

Richard Noble  
Bushfire Attack Level (BAL) Compliance Report  
Stage 4 Vivente, Hammond Park

20 August 2020

59211/131,251 (Rev 1)

JBS&G Australia Pty Ltd T/A Strategen-JBS&G

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- Appendix A BAL certificates
- Appendix B Vegetation plot photos and description

# 1. Introduction

## 1.1 Site/development summary

Table 1 provides a summary of the site and proposed development. The development layout and subject lots are shown in Figure 1 and Figure 2.

**Table 1: Site/development summary**

Site details	
Address details	65 proposed residential lots within Stage 4 Vivente, Hammond Park WA 6164
Local government area	City of Cockburn
Description of building works	Construction of a single residential dwelling (Class 1 a building and associated Class 10a buildings) within each lot

## 1.2 Purpose of report

This Bushfire Attack Level (BAL) compliance report has been prepared for 65 residential lots within Stage 4 Vivente Estate (hereafter referred to as the project area).

A portion of the project area is designated as bushfire prone on the Map of Bush Fire Prone Areas (DFES 2020, see Plate 1). As such, bushfire risk considerations and BAL assessment at the building stage are only applicable to those lots designated as bushfire prone (i.e. 39 proposed lots).

This report provides a post-subdivisional works update of the Bushfire Attack Level (BAL) ratings for individual lots within the project area and has been prepared for the benefit of the developer, future lot purchasers and decision makers. BAL certificates for each individual lot (contained in Appendix A) have been prepared based on the final site compliance check and are appended to this report for use at the building permit stage.

The BAL assessment outlined in this report has been prepared in consideration of the previous BAL contour assessments documented in the Bushfire Management Plans (BMPs) prepared to accompany the Local Structure Plan (LSP) (Strategen 2013) and LSP amendment (Strategen-JBS&G 2020) for the development. The approach for preparation of this BAL compliance report is consistent with Section 4.2 and Appendix 3 of *Guidelines for Planning in Bushfire Prone Areas* (the Guidelines; WAPC 2017).

The BAL assessment outlined in this report is the most up to date Strategen-JBS&G assessment relating to the project area and therefore supersedes any previous Strategen/Strategen-JBS&G assessments undertaken within the project area, including those documented in the following previously prepared report:

- Fire Management Plan for Barfield Road Local Structure Plan prepared by Strategen (2015)
- Bushfire Management Plan Amendment for Vivente Estate Structure Plan, including Stages 9 and 10 prepared by Strategen-JBS&G (2020).

