



# AS3959 Bushfire Attack Level Assessment Report

This report has been prepared using the Simplified Procedure (Method 1) as detailed in Section 2 of AS3959-2018.

Site Details	
Address:	Eden Beach Subdivision Stages 4B, 15B and 26B
Suburb:	Alkimos
Local Government Area	City of Wanneroo
State:	Western Australia
Description of Building Works	Residential lots in subdivision for Class 1 Dwellings

Report Details			
Report / Job Number:	2122-99	Report Version	1.0
Assessment Date:	13/5/2022	Report Date	20/05/2022
Assessor Details			
Name:	Rohan Carboon		
Accredited Practitioner	Rohan Carboon Level 3 - BPAD 23160		

**Disclaimer:**

*This report has been prepared in good faith and is derived from sources believed to be reliable and accurate at the time of publication. Nevertheless, this publication is distributed on the terms and understanding that the author is not responsible for results of any actions taken based on information in this publication or for any error in or omission from this publication.*

*Notwithstanding the precautions adopted in this report, it should always be remembered that bushfires burn under a wide range of conditions. An element of risk, no matter how small always remains. The objective of the standard (AS 3959:2018) is 'to prescribe particular construction details for buildings to reduce the risk of ignition from a bushfire while the front passes' (Standards Australia, 2018). Building to the standard (AS 3959:2018) does not guarantee a building will survive a bushfire.*







## Vegetation Classification


All vegetation within 150m of the subdivision was classified in accordance with Clause 2.2.3 of AS 3959-2018. There is no vegetation on the lots, the entire area has been cleared, roads and lots are established. Classified vegetation within 100 metres occurs to the north in the undeveloped areas of the adjacent land development and to the south in the POS with remnant vegetation.

The BAL ratings will reduce further with more clearing north of the site in the adjacent subdivision development.


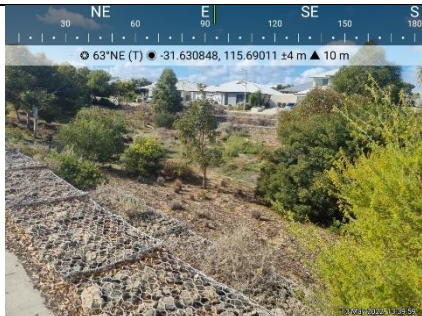

Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below and outlined in the Vegetation Classification Plan.

<p><b>Photo ID: 1</b></p> <p><b>Plot Number: 1</b></p> <p><b>Vegetation classification or exclusion clause:</b> Scrub (Class D)</p> <p><b>Description/justification of classification:</b> Acacia and other shrubs averaging 2-3 metres in height.</p>	
<p><b>Photo ID: 2</b></p> <p><b>Plot Number: 1</b></p> <p><b>Vegetation classification or exclusion clause:</b> Scrub (Class D)</p> <p><b>Description/justification of classification:</b> Acacia and other shrubs averaging 2-3 metres in height.</p>	
<p><b>Photo ID: 3</b></p> <p><b>Plot Number: 1</b></p> <p><b>Vegetation classification or exclusion clause:</b> Scrub (Class D)</p> <p><b>Description/justification of classification:</b> Acacia and other shrubs averaging 2-3 metres in height.</p>	
<p><b>Photo ID: 4</b></p> <p><b>Plot Number: 1</b></p> <p><b>Vegetation classification or exclusion clause:</b> Scrub (Class D)</p> <p><b>Description/justification of classification:</b> Acacia and other shrubs averaging 2-3 metres in height.</p>	



<p><b>Photo ID: 5</b></p> <p><b>Plot Number: 1</b></p> <p><b>Vegetation classification or exclusion clause:</b> Scrub (Class D)</p> <p><b>Description/justification of classification:</b> Acacia and other shrubs averaging 2-3 metres in height.</p>	
<p><b>Photo ID: 6</b></p> <p><b>Plot Number: 1</b></p> <p><b>Vegetation classification or exclusion clause:</b> Scrub (Class D)</p> <p><b>Description/justification of classification:</b> Acacia and other shrubs averaging 2-3 metres in height.</p>	
<p><b>Photo ID: 7</b></p> <p><b>Plot Number: 1</b></p> <p><b>Vegetation classification or exclusion clause:</b> Scrub (Class D)</p> <p><b>Description/justification of classification:</b> Acacia and other shrubs averaging 2-3 metres in height.</p>	
<p><b>Photo ID: 8</b></p> <p><b>Plot Number: 2</b></p> <p><b>Vegetation classification or exclusion clause:</b> Shrubland (Class C)</p> <p><b>Description/justification of classification:</b> Shrubs up to 1 metre high in the base of the swale.</p>	
<p><b>Photo ID: 9</b></p> <p><b>Plot Number: 2</b></p> <p><b>Vegetation classification or exclusion clause:</b> Shrubland (Class C)</p> <p><b>Description/justification of classification:</b> Shrubs up to 1 metre high in the base of the swale.</p>	

