




Bushfire Attack Level (BAL) Assessment Report

Site details	
Address: Stage 3 Claravale The Brook Estate	
Suburb: Hilbert	State: Western Australia
Local Government Area: City of Armadale	
Description of Building Works: Class 1a dwellings	

Report details			
Project number	A23.118	Report version	0
Assessment date	21/05/2026	Report date	19/06/2026
Author	Callan Baker Graduate Bushfire Consultant Bridie Gemmell BPAD L2 - 62640	Review	Daniel Panickar BPAD L3 - 37802 

Site Assessment and Site Plan

The assessment of 18 bushfire prone lots (subject lots) within Stage 3 of Claravale The Brook Estate (subject site) was undertaken on 21/05/2026 for the purpose of determining the Bushfire Attack Level (BAL) in accordance with *Australian Standard AS 3959: 2018 Construction of Buildings in Bushfire Prone Areas* (AS 3959: 2018; SA, 2018) Simplified Procedure (Method 1). An overview of the subject site is presented in Figure 1.

Vegetation Classification

All vegetation within 100 m of the 18 bushfire prone lots was classified in accordance with Clause 2.2.3 of AS 3959: 2018. Each distinguishable vegetation class with the potential to determine the BAL is identified in Table 1 and presented in Figure 2.

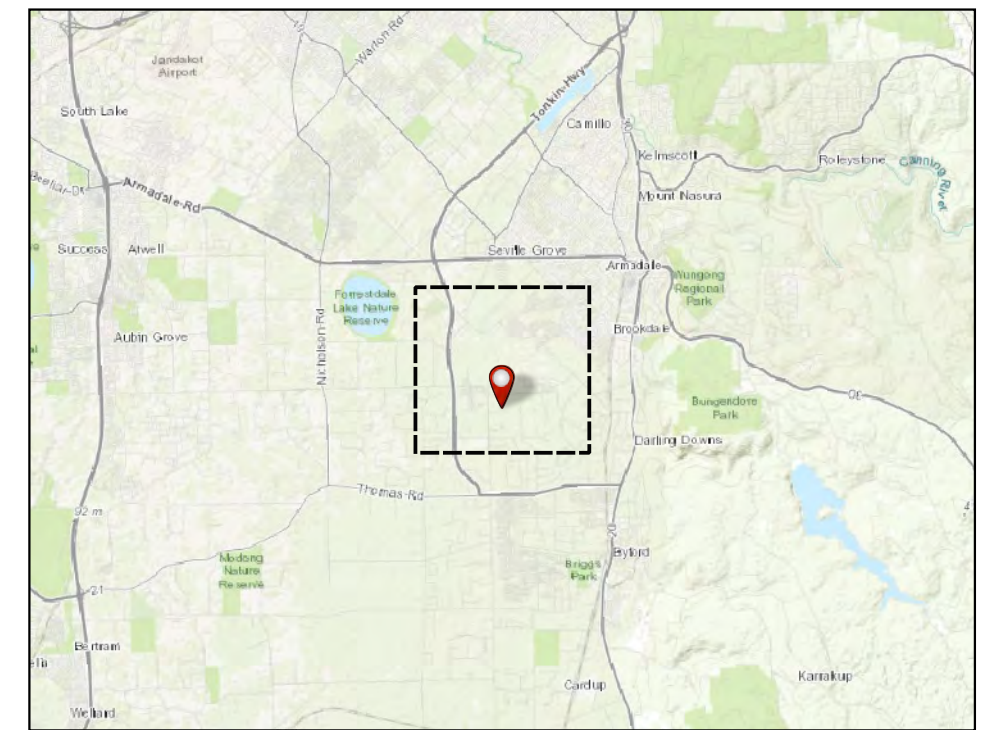
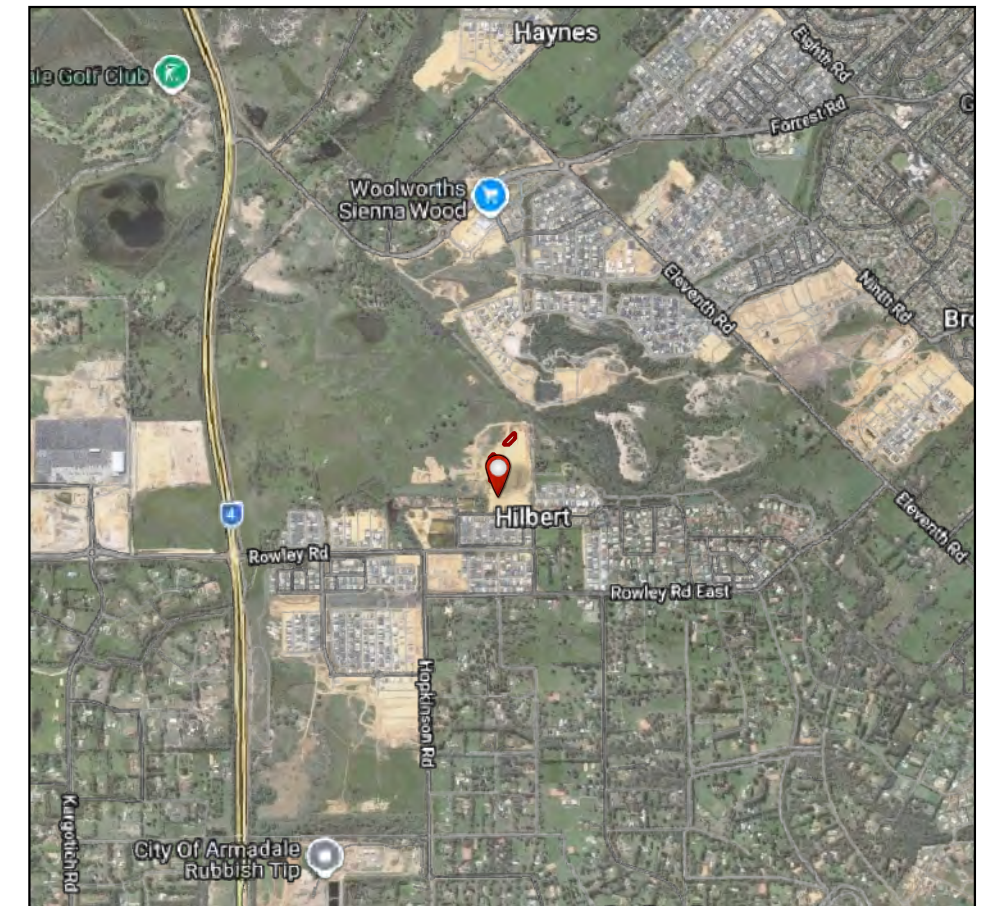
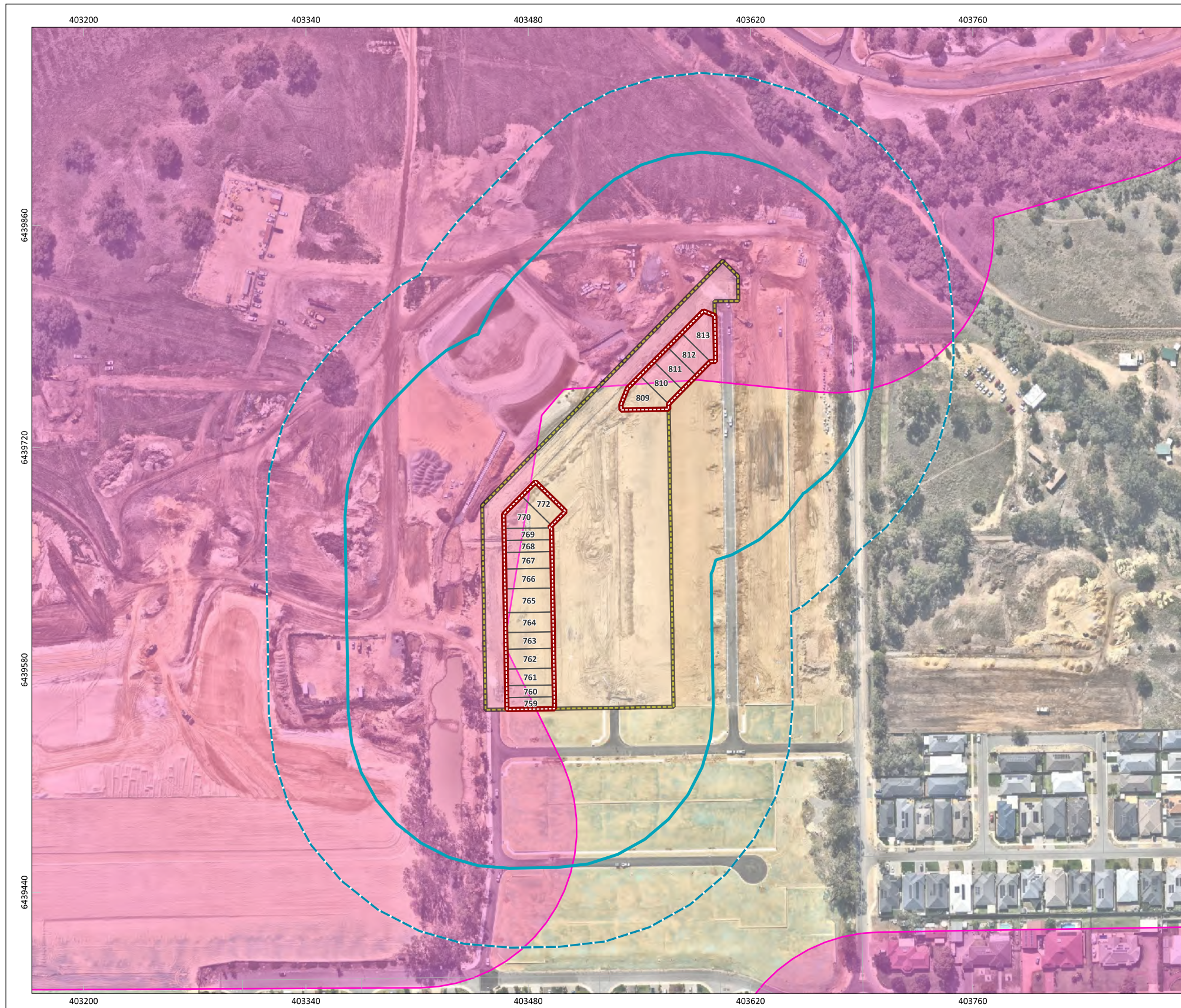