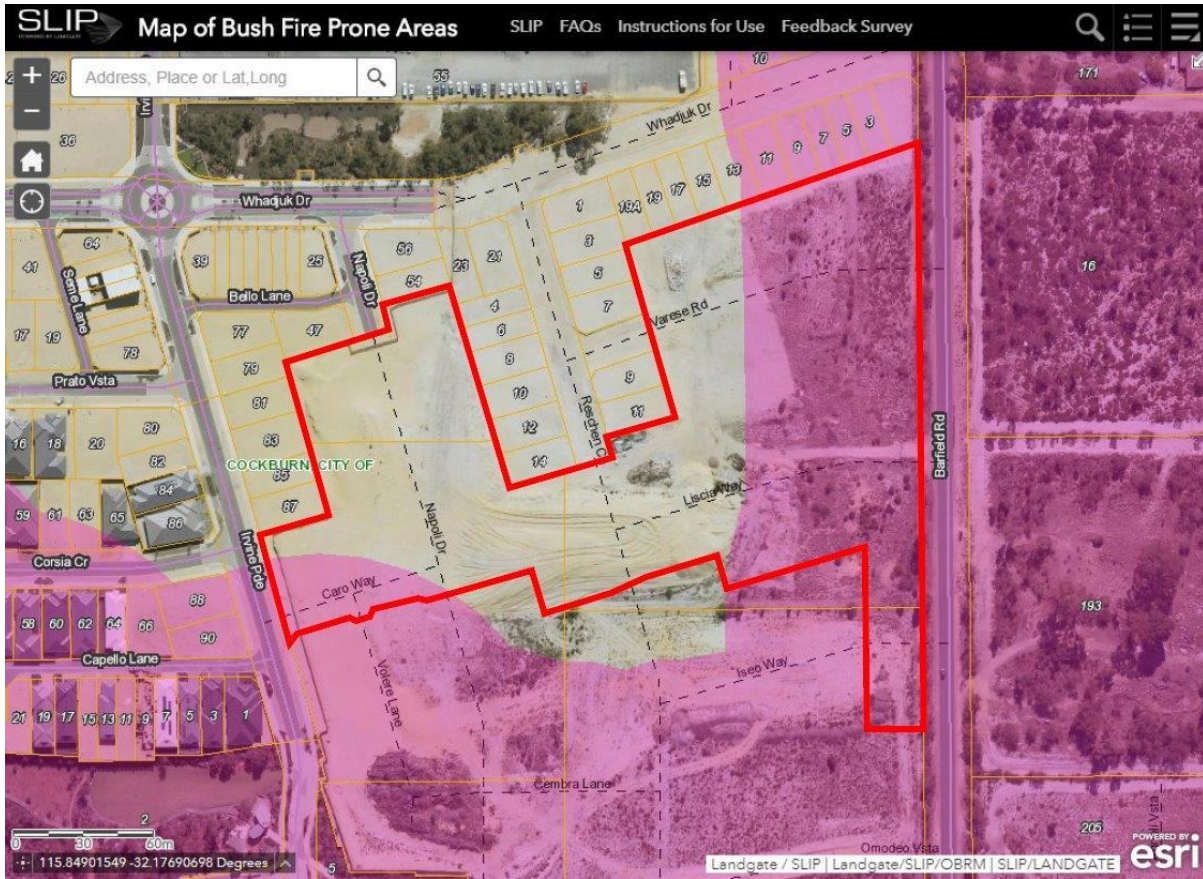


Plate 1: Map of Bush Fire Prone Areas (DFES 2020)

## 2. Bushfire assessment results

### 2.1 Assessment inputs

#### 2.1.1 Vegetation classification

Strategen-JBS&G assessed classified vegetation and exclusions within the 150 m assessment area through on-ground verification on 23 July 2020 and reassessment on 19 August 2020 in accordance with AS 3959—2018 *Construction of Buildings in Bushfire-Prone Areas* (AS 3959; SA 2018) and the *Visual Guide for Bushfire Risk Assessment in Western Australia* (DoP 2016). Georeferenced site photos and a description of the vegetation classifications and exclusions are contained in Appendix B and depicted in Figure 1.

Site observations show that the vegetation classifications align with the post-development vegetation classifications determined by the endorsed BMPs, except for new roadside clearing along Barfield Road, which has reduced the level of Class D scrub along this interface compared to that previously mapped.

Classified vegetation in the form of Class D scrub was identified to the east of the project area within undeveloped rural residential properties. Class G grassland was also identified within a previously cleared area amongst the broader Class D scrub to the east, which is not being managed.

All remaining land situated within 150 m of the project area was identified to be excluded from classification as a result of subdivisional works, the abovementioned roadside clearing, provision of low threat staging buffers and ongoing staged development. The following exclusions were observed:

- the project area is in a cleared, non-vegetated state in preparation for development and is excluded from classification under Clause 2.2.3.2 (e)
- existing non-vegetated and low threat managed land surrounding the project area, including land cleared for future development and road upgrades, existing residential development and low threat managed landscaped areas and staging buffers are excluded from classification under a combination of Clauses 2.2.3.2 (e) and (f).