<p><b>Photo ID: 10</b></p> <p><b>Plot Number: 3</b></p> <p><b>Vegetation classification or exclusion clause:</b> Exclusion Clause 2.2.3.2(e)</p> <p><b>Description/justification of classification:</b> Cleared development lots.</p>	
<p><b>Photo ID: 11</b></p> <p><b>Plot Number: 3</b></p> <p><b>Vegetation classification or exclusion clause:</b> Exclusion Clause 2.2.3.2(e)</p> <p><b>Description/justification of classification:</b> Cleared development lots.</p>	
<p><b>Photo ID: 12</b></p> <p><b>Plot Number: 3</b></p> <p><b>Vegetation classification or exclusion clause:</b> Exclusion Clause 2.2.3.2(e)</p> <p><b>Description/justification of classification:</b> Cleared development lots.</p>	
<p><b>Photo ID: 13</b></p> <p><b>Plot Number: 3</b></p> <p><b>Vegetation classification or exclusion clause:</b> Exclusion Clause 2.2.3.2(e)</p> <p><b>Description/justification of classification:</b> Cleared development lots.</p>	
<p><b>Photo ID: 14</b></p> <p><b>Plot Number: 3</b></p> <p><b>Vegetation classification or exclusion clause:</b> Exclusion Clause 2.2.3.2(e)</p> <p><b>Description/justification of classification:</b> Cleared development lots.</p>	

<p><b>Photo ID: 15</b></p> <p><b>Plot Number: 4</b></p> <p><b>Vegetation classification or exclusion clause:</b> Exclusion Clause 2.2.3.2(f)</p> <p><b>Description/justification of classification:</b> Irrigated turf and managed garden areas. Low threat vegetation.</p>	
<p><b>Photo ID: 16</b></p> <p><b>Plot Number: 5</b></p> <p><b>Vegetation classification or exclusion clause:</b> Exclusion Clause 2.2.3.2(b)</p> <p><b>Description/justification of classification:</b> Revegetating drainage basin, but less than 1ha in size and &gt; 100 metres from other areas of classified vegetation.</p>	
<p><b>Photo ID: 17</b></p> <p><b>Plot Number: 5</b></p> <p><b>Vegetation classification or exclusion clause:</b> Exclusion Clause 2.2.3.2(b)</p> <p><b>Description/justification of classification:</b> Revegetating drainage basin, but less than 1ha in size and &gt; 100 metres from other areas of classified vegetation.</p>	

### Relevant Fire Danger Index

The fire danger index for this site has been determined in accordance with Table 2.1 in AS3959–2018.

