BushFire Works



BUSHFIRE MANAGEMENT STATEMENT
Lot 61 #5 Shearing Rise, Wundowie

CLIENT:	Rural Building Company
DATE:	28/11/2024
SHIRE/CITY:	City of Swan
FIRE CONSULTANT:	Susan Deeley, David Deeley
CLIENT CONTACT #	Kirsten Dulwich, Rural Building Co, 6241 7000
Client Job No #	310219
BFW FILE #:	20240911
VERSION #:	1.0

Acacia Springs Pty Ltd
trading as
BushFire Works
ABN 945 23123 843
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www.bushfireworks.com.au

Property address: Lot 61 #5 Shearing Rise, Wundowie
Lot size: 1.8399 Ha
Landowner: Bryce Robert Bourke & Rachael Rutendo Bourke
Development Application ref: TBA
Prepared by: Susan Deeley, David Deeley

Document control

Client: Kirsten Dulwich, Rural Building Co

Report version	Purpose	Author/reviewer and accreditation details	Date submitted
Draft 1.0	Report preparation	Susan Deeley	27/11/2024
Final 1.0	Review and editing	Dr David Deeley	29/11/2024

I hereby declare that I am a BPAD Accredited bushfire practitioner.
Accreditation No. 37575
Signature
Date 29/11/2024

Disclaimer

The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959 – Building in Bushfire prone Areas, WAPC / DFES Guidelines for Building in Bushfire Prone areas (State Planning Policy 3.7) and CSIRO's research into Bushfire behaviour. These are considered the minimum standards required to balance the protection of the proposed dwelling and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed dwelling are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire protection consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.

Bushfire Assessment Results

The proposal is to construct a new dwelling on a previously-approved rural-residential zoned lot under the Shire of Northam's LPS No6.

At a site visit on the 16/10/2024, a rating of BAL-FZ was determined for this site (See Table 1), because of the unmanaged G. Grassland covering and surrounding the proposed build site. For G. Grassland to be rated as Low-threat, it must be maintained at ≤10 cm in height.

Table 1: BAL Analysis

Plot	Vegetation Classification	Effective Slope °	Separation (m)	BAL
1	Class G Grassland	Upslope/Flat	0	BAL – FZ
2	Class B Woodland	Upslope/Flat	31.5	BAL – 12.5
4	Class G Grassland	-3	0	BAL – FZ
5	Class G Grassland	-8	0	BAL – FZ
6	Class B Woodland	-8	96.5	BAL – 12.5
7	Class B Woodland	-3	113.5	BAL – LOW
8	Excludable - 2.2.3.2(e,f) Non Veg/Low Threat Veg	-	-	BAL - Low

Determined Bushfire Attack Level	BAL – FZ

Note: This table was copied from the BAL assessment at Appendix 1.

It has been determined that a rating of ≤BAL-19 is achievable for the proposed dwelling, with an APZ sited entirely within the property boundary as per the requirements of SPP3.7.

The APZ at 20 m wide, will need to be to be managed to Schedule 1 specifications (Appendix 2) in perpetuity such that a rating of BAL-19 will be maintained.

Table 2 Post-development BAL Analysis with a 20 m APZ in place

Plot	Vegetation Classification	Effective Slope °	Separation (m)	BAL	Achievable rating	Separation required (m)
1	Class G Grassland	Upslope/Flat	0	BAL – FZ	BAL-12.5	20
2	Class B Woodland	Upslope/Flat	31.5	BAL – 12.5	-	-
4	Class G Grassland	-3	0	BAL – FZ	BAL-12.5	20
5	Class G Grassland	-8	0	BAL – FZ	BAL - 19	20
6	Class B Woodland	-8	96.5	BAL – 12.5	-	-
7	Class B Woodland	-3	113.5	BAL – LOW	-	-
8	Excludable - 2.2.3.2(e,f) Non Veg/Low Threat Veg	-	-	BAL - Low		
Determined Bushfire Attack Level					BAL-19	

