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Bushfire Attack Level (BAL) Compliance Report  
Stages 9 and 12 Vivente, Hammond Park, WA

11 November 2021  
61728/140,797 (Rev 1)

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

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## 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	12 proposed residential lots within Stage 9 and 12 proposed residential lots within Stage 12 Vivente, Hammond Park WA 6164
Local government area	City of Cockburn
Description of building works	Construction of a single residential dwelling (Class 1a 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 24 proposed residential lots within Stages 9 and 12 Vivente Estate (hereafter referred to as the project area).

The entire project area is designated as bushfire prone on the Map of Bush Fire Prone Areas (DFES 2019, see Plate 1). As such, bushfire risk considerations and BAL assessment are applicable to all proposed lots within the project area and are required to support future building permit applications.

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 reports:

- 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 2019)**

## 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 12 October 2021 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 indicate that the vegetation classifications generally align with the post-development vegetation classifications determined by the endorsed BMPs, except for:

- new roadside clearing along the eastern verge of Barfield Road (refer to drone Photo 1f in Appendix B), which has reduced the level of Class D scrub along this interface compared to that previously mapped
- new vegetation clearing to the west of the project area opposite Frankland Avenue, which has reduced the level of Class D scrub along this interface compared to that previously mapped
- implementation of a 20 m wide cleared buffer to the east of the project area in accordance with clearing permit (CPS 7145/1), 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 north, east and south of Stage 9, as well as to the southwest of Stage 12. Class G grassland was also identified within a previously cleared area amongst the broader Class D scrub to the north of Stage 9, 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 within Vivente Estate and surrounding land. 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 Clauses 2.2.3.2 (e) and (f)
- existing non-vegetated and low threat managed land surrounding the project area, including land cleared for future development, existing residential development and low threat managed landscaped areas and staging buffers, excluded under Clauses 2.2.3.2 (e) and (f)
- multiple small pockets of vegetation retained south of the site opposite Rowley Road that are less than 0.25 ha in size and not within 20 m of each other, other areas of classified vegetation or the site, excluded under Clause 2.2.3.2 (c)
- a narrow strip of vegetation fronting Rowley Road that is less than 20 m wide and not within 20 m of other areas of classified vegetation or the site, excluded under Clause 2.2.3.2 (d)

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 12 October 2021 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 within the assessment area is situated on flat land resulting in an effective slope of flat/upslope (i.e. 0 degrees).