On-site POS has been excluded under Clause 2.2.3.2 (f) as low threat vegetation due to the fragmentation of the vegetation cells and lack of fuel carrying capacity within the vegetation, as previously adopted by the City and DFES under the approved BMPs for Vivente estate.

#### 2.1.2 Effective slope

Strategen-JBS&G assessed effective slope under classified vegetation within the 150 m assessment area through on-ground verification on 23 July 2020 and reassessment on 19 August 2020 in accordance with AS 3959. Results were cross-referenced with DPIRD 2 m contour data and are depicted in Figure 1.

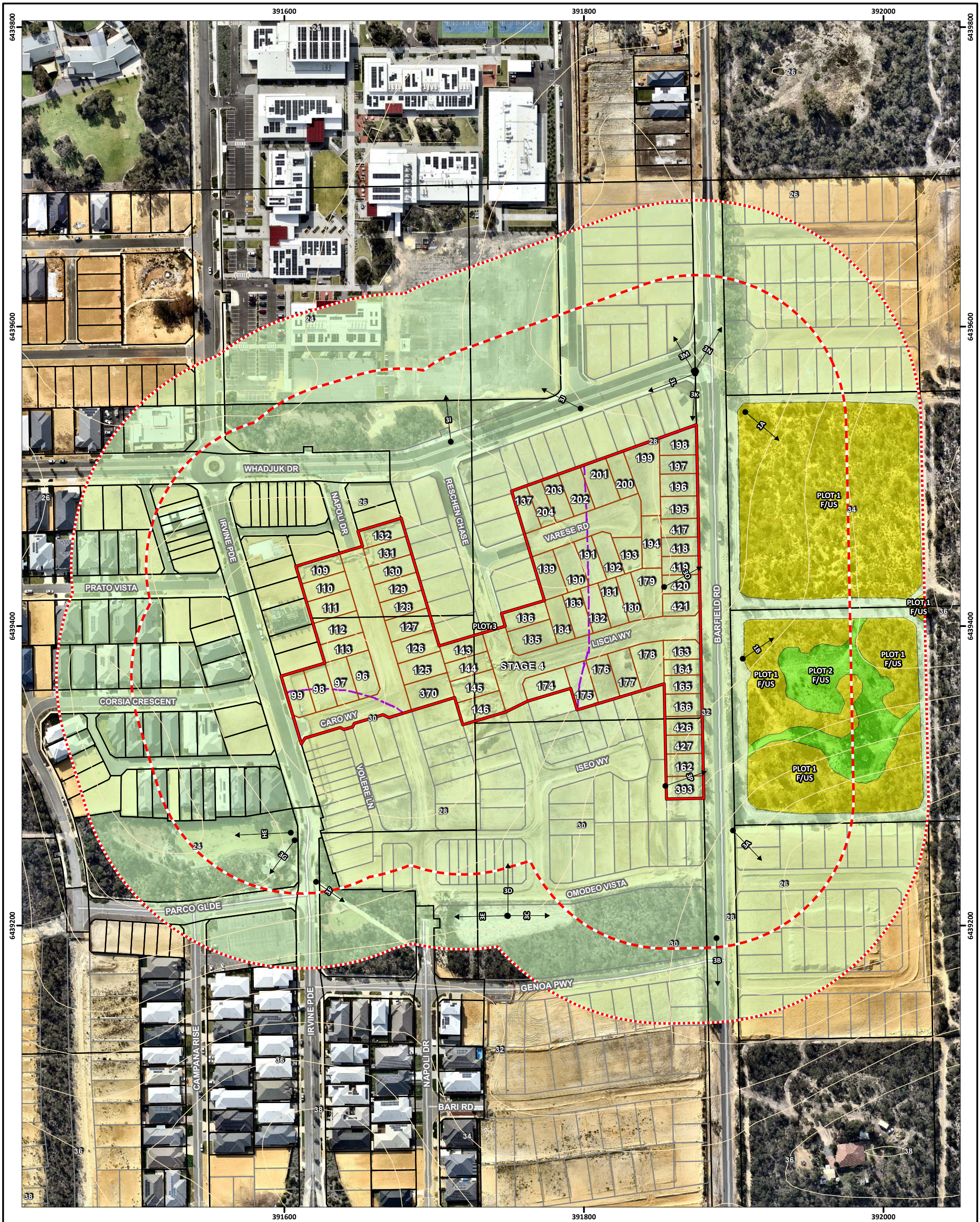
Site observations show that effective slope under the classified vegetation aligns with the effective slopes identified within the endorsed BMPs. Classified vegetation is situated on flat land resulting in an effective slope of flat/upslope (0 degrees) under all classified vegetation within the 150 m assessment area.

