WESTERN ENVIRONMENTAL

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Bushfire Attack Level (BAL) Assessment Report

Site details			
Address: Stage 15 Baldivis Parks Estate			
Suburb: Baldivis		**State:** Western Australia	
Local Government Area: City of Rockingham			
Description of Building Works: Subdivision of 47 lots			

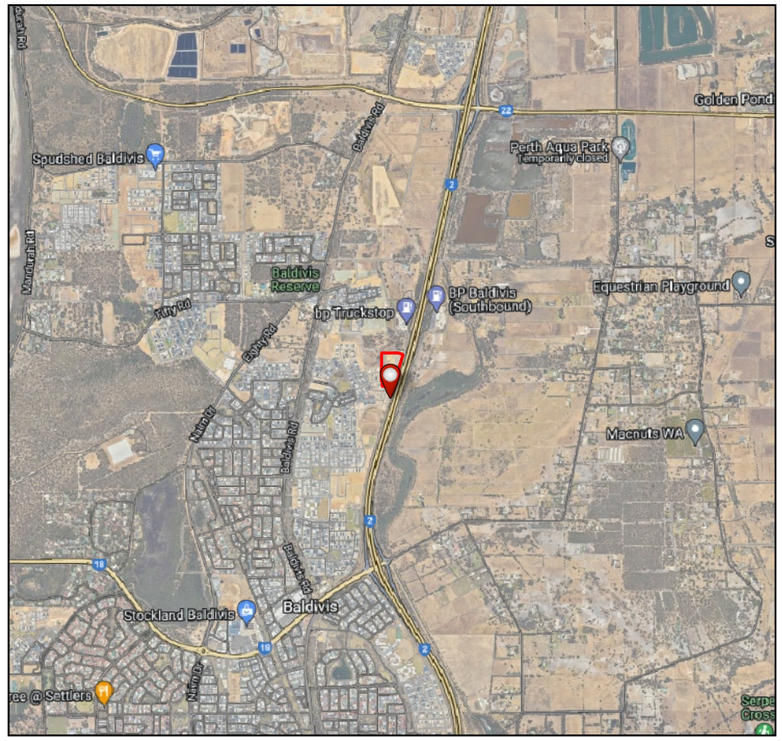
Report details			
Project number	**A24.009**	**Report version**	0
Assessment date	26/04/2024	**Report date**	2/05/2024
Author	Bridie Farrar Bushfire Consultant	**Review**	Daniel Panickar (BPAD L3-37802) BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Site Assessment and Site Plan

The assessment of the 47 lots was undertaken on 26/04/2024 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 site is presented in Figure 1.

Vegetation Classification

All vegetation within 100 m of Stage 15 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.



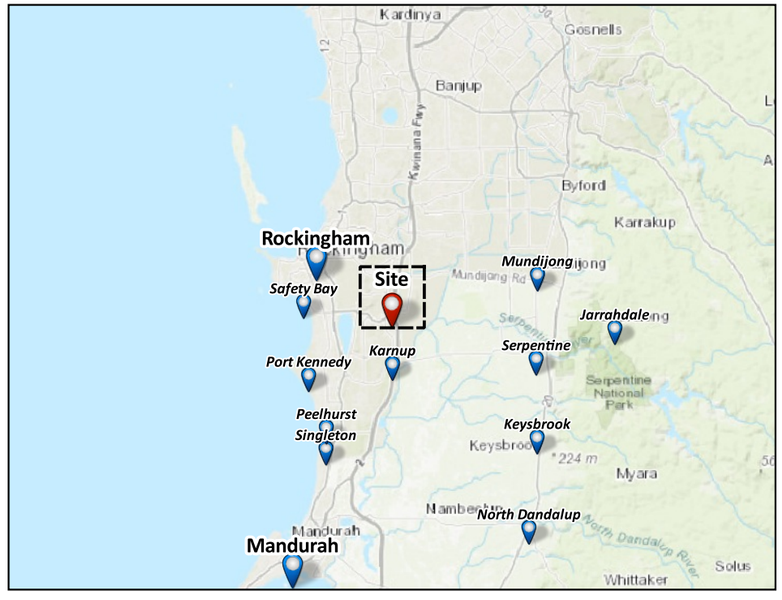


Figure 1: Site Overview

N

0 40 80 120 160 m

PROJECT/REPORT NAME	BAL Report Baldivis Parks Estate
SCALE	1:2,990
SHEET SIZE	A3 COLOUR
CLIENT	Frasers Property
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A24.009
VERSION	0
DATA SOURCE	LANDGATE AERIAL IMAGERY Summer 2023
DRAWN BY / REVIEWED BY	SM/DP
DATE	2/5/2024