Assessment against the bushfire protection criteria

Table 3: Compliance table

Bushfire protection criteria	Method of compliance Acceptable solutions	Proposed bushfire management strategies
Element 1: Location	**A1.1 Development location** The proposal is to build a single dwelling within a previously-approved rural residential lot. A rating of ≤BAL-29 is achievable with an APZ sited entirely within the property boundary. **This meets the intent of Element A1.1**	Scheme water has been provided and there is all-weather egress to two separate destinations.
Element 2: Siting and design	**A2.1 Asset Protection Zone** An APZ surrounding the proposed dwelling will achieve a rating of BAL-19 (Table 2, Figure 2). **This meets the intent of Element A2.1.**	A 20 m-wide APZ surrounding the proposed dwelling will be maintained to Table 9 specifications (Appendix 2), in perpetuity.
Element 3: Vehicular access	A3.1 Public road NA	There are no public roads proposed within the development boundary
	A3.2a Multiple access routes Two-way access via public roads is available to two separate destinations. **This meets the intent of Element A3.2a.**	Shearing Rd north or south provides the option of two separate destinations in the event of an evacuation emergency.
	A3.2b Emergency access routes NA	Existing private and public roads provide adequate emergency access.
	A3.3 No through roads N/A	There are no non-through roads.
	A3.4a Perimeter roads N/A	There is no subdivision
	A3.4b Fire service access routes NA	Existing private and public roads provide adequate fire service access
	3.5 Battle axe lots NA	There are no battle-axe lots
	A3.6 Private driveways The dwelling will have a private driveway >70 m and even though scheme water has been provided, it will need to be built to Table 10 column 4 specifications. **This meets the intent of Element A3.6.**	The private driveway will be constructed to Table 10, column 5 specifications (Appendix 3). This means it will be 4 m-wide and have a ≥13.5 m turn around area near the dwelling.
Element 4: Water	A4.1 Identification of future water supply NA	Scheme water is available.
	A4.2 Provision of water for firefighting purposes Scheme water is available. **This meets the intent of Element A4.3**	A ≥13.5 m turn around area will be established near the dwelling (Figure 2).

Responsibilities for the Bushfire Management Measures

LANDOWNER – PRIOR TO OCCUPANCY	
No.	**Implementation action**
1	Manage vegetation within the nominated APZ (Figure 2), to low threat status (Appendix 2).
2	Construct crossover and private driveway to the standard stated in the BMP (Appendix 3).
3	Connect to the scheme water supply with access for fire-fighting as specified within the BMP.

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	**Management action**
1	Maintain the Asset Protection Zone to the dimensions and standard stated in the BMP.
2	Maintain vehicular access routes within the lot to the surface condition and clearances stated in the BMP.
3	Comply with the relevant local government annual firebreak notice issued under s33 of the Bush Fires Act 1954 (Appendix 4)

