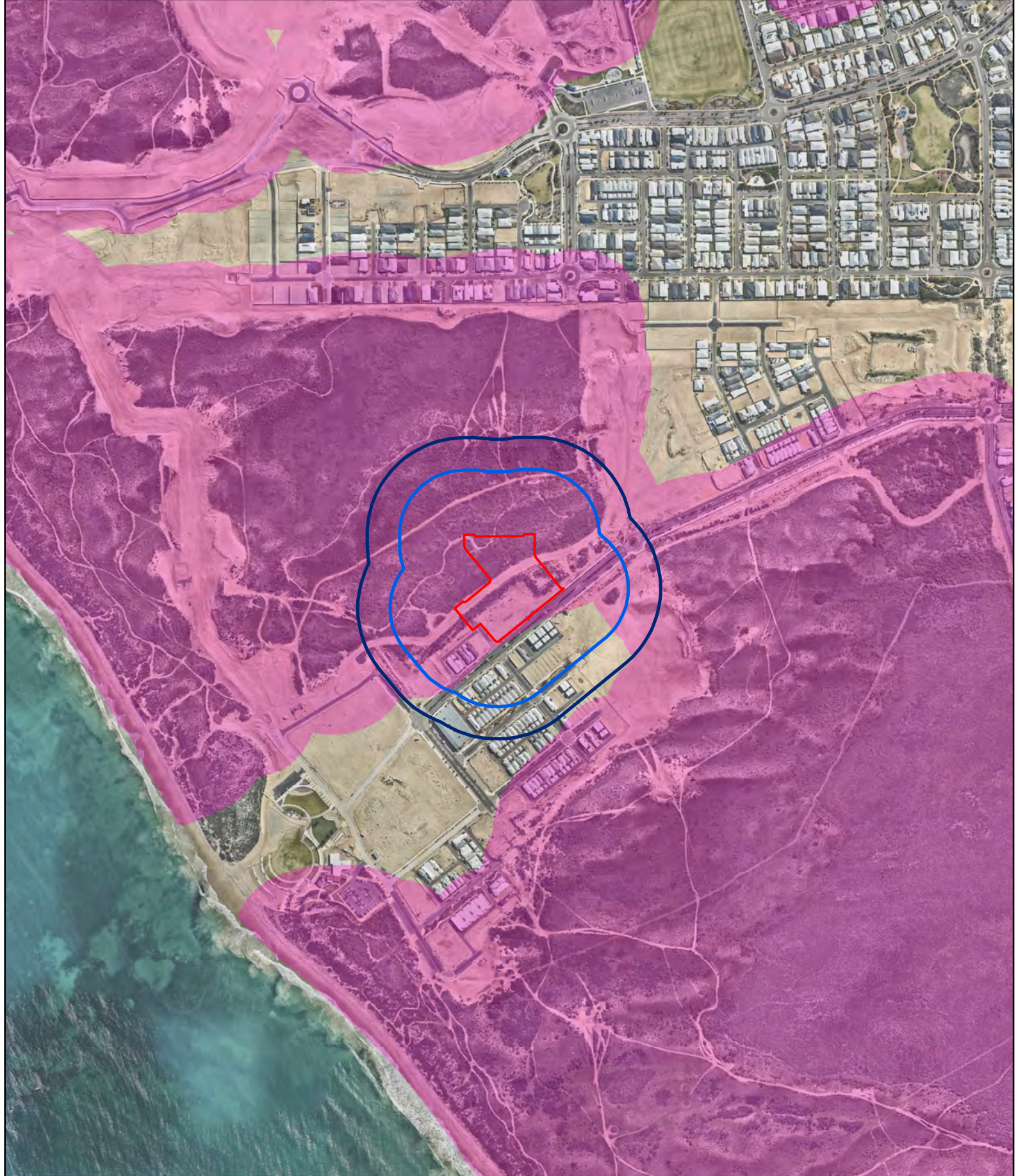
Figure 1: Site Overview







- Legend**
- Subject site
 - 100m site assessment
 - 150m site assessment
 - Lot layout

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

Figure 2: Bushfire Prone Areas



- Legend**
-  Subject site
 -  100m site assessment
 -  150m site assessment
 -  Bushfire Prone Mapping (DFES 2018)

0 75 150 300
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 General

The subject site is located in the City of Wanneroo, and is bound by:

- Native vegetation and residential properties to the north;
- Native vegetation, cleared land and residential properties to the east;
- Shorehaven Blvd, cleared land, residential properties and native vegetation to the south; and
- Native vegetation, cleared land and residential properties to the west.