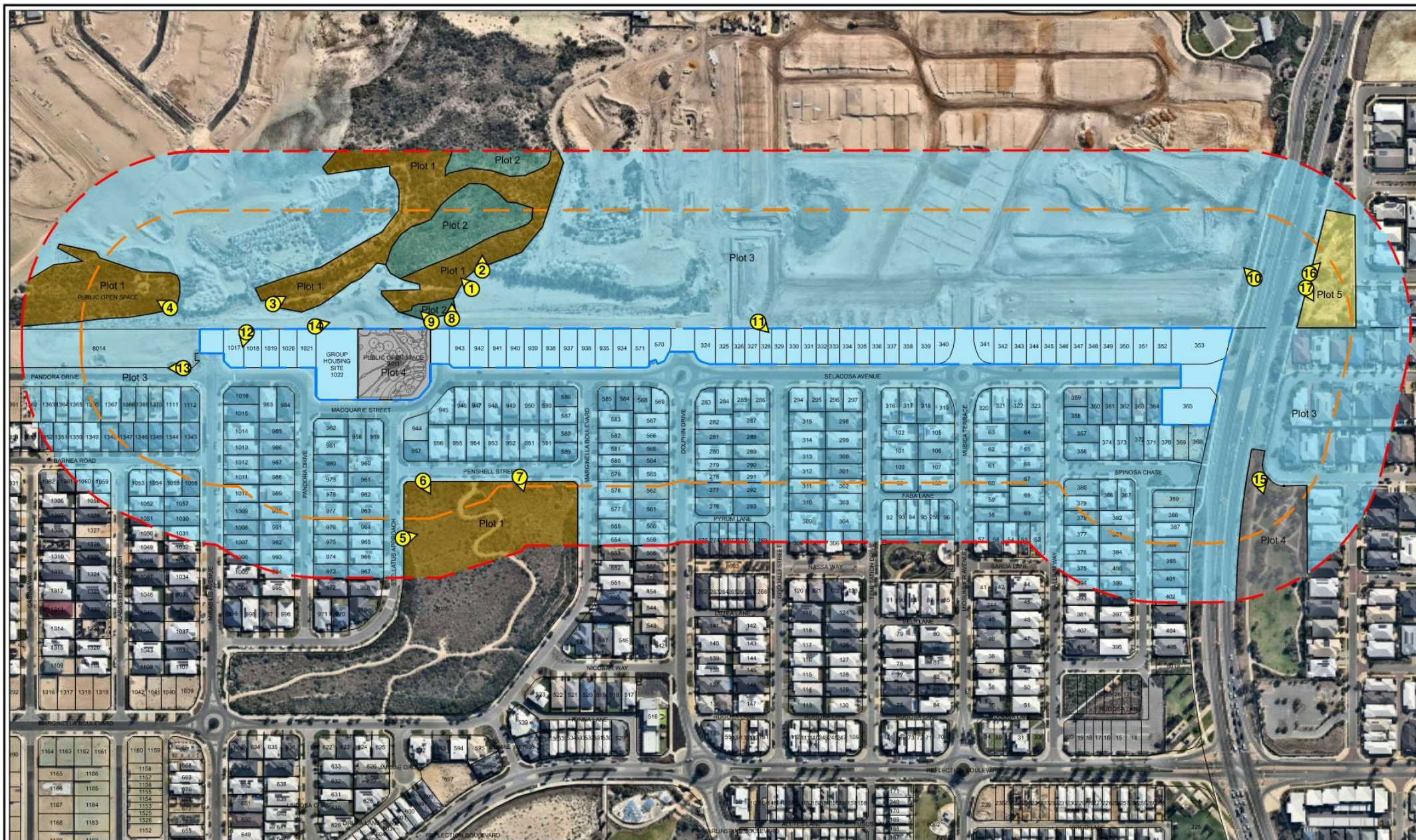
Fire Danger Index:	Table
FDI : 80	2.5

### Effective Slope

The effective slope under the classified vegetation is outlined in the following table.

Plot No.	Classified Vegetation	Effective slope
1	Class D Scrub	Flat/upslope
2	Class C Shrubland	Flat/upslope
3	Exclusion Clause 2.2.3.2(e)	N/A
4	Exclusion Clause 2.2.3.2(f)	N/A
5	Exclusion Clause 2.2.3.2(b)	N/A





Location details: 201 & 203K Reflection Boulevard & 377 Marmion Avenue, Jindalee (Eden Beach)  
 Assessment date: January, 2021  
 Prepared by: Bushfire Safety Consulting  
 Accreditation level: Level 3 BPAD Practitioner  
 Accreditation number: BPAD 23160  
 Accreditation expiry date: 31st January, 2023  
 Date aerial photo: January 2022

### VEGETATION CLASSIFICATION MAP (BAL CONTOUR MAP)

0 20 40 60 80 100 120m  
 SCALE 1:3000 @ A3  
 DATE: MAY 2022



LEGEND:  
 SUBJECT LAND  
 ASSESSMENT AREA (150m) FROM THE  
 EXTERNAL BOUNDARY OF THE SUBJECT SITE  
 ASSESSMENT AREA (100m) FROM THE  
 EXTERNAL BOUNDARY OF THE SUBJECT SITE

SOURCE OF PHOTOGRAPHY: NEARMAP

PLOT 1 - CLASS D SCRUB  
 PLOT 2 - CLASS C SHRUBLAND  
 PLOT 3 - EXCLUSION CLAUSE 2.2.3.2(e)  
 PLOT 4 - EXCLUSION CLAUSE 2.2.3.2(f)  
 PLOT 5 - EXCLUSION CLAUSE 2.2.3.2(b)

