Richard Noble

Bushfire Attack Level (BAL) Compliance Report

Stage 8 Vivente, Hammond Park, WA

22 April 2021

60210/136,884 (Rev 0)

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	63 proposed residential lots within Stage 8 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 63 residential lots within Stage 8 Vivente Estate (hereafter referred to as the project area).

The majority 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 applicable to all proposed lots within Stage 8 (i.e. all 63 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 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 21 January 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 show that the vegetation classifications 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 Photo 1c), 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 opposite Barfield Road within undeveloped rural residential properties and to the southeast of the project area opposite Rowley Road. 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 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 and road upgrades, 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 21 January 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 east of the site is situated on flat land resulting in an effective slope of flat/upslope (0 degrees). Classified vegetation southeast of the site opposite Rowley Road is situated on an effective downslope at 0–5 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 D Scrub	Downslope >0–5°	Scrub vegetation predominantly 2–6 m in height with a continuous horizontal fuel profile consisting predominantly of banksia/sheoak.
3	Class G Grassland	Flat/upslope (0°)	Unmanaged grassland vegetation greater than 10 cm in height.
4	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.
5	Excluded – Clause 2.2.3.2 [d]	N/A	Narrow strips of vegetation less than 20 m wide and not within 20 m of other areas of classified vegetation or the site.
6	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).

Legend

- Project area
- 100m assessment area
- 150m assessment area
- Cadastral boundary
- Proposed lots
- Future indicative lot layout
- Stage boundary
- Photo point directions

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)
- Topographic contours (mAHD)
- Roads (MRWA)

Scale 1:2,800 at A4 (0 25 50 metres)		**Stage 8 Vivente, Hammond Park, WA**
Coord. Sys. GDA 1994 MGA Zone 50		**VEGETATION CLASSIFICATION AND EFFECTIVE SLOPE**
Job No: 60210		
Client: Richard Noble		**FIGURE 1**
Version: A	Date: 21-Apr-2021	strategen JBS&G
Drawn By: jcrute	Checked By: CT	

File Name: W:\Projects\1)Open\Richard Noble\60210 Stage 8 Vivente BAL compliance\GIS\Maps\R001_Rev A\60210_01_VegClass.mxd
Image Reference: www.nearmap.com© - Imagery Date: 09. March 2021.

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 front R-code building setback of 2–3 m for those lots fronting Barfield Road in accordance with the Local Development Plan (LDP).

