

AS 3959 Bushfire Attack Level (BAL) Assessment Report

This report has been prepared by a representative from Structerre Consulting Engineers using the Simplified Procedure (Method 1) as detailed in Section 2 of AS 3959 – 2018 (Incorporating Amendment No 1, 2 and 3) All enquiries related to information and conclusion presented in this report must be forwarded to the representative whose details appear below.

Client details	
Client	Redink Homes
Number	ML2010374

Site Details			
Address	Lot 31 119 Millhouse Rd		
Suburb	Belhus	State	WA
Local Government	Swan		
Building Type	Class 1a		

Report Details	
Job Number	S1010526
Assessment Date	27 April 2021
Report Date/Version	28 April 2021 Version 1



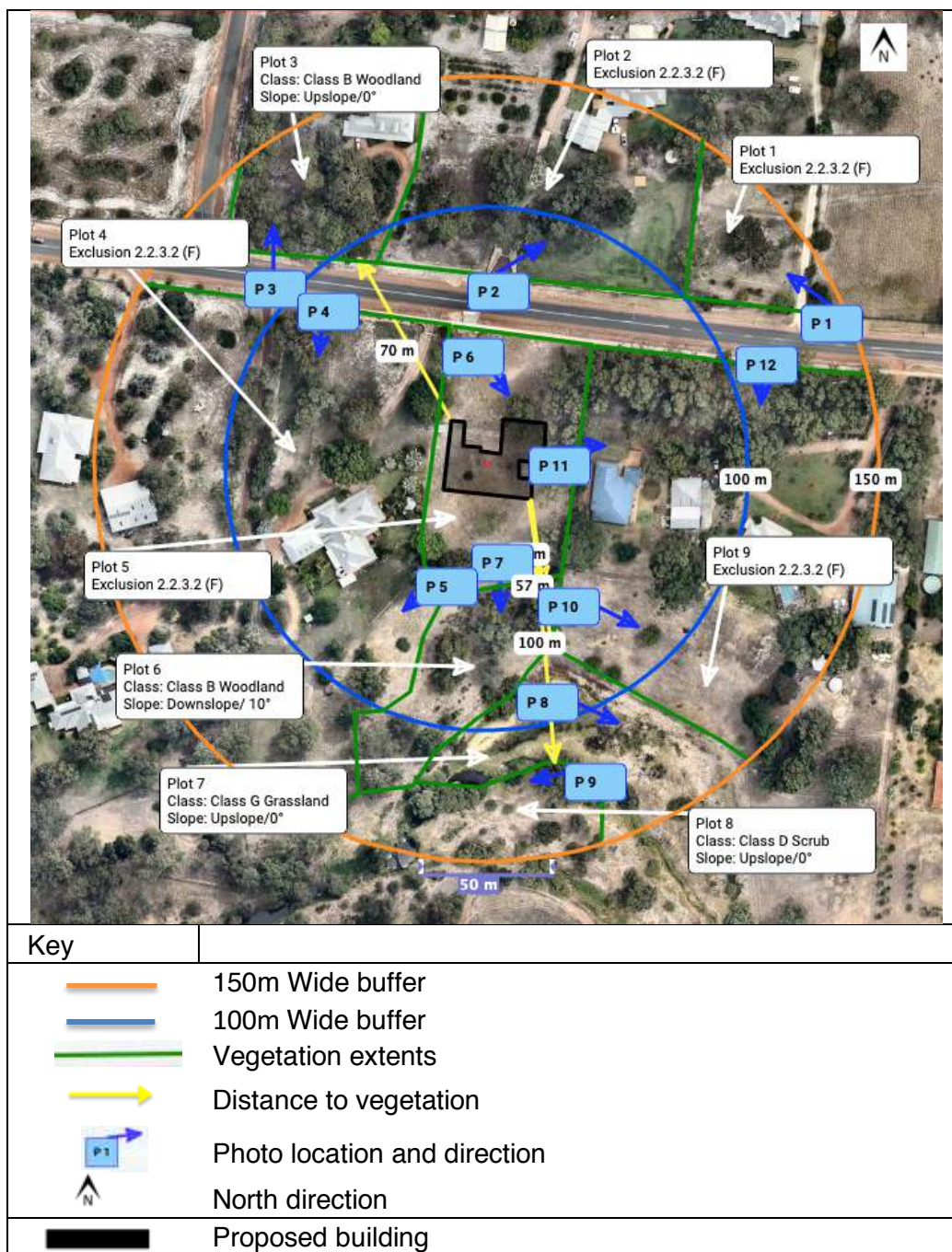
Structerre Consulting Engineers Representative	
Name	Clinton Macdonald
Employee Title	BAL Accredited Practitioner
Signature	
Accreditation No:BPAD47223 Accreditation Expiry Date: June 2021	

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1.0 SITE ASSESSMENT & SITE PLANS

The assessment of this site / development was undertaken for the purpose of determining the Bushfire Attack Level (BAL) in accordance with AS 3959–2018 Simplified Procedure (Method 1).



