

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference:	Lot 42 [P017506] Hoy Road		
Suburb:	Coonabidgee	State: WA	P/code: 6503
Local government area:	Gingin		
Description of the planning proposal:	Flour (Wheat) Milling Plant		
BMP Plan / Reference Number:	230202	Version: B	Date of Issue: 02/03/2023
Client / Business Name:	AU Grass Pty Ltd		

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minor development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High risk land-use	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vulnerable land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

High Risk - potential for flour dust to be an explosive combustion source.

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name Jeremy Durston	Accreditation Level Level 3	Accreditation No. BPAD-36525	Accreditation Expiry 30/04/2024
Company Bushfire West Pty Ltd		Contact No. 0403328835	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner



Date 02/03/2023



Bushfire Management Plan

Development:

Flour Milling Plant & Caretaker Residence,

Lot 42 Hoy Road, Coonabidgee



Ref: 230202

Version: B

Mar 2023

REPORT DETAILS

Subject Land

Land ID	Plan P017506 [42]
Address	Lot 42 Hoy Road, Coonabidgee 6503
Land area	2.2847 ha
Zoning	Rural Industry
Local Government	Gingin
Proposal description	Flour (Wheat) Milling Plant incorporating: milling shed with office; storage silos; caretaker residence; water tanks; associated vehicle access with hardstand areas.
Site assessment date	7 Feb 2023

Document Reference

Ref: 230202	Date	Purpose
A	23 Feb 2023	Consultation draft.
B	2 Mar 2023	Development application.

Author

Practitioner	Accreditation Level	Accreditation No.
Jeremy Durston	Level 3	BPAD-36525

Report Limitations

Bushfire and weather conditions can be extremely dangerous and unpredictable. The management of bushfire risk will depend on, among other things, the actions of property owners and/or occupiers over which the author has no control.

All surveys, forecasts, projections and recommendations made in this report are made in good faith on the basis of information available at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

Notwithstanding anything contained therein, the author will not, except as the law may require, be liable for any loss or other consequences arising out of the services provided.

Jeremy Durston
jeremy@Bushfire West.com.au
Bushfire West Pty Ltd



Contents

1. Proposal Details.....	4
2. Environmental Considerations	8
3. Bushfire Assessment Inputs	8
4. Bushfire Assessment Outputs	10
5. Bushfire Hazard Issues	10
6. Assessment against the Bushfire Protection Criteria.....	13
7. Bushfire Risk Assessment	14
8. Risk Treatment Strategies	16
9. Implementation and Management.....	18
10. Conclusion.....	18

Appendix 1 – Schedule of Bushfire Mitigation Measures

Appendix 2 – Asset Protection Zone Standards

Appendix 3 – Driveway Standards

Appendix 4 – Firefighting Water Standards

Appendix 5 – Vegetation Assessment

1. Proposal Details

Background & Purpose of Report

This Bushfire Management Plan (BMP) is for the development of a Flour Milling Plant with Caretaker Residence at Lot 42 Hoy Road, Coonabidgee. The primary purpose of this report is to provide the required bushfire planning information to inform the assessment of the development application. The BMP assesses the proposal against *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) and the associated *Guidelines for Planning in Bushfire Prone Areas v1.4* (the Guidelines). The required bushfire protection measures are specified in accordance with the Guidelines.

Additionally, the proposal is determined to be a 'High Risk Land Use' with respect to the milling dust hazard from the proposed operations having the potential to cause or contribute to a bushfire in the wider locality. A higher-order risk assessment and appropriate risk treatment measures are therefore required to address the onsite hazards.

The assessment within this report determines the bushfire risk of the proposed development to be tolerable, and a range of risk treatment measures are provided to specifically address the potential onsite hazard. In combination with the general bushfire planning requirements of the Guidelines, these measures are considered appropriate to manage the assessed bushfire threat.

Subject Site & Existing Conditions

The subject land is currently undeveloped and generally comprises remnant vegetation with firebreaks and some boundary fencing. The site is located within the southern section of a Rural Industry subdivision with broad-scale agricultural land adjacent to the south (Figure 1). Hoy Road provides direct road access, connecting with Brand Hwy to the east and providing a through-connection to Gingin Brook Road to the north. No reticulated water supply is installed. The subject land is within a bushfire prone area, as designated by the *Western Australia State Map of Bush Fire Prone Areas*.

Proposal Description

The proposal of 'Flour (Wheat) Milling Plant' comprises a milling shed with office, storage silos, caretaker residence, water tanks and associated vehicle access with hardstand areas. The development plans are depicted in Figures 2 & 3.