Legend

- Subject Site
- Lots
- Buffer 100m
- Buffer 150m

No	Description	Drawn	Approved	Date
A	Original issue	SM	DP	2/5/2024

NOTES:

Cadastral boundary (LGATE-002). Base map ESRI Topo. Townsites (LGATE-248).

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Table 1: Vegetation Classification

Plot 1	Class A Forest
Photo 1 Trees up to 30 m in height with canopy cover exceeding 30%. Understorey vegetation structure is multi-tiered. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 1	**Class A Forest**
Photo 2 Trees up to 30 m in height with canopy cover exceeding 30%. Understorey vegetation structure is multi-tiered. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 2	**Class D Scrub**
Photo 3 Trees and shrubs up to 6 m in height. Although scorched, understorey structure is expected to be multi-tiered at maturity with cover exceeding 30%. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 2	Class D Scrub
Photo 4 Shrubs up to 6 m in height. This is a conservative classification. Despite there being understorey vegetation present, its structure is less dense, more open and shorter in stature and as such, is expected not to produce radiant heat impacts to the extent modelled for Scrub classification in AS 3959:2018. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 2	**Class D Scrub**
Photo 5 Trees and shrubs to 6 m in height. The structure of vegetation in this plot is multi-tiered with cover exceeding 30%. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 2	**Class D Scrub**
Photo 6 (background) Vegetation in this plot is behind the road (Kwinana Freeway). The photo was taken from a distance for safety reasons. Trees and shrubs to 6 m in height. The structure of vegetation in this plot is multi-tiered with cover exceeding 30%. The slope under this vegetation was assessed to be upslope/flat land.	

Plot 3	Excluded - clause 2.2.3.2 (e) & (f)
Photo 7 Cleared areas adjacent to and within the subject site. These areas are devoid of vegetation.	
Plot 3	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 8 Cleared areas and low-threat vegetation (i.e. trees and sparse shrubs over mineral earth) adjacent to the subject site.	
Plot 3	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 9 Low-threat vegetation adjacent to the subject site (i.e. trees and sparse shrubs over mineral earth). The lack of understorey vegetation significantly reduces the potential for fire to spread through this vegetation.	

Plot 3	Excluded - clause 2.2.3.2 (e) & (f)
Photo 10 Low-threat vegetation adjacent to the subject site (i.e. trees and sparse shrubs over mineral earth). The lack of understorey vegetation significantly reduces the potential for fire to spread through this vegetation.	
Plot 3	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 11 Shared path east of the subject site which is devoid of vegetation.	
Plot 3	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 12 Areas to the north of the subject site (within Baldivis Parks Estate) which are devoid of vegetation.	

Plot 3	Excluded - clause 2.2.3.2 (e) & (f)
Photo 13 Low-threat vegetation to the north of the subject site (within Baldivis Parks Estate). The lack of understorey vegetation significantly reduces the potential for fire to spread through this vegetation.	
Plot 3	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 14 The Kwinana Freeway to the east of the subject site which is devoid of vegetation.	
Plot 3	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 15 Areas within the subject site which have been cleared. In the background there are trees to be retained in the POS area (Figure 1). This vegetated area lacks any understorey vegetation and as such, is considered to be low threat.	