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### Determined Bushfire Attack Level

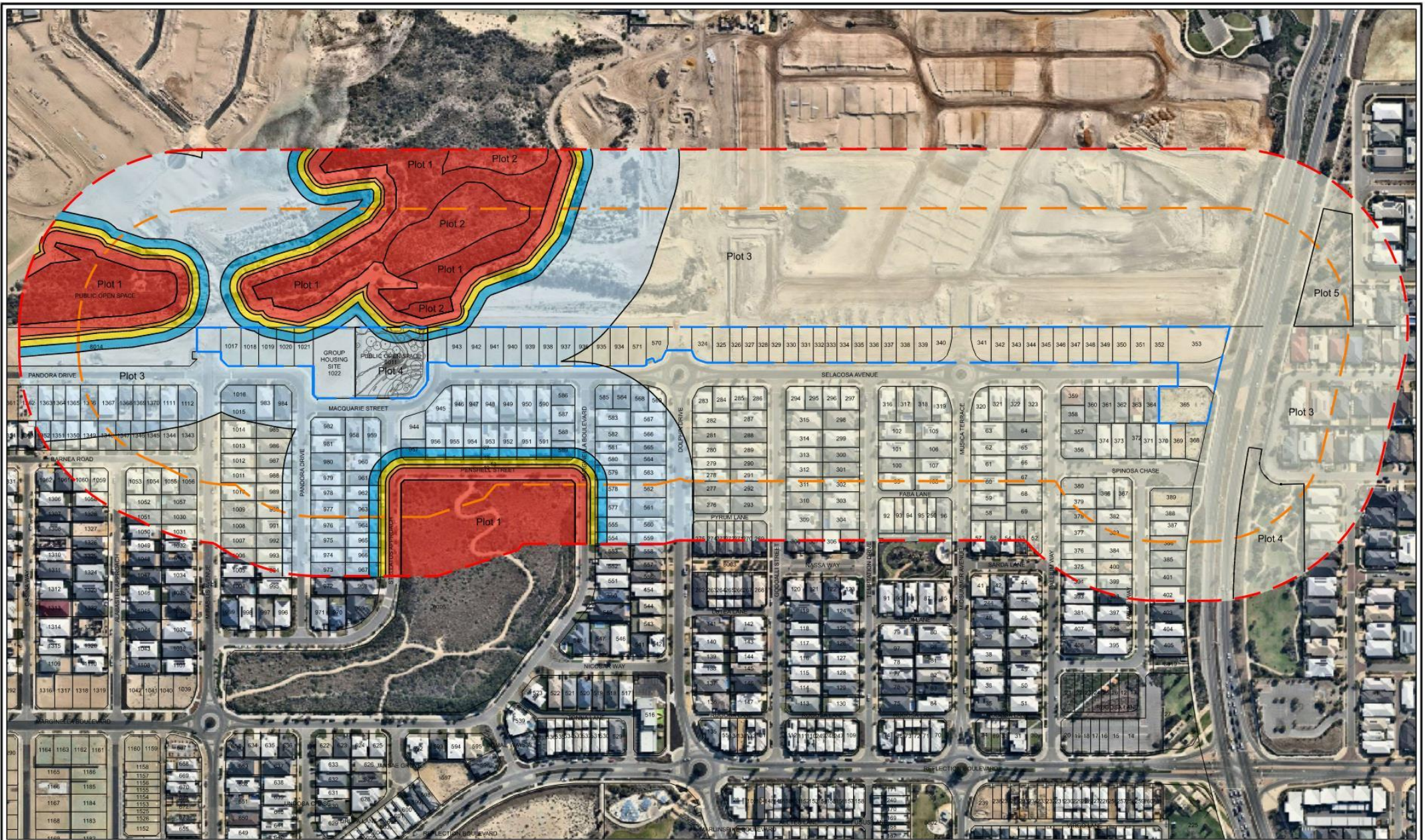
The determined Bushfire Attack Level (highest BAL) for the lots and future dwellings has been determined in accordance with clause 2.2.6 of AS3959-2018 using the above analysis.

### Potential Bushfire Impacts

The predicted radiant heat flux levels into the site from the assessment are outlined below in Table 1 and the BAL Contour Plan.