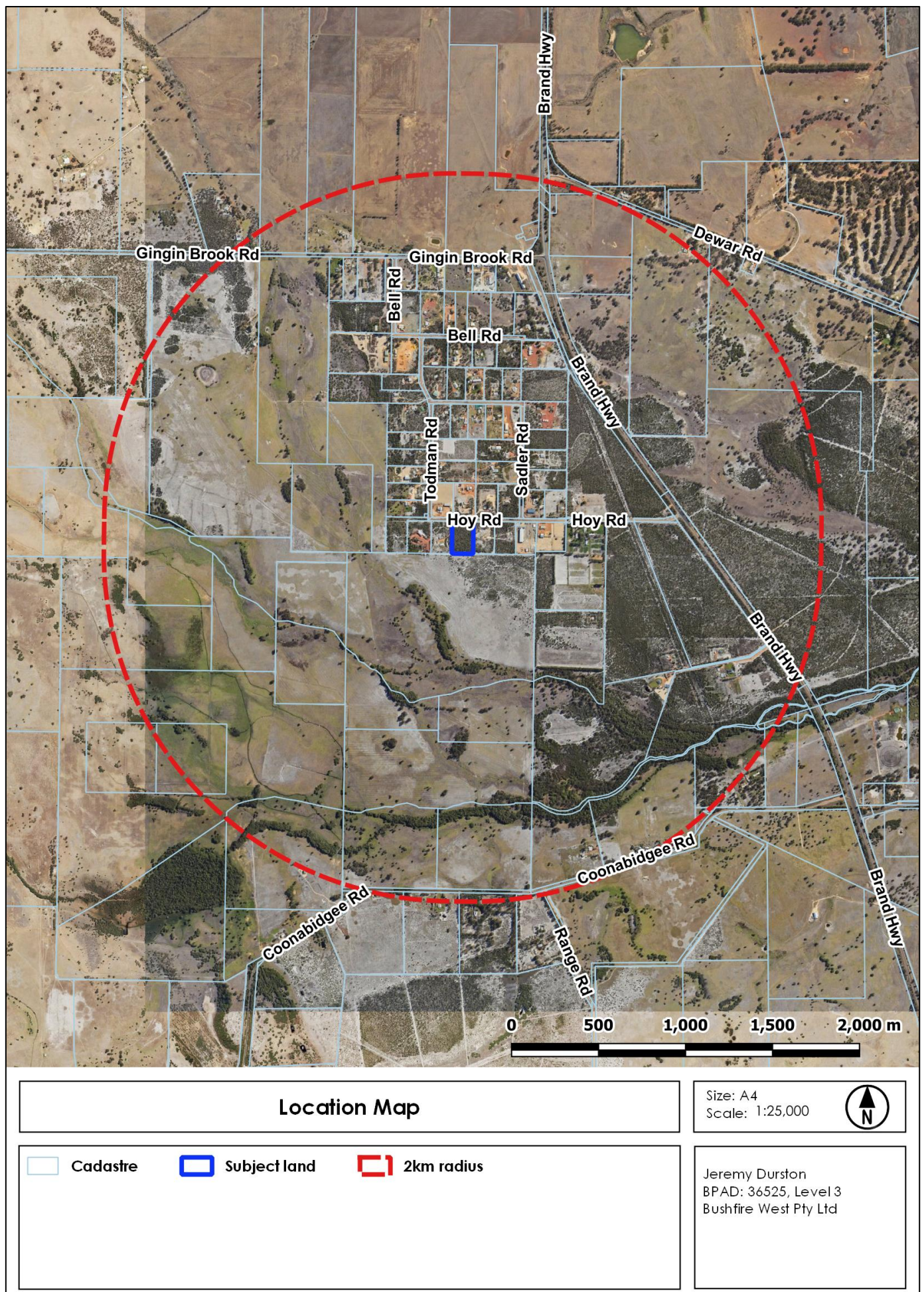
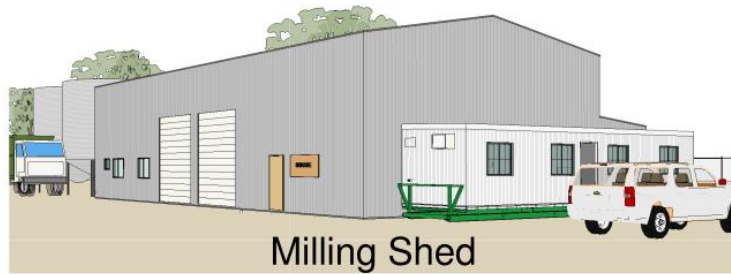
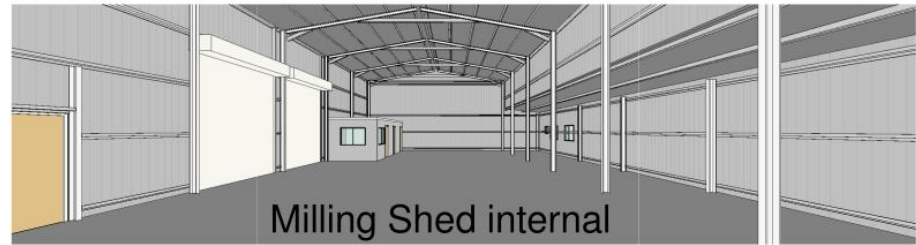