Visual assessment of the surrounding vegetation within the assessment area did not identify any recent fire scars and fire history was not able to be determined. Accumulation of vegetative matter over time, combined with the moderate to high risk of ignition associated with high levels of public access and proximity to urban areas would potentially facilitate a bushfire occurrence in this area.

2.1.2 Fire Danger Index

A blanket rating of FDI 80 is adopted for Western Australian environments, as outlined in AS 3959–2009 and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.3 Vegetation classification

Vegetation within the subject site and surrounding 150 m (the assessment area) was assessed in accordance with the Guidelines and AS 3959-2009 *Construction of Buildings in Bushfire Prone Areas* (SA 2009) with regard given to the Visual guide for bushfire risk assessment in Western Australia (DoP 2016). The site inspection was undertaken on 16 October 2018.

The following vegetation classes and exclusions were identified within the assessment area as depicted in **Figure 3** and listed below:

- Class C shrubland;
- Class D scrub;
- Class G grassland;
- Exclusions as per clause 2.2.3.2 (c) (i.e. vegetation less than 0.25 ha not within 20 m of the site or other classified vegetation) and
- Exclusions as per clause 2.2.3.2 (e) and (f) (i.e. non-vegetated areas and low-threat vegetation).

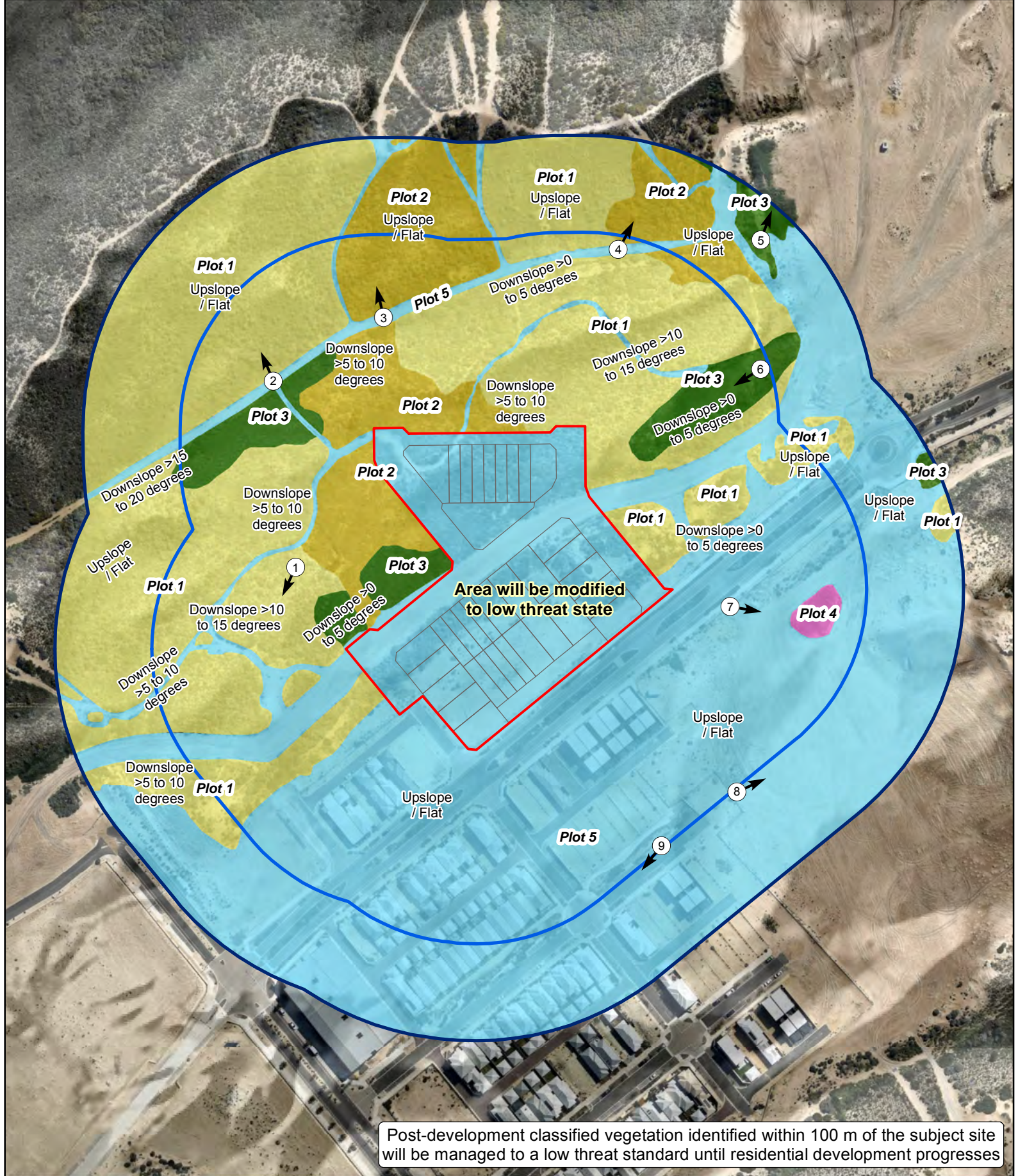
Photographs relating to each vegetation type are included in **Appendix A**.