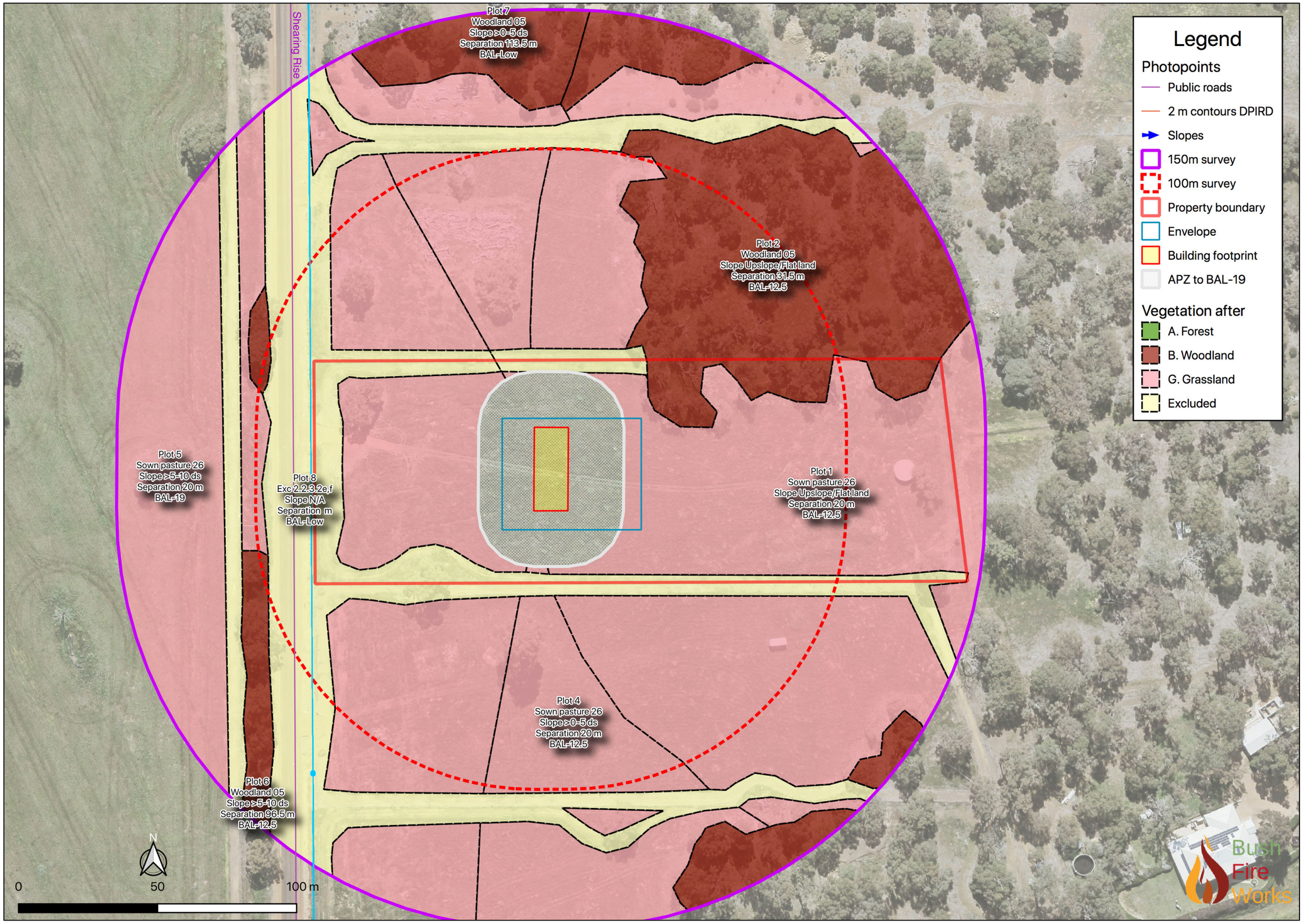


Figure 1 Post-development BAL contours with a nominated APZ to BAL-19.