Figure 1: Site Location



PROPOSED MILLING PLANT
42 Hoy Road, Coonabidgee

Figure 2: Elevation Plans

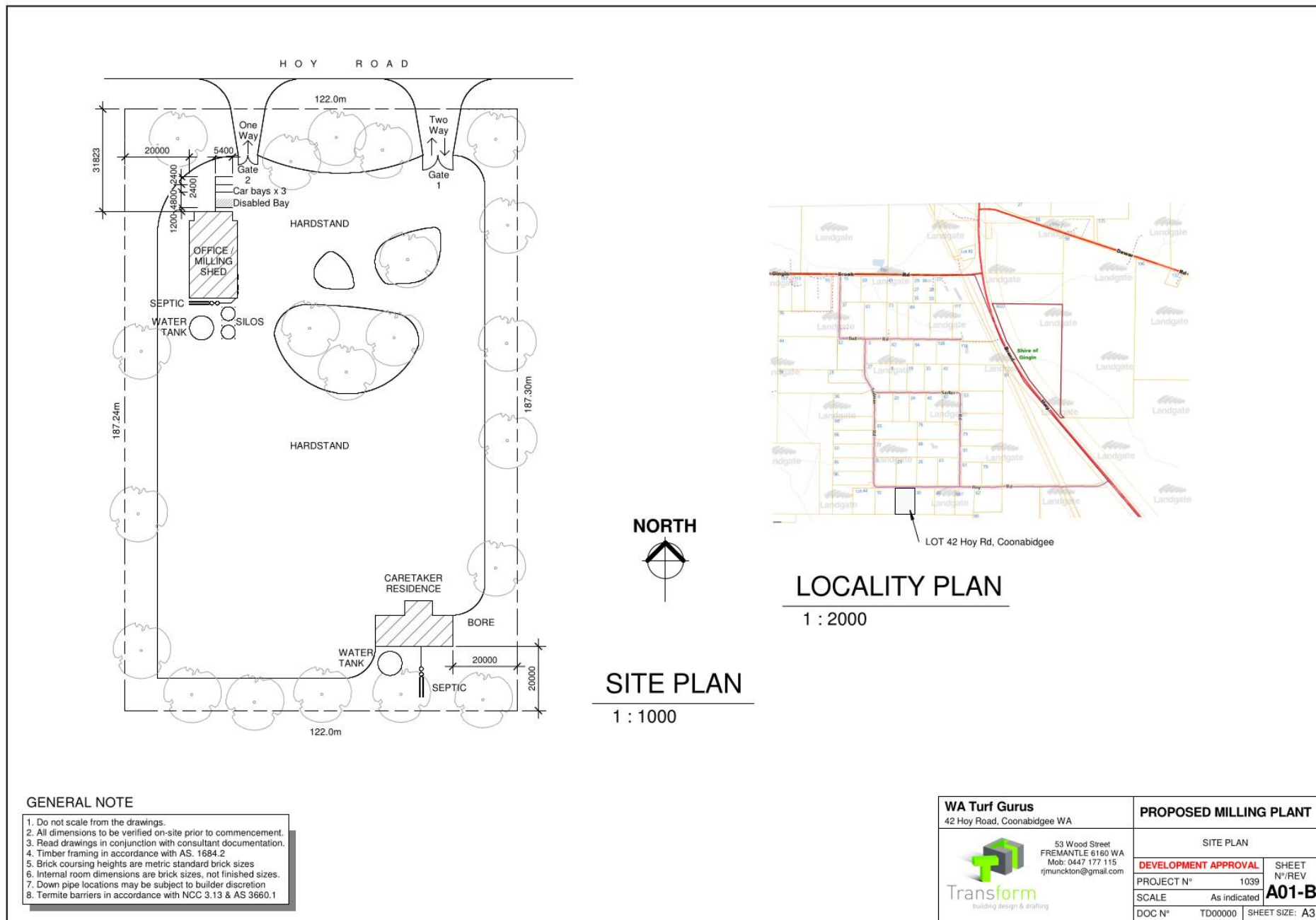


Figure 3: Development Site Plan

2. Environmental Considerations

The subject land is included within previous assessments identified by the WA Environmental Protection Authority Spatial Index of Environmental Reports (i.e. identified in the 'DWER-060' dataset), however no designated Environmentally Sensitive Area subject to clearing regulations is identified (i.e. not identified in the 'DWER-046' dataset).

The subject land will require substantial vegetation clearing and modification to enable the proposed development and to establish the Asset Protection Zone detailed within this report. The Asset Protection Zone is not required to be entirely cleared of vegetation, however any remaining vegetation should be landscaped for low bushfire threat, with reference to the applicable Asset Protection Zone standards detailed in Appendix 1.

All required permits must be applied for and granted by the relevant authority prior to any clearing, thinning and/or modification of native vegetation.

3. Bushfire Assessment Inputs

Effective Slope

Effective slopes were assessed in accordance with AS3959-2018 *Construction of buildings in bushfire prone areas* (AS3959). Slope data was measured on site and cross referenced with Landgate elevation data. The effective slopes beneath applicable vegetation areas are recorded in Table 1.

Bushfire Fuels

The location and extent of classified vegetation structures, including low-threat exclusions, within 150 metres of the proposed development were assessed in accordance with AS3959-2018 and mapped in Figure 4. The areas of classified vegetation and low-threat exclusions, post-development, are detailed in Appendix 5 and summarised below.

Table 1 Areas of classified vegetation and exclusions, post-development:

Assessment Area	Vegetation Classification	Effective Slope
1	Subject land to be modified & maintained as a low threat APZ. Exclusions 2.2.3.2 (e)&(f)	n/a
2	Class D Scrub	Downslope 1 deg
3	Class G Grassland	Downslope 1 deg
4	Class D Scrub	Downslope 1 deg
5	Class D Scrub	Upslope/flat
6	Class D Scrub	Upslope/flat
7	Exclusions 2.2.3.2 (e)&(f)	n/a
8	Exclusions 2.2.3.2 (e)	n/a