Prior to residential development, classified vegetation within the subject site and surrounding 100 m (within landholdings in Peet's ownership) will be managed to a low threat standard.

2.1.4 Topography and slope under vegetation

Effective slope under vegetation was assessed for a distance of 150 m from the subject site in accordance with the Guidelines and AS 3959-2009. Slope under classified vegetation in all directions from the subject site ranged from upslope/flat land to downslope >15 to 20 degrees and is depicted in **Figure 3**.

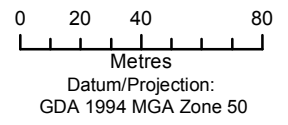
Figure 3: Vegetation Classification



Post-development classified vegetation identified within 100 m of the subject site will be managed to a low threat standard until residential development progresses

- Legend**
- Subject site
 - 100m site assessment
 - 150m site assessment
 - Lot layout
 - Photo location

- Vegetation classification**
- Class C shrubland
 - Class D scrub
 - Class G grassland
 - Excluded as per clause 2.2.3.2 (c)
 - Excluded as per clause 2.2.3.2 (e) and (f)



2.2 Bushfire assessment outputs

A BAL assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959-2009 and the bushfire assessment inputs in **Section 2.1**.

2.2.1 Bushfire Attack Level (BAL) assessment

All land located within 100 m of the classified vegetation depicted in **Figure 3** is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959-2009.

A Method 1 BAL assessment (as outlined in AS 3959-2009) 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