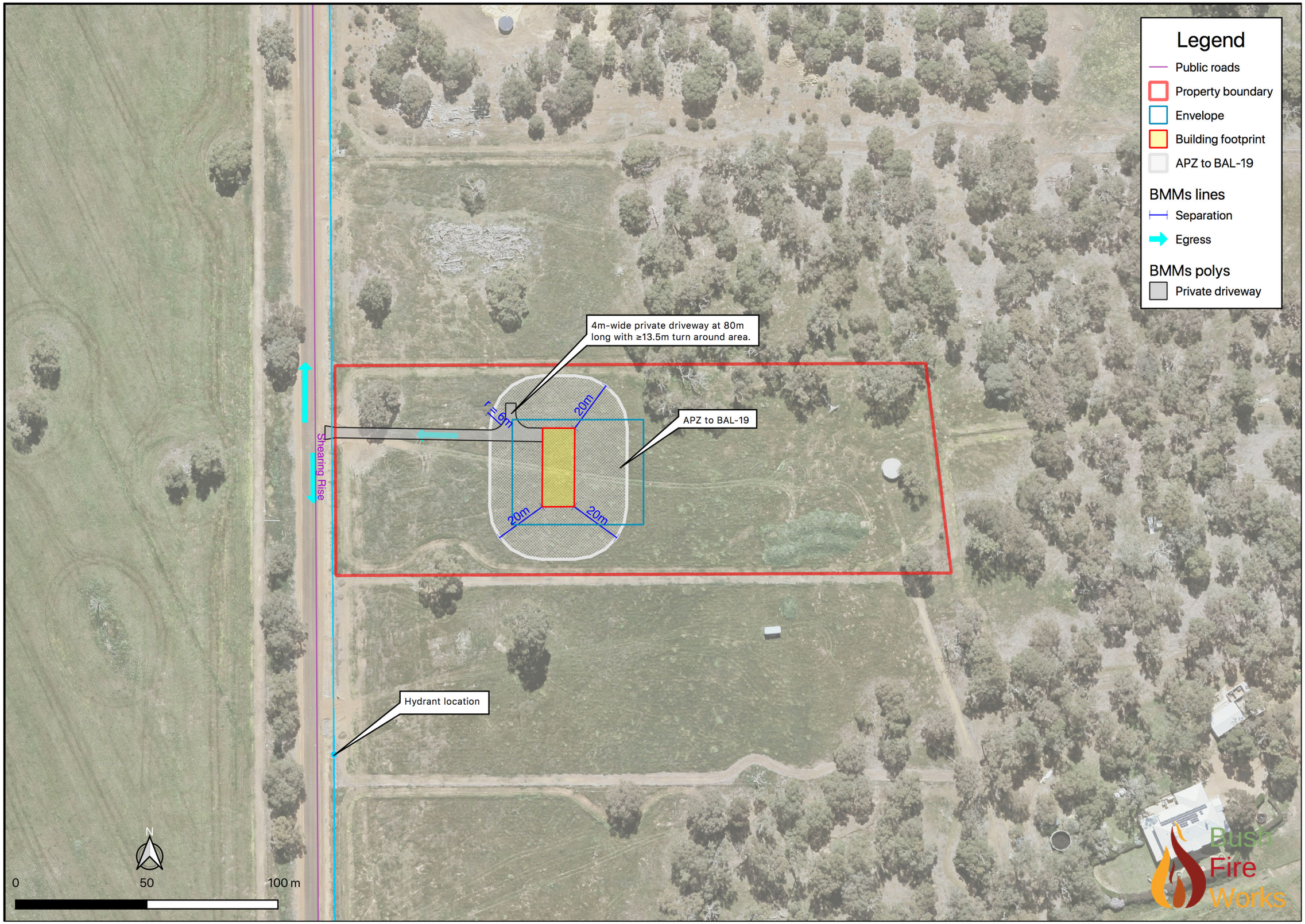


Figure 3 Spatial representation of the proposed risk management measures.

Appendices:

Appendix 1 BAL assessment



Bushfire Attack Level (BAL) Assessment Report

This report has been prepared by an Accredited BPAD Practitioner using the Simplified Procedure (Method 1) as detailed in Section 2 of AS 3959:2018. All enquiries related to the information and conclusions presented in this report must be made to the BPAD Accredited Practitioner.

Property Details and Description of Works

Job Details	**Unit no**	**Street no** 5	**Lot no** 61	**Street name / Plan Reference** Shearing Rise	
	Suburb Wundowie			**State** WA	**Postcode** 6560
Local government area	**Shire / City** Shire of Northam				
Main BCA class of the building	Class 1a	**Use(s) of the building**	Private dwelling		
Description of the building or works	New Home Construction				

Report Details

Report / Job Number	Report Version	Assessment Date	Report Date
202340911	1.0	16 October 2024	28 November 2024

BPAD Accredited Practitioner Details

Report: Susan Deeley **Review:** David Deeley	Authorised Practitioner Stamp
Company Details Acacia Springs Pty Ltd *trading as* BushFire Works ABN 945 23123 843 PO Box 1249, Bibra Lake DC, WA 6965 enquiries@bushfireworks.com.au www.bushfireworks.com.au	I hereby declare that I am a BPAD Accredited bushfire practitioner. Accreditation No. 37575 Signature Date 29/11/2024

Reliance on the assessment and determination of the Bushfire Attack Level contained in this report should not extend beyond a period of 12 months from the date of issue of the report. If this report 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 report issued.

Site Assessment & Site Plans - This site was assessed on 16 October 2024 by a Accredited BPAD Practitioner to determine the BAL rating per AS 3959:2018 Simplified Procedure (Method 1).