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

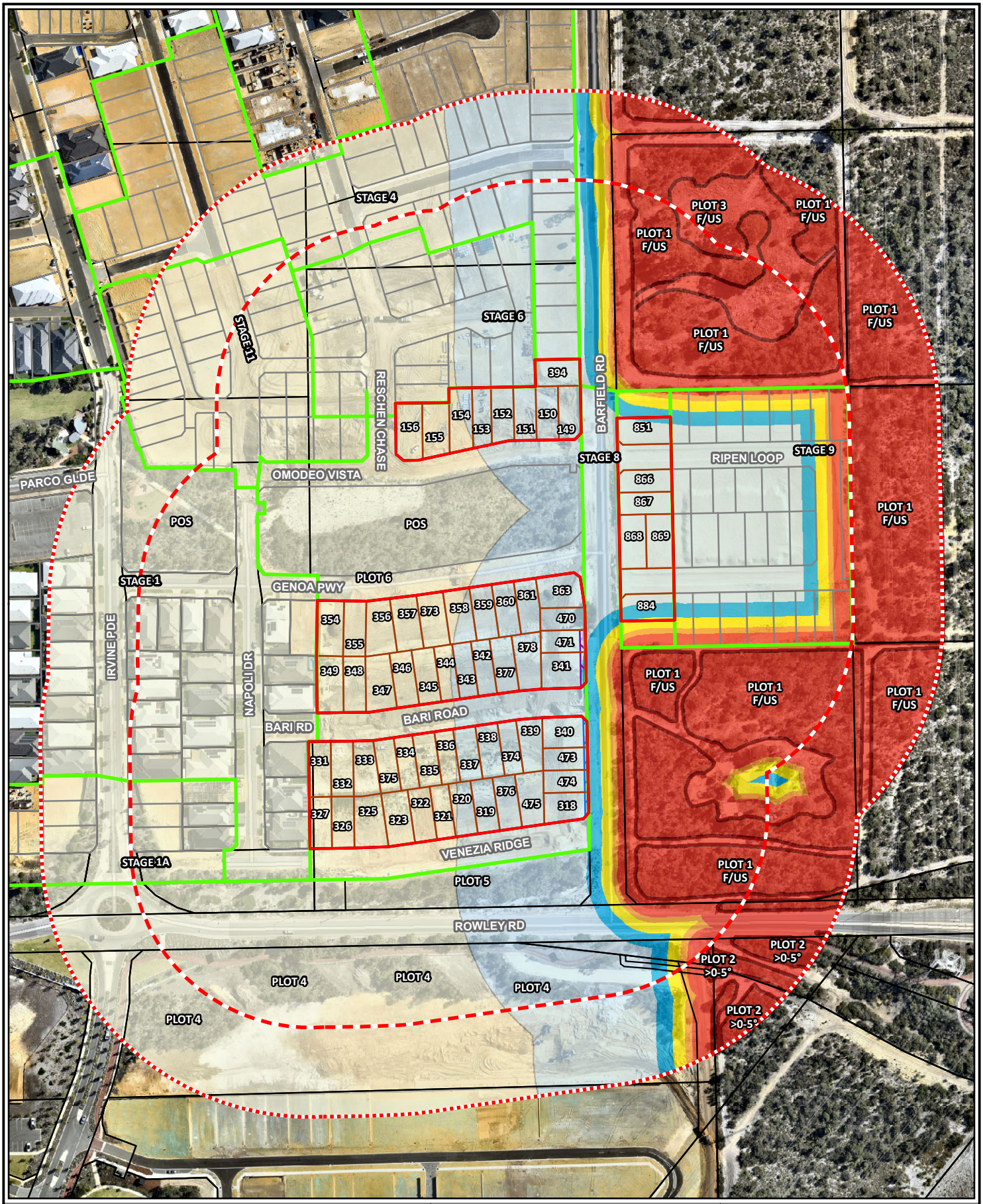
Method 1 BAL determination								
Lot	Bushfire prone	Vegetation plot	Vegetation classification	Effective slope	Separation distance	Highest BAL	Building setback to achieve lower BAL	Reduced BAL*
149	Yes	1	Class D Scrub	Flat/upslope (0°)	33m	BAL-12.5	N/A	N/A
150		1	Class D Scrub	Flat/upslope (0°)	45m	BAL-12.5	N/A	N/A
151		1	Class D Scrub	Flat/upslope (0°)	57m	BAL-12.5	N/A	N/A
152		1	Class D Scrub	Flat/upslope (0°)	69m	BAL-12.5	N/A	N/A
153		1	Class D Scrub	Flat/upslope (0°)	81m	BAL-12.5	N/A	N/A
154		1	Class D Scrub	Flat/upslope (0°)	92m	BAL-12.5	N/A	N/A
155		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
156		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
318		1	Class D Scrub	Flat/upslope (0°)	28m	BAL-12.5	N/A	N/A
319		1	Class D Scrub	Flat/upslope (0°)	76m	BAL-12.5	N/A	N/A
320		1	Class D Scrub	Flat/upslope (0°)	88m	BAL-12.5	N/A	N/A
321		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
322		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
323		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
325		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
326		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
327		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
331		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
332		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
333		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
334		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
335		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
336		1	Class D Scrub	Flat/upslope (0°)	97m	BAL-12.5	N/A	N/A
337		1	Class D Scrub	Flat/upslope (0°)	85m	BAL-12.5	N/A	N/A
338		1	Class D Scrub	Flat/upslope (0°)	73m	BAL-12.5	N/A	N/A
339		1	Class D Scrub	Flat/upslope (0°)	50m	BAL-12.5	N/A	N/A
340		1	Class D Scrub	Flat/upslope (0°)	27m	BAL-12.5	N/A	N/A
341		1	Class D Scrub	Flat/upslope (0°)	27m	BAL-12.5	N/A	N/A
342		1	Class D Scrub	Flat/upslope (0°)	75m	BAL-12.5	N/A	N/A
343		1	Class D Scrub	Flat/upslope (0°)	85m	BAL-12.5	N/A	N/A
344		1	Class D Scrub	Flat/upslope (0°)	95m	BAL-12.5	N/A	N/A