#### 2.1.3 Summary of inputs

Figure 1 illustrates the current post-development vegetation classifications and exclusions observed during the inspection. The vegetation classifications/exclusions and effective slope are summarised in Table 2.

**Table 2: Summary of vegetation classifications, exclusions and effective slope**

Vegetation plot	Vegetation classification	Effective slope	Comments
1	Class D Scrub	Flat/upslope (0°)	Scrub vegetation predominantly 2-6 m in height with a continuous vertical fuel profile consisting predominantly of low banksia.
2	Class G Grassland	Flat/upslope (0°)	Unmanaged grassland vegetation greater than 10 cm in height.
3	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Non-vegetated areas (i.e. roads, buildings, cleared vacant lots, driveways, footpaths) and low threat managed vegetation (i.e. mowed grass, slashed staging buffers, managed gardens/POS, etc).



<b>Legend</b> Project area 100m assessment area 150m assessment area Cadastral boundary Bushfire prone areas (DFES) <b>Vegetation classification</b> Class D Scrub Class G Grassland Clause 2.2.3.2 (e) & (f)		Proposed Stage 4 lots Indicative future subdivision Topographic contours (mAHd) Photo point directions Roads (MRWA)		 Job No: 59211 Client: Richard Noble Drawn By: jcrute Checked By: CT		 Scale 1:2,300 at A3 Coord. Sys. GDA 1994 MGA Zone 50 Version: A Date: 20-Aug-2020		<b>Stage 4 Vivente Estate</b> Barfield Road, Hammond Park, WA  <b>VEGETATION CLASSIFICATION</b> <b>AND EFFECTIVE SLOPE</b>  <b>FIGURE: 1</b>	
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## 2.2 Assessment outputs

### 2.2.1 Bushfire Attack Level (BAL) contour assessment

Strategen-JBS&G has undertaken a BAL contour assessment in accordance with Method 1 of AS 3959 for the project area (Figure 2). The Method 1 procedure incorporates the following factors:

- state-adopted FDI 80 rating
- vegetation classification
- effective slope
- distance maintained between proposed development areas and the classified vegetation, including consideration of a 2 m front R-code building setback for those lots fronting Barfield Road.

The BAL contours are based on the current on-ground site conditions confirmed during site assessment and results are detailed in Table 3 and illustrated in Figure 2.