Note: The 150m radius depicted on the site plan is used to identify any classifiable vegetation from the centroid of the proposed building envelope. Any vegetation greater than 100m from the proposed building envelope is excluded from classification as per AS-3959.

2.0 VEGETATION CLASSIFICATION

All vegetation within 100m of the site/proposed development was classified in accordance with Clause 2.2.3 of AS 3959-2018. Each distinguishable vegetation area with the potential to determine the bushfire level is identified below.

Plot 1 Exclusion 2.2.3.2 (F)	
Description / Justification for Classification	
<p>Grassland managed under 100mm in height, with sparse tree overstorey. At the time of the assessment, this area was maintained as low threat vegetation.</p>	<p>Photo 1</p> 


Plot 2 Exclusion 2.2.3.2 (F)

Description / Justification for Classification

Grassland managed under 100mm in height, with sparse tree overstorey. At the time of the assessment, this area was maintained as low threat vegetation.

Photo 2



Plot 3 Class B Woodland	
Description / Justification for Classification	
<p>Trees 2-30 metres high with foliage cover in the range of 10 to 30 per cent at maturity, predominantly dominated by Eucalypts and Acacias. Woodlands are dominated by trees but generally lack the shrubby middle layer and deep surface litter layer that is characteristic of forests and have more grassy ground layer. Trees 2-30 meters high with foliage cover in the range of 10 to 30 per cent at maturity. Trees dominate woodlands but generally lack the shrubby middle layer and deep surface litter that is characteristic of forests.</p>	<p data-bbox="616 450 719 479">Photo 3</p> 

Plot 4 Exclusion 2.2.3.2 (F)

Description / Justification for Classification

Grassland managed under 100mm in height, with sparse tree overstorey. Maintained lawns and gardens. At the time of the assessment, this area was maintained as low threat vegetation.

Photo 4



Plot 4 Exclusion 2.2.3.2 (F)

Description / Justification for Classification

Grassland managed under 100mm in height, with sparse tree overstorey. Maintained lawns and gardens. At the time of the assessment, this area was maintained as low threat vegetation.

Photo 5




Plot 5 Exclusion 2.2.3.2 (F)

Description / Justification for Classification

Grassland managed under 100mm in height, with sparse tree overstorey. At the time of the assessment, this area was maintained as low threat vegetation.

Photo 6



Plot 6 Class B Woodland	
Description / Justification for Classification	
<p>Trees 2-30 metres high with foliage cover in the range of 10 to 30 per cent at maturity, predominantly dominated by Eucalypts and Acacias. Woodlands are dominated by trees but generally lack the shrubby middle layer and deep surface litter layer that is characteristic of forests and have more grassy ground layer. Trees 2-30 meters high with foliage cover in the range of 10 to 30 per cent at maturity. Trees dominate woodlands but generally lack the shrubby middle layer and deep surface litter that is characteristic of forests.</p>	<p>Photo 7</p> 


Plot 7 Class G Grassland


Description / Justification for Classification

Grassland over 100mm in height at the time of the assessment, this area was not maintained and is therefore classified as grassland to allow for re-growth.

Photo 8



Plot 8 Class D Scrub	
Description / Justification for Classification	
<p>Scrub vegetation typically with continuous horizontal and vertical vegetation structures, greater than 2 metres high. Shrubs greater than 2 metres in height with >30% foliage cover, the understorey may contain grasses and small shrubs resulting in dense continuous vegetation.</p>	<p>Photo 9</p> 

Plot 9 Exclusion 2.2.3.2 (F)	
Description / Justification for Classification	
<p>Maintained lawns and gardens. Grassland managed under 100mm in height, with sparse tree overstorey. At the time of the assessment, this area was maintained as low threat vegetation.</p>	<p>Photo 10</p> 

Plot 9 Exclusion 2.2.3.2 (F)

Description / Justification for Classification

Maintained lawns and gardens. Grassland managed under 100mm in height, with sparse tree overstorey. At the time of the assessment, this area was maintained as low threat vegetation.