Figure 1: Site Overview

		PROJECT/REPORT NAME Bushfire Attack Level (BAL) Report Stage 3 Claravale The Brook Estate, Hilbert		Legend Subject Site Buffer 100m Buffer 150m Lot Boundary Stage 3 Boundary Bush Fire Prone Area Planning (OBRM-023) Bushfire Prone Area 2
SCALE 1:2,800	SHEET SIZE A3 COLOUR	CLIENT Parcel Property		
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		PROJECT NUMBER A23.118	VERSION 0	 Western Environmental Pty Ltd 08 6344 2310 enquiries@western.com.au Level 3/25 Prowe St, West Perth WA 6005 western.com.au
DATA SOURCE Nearmap (2nd April 2026)		DRAWN BY / REVIEWED BY JP/CB	DATE 19/6/2026	

Table 1: Vegetation Classification

Plot 1	Class F Rainforest
<p>Photo 1</p> <p>Existing trees which have been retained as part of the approved Landscape Plan (Appendix A) for the subject site. This vegetation has been classified in accordance with its assumed mature state informed by the Landscape Plan. The Class F Rainforest classification was agreed upon between the bushfire planning practitioner and the City of Armadale (the City) given the City’s desire for the vegetation in the Public Open Space (POS) reserve to be classified as Class B Woodland or Class A Forest. Given the linear nature of the reserve, Class B Woodland and Class A Forest likely overestimate bushfire risk posed to surrounding lots and, as such, Class F Rainforest has been adopted as a more realistic model of bushfire behaviour associated with the proposed vegetation. Although Class A Rainforest vegetation does not typically occur with Western Australia, this methodology aligns with the Rural Fire Service’s <i>Planning for Bush Fire Protection</i> (RFS, 2019). This approach is detailed further in the rainforest technical note (Appendix B).</p>	
Plot 1	Class F Rainforest
<p>Photo 2</p> <p>Existing trees which have been retained as part of the approved Landscape Plan (Appendix A) for the subject site. This vegetation has been classified in accordance with its assumed mature state informed by the Landscape Plan. The Class F Rainforest classification was agreed upon between the bushfire planning practitioner and the City of Armadale (the City) given the City’s desire for the vegetation in the Public Open Space (POS) reserve to be classified as Class B Woodland or Class A Forest. Given the linear nature of the reserve, Class B Woodland and Class A Forest likely overestimate bushfire risk posed to surrounding lots and, as such, Class F Rainforest has been adopted as a more realistic model of bushfire behaviour associated with the proposed vegetation. Although Class A Rainforest vegetation does not typically occur with Western Australia, this methodology aligns with the Rural Fire Service’s <i>Planning for Bush Fire Protection</i> (RFS,</p>	



<p>2019). This approach is detailed further in the rainforest technical note (Appendix B).</p>	
<p>Plot 2</p> <p>Photo 3</p> <p>This plot is dominated by grasses in the understorey. Some trees are present in this plot, however these are restricted to wind breaks along property fencelines or are sparsely spread throughout the plot with isolated canopies. Canopy cover was assessed to be less than 10%.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p>	<p>Class G Grassland</p> 
<p>Plot 2</p> <p>Photo 4</p> <p>This plot contains unmanaged grasses exceeding 100 mm in height. This photo was taken using a drone and represents the extent of the unmanaged grassland to the north of the site.</p> <p>The slope under this vegetation was assessed to be upslope/flat land.</p> <p>Drone photography was used to capture this photo due to site access constraints.</p>	<p>Class G Grassland</p> 
<p>Plot 3</p> <p>Photo 5</p> <p>This photo was taken using a drone and is representative of the plot of classifiable vegetation located to the north of the subject site. It is located outside the 100 m survey area and has therefore been excluded under clause 2.2.3.2 (a) of AS 3959:2018.</p>	<p>Excluded - clause 2.2.3.2 (a)</p> 



<p>Plot 4</p>	<p>Excluded - clause 2.2.3.2 (e)</p>
<p>Photo 6 Areas within the subject site cleared for development and is devoid of vegetation. This plot has been excluded under clause 2.2.3.2 (e) of AS 3959:2018.</p>	
<p>Plot 5</p>	<p>Excluded - clause 2.2.3.2 (e)</p>
<p>Photo 7 Areas within the subject site cleared for development and is devoid of vegetation. This plot has been excluded under clause 2.2.3.2 (e) of AS 3959:2018.</p>	
<p>Plot 5</p>	<p>Excluded - clause 2.2.3.2 (f)</p>
<p>Photo 8 Areas of vegetation to the east of the subject site which contain managed vegetation with a cropped understory maintained to a low-threat state. This plot has been excluded under clause 2.2.3.2 (f) of AS 3959:2018.</p>	