**Table 3: BAL contour assessment results**

Method 1 BAL determination								
Lot	Bushfire prone	Vegetation plot	Vegetation classification	Effective slope	Separation distance	Highest BAL	Building setback to achieve lower BAL	Reduced BAL*
96	Yes	1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
97		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
98		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
99		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
109	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
110		N/A	N/A	N/A	N/A	N/A	N/A	N/A
111		N/A	N/A	N/A	N/A	N/A	N/A	N/A
112		N/A	N/A	N/A	N/A	N/A	N/A	N/A
113		N/A	N/A	N/A	N/A	N/A	N/A	N/A
125		N/A	N/A	N/A	N/A	N/A	N/A	N/A
126		N/A	N/A	N/A	N/A	N/A	N/A	N/A
127		N/A	N/A	N/A	N/A	N/A	N/A	N/A
128		N/A	N/A	N/A	N/A	N/A	N/A	N/A
129		N/A	N/A	N/A	N/A	N/A	N/A	N/A
130		N/A	N/A	N/A	N/A	N/A	N/A	N/A
131		N/A	N/A	N/A	N/A	N/A	N/A	N/A
132		N/A	N/A	N/A	N/A	N/A	N/A	N/A
137		N/A	N/A	N/A	N/A	N/A	N/A	N/A
143		N/A	N/A	N/A	N/A	N/A	N/A	N/A
144		N/A	N/A	N/A	N/A	N/A	N/A	N/A
145		N/A	N/A	N/A	N/A	N/A	N/A	N/A
146	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
162	Yes	1	Class D Scrub	Flat/upslope (0°)	32m	BAL-12.5	N/A	N/A
163		1	Class D Scrub	Flat/upslope (0°)	31m	BAL-12.5	N/A	N/A
164		1	Class D Scrub	Flat/upslope (0°)	31m	BAL-12.5	N/A	N/A
165		1	Class D Scrub	Flat/upslope (0°)	32m	BAL-12.5	N/A	N/A
166		1	Class D Scrub	Flat/upslope (0°)	32m	BAL-12.5	N/A	N/A
174	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
175	Yes	1	Class D Scrub	Flat/upslope (0°)	99m	BAL-12.5	1m truncated rear/side setback	BAL-Low
176		1	Class D Scrub	Flat/upslope (0°)	85m	BAL-12.5	N/A	N/A
177		1	Class D Scrub	Flat/upslope (0°)	70m	BAL-12.5	N/A	N/A
178		1	Class D Scrub	Flat/upslope (0°)	54m	BAL-12.5	N/A	N/A
179		1	Class D Scrub	Flat/upslope (0°)	52m	BAL-12.5	N/A	N/A