345		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
346		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
347		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
348		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	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*
349		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
354		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
355		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
356		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
357		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
358		1	Class D Scrub	Flat/upslope (0°)	87m	BAL-12.5	N/A	N/A
359		1	Class D Scrub	Flat/upslope (0°)	75m	BAL-12.5	N/A	N/A
360		1	Class D Scrub	Flat/upslope (0°)	63m	BAL-12.5	N/A	N/A
361		1	Class D Scrub	Flat/upslope (0°)	54m	BAL-12.5	N/A	N/A
363		1	Class D Scrub	Flat/upslope (0°)	39m	BAL-12.5	N/A	N/A
373		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
374		1	Class D Scrub	Flat/upslope (0°)	62m	BAL-12.5	N/A	N/A
375		1	Class D Scrub	Flat/upslope (0°)	>100m	BAL-Low	N/A	N/A
376		1	Class D Scrub	Flat/upslope (0°)	63m	BAL-12.5	N/A	N/A
377		1	Class D Scrub	Flat/upslope (0°)	62m	BAL-12.5	N/A	N/A
378		1	Class D Scrub	Flat/upslope (0°)	50m	BAL-12.5	N/A	N/A
394		1	Class D Scrub	Flat/upslope (0°)	30m	BAL-12.5	N/A	N/A
470		1	Class D Scrub	Flat/upslope (0°)	31m	BAL-12.5	N/A	N/A
471		1	Class D Scrub	Flat/upslope (0°)	29m	BAL-12.5	N/A	N/A
473		1	Class D Scrub	Flat/upslope (0°)	28m	BAL-12.5	N/A	N/A
474		1	Class D Scrub	Flat/upslope (0°)	28m	BAL-12.5	N/A	N/A
475		1	Class D Scrub	Flat/upslope (0°)	51m	BAL-12.5	N/A	N/A
851		1	Class D Scrub	Flat/upslope (0°)	24m	BAL-19	Lower BAL achievable with 3m side setback off northern lot boundary	BAL-12.5
866		1	Class D Scrub	Flat/upslope (0°)	53m	BAL-12.5	N/A	N/A
867		1	Class D Scrub	Flat/upslope (0°)	66m	BAL-12.5	N/A	N/A
868		1	Class D Scrub	Flat/upslope (0°)	47m	BAL-12.5	N/A	N/A
869		1	Class D Scrub	Flat/upslope (0°)	47m	BAL-12.5	N/A	N/A
884		1	Class D Scrub	Flat/upslope (0°)	17m	BAL-29	Lower BAL achievable with 2m side setback off southern lot boundary	BAL-19