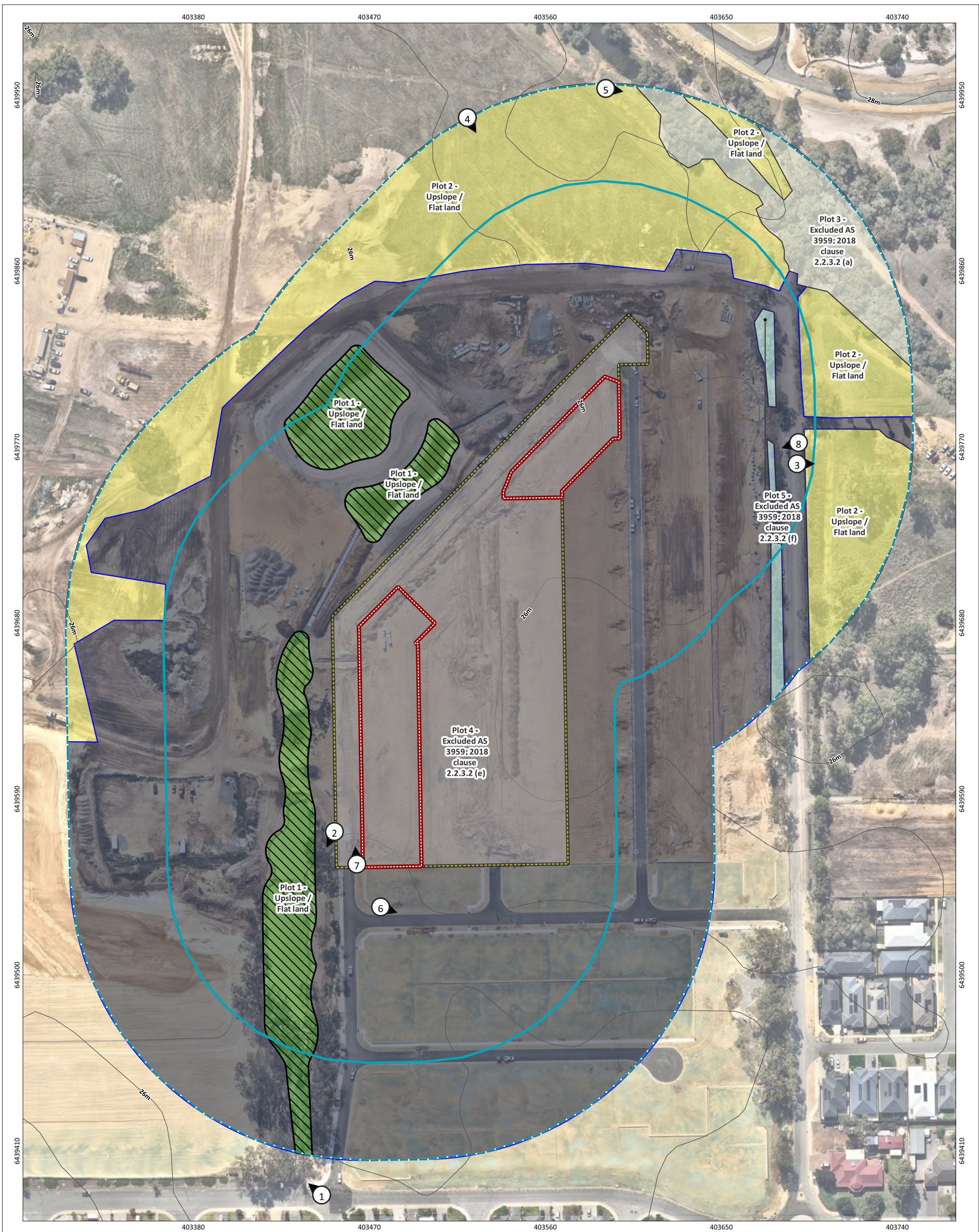


Figure 2: Vegetation Classification

		PROJECT/REPORT NAME Bushfire Attack Level (BAL) Report Stage 3 Claravale The Brook Estate, Hilbert		Legend Subject Site Buffer 100m Buffer 150m Stage 3 Boundary Classification Informed by the Landscape Plan Photos 2 metre contours (DPIRD-072) 2m		Vegetation Classification Class F - Rainforest Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (a) Excluded AS 3959: 2018 2.2.3.2 (e) Excluded AS 3959: 2018 2.2.3.2 (f)		 WESTERN ENVIRONMENTAL <small>Western Environmental Pty Ltd 08 6244 2310 enquiries@westernv.com.au Level 3/25 Prowse St, West Perth WA 6005 westernv.com.au</small>
SCALE 1:1,800	SHEET SIZE A3 COLOUR	CLIENT Parcel Property		Vegetation Classification Class F - Rainforest Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (a) Excluded AS 3959: 2018 2.2.3.2 (e) Excluded AS 3959: 2018 2.2.3.2 (f)		 WESTERN ENVIRONMENTAL <small>Western Environmental Pty Ltd 08 6244 2310 enquiries@westernv.com.au Level 3/25 Prowse St, West Perth WA 6005 westernv.com.au</small>		
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		PROJECT NUMBER A23.118	VERSION 0	Vegetation Classification Class F - Rainforest Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (a) Excluded AS 3959: 2018 2.2.3.2 (e) Excluded AS 3959: 2018 2.2.3.2 (f)			 WESTERN ENVIRONMENTAL <small>Western Environmental Pty Ltd 08 6244 2310 enquiries@westernv.com.au Level 3/25 Prowse St, West Perth WA 6005 westernv.com.au</small>	
DATA SOURCE Nearmap (2nd April 2026)		DRAWN BY / REVIEWED BY JP/CB	DATE 19/6/2026	Vegetation Classification Class F - Rainforest Class G - Grassland Excluded AS 3959: 2018 2.2.3.2 (a) Excluded AS 3959: 2018 2.2.3.2 (e) Excluded AS 3959: 2018 2.2.3.2 (f)				

Relevant Fire Danger Index

The Fire Danger Index for the subject lots has been determined in accordance with Table 2.1 of AS 3959: 2018 and is presented in Table 2.