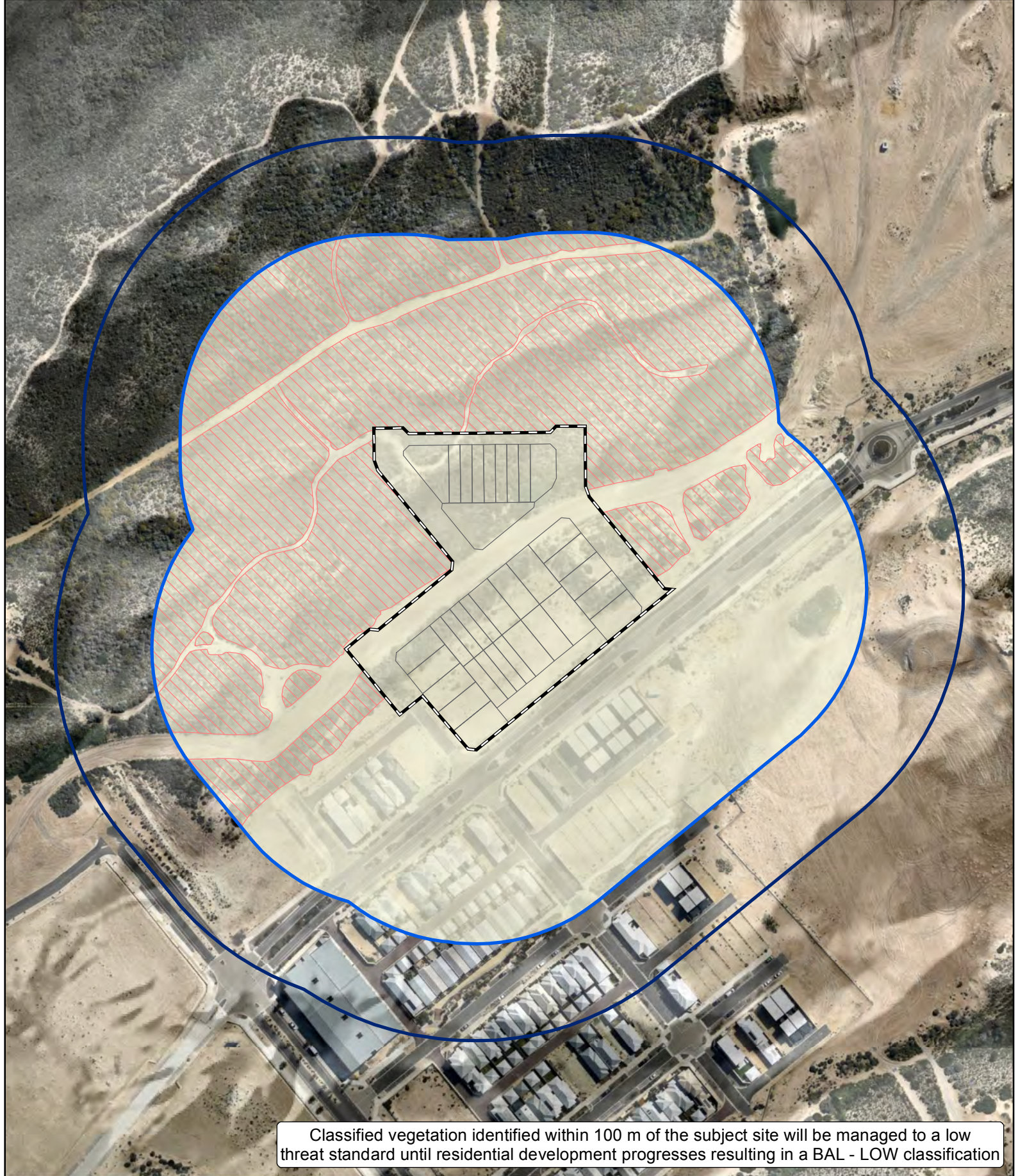
Figure 4 displays the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed development in accordance with AS 3959-2009 methodology.

Prior to residential development, classified vegetation within the subject site and surrounding 100 m (within landholdings in Peet' Alkimos' ownership) will be managed to a low threat standard. Due to this, the Method 1 BAL assessment resulted in a BAL-LOW rating for all proposed lots.

2.3 Identification of issues arising from the BAL assessment






All proposed lots are located in areas subject to a BAL rating 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 4: Bushfire Attack Level (BAL) Contours

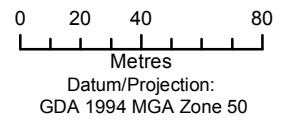


Classified vegetation identified within 100 m of the subject site will be managed to a low threat standard until residential development progresses resulting in a BAL - LOW classification

Legend

-  Subject site
-  100m site assessment
-  150m site assessment
-  Lot layout
-  Peet Alkimos Pty. Ltd. landholdings - vegetation will be modified to low threat state prior to development

Bushfire attack level (BAL)
 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 management measures, as outlined, have been devised for the proposed development in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

The 'acceptable solutions assessment' is provided below to assess the proposed bushfire management measures against each bushfire protection criteria in accordance with the Guidelines and demonstrate that the measures proposed meet the intent of each element of the bushfire protection criteria. **Figure 5** depicts bushfire management strategies where necessary.