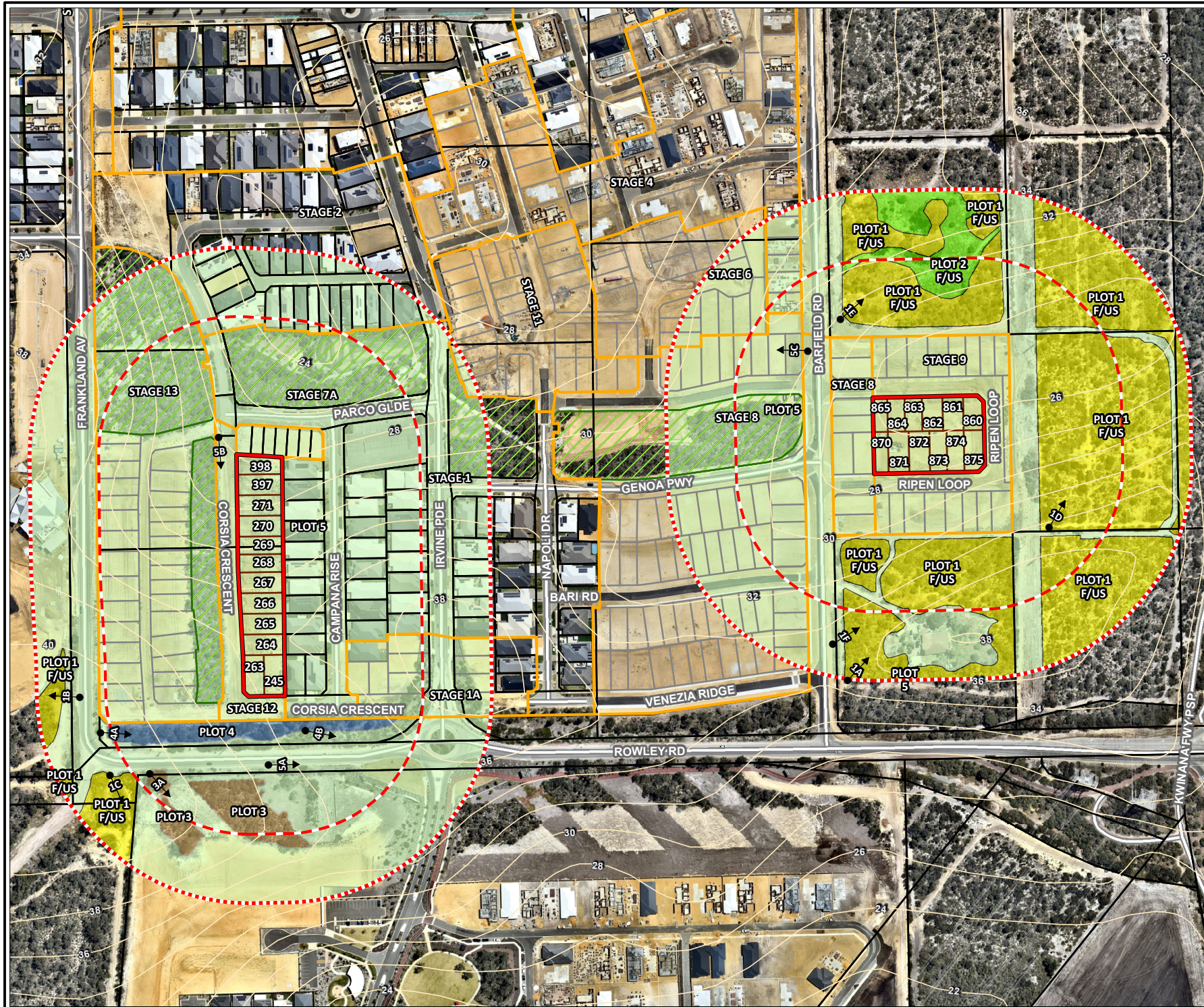
### 2.1.3 Summary of inputs

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 horizontal fuel profile consisting predominantly of banksia/sheoak.
2	Class G Grassland	Flat/upslope (0°)	Unmanaged grassland vegetation greater than 100 mm in height.
3	Excluded – Clause 2.2.3.2 [c]	N/A	Small pockets of vegetation less than 0.25 ha in size and not within 20 m of each other, other areas of classified vegetation or the site, south of Rowley Road.
4	Excluded – Clause 2.2.3.2 [d]	N/A	Narrow strip of vegetation less than 20 m wide and not within 20 m of other areas of classified vegetation or the site, north of Rowley Road.
5	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])	N/A	Existing 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).





#### Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- POS
- Vegetation classification
  - Class D Scrub
  - Class G Grassland
  - Clause 2.2.3.2 (c)
  - Clause 2.2.3.2 (d)
  - Clause 2.2.3.2 (e) & (f)
- Stage boundaries
- Proposed lots
- Indicative future subdivisions on adjacent stages
- Topographic contours (mAHD)
- Photo point directions
- Roads (MRWA)



Job No: 61728

Client: Richard Noble

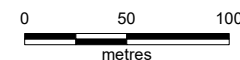
Version: 0

Date 11/11/2021

Drawn By: jcrute

Checked By: CT

Scale 1:3,700 at A4



Coord. Sys. GDA 1994 MGA Zone 50

**Stages 9 and 12, Vivente Hammond Park, WA**

**VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE**

**FIGURE 1**



## 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.

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.