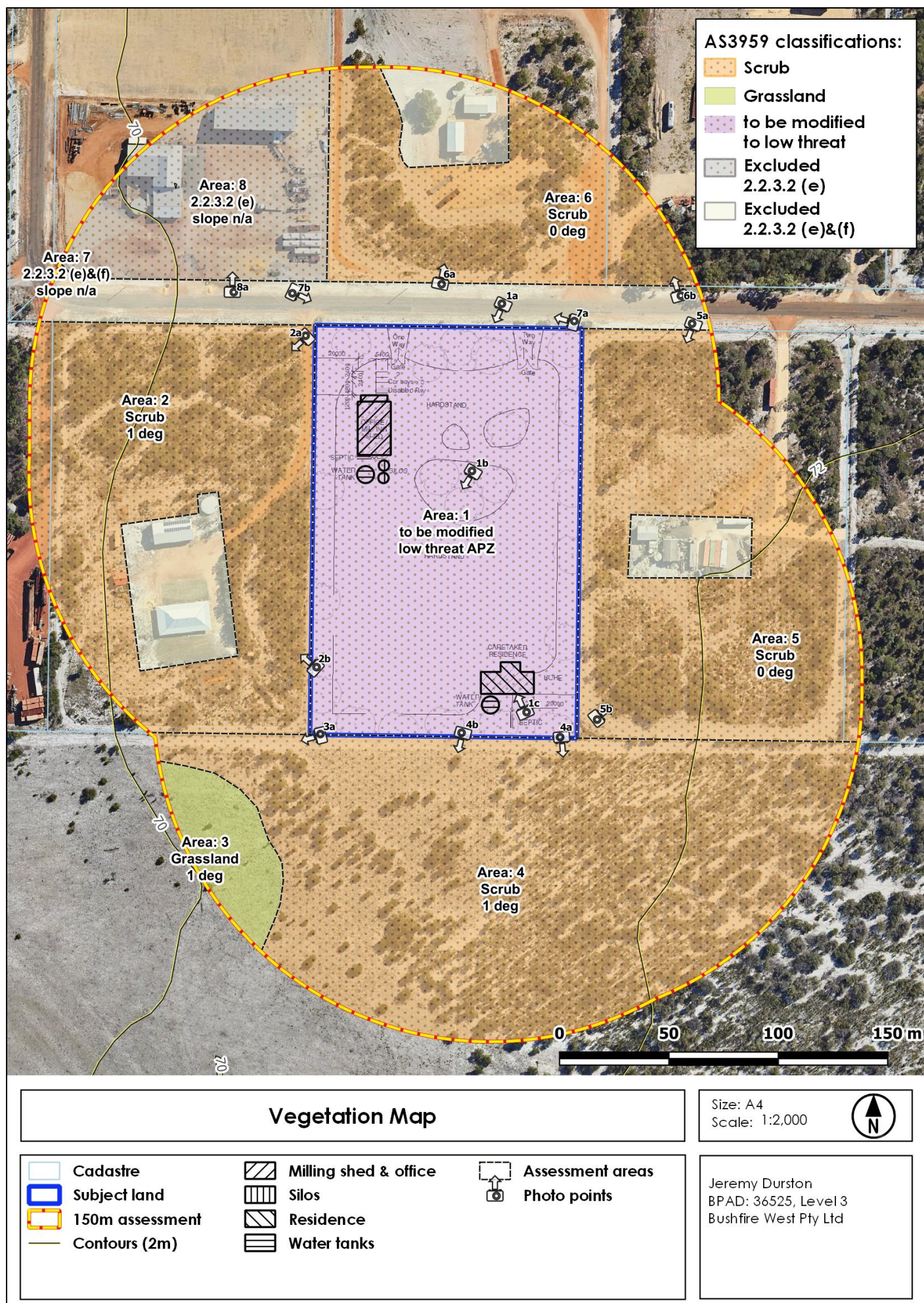


Figure 4: Vegetation Classifications Map

4. Bushfire Assessment Outputs

Potential Bushfire Impact

The potential, post-development radiant heat impacts to the site in accordance with AS3959-2018 (Method 1) are summarised as follows:

Table 2: BAL rating variables (AS3959-2018 Method 1)

Vegetation Classification	Slope	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
Class D Scrub	>0 to 5 deg	<11m	11 to <15m	15 to <22m	22 to <31m	31 to <100m
Class D Scrub	Flat & upslope	<10m	10 to <13m	13 to <19m	19 to <27m	27 to <100m
Class G Grassland	>0 to 5 deg	<7m	7 to <9m	9 to <14m	14 to <20m	20 to <50m
Exclusions 2.2.3.2	n/a	n/a	n/a	n/a	n/a	n/a

BAL Contour Map

BAL Contour Mapping has been prepared in accordance with the Guidelines to determine the post-development BAL ratings for the relevant development components (Figures 5 & 6). The resulting BAL ratings are summarised as follows:

Table 3: BAL ratings, post-development (AS3959 Method 1)

Development Components	Highest BAL Rating
Milling Shed	BAL-29
Office	BAL-29
Silos	BAL-19
Caretaker residence	BAL-29
Industrial & domestic water tanks	exempt
Vehicle access ways, hardstand areas, low threat landscaping	exempt

All relevant onsite development is thus capable of achieving acceptable ratings of BAL-29 or lower subject to the installation and maintenance of the required Asset Protection Zone.

5. Bushfire Hazard Issues

The following hazard issues are identified:

- The bushfire hazards are areas of remnant Scrub vegetation throughout the subject land and surrounding area, in addition to agricultural grasslands.
- The proposed milling operations represent a potential onsite hazard that may cause or contribute to a bushfire.
- An Asset Protection Zone is required to minimise the hazard from any remnant onsite vegetation and landscaping.
- The public road network provides two access alternatives and multiple egress destinations.
- No reticulated water supply is available. Onsite firefighting water is required with sufficient capacity to service the milling area and caretaker residence, with respect to the potential onsite hazards.
- The subject land, proposed development and firefighting water all need to be accessible by firefighting vehicles and appliances.