* 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 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
- 2m setback
- 3m setback
- Classified vegetation
- Proposed lots
- Future indicative lot layout

BAL contours

- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5
- BAL Low
- Stage boundary
- Roads (MRWA)

Scale 1:2,800 at A4

0 25 50 metres

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 60210

Client: Richard Noble

Version: A | Date: 21-Apr-2021

Drawn By: jcrute | Checked By: CT

Stage 8 Vivente, Hammond Park, WA

BAL CONTOUR MAP

FIGURE 2

strategen JBS&G

File Name: W:\Projects\1)Open\Richard Noble\60210 Stage 8 Vivente BAL compliance\GIS\Maps\R001_Rev A\60210_02_BALs.mxd
Image Reference: www.nearmap.com© - Imagery Date: 09. March 2021.

3. Conclusion and recommendations

This BAL compliance report has been prepared for 63 residential lots within Stage 8 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 8 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) 2019, *Map of Bush Fire Prone Areas*, [Online], Government of Western Australia, available from: https://maps.slip.wa.gov.au/landgate/bushfireprone/, [20/04/2021].

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.

Reliance on data

In preparing the report, Strategen-JBS&G has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, Strategen-JBS&G has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Strategen-JBS&G has also not attempted to determine whether any material matter has been omitted from the data. Strategen-JBS&G will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Strategen-JBS&G. The making of any assumption does not imply that Strategen-JBS&G has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen-JBS&G disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

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.

Strategen-JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by Strategen-JBS&G, and should not be relied upon by other parties, who should make their own enquiries.

Appendix B Vegetation plot photos and description

Photo ID: 1a

Photo ID: 1b

Photo ID: 1c

Photo ID: 1d

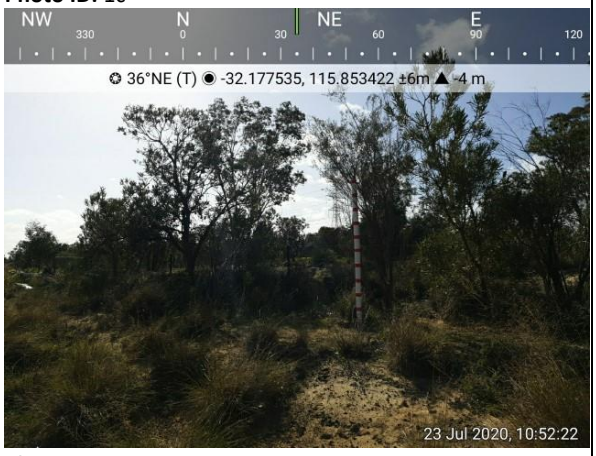
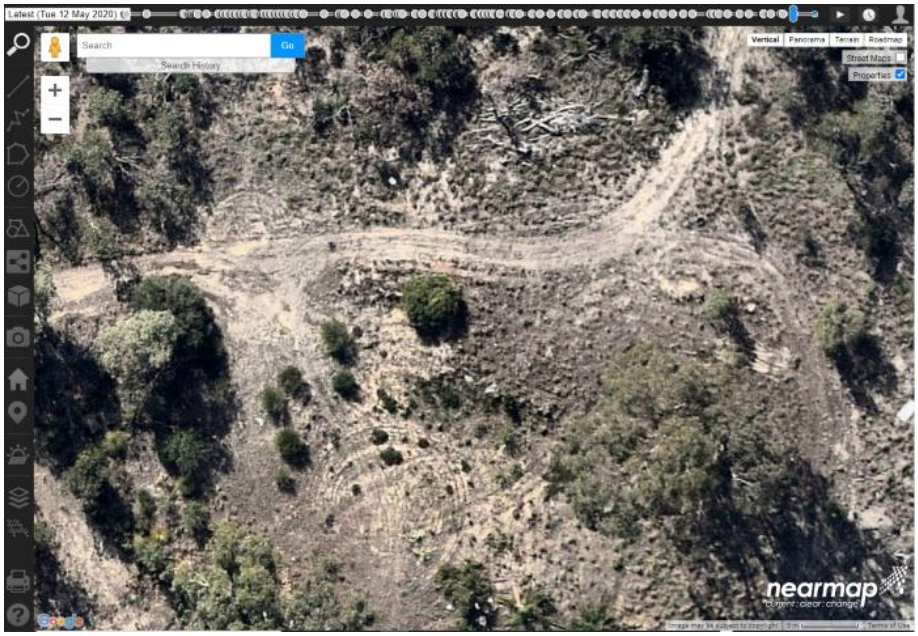


Photo ID: 1e

Plot number	Plot 1
Vegetation classification	Class D Scrub
Description / justification	Scrub vegetation predominantly 2–6 m in height with a continuous horizontal fuel profile consisting predominantly of banksia and sheoak.