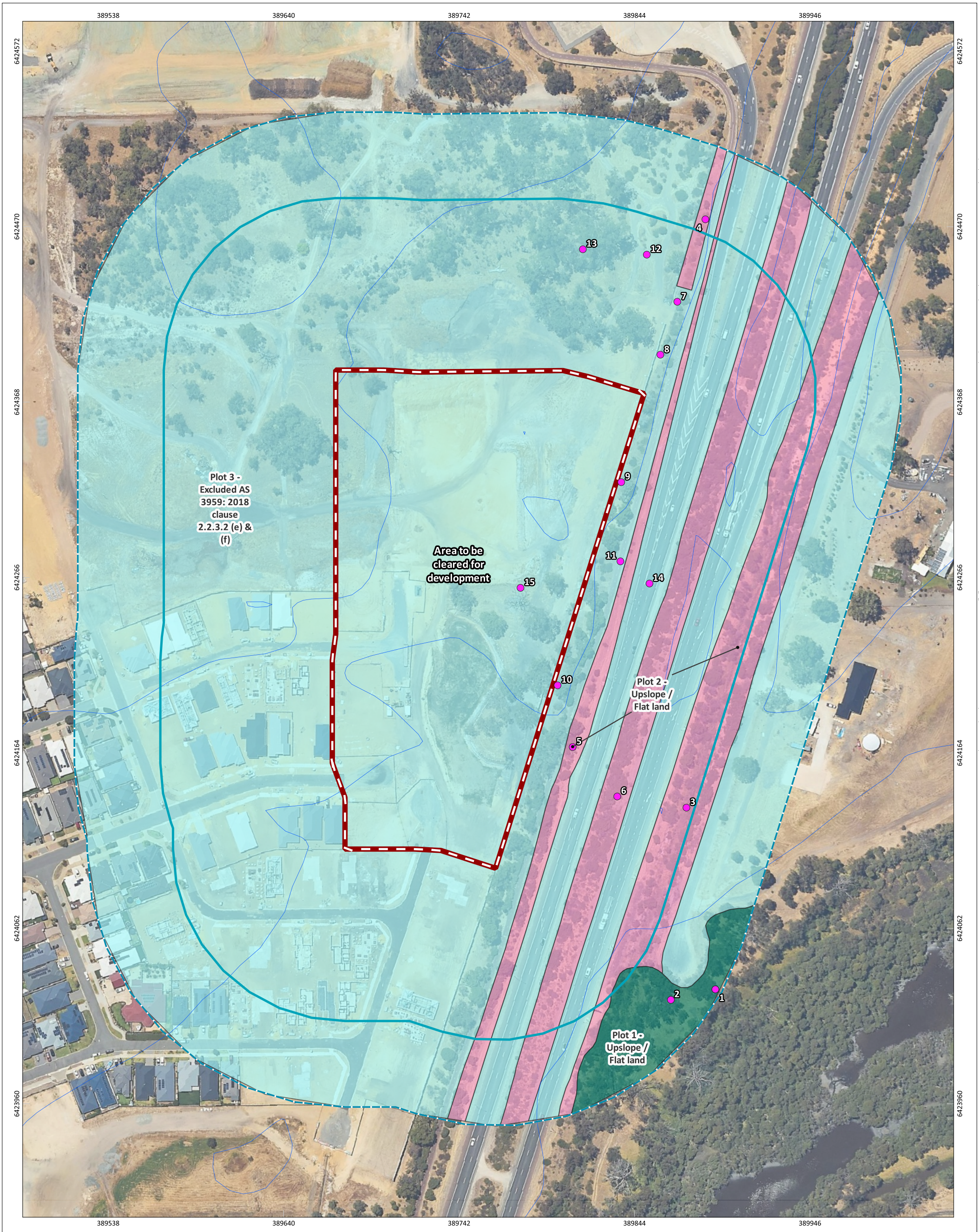

Figure 2: Vegetation Classification

N

0 10 20 30 40 m

PROJECT/REPORT NAME	BAL Report Baldivis Parks Estate
SCALE: 1:2,043	SHEET SIZE: A3 COLOUR
CLIENT	Frasers Property
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A24.009
VERSION	0
DATA SOURCE	LANDGATE AERIAL IMAGERY Summer 2023
DRAWN BY / REVIEWED BY	SM/DP
DATE	2/5/2024

Legend

- Subject Site
- Buffer 100m
- Buffer 150m

2m Contours (DPIRD-072)