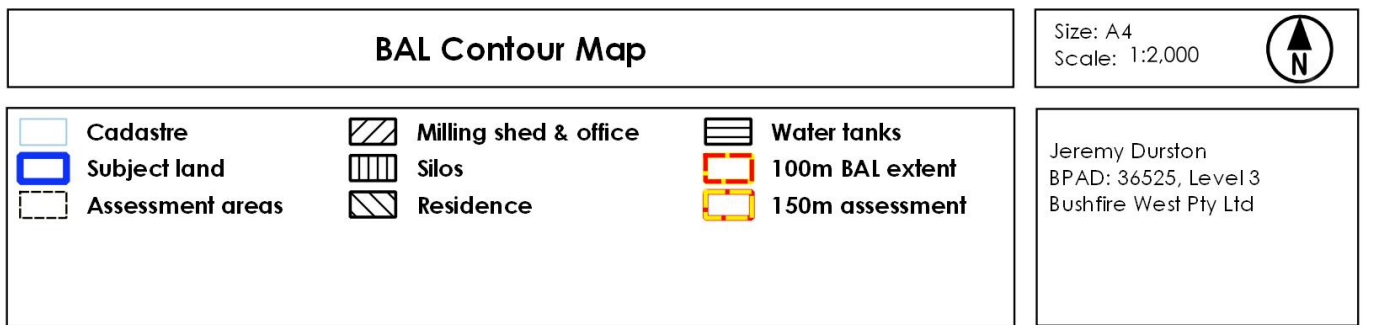
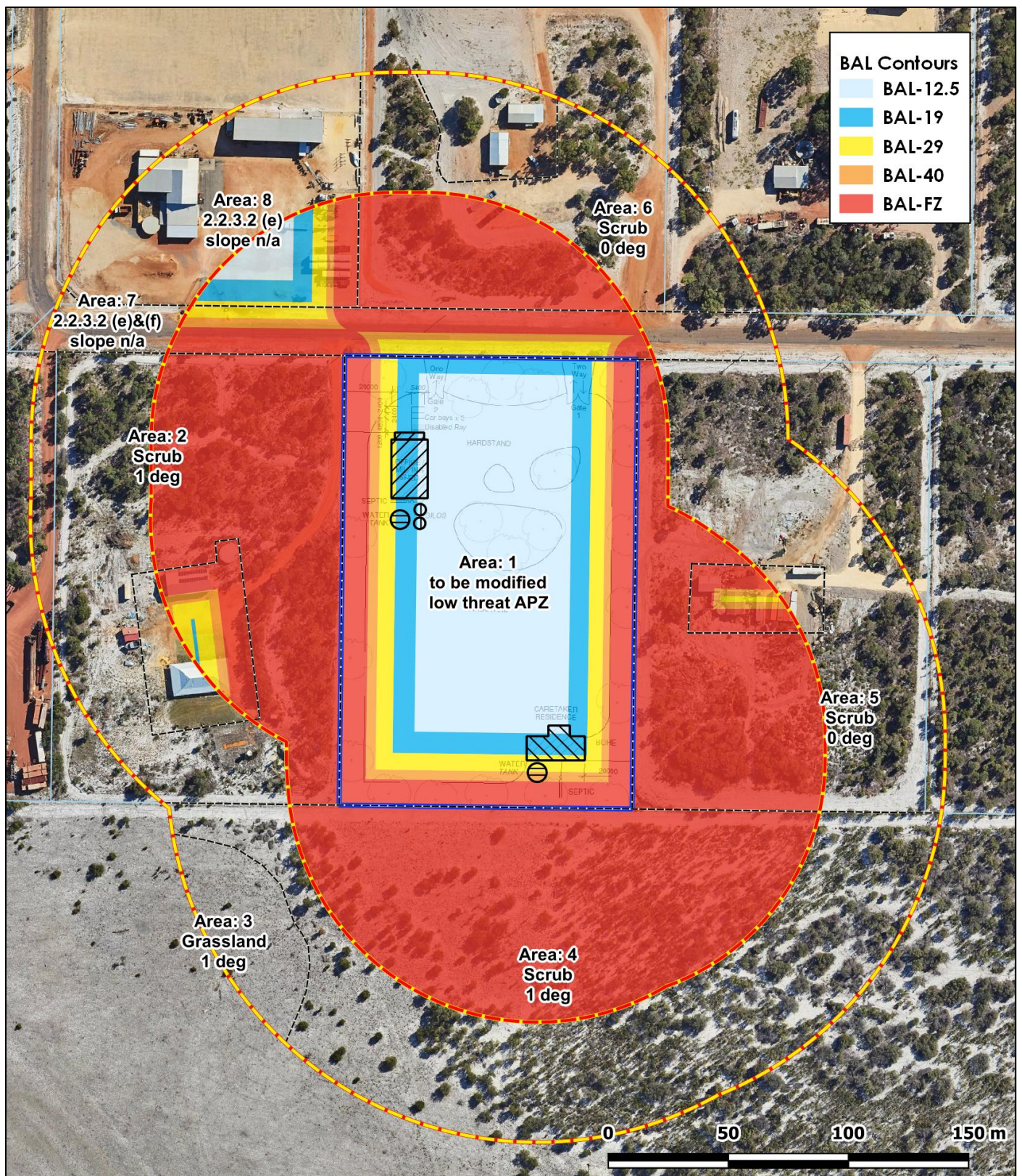