	
Photo ID: 2a	**Photo ID:** 2b
Plot number	Plot 2
Vegetation classification	Class D Scrub
Description / justification	Scrub vegetation predominantly 2–6 m in height with a continuous horizontal fuel profile consisting predominantly of banksia and sheoak.



Nearmap aerial imagery (2020)

Plot number	Plot 3
Vegetation classification	Class G Grassland
Description / justification	Unmanaged grassland vegetation greater than 10 cm in height.

	
Photo ID: 4a	**Photo ID:** 4b
Plot number	Plot 4
Vegetation classification	Excluded – Clause 2.2.3.2 [c]
Description / justification	Multiple areas of vegetation less than 0.25 ha in area and not within 20m of the site, or each other or of other areas of vegetation being classified vegetation.

Photo ID: 5a	
Plot number	Plot 5
Vegetation classification	Excluded – Clause 2.2.3.2 [d]
Description / justification	Strips of vegetation less than 20m in width and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.

Photo ID: 6a

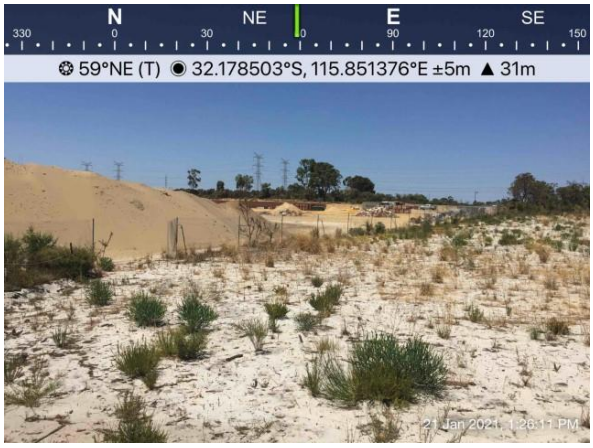
Photo ID: 6b

Photo ID: 6c

Photo ID: 6d

Photo ID: 6e

Photo ID: 6f



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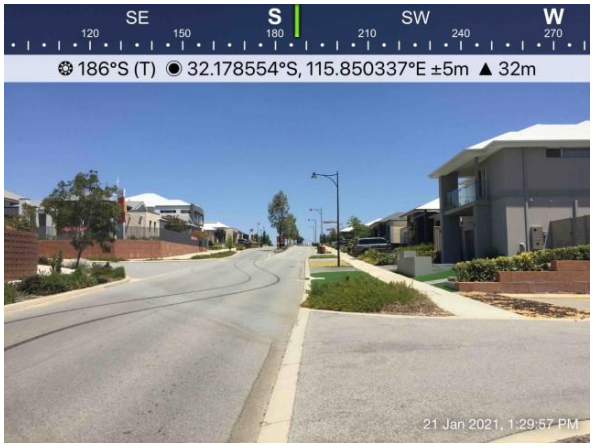

Photo ID: 6h

Photo ID: 6i

Photo ID: 6j

Photo ID: 6k

Photo ID: 6l

Photo ID: 6m

Photo ID: 6n

Photo ID: 6o

Photo ID: 6p

Photo ID: 6q

Photo ID: 6r

Plot number	Plot 6
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).

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	Zac Cockerill (BPAD 37803, Level 2)	Zac Cockerill (BPAD 37803, Level 2)	22 April 2021

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