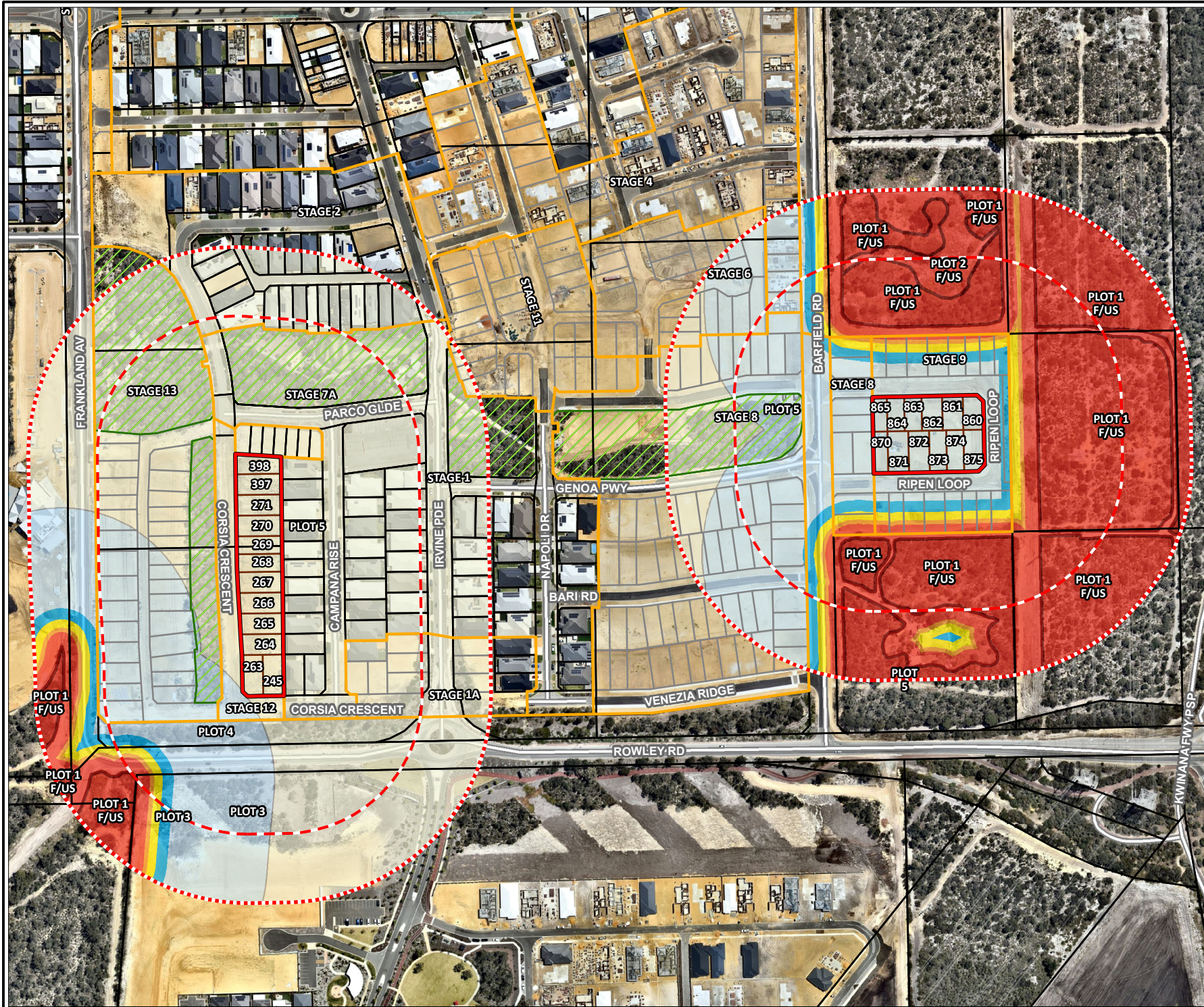
**Table 3: BAL contour assessment results**

Lot	Bushfire prone	Vegetation plot	Vegetation classification	Effective slope	Separation distance	Highest BAL
245	Yes	1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
263		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
264		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
265		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
266		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
267		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
268		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
269		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
270		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
271		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
397		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
398		1	Class D Scrub	Flat/upslope (0°)	>100 m	BAL-Low
860		1	Class D Scrub	Flat/upslope (0°)	39 m	BAL-12.5
861		1	Class D Scrub	Flat/upslope (0°)	51 m	BAL-12.5
862		1	Class D Scrub	Flat/upslope (0°)	51 m	BAL-12.5
863		1	Class D Scrub	Flat/upslope (0°)	51 m	BAL-12.5
864		1	Class D Scrub	Flat/upslope (0°)	51 m	BAL-12.5
865		1	Class D Scrub	Flat/upslope (0°)	51 m	BAL-12.5
870		1	Class D Scrub	Flat/upslope (0°)	47 m	BAL-12.5
871		1	Class D Scrub	Flat/upslope (0°)	47 m	BAL-12.5
872		1	Class D Scrub	Flat/upslope (0°)	47 m	BAL-12.5
873		1	Class D Scrub	Flat/upslope (0°)	47 m	BAL-12.5
874		1	Class D Scrub	Flat/upslope (0°)	47 m	BAL-12.5
875		1	Class D Scrub	Flat/upslope (0°)	39 m	BAL-12.5