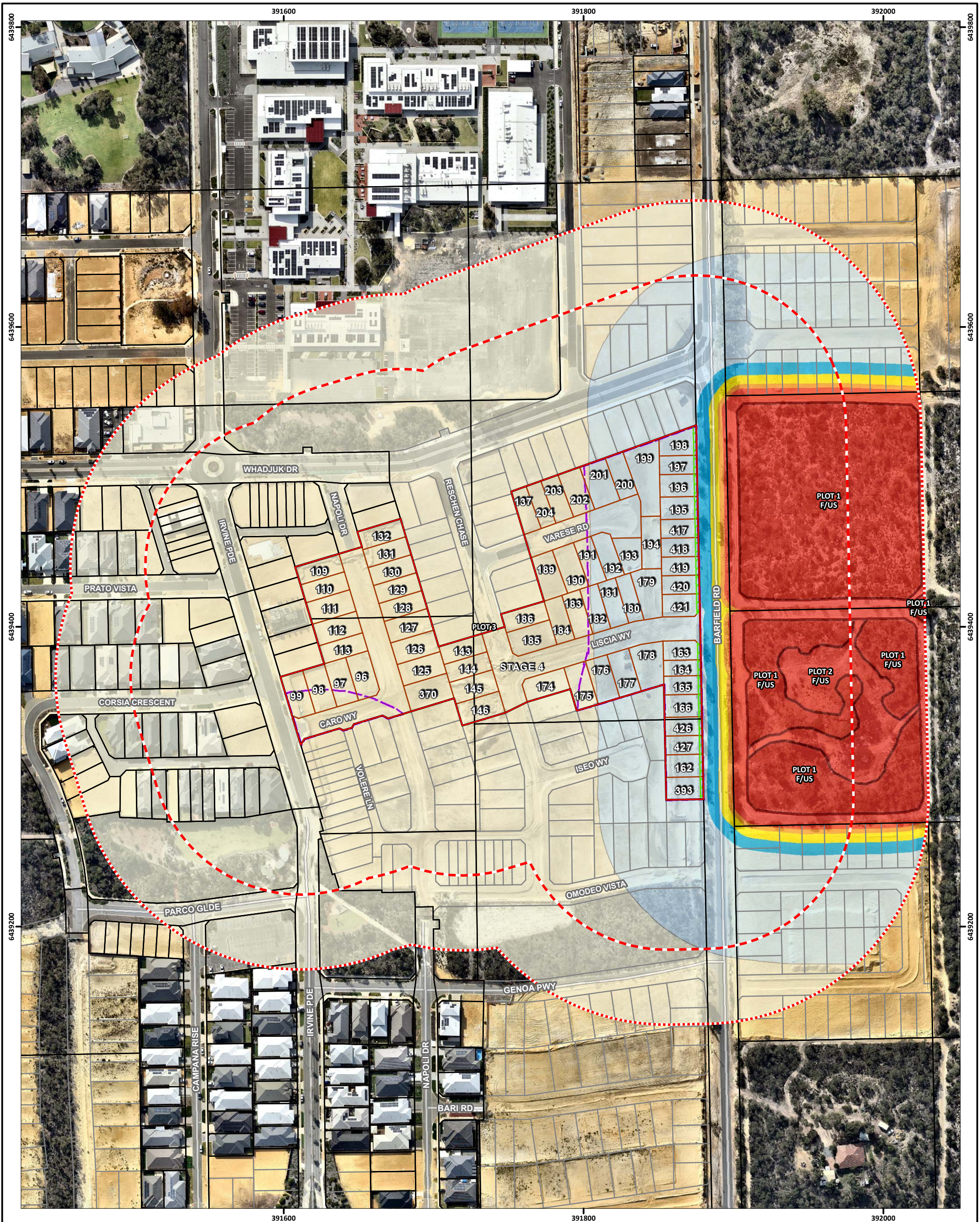


Method 1 BAL determination								
Lot	Bushfire prone	Vegetation plot	Vegetation classification	Effective slope	Separation distance	Highest BAL	Building setback to achieve lower BAL	Reduced BAL*
180		1	Class D Scrub	Flat/upslope (0°)	66m	BAL-12.5	N/A	N/A
181		1	Class D Scrub	Flat/upslope (0°)	77m	BAL-12.5	N/A	N/A
182		1	Class D Scrub	Flat/upslope (0°)	89m	BAL-12.5	N/A	N/A
183		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
184	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
185		N/A	N/A	N/A	N/A	N/A	N/A	N/A
186		N/A	N/A	N/A	N/A	N/A	N/A	N/A
189		N/A	N/A	N/A	N/A	N/A	N/A	N/A
190	Yes	1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
191		1	Class D Scrub	Flat/upslope (0°)	89m	BAL-12.5	N/A	N/A
192		1	Class D Scrub	Flat/upslope (0°)	77m	BAL-12.5	N/A	N/A
193		1	Class D Scrub	Flat/upslope (0°)	66m	BAL-12.5	N/A	N/A
194		1	Class D Scrub	Flat/upslope (0°)	53m	BAL-12.5	N/A	N/A
195		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
196		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
197		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
198		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
199		1	Class D Scrub	Flat/upslope (0°)	53m	BAL-12.5	N/A	N/A
200		1	Class D Scrub	Flat/upslope (0°)	68m	BAL-12.5	N/A	N/A
201		1	Class D Scrub	Flat/upslope (0°)	79m	BAL-12.5	N/A	N/A
202		1	Class D Scrub	Flat/upslope (0°)	97m	BAL-12.5	3m truncated rear/side setback	BAL-Low
203		No	N/A	N/A	N/A	N/A	N/A	N/A
204	N/A		N/A	N/A	N/A	N/A	N/A	N/A
370	N/A		N/A	N/A	N/A	N/A	N/A	N/A
393	Yes	1	Class D Scrub	Flat/upslope (0°)	32m	BAL-12.5	N/A	N/A
417		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
418		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
419		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
420		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
421		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
426		1	Class D Scrub	Flat/upslope (0°)	32m	BAL-12.5	N/A	N/A
427		1	Class D Scrub	Flat/upslope (0°)	32m	BAL-12.5	N/A	N/A

\* The reduced BAL in Table 3 can only be confirmed once the building plan for the relevant lot has been prepared to demonstrate compliance with the recommended building setback. Once the setback has been confirmed, a new BAL certificate for the reduced BAL rating can be prepared and issued to accompany the building permit application.