Lot	Applied Vegetation Classification	Plot No. & Effective Slope	Separation distance to Classified Vegetation (metres)	Highest BAL Contour
324-353	Class D Scrub	Plot 1 - flat/upslope	>100 metres	BAL-LOW
365	Class D Scrub	Plot 1 - flat/upslope	>100 metres	BAL-LOW
570-571	Class D Scrub	Plot 1 - flat/upslope	>100 metres	BAL-LOW
934	Class D Scrub	Plot 1 - flat/upslope	>100 metres	BAL-LOW
935	Class D Scrub	Plot 1 - flat/upslope	90	BAL-12.5
936	Class D Scrub	Plot 1 - flat/upslope	80.5	BAL-12.5
937	Class D Scrub	Plot 1 - flat/upslope	73	BAL-12.5
938	Class D Scrub	Plot 1 - flat/upslope	67	BAL-12.5
939	Class D Scrub	Plot 1 - flat/upslope	65	BAL-12.5
940	Class D Scrub	Plot 1 - flat/upslope	51	BAL-12.5
941	Class D Scrub	Plot 1 - flat/upslope	40	BAL-12.5
942	Class C Shrubland	Plot 2 - flat/upslope	18	BAL-19
943	Class C Shrubland	Plot 2 - flat/upslope	12	BAL-29
1022	Class D Scrub	Plot 1 - flat/upslope	17.5	BAL-29
1021	Class D Scrub	Plot 1 - flat/upslope	14	BAL-29
1020	Class D Scrub	Plot 1 - flat/upslope	15	BAL-29
1019	Class D Scrub	Plot 1 - flat/upslope	17.5	BAL-29
1018	Class D Scrub	Plot 1 - flat/upslope	21.5	BAL-19
1017	Class D Scrub	Plot 1 - flat/upslope	28	BAL-12.5





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Date aerial photo: January 2022

## BAL CONTOUR MAP

0 20 40 60 80 100 120m

SCALE 1:3000 @ A3

DATE: MAY 2022



LEGEND:

SUBJECT LAND

ASSESSMENT AREA (150m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE

ASSESSMENT AREA (100m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE

SOURCE OF PHOTOGRAPHY: NEARMAP

### INDICATIVE BUSHFIRE ATTACK LEVELS

BAL LOW

BAL 12.5

BAL 19

BAL 29

BAL 40

BAL FLAME ZONE

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**Appendix 1: Additional Information / Advisory Notes**

A Bushfire Attack Level (BAL) Assessment is a means of measuring the severity of a buildings potential exposure to ember attack, radiant heat and direct flame contact from a bushfire event, and thereby determining the construction measures required for the dwelling.

The method used to determination of the BAL rating, and subsequent building construction standards, are directly referenced from Australian Standard *AS3959-2018 Construction of buildings in bushfire prone areas*.

The BAL rating is determined through the identification and assessment of the following parameters:

- Fire danger Index (FDI) rating; assumed to be FDI-80 for Western Australia
- All classified vegetation **within 100m** of the subject building
- Separation distance between the building and the classified vegetation
- Slope of the land under the classified vegetation

AS3959-2018 has six (6) levels of BAL, based on the radiant heat flux exposure to the building, and also identifies the relevant sections for building construction as detailed below;

Bushfire Attack Level (BAL)	Classified Vegetation within 100m of the site and heat flux exposure thresholds	Description of predicted bushfire attack and levels of exposure	Construction Sections (within AS3959)
<b>BAL-LOW</b>	See Clause 2.2.3.2	There is insufficient risk to warrant specific construction requirements	4
<b>BAL-12.5</b>	$\leq 12.5 \text{ kW/m}^2$	Ember attack	3 & 5
<b>BAL-19</b>	$> 12.5 \text{ kW/m}^2$ to $\leq 19 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windbourne embers together with increasing heat flux	3 & 6
<b>BAL-29</b>	$> 19 \text{ kW/m}^2$ to $\leq 29 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windbourne embers together with increasing heat flux	3 & 7
<b>BAL-40</b>	$> 29 \text{ kW/m}^2$ to $\leq 40 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windbourne embers together with increasing heat flux with the increased likelihood of exposure to flames	3 & 8
<b>BAL-FZ</b>	$> 40 \text{ kW/m}^2$	Direct exposure to flames from fire front in addition to heat flux and ember attack	3 & 9