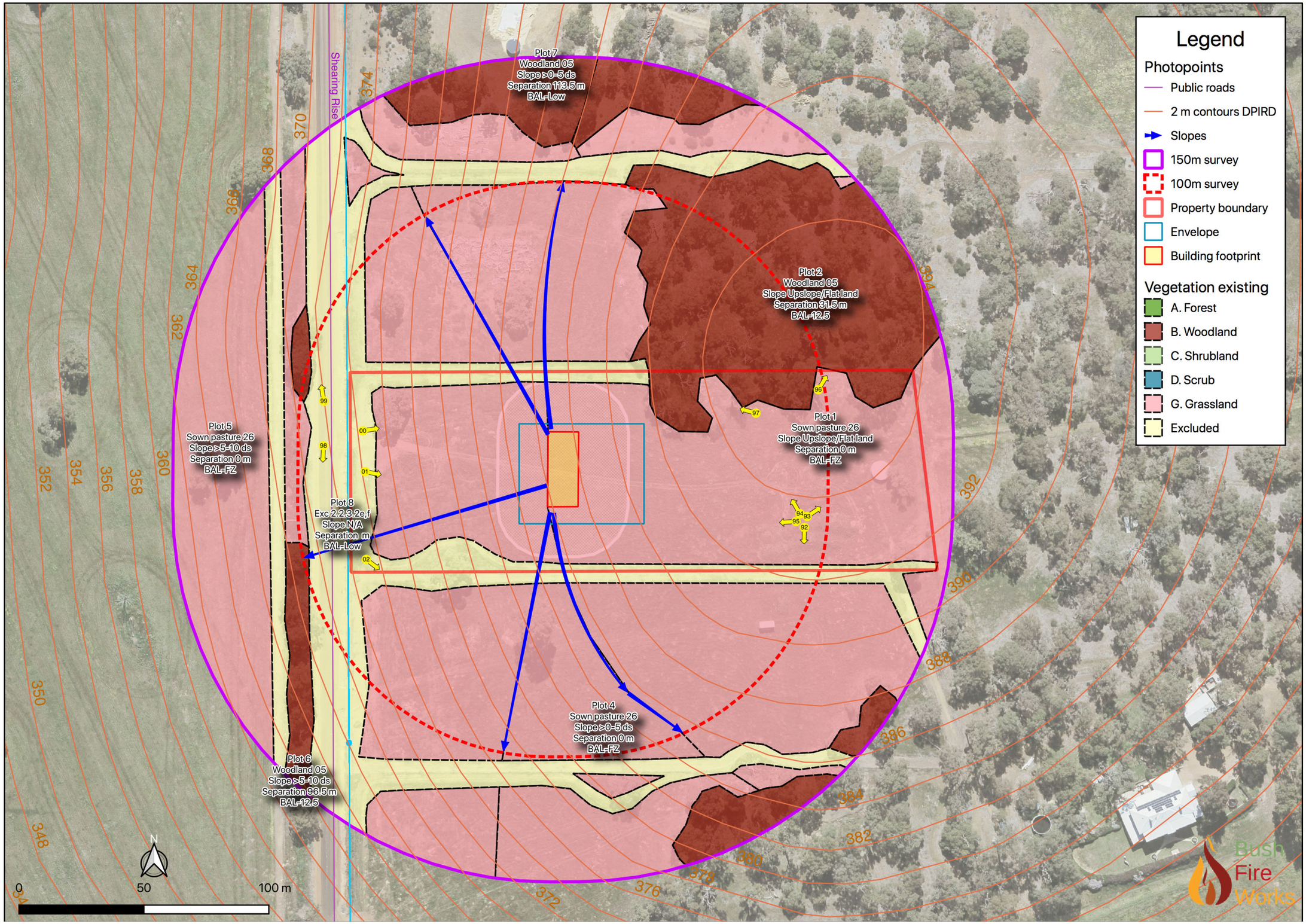


Figure 1: Classified Vegetation and Photo Points

Vegetation Classification All vegetation within 150 m of the site was classified in accordance with Clause 2.2.3 of AS 3959:2018. Each distinguishable vegetation plot determining the Bushfire Attack Level is identified below.

Photo ID:	92	**Plot:**	1
Vegetation Classification or Exclusion Clause			
Class G Grassland – Sown pasture G-26			
Description / Justification for Classification			
Grassland with <10% cover from shrubs and low trees. Fuel load to 4.5t/ha.			



Photo ID:	93	**Plot:**	1
Vegetation Classification or Exclusion Clause			
Class G Grassland – Sown pasture G-26			
Description / Justification for Classification			
Grassland with <10% cover from shrubs and low trees. Fuel load to 4.5t/ha. **Note** Plot 2 Woodland 05 at background			



Photo ID:	94	**Plot:**	1
Vegetation Classification or Exclusion Clause			
Class G Grassland – Sown pasture G-26			
Description / Justification for Classification			
Grassland with <10% cover from shrubs and low trees. Fuel load to 4.5t/ha.			



Photo ID:	95	Plot:	1

Vegetation Classification or Exclusion Clause

Class G Grassland – Sown pasture G-26

Description / Justification for Classification

Grassland with <10% cover from shrubs and low trees. Fuel load to 4.5t/ha.