- Each 2 m

VegetationBushfire150

- Class A - Forest
- Class D - Scrub
- Excluded AS 3959: 2018 2.2.3.2

No	Description	Drawn	Approved	Date
A	Original issue	SM	DP	2/5/2024

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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Relevant Fire Danger Index

The Fire Danger Index for this site 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 ☐ *Table 2.4.5*	FDI 50 ☐ *Table 2.4.4*	FDI 80 ✓ *Table 2.4.3*	FDI 100 ☐ *Table 2.4.2*

Potential Bushfire Impacts

The potential bushfire impact to the site / proposed development 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 A Forest	All upslopes and flat land (0 degrees)	<16	16 - <21	21 - <31	31 - <42	42 - <100
2	Class D Scrub	All upslopes and flat land (0 degrees)	<10	10 - <13	13 - <19	19 - <27	27 - <100
3	Excluded - clause 2.2.3.2 (e) & (f)	-	No separation distances required - BAL-LOW				

Determined Bushfire Attack Level (BAL)

The determined Bushfire Attack Level (highest BAL) for the proposed works has been determined in accordance with Clause 2.2.6 of AS 3959: 2018 relevant data from the site assessment 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
1501	BAL-LOW	3 and 4
1502	BAL-LOW	3 and 4
1503	BAL-LOW	3 and 4
1504	BAL-LOW	3 and 4
1505	BAL-LOW	3 and 4
1506	BAL-LOW	3 and 4
1507	BAL-LOW	3 and 4
1508	BAL-LOW	3 and 4
1509	BAL-LOW	3 and 4
1510	BAL-LOW	3 and 4
1511	BAL-LOW	3 and 4
1512	BAL-LOW	3 and 4
1513	BAL-LOW	3 and 4
1514	BAL-LOW	3 and 4
1515	BAL-LOW	3 and 4
1516	BAL-12.5	3 and 5
1517	BAL-12.5	3 and 5
1518	BAL-12.5	3 and 5
1519	BAL-19*	3 and 6
1520	BAL-19*	3 and 6
1521	BAL-LOW	3 and 4

Affected lot	BAL Rating	Construction sections to be consulted in AS 3959: 2018
1522	BAL-LOW	3 and 4
1523	BAL-LOW	3 and 4
1524	BAL-12.5	3 and 5
1525	BAL-12.5	3 and 5
1526	BAL-12.5	3 and 5
1527	BAL-12.5	3 and 5
1528	BAL-LOW	3 and 4
1529	BAL-LOW	3 and 4
1530	BAL-12.5	3 and 5
1531	BAL-12.5	3 and 5
1532	BAL-12.5	3 and 5
1533	BAL-12.5	3 and 5
1534	BAL-12.5	3 and 5
1535	BAL-12.5	3 and 5
1536	BAL-LOW	3 and 4
1537	BAL-19*	3 and 6
1538	BAL-19*	3 and 6
1539	BAL-19*	3 and 6
1540	BAL-19*	3 and 6
1541	BAL-19*	3 and 6
1542	BAL-19*	3 and 6
1543	BAL-19*	3 and 6

Affected lot	BAL Rating	Construction sections to be consulted in AS 3959: 2018
1544	BAL-19*	3 and 6
1545	BAL-19	3 and 6
1546	BAL-19*	3 and 6

*INDICATES THAT THE BAL RATING HAS BEEN DETERMINED BY APPLYING A REAR OF LOT SETBACK (DETAILED IN BAL CERTIFICATES).