Table 1: Summary of solutions used to achieve bushfire performance criteria

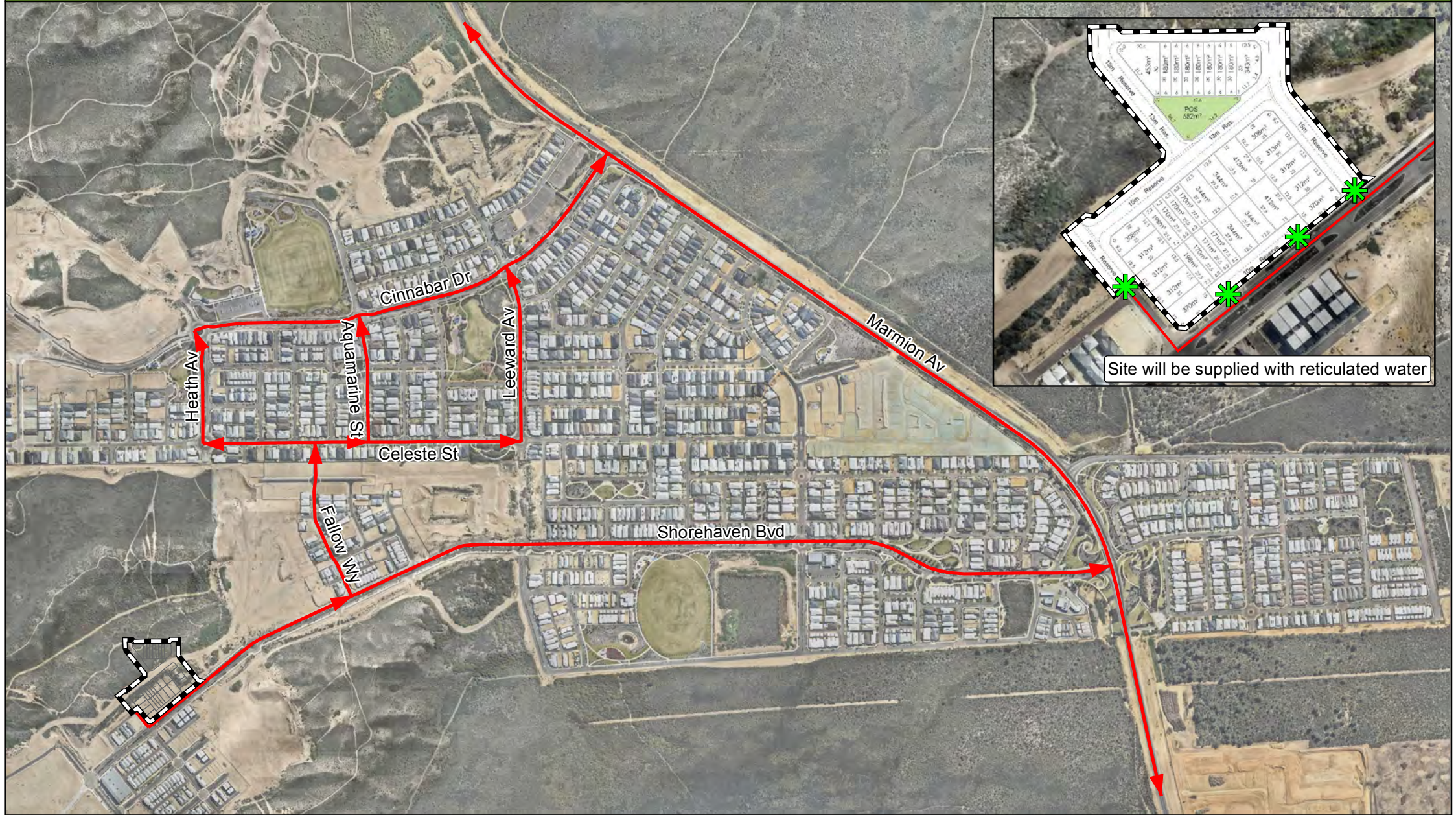
Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On development, all proposed lots are will be located in areas subject to BAL ratings of BAL-LOW. The proposed development is considered to be compliant with A1.1.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No APZs are proposed as part of the development. All classified vegetation within 100 m of the subject site will be cleared resulting in a BAL-LOW rating with no APZs required.
Element 3: Vehicular access A3.1 Two access routes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	There are more than two access routes to/from the subject site associated with the existing road network (Figure 5). The final development design will not interfere with this access network. The proposed development is considered to be compliant with A3.1.
Element 3: Vehicular access A3.2 Public road	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All public roads will comply with vehicular access requirements (refer to Appendix C).
Element 3: Vehicular access A3.3 Cul-de-sac	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No cul-de-sacs are proposed as part of the development.
Element 3: Vehicular access A3.4 Battle-axe	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No battle axe lots are proposed.
Element 3: Vehicular access A3.5 Private Driveway longer than 50 m	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No private driveways longer than 50 m are proposed.

Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 3: Vehicular access A3.6 Emergency Access way	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No emergency access ways are required or proposed.
Element 3: Vehicular access A3.7 Fire-service access routes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No fire service access routes are required or proposed.
Element 3: Vehicular access A3.8 Firebreak width	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	None of the proposed lots is greater than 0.5 hectares and therefore firebreaks are not required.
Element 4: Water A4.1 Reticulated areas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	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. .

3.2 Additional management strategies

Future demonstration of compliance with the relevant requirements of SPP 3.7, the Guidelines and AS 3959-2009 will depend on the developer's ability to coordinate the timing of development works within the subject site. Depending on the timing of development, the BAL Assessment may have to be undertaken again at the building licensing stage of development. Additional risk management will include the maintenance classified vegetation in line with this BMP.

Figure 5: Spatial representation of the bushfire management strategies



Site will be supplied with reticulated water

Legend

- Access point *(Refer to inset)
- Subject site
- Lot layout
- Access / egress route

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

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Prepared by: SM Date: 26/10/2018

4 Implementation and enforcement

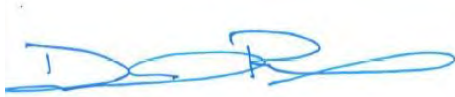
Implementation of the BMP applies to Peet Alkimos Pty. Ltd., the City of Wanneroo, and future landowners to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in **Section 3**, as well as a works program, is provided in **Table 2**. 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 2: Proposed work program

No.	Bushfire management measure	Responsibility
Prior to issue of Titles		
1	Clear classified vegetation depicted in Figure 3 and Figure 4 to a low threat standard until residential development progresses	Peet Alkimos Pty. Ltd.
2	Place Section 70A on title of all Lots within Bushfire Prone Areas	Peet Alkimos Pty. Ltd.
Prior to sale or occupancy		
3	Maintenance of vegetation to a low threat standard	Peet Alkimos Pty. Ltd. until development completion
4	Implementation of increased building construction standards	Builders
5	Provision of reticulated water supply	Peet Alkimos Pty. Ltd. construction contractor
6	Compliance with current fire control order	Peet Alkimos Pty. Ltd. until development completion
Ongoing management		
7	Maintenance of vegetation to a low threat standard	Individual landowners (within property)
		City of Wanneroo (within public reserves)
8	Compliance with fire break order	Individual landowners (within property)
		City of Wanneroo (within public reserves)

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.



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Senior Bushfire Consultant
FPAA BPAD Certified Practitioner
No. BPAD37802-L2



References

Department of Fire and Emergency Services (DFES). 2017. *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from:

<http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx>


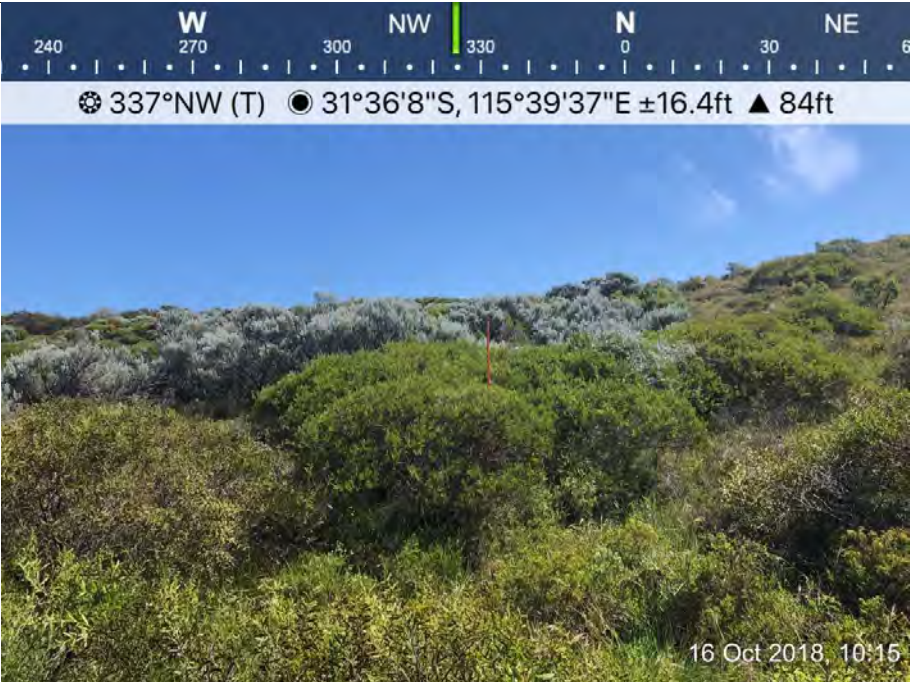
Department of Planning (DoP). 2016. *Visual guide for bushfire risk assessment in Western Australia*. DoP, Perth.