### 2.2.2 BAL certificates

BAL certificates are provided in Appendix A in accordance with the BAL contour assessment results detailed in Table 3 and Figure 2.





- Legend**
- Project area
  - 100m assessment area
  - 150m assessment area
  - Cadastral boundary
  - POS
  - Classified vegetation
  - BAL contours**
  - BAL FZ
  - BAL 40
  - BAL 29
  - BAL 19
  - BAL 12.5
  - BAL Low
  - Stage boundaries
  - Proposed lots
  - Indicative future subdivisions on adjacent stages
  - Roads (MRWA)



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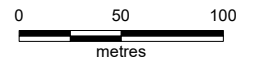
Version: 0

Date 11/11/2021

Drawn By: jcrute

Checked By: CT

Scale 1:3,700 at A4



Coord. Sys. GDA 1994 MGA Zone 50

**Stages 9 and 12, Vivente Hammond Park, WA**

**BAL CONTOUR MAP**

**FIGURE 2**



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

This BAL compliance report has been prepared for 24 proposed residential lots within Stages 9 and 12 Vivente Estate to provide a final BAL check and certification 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 Stages 9 and 12 areas 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) 2019, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: <https://maps.slip.wa.gov.au/landgate/bushfireprone/>, [20/10/2021].

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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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



Photo ID: 1c



Photo ID: 1e

Plot number

Vegetation classification

Pre-development

Post-development

Description / justification



Photo ID: 1b



Photo ID: 1d



Photo ID: 1f

Plot 1

Class D Scrub

Class D Scrub

Scrub vegetation predominantly 2–6 m in height with a continuous horizontal fuel profile consisting predominantly of banksia/sheoak





Photo ID: 2a (Nearmap imagery captured 24/10/21)

Plot number		Plot 2
Vegetation classification	Pre-development	Class G Grassland
	Post-development	Class G Grassland
Description / justification		Unmanaged grassland vegetation greater than 100 mm in height.