Photo ID:	96	Plot:	2

Vegetation Classification or Exclusion Clause

Class B Woodland - Woodland B-05

Description / Justification for Classification

Trees 2-30m with 10-30% mature canopy cover with sparse simplified understorey. Fuel load, 15-26t/ha

Note: Plot 1 Grassland in foreground



Photo ID:	97	Plot:	2

Vegetation Classification or Exclusion Clause

Class B Woodland - Woodland B-05

Description / Justification for Classification

Trees 2-30m with 10-30% mature canopy cover with sparse simplified understorey. Fuel load, 15-26t/ha

Note: Plot 1 Grassland in foreground



Photo ID:	98	Plot:	3

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(e,f) Non veg/ low threat vegetation areas

Description / Justification for Classification

Road and verge



Photo ID:	99	Plot:	6

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(e,f) Non veg/ low threat vegetation areas

Description / Justification for Classification

Road and verge



Photo ID:	00	Plot:	5

Vegetation Classification or Exclusion Clause

Class G Grassland – Sown pasture G-26

Description / Justification for Classification

Grassland with <10% cover from shrubs and low trees. Fuel load to 4.5t/ha.



Photo ID:	01	Plot:	5
Vegetation Classification or Exclusion Clause			
Class G Grassland – Sown pasture G-26			
Description / Justification for Classification			
Grassland with <10% cover from shrubs and low trees. Fuel load to 4.5t/ha.			



Photo ID:	02	Plot:	4
Vegetation Classification or Exclusion Clause			
Class G Grassland – Sown pasture G-26			
Description / Justification for Classification			
Grassland with <10% cover from shrubs and low trees. Fuel load to 4.5t/ha.			



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 a jurisdictional variation applicable to the site.

Fire Danger Index			
FDI 40 ☐	FDI 50 ☐	FDI 80 ☒	FDI 100 ☐
Table 2.4.5	*Table 2.4.4*	*Table 2.4.3*	*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.

Table 1: BAL Analysis

Plot	Vegetation Classification	Effective Slope °	Separation (m)	BAL
1	Class G Grassland	Upslope/Flat	0	BAL – FZ
2	Class B Woodland	Upslope/Flat	31.5	BAL – 12.5
4	Class G Grassland	-3	0	BAL – FZ
5	Class G Grassland	-8	0	BAL – FZ
6	Class B Woodland	-8	96.5	BAL – 12.5
7	Class B Woodland	-3	113.5	BAL – LOW
8	Excludable - 2.2.3.2(e,f) Non Veg/Low Threat Veg	N/A	N/A	BAL – LOW
Determined Bushfire Attack Level				**BAL – FZ**

DISCLAIMER

The determinations and recommendations in this report are based on the requirements of Australian Standards 3959 – 2018, (Construction of Buildings in Bushfire prone Areas) and State Planning Policy 3.7, (Planning in Bushfire Prone Areas and appendices). This assessment has been undertaken in good faith and has been based on the site conditions apparent at the time of inspection, and other information provided by the client or their agents. Construction of the dwelling to the prescribed BAL level will not on its own guarantee that a building will not be destroyed or damaged by a bushfire. The consultant has no control over the subsequent actions of the home owner in the construction, development and maintenance of a property, which in the event of a bushfire may contribute to loss or damage. Accordingly the consultant, local government authority, their servants or agents shall not be held accountable for any damage to property, loss or other consequence as a result of the services provided or determinations in this report.

ADDITIONAL INFORMATION FOR THE CLIENT

BUSHFIRE ATTACK LEVELS AND CORRESPONDING SECTIONS FROM AS 3959:2018

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

RADIANT HEAT THRESHOLDS OF PAIN AND IGNITION FROM AS 3959:2018

In a bushfire, radiant heat levels may be unsafe for humans and could also ignite combustible materials in the vicinity. Table G1 provides an indication of the potential effects of radiant heat levels on both humans and selected materials to assist the reader in understanding the implications of the different BALs.