Standards Australia. 2009. *Construction of buildings in bushfire-prone areas, AS 3959-2009*. 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 Plates

Plot	Photo ID	Photo and vegetation class
1	1	 <p>Class C shrubland</p>
1	2	 <p>Class C shrubland</p>

Plot	Photo ID	Photo and vegetation class
2	3	 <p>Class D scrub</p>
2	4	 <p>Class D scrub</p>

Plot	Photo ID	Photo and vegetation class
3	5	 <p>Class G grassland</p>
3	6	 <p>Class G grassland</p>

Plot	Photo ID	Photo and vegetation class
4	7	 <p>☉ 144°SE (T) ● 31°36'12"S, 115°39'47"E ±16.4ft ▲ 105ft</p>  <p>Excluded as per clause 2.2.3.2 (c)</p>
5	8	 <p>☉ 65°NE (T) ● 31°36'11"S, 115°39'46"E ±16.4ft ▲ 99ft</p>  <p>Excluded as per clause 2.2.3.2 (e) and (f)</p>

Plot	Photo ID	Photo and vegetation class
5	9	 <p>Excluded as per clause 2.2.3.2 (e) and (f)</p>

Appendix B 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 6**).

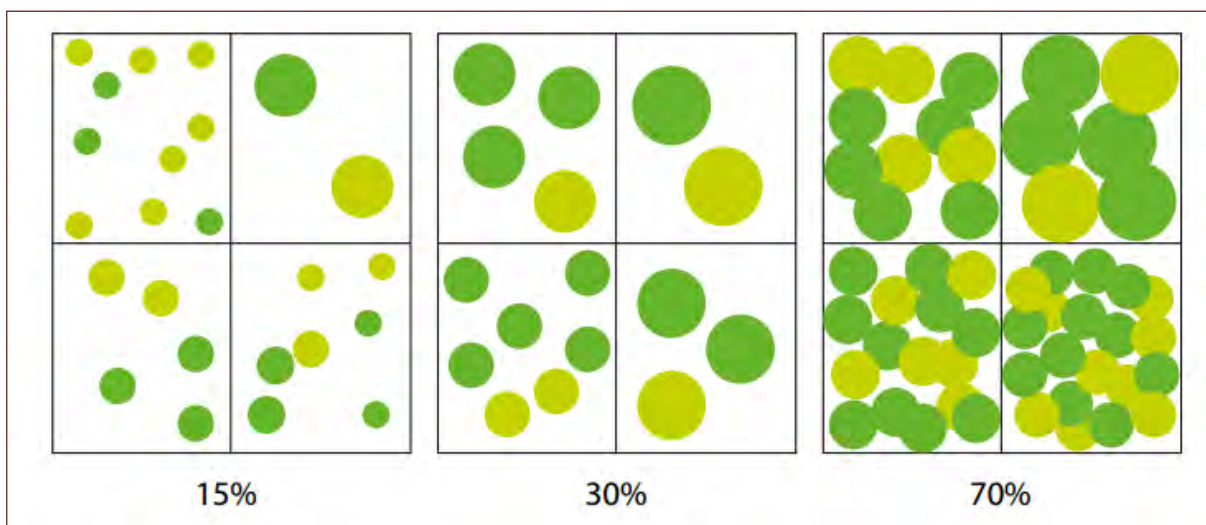


Figure 6: Illustrated tree canopy cover projection (WAPC 2017)

- **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 C 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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