Table 2: Fire Danger Index (FDI)

Relevant Fire Danger Index			
FDI 40 <input type="checkbox"/>	FDI 50 <input type="checkbox"/>	FDI 80 <input checked="" type="checkbox"/>	FDI 100 <input type="checkbox"/>
<i>Table 2.4.5</i>	<i>Table 2.4.4</i>	<i>Table 2.4.3</i>	<i>Table 2.4.2</i>

Potential Bushfire Impacts

The potential bushfire impact to the subject lots from each of the identified vegetation plots are identified below in Table 3.

Table 3: Method 1 BAL Calculation (BAL Contours)

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
1	Class F Rainforest	All upslopes and flat land (0 degrees)	<6	6 - <9	9 - <13	13 - <19	19 - <100
2	Class G Grassland	All upslopes and flat land (0 degrees)	<6	6 - <8	8 - <12	12 - <17	17 - <50
3	Excluded - clause 2.2.3.2 (a)	-	No separation distances required - BAL-LOW				
4	Excluded - clause 2.2.3.2 (e)	-	No separation distances required - BAL-LOW				
5	Excluded - clause 2.2.3.2 (f)	-	No separation distances required - BAL-LOW				

Determined Bushfire Attack Level (BAL)

The determined Bushfire Attack Level (highest BAL) for the subject lots has been determined in accordance with Clause 2.2.6 of AS 3959: 2018. Relevant data from the subject site assessment is shown in Figure 3 and Table 4.

Table 4: BAL Assessment Summary

Affected Lot	BAL Rating	Construction sections to be consulted in AS 3959: 2018
759	BAL-12.5	3 and 5
760	BAL-12.5	3 and 5
761	BAL-12.5	3 and 5
762	BAL-12.5	3 and 5
763	BAL-12.5	3 and 5
764	BAL-12.5	3 and 5
765	BAL-12.5	3 and 5
766	BAL-12.5	3 and 5
767	BAL-12.5	3 and 5
768	BAL-12.5	3 and 5
769	BAL-12.5	3 and 5
770	BAL-12.5	3 and 5
772	BAL-12.5	3 and 5
809	BAL-12.5	3 and 5
810	BAL-12.5	3 and 5
811	BAL-12.5	3 and 5
812	BAL-12.5	3 and 5
813	BAL-12.5	3 and 5

Note: This BAL rating is based on the information current at the date of this document and is valid for 12 months.