Photo 11



Plot 9 Exclusion 2.2.3.2 (F)

Description / Justification for Classification

Maintained lawns and gardens. Grassland managed under 100mm in height, with sparse tree overstorey. At the time of the assessment, this area was maintained as low threat vegetation.

Photo 12



3.0 RELEVANT FIRE DANGER INDEX

The fire danger index for this site has been determined in accordance with Table 2.1 or otherwise determined in accordance with jurisdictional variation applicable to the site.

FDI 40 <input checked="" type="checkbox"/> 2.4.5	<input checked="" type="checkbox"/>	FDI 80 <input checked="" type="checkbox"/> 2.4.3	FDI 100 <input checked="" type="checkbox"/> 2.4.2
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4.0 POTENTIAL BUSHFIRE IMPACTS

The potential bushfire impact to the site / proposed development from each of the identified vegetation areas are identified below.

Plot	Vegetation Classification	Effective slope	Separation	Exclusions	BAL
1	Exclusion	-	-	F	LOW
2	Exclusion	-	-	F	LOW
3	Class B Woodland	Upslope/0°	70 m		12.5
4	Exclusion	-	-	F	LOW
5	Exclusion	-	-	F	LOW
6	Class B Woodland	Downslope/10°	32 m		19
7	Class G Grassland	Upslope/0°	57 m		LOW
8	Class D Scrub	Upslope/0°	100 m		LOW
9	Exclusion	-	-	F	LOW

Exclusions apply to AS3959-2018 pg15 sections 2.2.3.2

5.0 BUSHFIRE ATTACK LEVEL (BAL)

The Determined Bushfire Attack Level (highest BAL) for the site / proposed development has been determined in accordance with clause 2.2.6 of AS 3959-2018 using the above analysis.

Determined Bushfire Attack Level	BAL - 19
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6.0 EXPLANATORY NOTES

A bushfire attack level (BAL) Assessment is a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact in a bushfire event, and thereby determining the construction measures required for the dwelling.

The methodology used for the determination of the BAL rating, and the subsequent building construction standards, are directly referenced from the Australian Standard AS3959-2018 construction of buildings in bushfire prone areas.

The BAL rating is determined through identification and assessment of the following parameters

- Fire Danger index (FDI) Rating; assumed to be FDI-80 for WA;
- All classified vegetation **within 100m** of the subject building;
- Separation distance between the building and the classified vegetation source/s; and
- Slope of the land under the classified vegetation.

AS3959-2018 has six (6) levels of BAL, based on the radiant heat flux exposure to the building, and also identifies the relevant sections for building construction; this is shown in the table below.

Bushfire Attack Level (BAL)	Classified vegetation within 100m of the site and heat flux exposure thresholds	Description of predicted bushfire attack and levels of exposure	Construction Sections (within AS 3959-2018)
BAL-LOW	See clause 2.2.3.2	There is insufficient risk to warrant specific construction requirements.	4
BAL-12.5	$\leq 12.5\text{kW/m}^2$	Ember attack.	3 & 5
BAL-19	$\geq 12.5\text{kW m}^2$ to $\leq 19\text{kW m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux.	3 & 6
BAL-29	$\geq 19\text{kW m}^2$ to $\leq 29\text{kW m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux.	3 & 7
BAL-40	$\geq 29\text{kW m}^2$ to $\leq 40\text{kW m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux with the increased likelihood of exposure to flames.	3 & 8
BAL-FZ	$> 40\text{kW m}^2$	Direct exposure to flames from fire front in addition to heat flux and ember attack.	3 & 9