Figure 5: BAL Contour Map

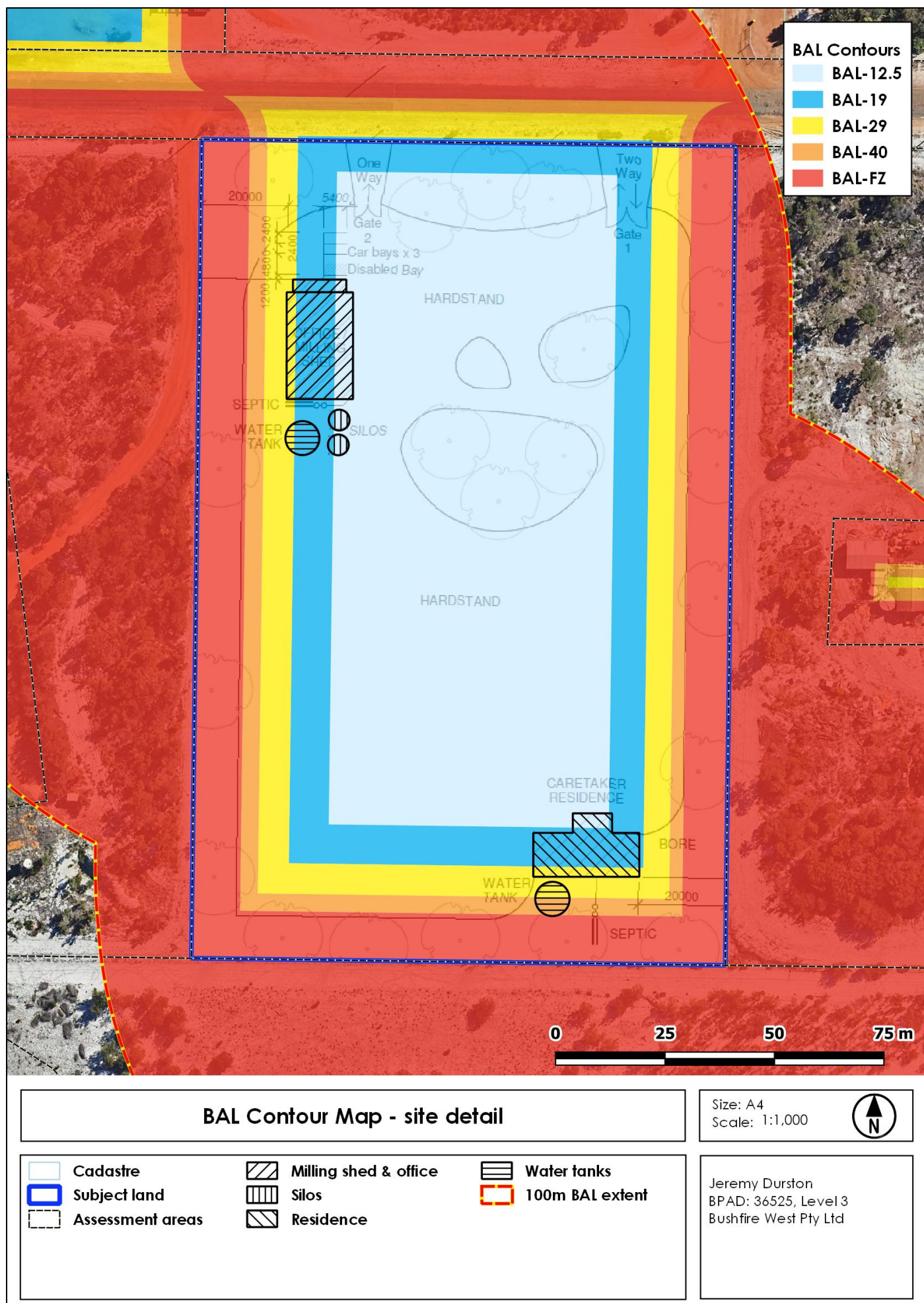


Figure 6: BAL Contour Map – detailed site view

6. Assessment against the Bushfire Protection Criteria

Following is an assessment against the bushfire protection criteria detailed in Appendix 4 of the *Guidelines for Planning in Bushfire Prone Areas Version A.4* (the Guidelines), including the applicable Acceptable Solutions for each element.