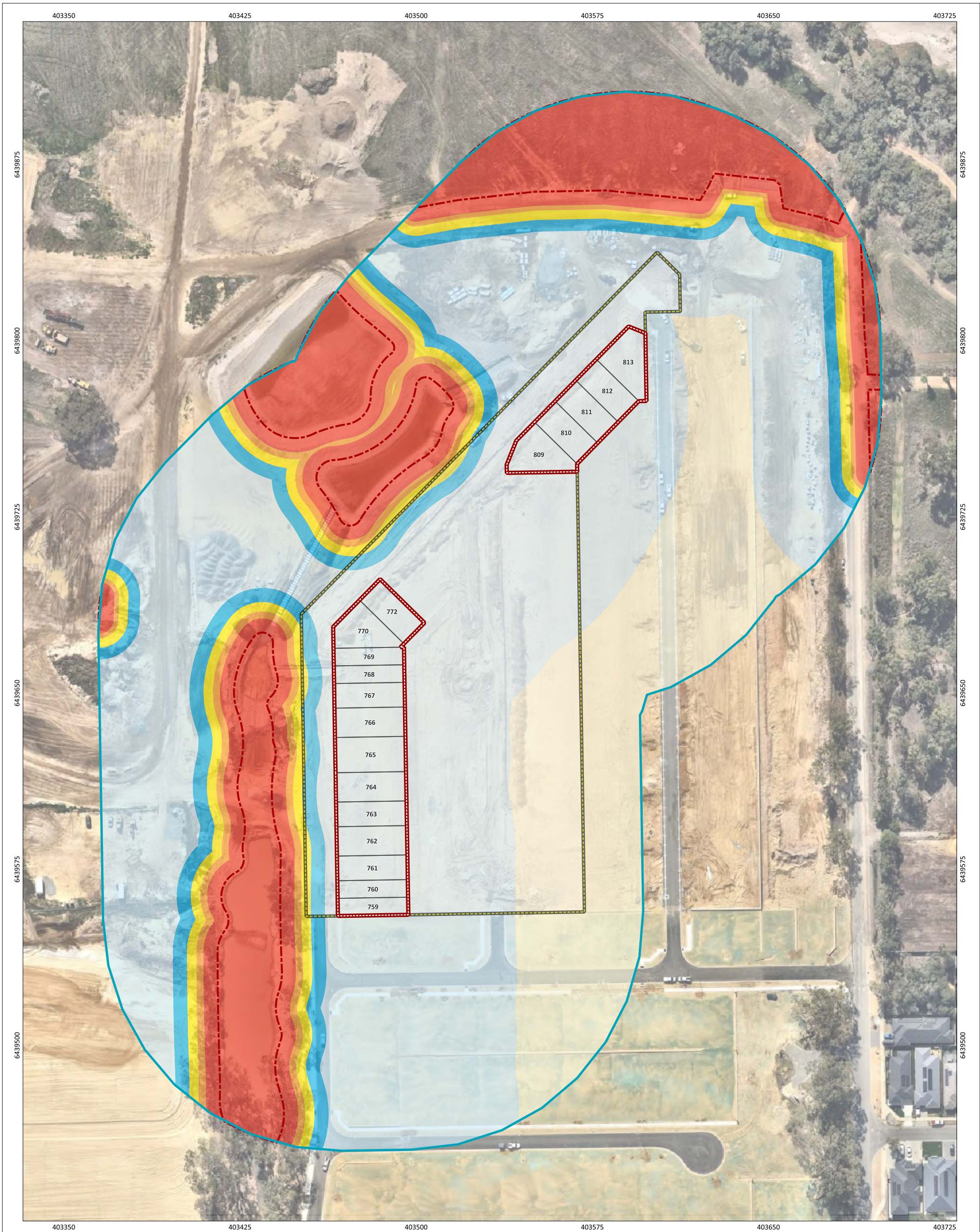


Figure 3: Bushfire Attack Level (BAL) Contours

		PROJECT/REPORT NAME Bushfire Attack Level (BAL) Report Stage 3 Claravale The Brook Estate, Hilbert		Legend 	Bushfire Attack Level (BAL) 	 Western Environmental Pty Ltd 08 6244 2310 enquiries@westernv.com.au Level 3/25 Prowse St, West Perth WA 6005 westernv.com.au
SCALE 1:1,500	SHEET SIZE A3 COLOUR	CLIENT Parcel Property				
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		PROJECT NUMBER A23.118	VERSION 0			
DATA SOURCE Nearmap (2nd April 2026)		DRAWN BY / REVIEWED BY JP/CB	DATE 19/6/2026			

References

ACT Government. (2023). *ACT Bushfire Management Standards: justice and community safety directorate act emergency services agency.*

Country Fire Authority (2017) *Riparian land and bushfire. Resource document. Version 2. Report prepared by obliqua pty ltd for the Country Fire Authority and Department of Environment, Land, Water and Planning. CFA, East Burwood, Victoria.*

Rural Fire Service (RFS). (2019). *Planning for Bush Fire Protection: A guide for councils, planners, fire authorities and developers.* Government of New South Wales.













Standards Australia (SA). (2018). *Construction of buildings in bushfire-prone areas (AS 3959: 2018).*