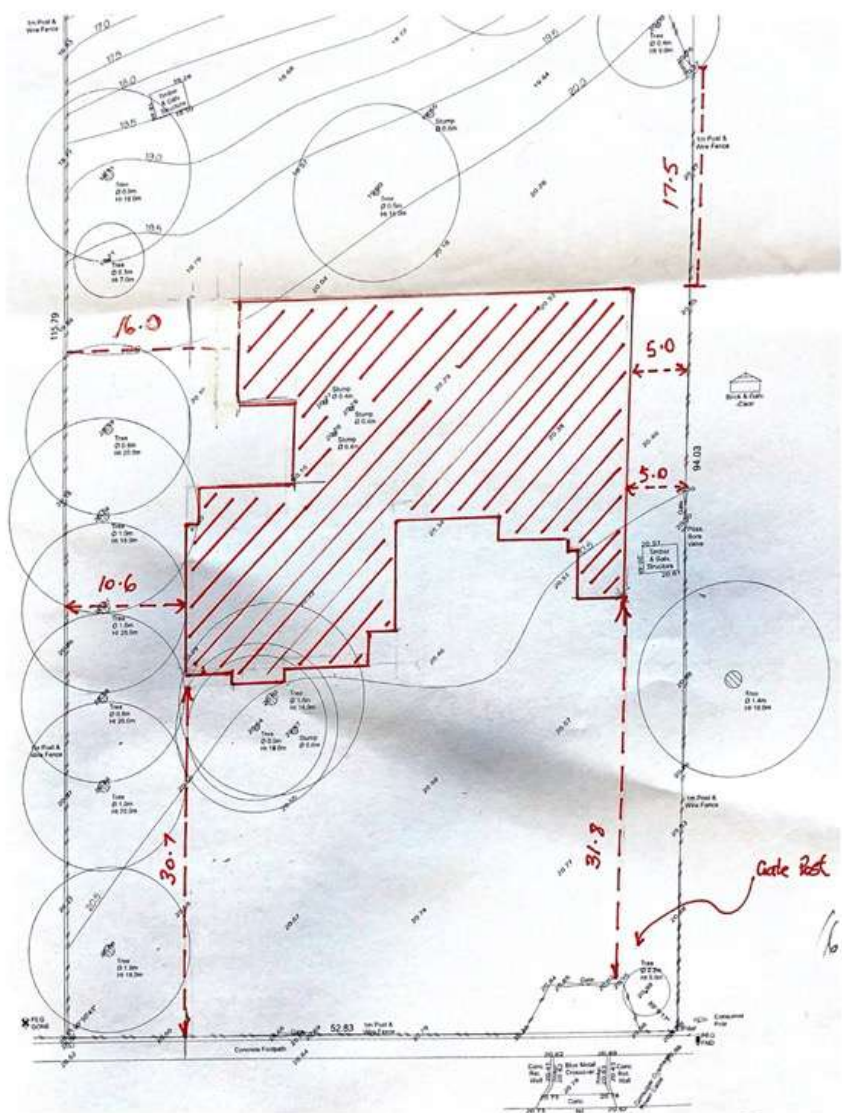
Reference: AS 3959 Construction of buildings in bushfire-prone areas Table 3.1

Please contact this office for a bushfire checklist, this allows for your plans to be cross-referenced with AS3959 Construction of buildings in bushfire-prone areas, to comply with the required upgrades.

APPENDIX A: PROPOSED SITE PLAN

Whilst AS 3959 sets out to improve the performance of buildings when subjected to bushfire attack in a designated bushfire-prone area, it does not guarantee that a building will survive a bushfire event on every occasion.

This assessment has been conducted in conjunction with the site plans provided by the client as provided in Appendix A, and is limited to the surrounding environment within 100m of the proposed building at the time of the assessment only.



Determined in accordance with AS3959-2018

This Certificate has been issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme. The certificate details the conclusions of the full Bushfire Attack Level Assessment Report (full report) prepared by the Accredited Practitioner.

Property Details and Description of Works

Address Details	Unit No.	Street No.	Lot no	Street Name / Plan Reference	
		119	Lot 31	Millhouse	
Main BCA class of the building	Suburb		State	Local Government area	
	Belhus		WA	Swan	
Description of the building or works	Class 1a				
	Single dwelling.				

Determination of the Highest Bushfire Attack Level

AS 3959 Assessment Procedure	Vegetation Classification	Effective Slope	Separation Distance	BAL
Method 1	Class B Woodland	Downslope/10°	32 m	19

BPAD Accredited Practitioner Details

Name: Clinton Macdonald	I hereby declare that I am a BPAD accredited bushfire practitioner 
Company Details: Structerre Consulting Engineers	
I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS 3959-2018 (Incorporating Amendments 1, 2 and 3).	Accreditation No. BPAD47223
	Signature 
	Date 28/04/2021
_____ Authorised Practitioner Stamp	

Reliance on the assessment and determination of the Bushfire Attack Level contained in this certificate should not extend beyond a period of 12 months from the date of issue of the certificate. If this certificate was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated certificate issued.