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

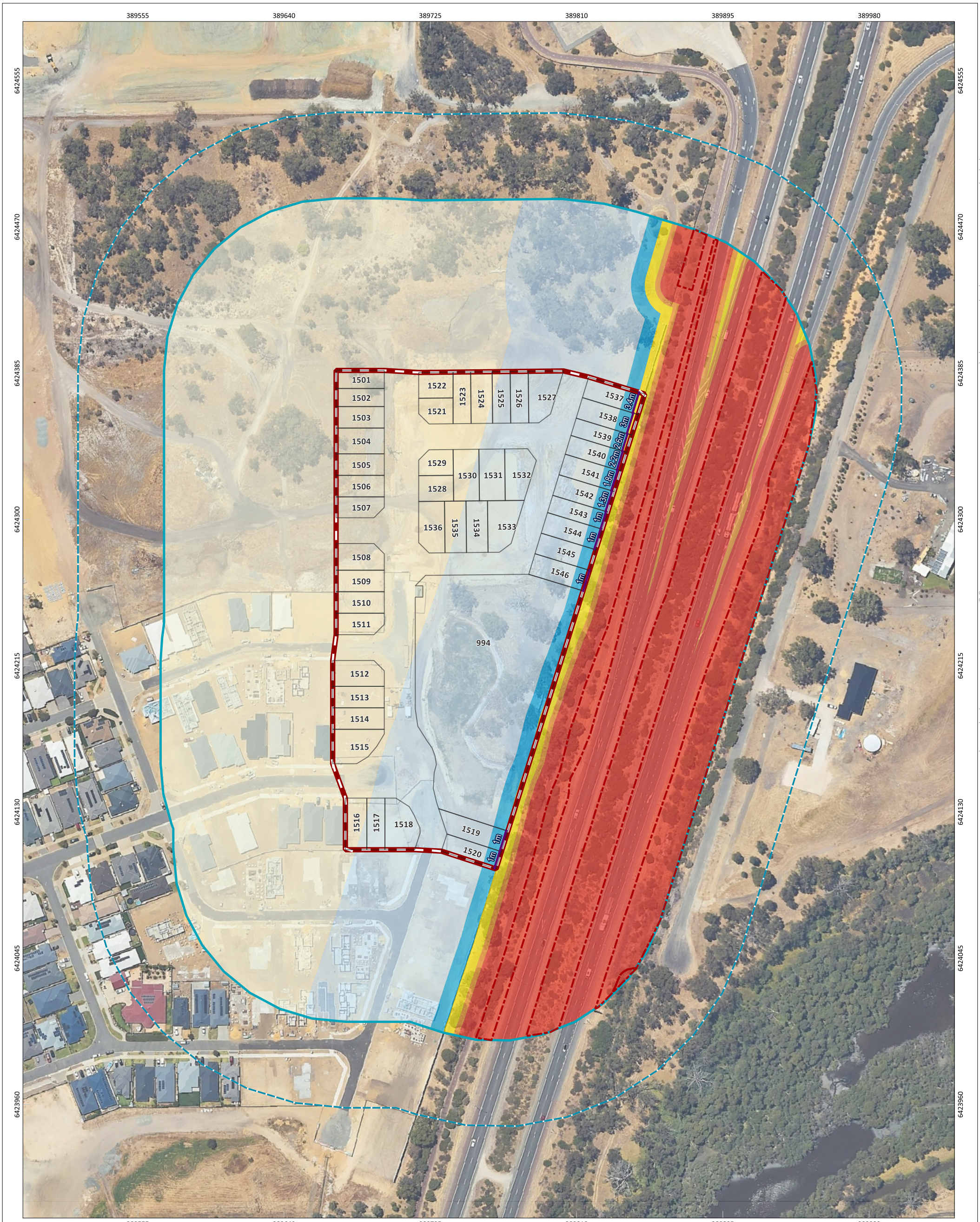

Figure 3: Bushfire Attack Level (BAL) Contours

0 10 20 30 40 m

N

PROJECT/REPORT NAME: BAL Report Baldivis Parks Estate		
SCALE: 1:2,043	SHEET SIZE: A3 COLOUR	CLIENT: Frasers Property
COORDINATE REFERENCE SYSTEM: GDA2020 / MGA zone 50	PROJECT NUMBER: A24.009	VERSION: 0
DATA SOURCE: LANDGATE AERIAL IMAGERY Summer 2023	DRAWN BY / REVIEWED BY: SM/DP	DATE: 2/5/2024

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Bushfire hazard Interface
- Setback

Bushfire Attack Level (BAL)

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

No	Description	Drawn	Approved	Date
A	Original issue	SM	DP	2/5/2024

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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Appendix A
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 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	≤12.5 kW/m^2	Ember attack	3 and 5
BAL-19	>12.5 kW/m^2 ≤19 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 kW/m^2 ≤29 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 kW/m^2 ≤40 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 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.