Appendix A: Landscape Plan

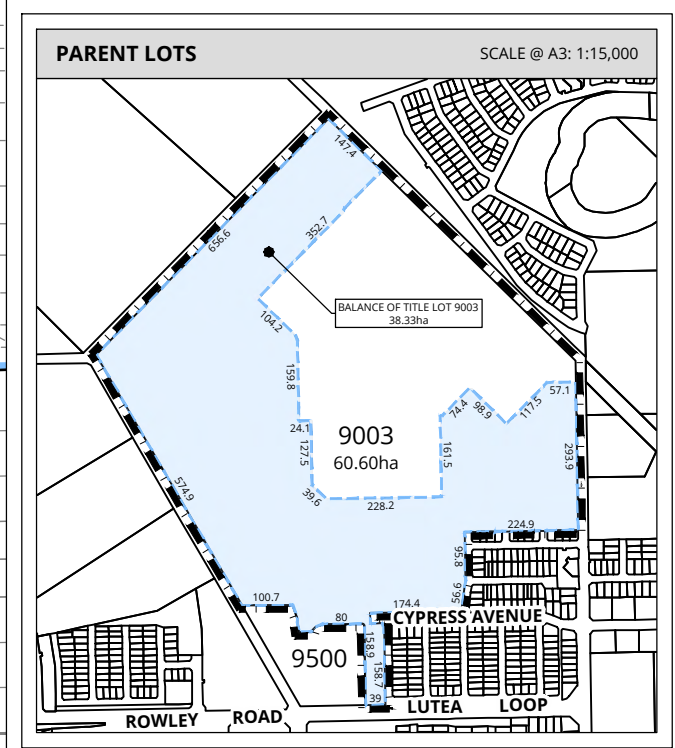


LEGEND

-  SUBJECT SITE
-  CONTOURS
-  EXISTING BOUNDARIES
-  EXISTING LOT NUMBERS
-  PROPOSED BOUNDARIES
-  PROPOSED LOT NUMBERS
-  PROPOSED LOT DIMENSIONS
-  WATER
-  SEWER
-  POWER
-  TEMPORARY TURNAROUND
-  BALANCE OF TITLE LOT

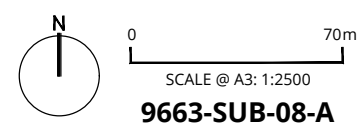
LOT SUMMARY

ORIGINAL AREAS:	2
LOT 9003	60.60ha
PROPOSED RESIDENTIAL LOTS:	254
MINIMUM LOT AREA	225m ²
AVERAGE LOT AREA	355m ²
MAXIMUM LOT AREA	852m ²
TOTAL AREA	9.01ha
BALANCE OF TITLE LOTS:	1
LOT 9003	38.33ha
PUBLIC OPEN SPACE LOTS	2
TOTAL AREA	2.60ha
FORESHORE RESERVE	1.68ha
PRIMARY SCHOOL	4.10ha