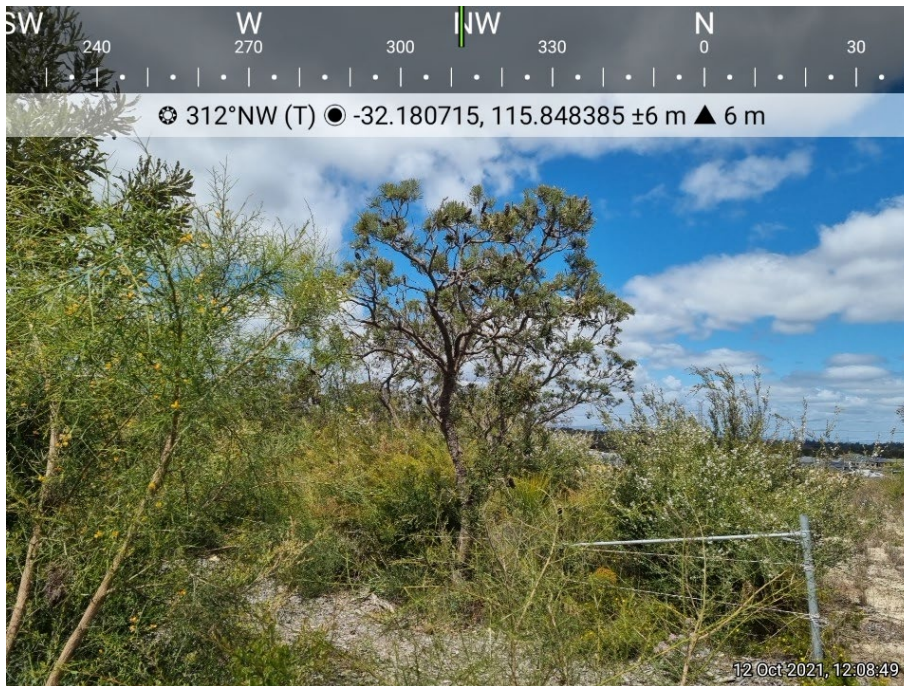


Photo ID: 3a

Plot number		Plot 3
Vegetation classification	Pre-development	Excluded – Clause 2.2.3.2 [c]
	Post-development	Excluded – Clause 2.2.3.2 [c]
Description / justification		Small pockets of vegetation less than 0.25 ha in size and not within 20 m of each other, other areas of classified vegetation or the site, south of Rowley Road.



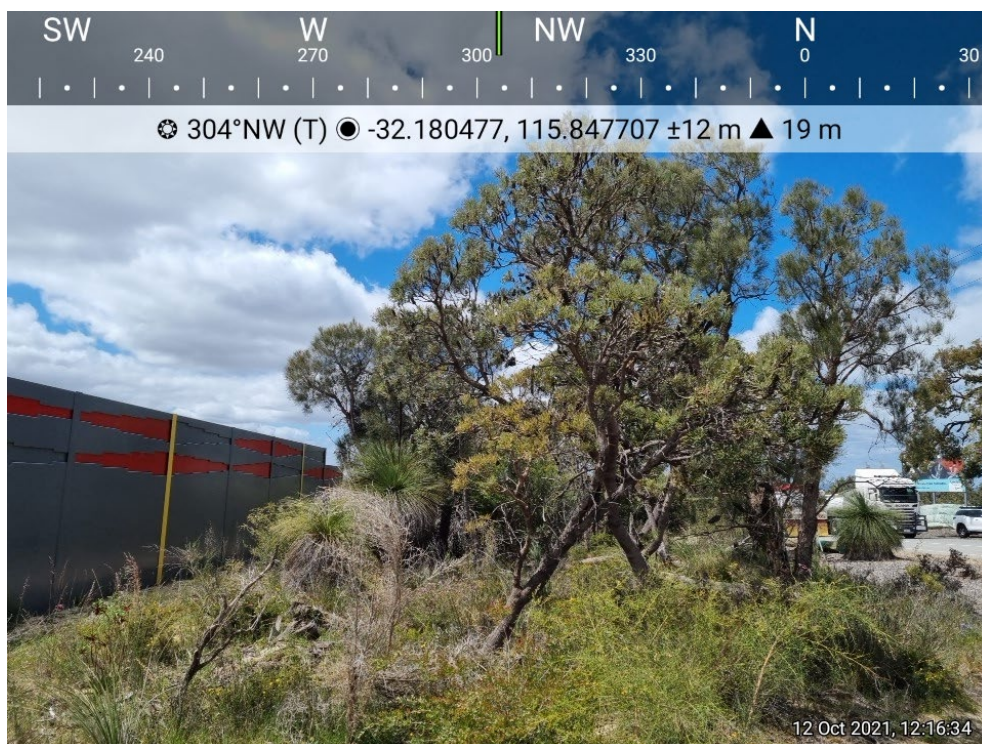


Photo ID: 4a



Photo ID: 4b

Plot number		Plot 4
Vegetation classification	Pre-development	Excluded – Clause 2.2.3.2 [d]
	Post-development	Excluded – Clause 2.2.3.2 [d]
Description / justification		Narrow strip of vegetation less than 20 m wide and not within 20 m of other areas of classified vegetation or the site, north of Rowley Road.





Photo ID: 5a



Photo ID: 5b



Photo ID: 5c

Plot number		Plot 5
Vegetation classification	Pre-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
	Post-development	Excluded – Non-vegetated and Low threat (Clause 2.2.3.2 [e] and [f])
Description / justification		Existing 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 future lot sale and building permit applications	Kaitlin Southgate	Zac Cockerill (BPAD 37803, Level 2)	11 November 2021