TABLE G1 - TYPICAL RADIANT HEAT INTENSITIES FOR VARIOUS PHENOMENA

PHENOMENA	kW/m^2
Pain to humans after 10 s to 20 s	4
Pain to humans after 3 s	10
Ignition of cotton fabric after a long time (piloted) (see Note 2)	13
Ignition of timber after a long time 13 (piloted) (see Note 2)	13
Ignition of cotton fabric after a long time (non-piloted) (see Note 3)	25
Ignition of timber after a long time (non-piloted) (see Note 3)	25
Ignition of gabardine fabric after a long time (non-piloted) (see Note 3)	27
Ignition of black drill fabric after a long time (non-piloted) (see Note 3)	38
Ignition of cotton fabric after 5 s (non-piloted) (see Note 3)	42
Ignition of timber in 20 s (non-piloted) (see Note 3)	45
Ignition of timber in 10 s (non-piloted) (see Note 3)	55

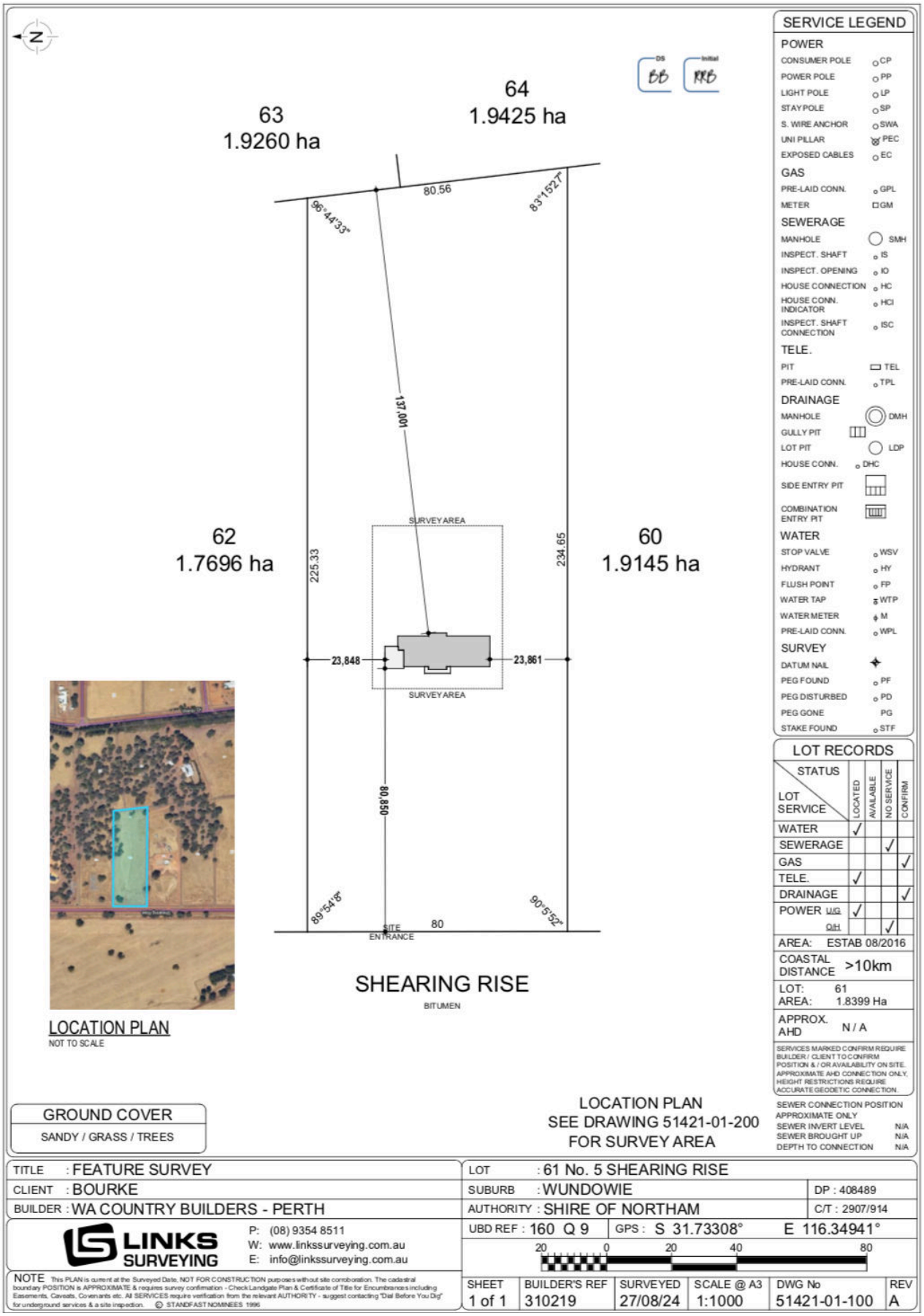
NOTES:

1. Source AS 1530.4—2005.

2. Introduction of a small flame to initiate ignition.

3. Flame not introduced to initiate ignition.

Attachment 1: Site Plan and Drawings



Appendix 2 Specifications for Asset Protection Zones (APZs)

Table 9: Asset Protection Zone (APZ) technical requirements

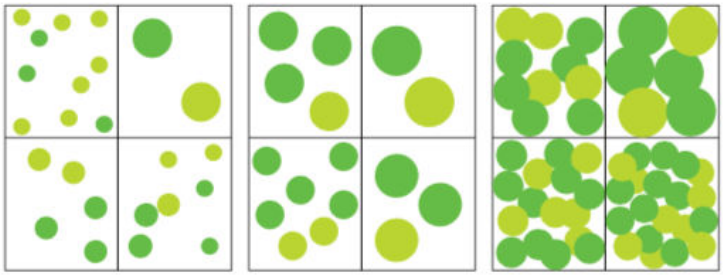
OBJECT	REQUIREMENT
Fences within the APZ	Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (combustible, dead vegetation matter less than 6 mm in thickness)	• Should be managed and removed on a regular basis to be maintained as low threat vegetation • Should be maintained at less than two tonnes per hectare (on average) • Mulches should be non-combustible such as stone, gravel, shells, rock or crushed mineral earth or wood mulch more than five millimetres in thickness.
Trees* (more than 6 m in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building • Branches at maturity should not touch or overhang a building or powerline • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be less than 15 per cent of the total APZ area • Tree canopies at maturity should be at least 5 m apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided the total canopy cover within the APZ does not exceed 15 per cent and is not connected to the tree canopy outside the APZ. Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%
Shrub* and scrub* (0.5 m to 6 m in height). Shrub and scrub more than 6 m in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings • Should not be planted in clumps more than five square metres in area • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground cover*(less than 0.5 m in height. Ground cover more than 0.5 m in height is to be treated as shrub)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above • Can be located within two metres of a structure but three metres from windows or doors if more than 100 mm in height.
Grass	• Grass should be maintained at a height of 100 mm or less, at all times • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	Within three metres of each wall or supporting post of a habitable building; the area is kept free from vegetation but can include ground cover, grass and non- combustible mulches as prescribed above.
Liquid petroleum gas cylinders	• Should be located on the side of a building farthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building • The pressure relief valve should point away from the house • No flammable material within six metres from the front of the valve • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

Table 10: Vehicular access technical requirements

	1		2		3		4		5	
TECHNICAL REQUIREMENTS	**PERIMETER ROADS**		**PUBLIC ROADS**		**EMERGENCY ACCESS WAY[3]**		**FIRE SERVICE ACCESS ROUTE[3]**		**BATTLE-AXE & PRIVATE DRIVEWAYS[1]**	
MAP OF BUSH FIRE PRONE AREAS DESIGNATION	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**	**Area 2**	**Area 1**
Minimum horizontal clearance (metres)	12	8	See note 5		10	6	10	6	6	
Minimum vertical clearance (metres)	4.5									
Minimum weight capacity (tonnes)	15									
Maximum grade unsealed road[2]	See note 5		See note 5		1:10 (10% or 6°)					
Maximum grade sealed road[2,4]					1:7 (14.3% or 8°)					
Maximum average grade sealed road					1:10 (10% or 6°)					
Minimum inner radius of road curves (metres)					8.5					

Notes:

[1] Driveways and battle-axe legs to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision where not required to comply with the widths in this Appendix or the Guidelines.

[2] Dips must have no more than a 1 in 8 (12.5% - 7.1 degrees) entry and exit angle.

[3] To have crossfalls between 3 per cent and 6 per cent.

[4] For sealed roads only the maximum grade of no more than 1 in 5 (20 per cent) (11.3 degrees) for no more than 50 metres is permissible, except for short constrictions to 3.5 metres for no more than 30 metres in length where an obstruction cannot be reasonably avoided or removed.

[5] As outlined in the Institute of **Public Works Engineering Australasia (IPWEA) subdivision guidelines, Liveable Neighbourhoods, Austroads Standards** Main Roads standard, supplement, policy or guideline and/or any applicable or relevant local government standard or policy.

Appendix 4 Local authority annual firebreak and fuel reduction notice

The Shire of Northam annual firebreak information can be downloaded with the following link

Or click on the picture below