DRAFT

FREEHOLD PLAN OF SUBDIVISION
 LOT 9003 HILBERT ROAD
 HILBERT

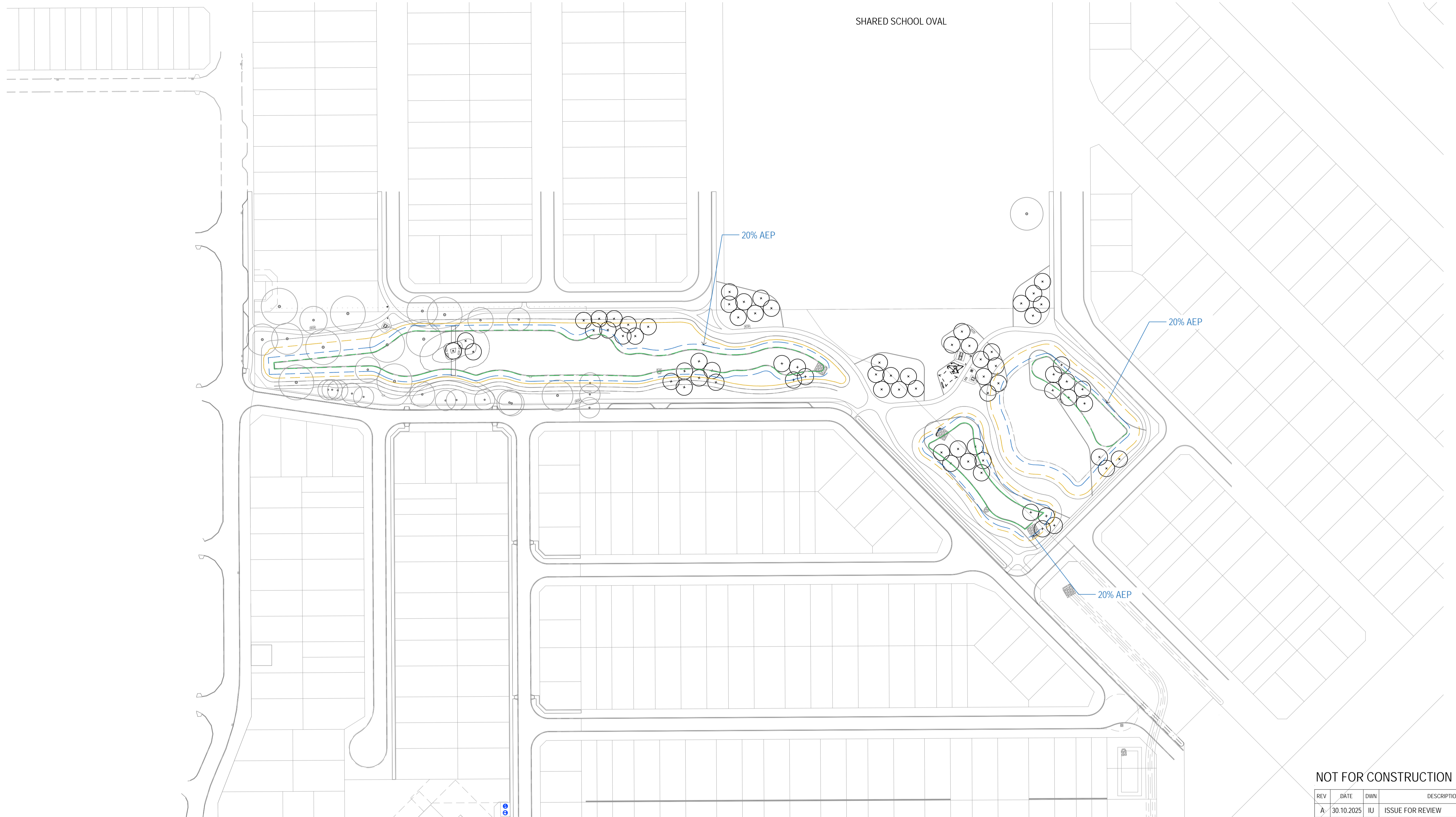


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SHARED SCHOOL OVAL

20% AEP

20% AEP

20% AEP

NOT FOR CONSTRUCTION



REV	DATE	DWN	DESCRIPTION
A	30.10.2025	IU	ISSUE FOR REVIEW
B	03.11.2025	SP	ISSUE FOR REVIEW
C	06.11.2025	IU	ISSUE FOR REVIEW
D	12.11.2025	SP	20% AEP LINES

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PROJECT:
 Claravale The Brook - POS 3
 CLIENT:
 Parcel Property
 TITLE:
 Landscape Concept

PROJECT NO:	10.7275	DRAWN BY:	IU	APPROVED BY:	SP	REV:	D
SCALE:	1:1000	SHEET NO:	301	SHEET SIZE:	A1		



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Appendix B

Rainforest Classification



Drainage basin areas are intended to be planted with a mixture of native species as per the landscape plan in Appendix A. This structure could be considered low threat vegetation; however the City of Armadale has expressed the desire to plant trees within these areas in the future. As such, a detailed review of the structure, shape and size of these basins has been considered below.

The revegetated areas of the basins form a sinuous pattern in the landscape, presenting as a living stream that runs parallel to proposed lots. The restricted size and parallel orientation of the basins to proposed lots will likely limit bushfire behavior and associated risk to proposed built assets. Therefore, the vegetation classification of the basins needs to consider this reduced bushfire threat.

Western Australia does not currently have a consistent approach to classifying small areas of remnant bushland and narrow vegetation corridors outside of AS 3959: 2018. However, NSW RFS (2019) and ACT Government (2023) outline a clear and well-thought-out simplified methodology for assessing these areas. This simplified approach provides an acceptable method for assessing remnant vegetation (defined as a parcel of vegetation with a size of less than 1 ha or a shape that provides a potential fire run that could threaten buildings not exceeding 50 m). The second definition relates to riparian corridors etc. that are <50 m wide. These areas are considered a low hazard and can be classified as Class F Rainforest under AS 3959: 2018. CFA (2017) supports this 'low hazard' categorisation and states, *'riparian land can be expected to have only a limited influence on bushfire spread at a landscape scale. In addition, if spotting is limited, a fire burning in a forested riparian area is expected to be slower and therefore less likely to contribute to fire spread at a landscape scale than a fire burning in grass or crops.'*

The Class F Rainforest classification in AS 3959: 2018 uses the same rate of spread model as is used for Class A Forest and Class B Woodland classifications, with a modified (reduced) fuel load that results in a slower rate of spread and consequently, lower radiant heat flux impacts. Given the restricted size and parallel orientation of the basins to proposed lots, a Class F Rainforest classification in line with the approach outlined in NSW RFS (2019) and ACT Government (2023) is considered appropriate for use at The Brook, Claravale.



Appendix C:
Additional Information / Advisory
Notes



This assessment was undertaken as per AS 3959: 2018. It is important that the current version of AS 3959, is consulted for construction purposes.

This BAL rating is based on the information current at the date of this letter and is valid for 12 months from the date of this letter.

Bushfire Attack Level (BAL) as set out in the Australian Standard 3959 Construction of Buildings in Bushfire-Prone Areas (AS 3959), as referenced in the Building Code of Australia.

Bushfire Attack Level (BAL)	Classified vegetation within 100 m of the subject site and radiant heat flux exposure thresholds	Description of predicted bush fire attack and levels of exposure	Construction Section as per AS 3959
BAL-LOW		There is insufficient risk to warrant specific construction requirements.	4
BAL-12.5	$\leq 12.5 \text{ kW/m}^2$	Ember attack	3 and 5
BAL-19	$>12.5 \text{ kW/m}^2 \leq 19 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing radiant heat flux.	3 and 6
BAL-29	$>19 \text{ kW/m}^2 \leq 29 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing radiant heat flux	3 and 7
BAL-40	$>29 \text{ kW/m}^2 \leq 40 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing radiant heat flux with the increased likelihood of exposure to flames.	3 and 8
BAL-FZ	$>40 \text{ kW/m}^2$	Direct exposure to flames from fire front in addition to radiant heat flux and ember attack	3 and 9

Source: "AS 3959: 2018 Construction of buildings in bushfire-prone areas" published by Standards Australia, Sydney.