### 2.2.2 BAL certificates

BAL certificates for those lots designated as bushfire prone are provided in Appendix A in accordance with the BAL contour assessment results detailed in Table 3 and Figure 2.



Legend			
	Project area		BAL contours
	100m assessment area		BAL FZ
	150m assessment area		BAL 40
	Cadastral boundary		BAL 29
	Bushfire prone areas (DFES)		BAL 19
	2m R-code setback		BAL 12.5
	Classified vegetation		BAL Low
			Proposed Stage 4 lots
			Indicative future subdivision
			Roads (MRWA)

Job No: 59211  
 Client: Richard Noble  
 Drawn By: jcrute  
 Checked By: CT

Scale 1:2,300 at A3  
 Coord. Sys. GDA 1994 MGA Zone 50  
 Version: A  
 Date: 05-Aug-2020

**Stage 4 Vivente Estate**  
 Barfield Road, Hammond Park, WA

**BAL CONTOUR ASSESSMENT**

**FIGURE: 2**

### **3. Conclusion and recommendations**

This BAL compliance report has been prepared for 65 residential lots within Stage 4 Vivente Estate to provide a final BAL check for individual lots for use at the building permit stage. Assessment results are consistent with current on-ground conditions confirmed during site assessment. Strategen-JBS&G can confirm that the existing BMPs over the site have been implemented throughout the duration of subdivisional works for the relevant Stage 4 area and adjacent land to achieve the BAL outcomes as intended.

Ongoing requirements of the current City of Cockburn annual firebreak notice should continue to be implemented as required, particularly with regards to ongoing fuel management of vacant land and road reserves.

## 4. References

Department of Fire and Emergency Services (DFES) 2020, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: <https://maps.slip.wa.gov.au/landgate/bushfireprone/>, [30/07/2020].

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

Standards Australia (SA) 2018, *Australian Standard AS 3959–2018 Construction of Buildings in Bushfire-prone Areas*, Standards Australia, Sydney.

Strategen Environmental (Strategen) 2015, *Fire Management Plan: Barfield Road Local Structure Plan*, Strategen, Bunbury

Strategen-JBS&G 2020, *Bushfire Management Plan: Vivente Estate Structure Plan Amendment, including Stages 9 and 10*, Strategen, Bunbury

Western Australian Planning Commission (WAPC) 2017, *Guidelines for Planning in Bushfire Prone Areas*, Version 1.3 August 2017, Western Australian Planning Commission, Perth.

## 5. Limitations

### Scope of services

This report ("the report") has been prepared by Strategen-JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen-JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

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### Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

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## Appendix A BAL certificates

## Appendix B Vegetation plot photos and description

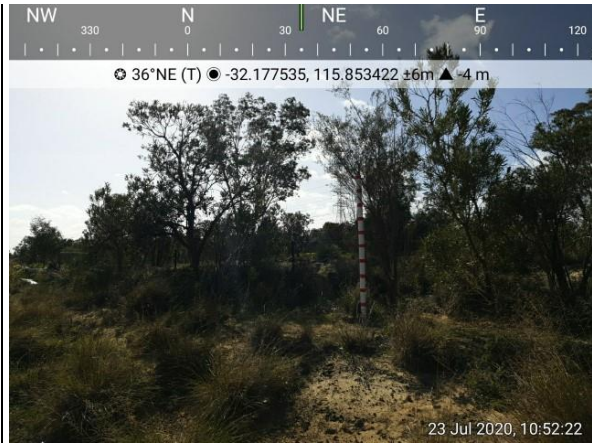


**Photo ID: 1a**

**Plot number**

**Vegetation classification**

**Description / justification**



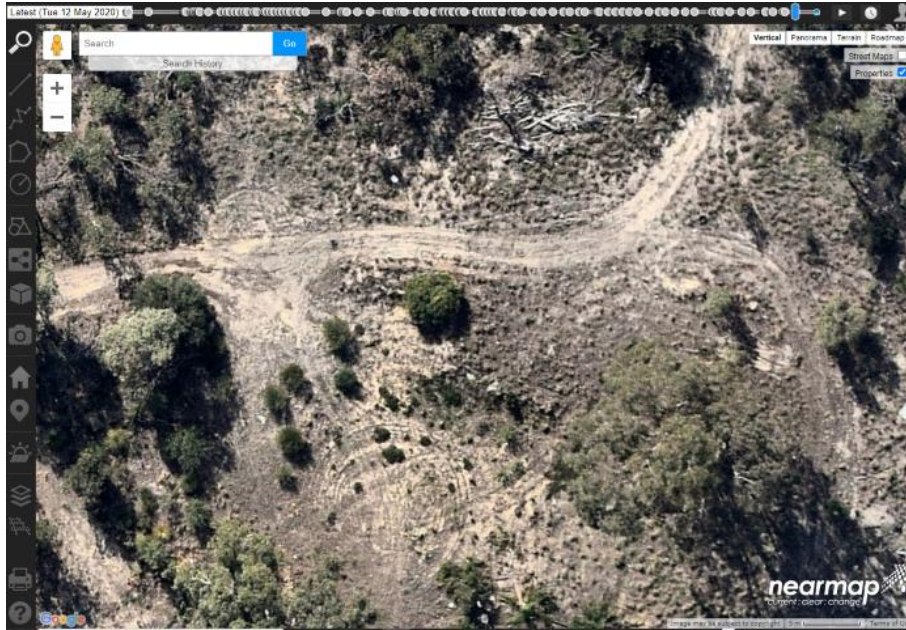
**Photo ID: 1b**

**Plot 1**

**Class D Scrub**

Scrub vegetation predominantly 2-6 m in height with a continuous vertical fuel profile consisting predominantly of low banksias.





Nearmap aerial imagery (2020)

<b>Plot number</b>	Plot 2
<b>Vegetation classification</b>	Class G Grassland
<b>Description / justification</b>	Unmanaged grassland vegetation greater than 10 cm in height.



Photo ID: 3a



Photo ID: 3b



Photo ID: 3c



Photo ID: 3d



Photo ID: 3e



Photo ID: 3f



Photo ID: 3g



Photo ID: 3h



Photo ID: 3i



Photo ID: 3j



Photo ID: 3k



Photo ID: 3l



Photo ID: 3m



Photo ID: 3n



Photo ID: 3o



Photo ID: 3p

Plot number

Plot 3

Vegetation classification

Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])

Description / justification

Non-vegetated areas (i.e. roads, buildings, cleared vacant lots, driveways, footpaths) and low threat managed vegetation (i.e. mowed grass, slashed staging buffers, managed gardens/POS, etc).

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**Document Status**

Report version	Rev No.	Purpose	Author	Reviewed and Approved for Issue	
				Name	Date
Final Report	Rev 0	Issued for use: to accompany lot sale and building permit applications	Brodie Mastrangelo (BPAD 45985, Level 1)	Zac Cockerill (BPAD 37803, Level 2)	30 July 2020
Final Report	Rev 1	Issued for use: updated to account for new roadside clearing along Barfield Road, to accompany lot sale and building permit applications	Zac Cockerill (BPAD 37803, Level 2)	Zac Cockerill (BPAD 37803, Level 2)	20 August 2020