Table 4: Assessment against the bushfire protection criteria of the Guidelines

Element	Acceptable Solution (A)	Compliance	Notes/Requirements
1. Location	A1.1 Development location	Yes	Complies. The location is capable of achieving acceptable ratings of BAL-29 or lower for relevant development.
2. Siting of Development	A2.1 Asset Protection Zone	Yes, to comply	To comply. An Asset Protection Zone extending over the entire subject land is to be installed and maintained to the standards specified by the Guidelines.
3. Vehicular Access	A3.1 Public roads	Yes	Complies. Existing Roads comply with the technical requirements of the Guidelines Table 6 Column 1.
	A3.2a Multiple access routes	Yes	Complies. Existing Roads provide connections to multiple access routes.
	A3.2b Emergency access way	n/a	Not applicable. A3.2a is achieved instead.
	A3.3 Through-roads	n/a	Not applicable to a development application.
	A3.4a Perimeter roads	n/a	Not applicable to a development application.
	A3.4b Fire service access route	n/a	Not applicable to a development application.
	A3.5 Battle-axe	n/a	Not applicable to a development application.
	A3.6 Private driveways	Yes, to comply	To comply. The driveway is to be suitable for firefighting vehicles and appliances to access the milling site and caretaker residence, in accordance with the Guidelines.
4. Water	A4.1 Identification of future water supply	n/a	Not applicable to a development application.
	A4.2 Provision of water for firefighting purposes	Yes, to comply	To Comply. A dedicated 50,000L firefighting water tank is required incorporating the standards specified by the Guidelines.

7. Bushfire Risk Assessment

Potential Onsite Hazard

Flour dust can act as a potentially explosive combustion source when accumulated in a confined or poorly ventilated space. The flour milling process can create concentrated air-borne dust that, if ignited, may trigger an explosive chain reaction.

The flour milling process is therefore an activity that may potentially cause a bushfire, or otherwise intensify and prolong a bushfire impacting the site. For this reason, the proposal is determined to be a 'High Risk Land Use' that requires appropriate assessment and risk treatments.

Likelihood of Bushfire

The subject land is within a bushfire prone area designated by the *Western Australia State Map of Bush Fire Prone Areas* with respect to the areas of remnant vegetation and agricultural land throughout the locality. The site, therefore, may reasonably be expected to experience a bushfire event at some time in the future.

The DBCA Fire History dataset (DBCA-060) indicates a major bushfire incident impacted the site during the 2002/2003 bushfire season, and other bushfire incidents have been regularly recorded within the local area, most recently in 2021. Based on historical evidence, the likelihood of a bushfire impacting the site has accordingly been assessed using the following matrix:

Table 5: *Likelihood Matrix*

Likelihood	Recurrence (Years)
Almost Certain	1
Likely	20
Possible	50
Unlikely	100
Very Unlikely	200

Due to the history of fire activity in the locality the chance of a bushfire impacting the site is assessed as **Likely**; i.e. expected to occur over a twenty year time-frame.

Bushfire Management Objectives

The primary bushfire management objectives are to avoid unacceptable bushfire threats to people, property, infrastructure and the environment. Once overall risk levels have been identified, assessed and fully considered then risks may then be accepted if determined to be tolerable. The adoption of specific bushfire protection measures aims to manage risk to the extent possible by practical means.

Potential Consequences

The key consequences of a bushfire impacting the site are:

- Loss of life, or harm to people.
- Loss of property and/or infrastructure.
- Loss of environment.

The site is located within a Rural Industry zoned subdivision comprising lots generally 2ha or greater in size, surrounded by broader agricultural lands and landscape-scale native vegetation areas. The Gingin townsite and Gingin South Bush Fire Service are located to the east of the site approximately 6km by travel distance. It is expected that a bushfire will be promptly identified and attended by the fire brigade. Within this context:

- The site will require a small workforce and the surrounding population density is low.
- The property and infrastructure densities are also low, with no major infrastructure installations nearby.
- The local Coonambidgee Complex and Yanga Complex vegetation structures have regenerated after historically fire activity.

On balance, with respect to the above considerations, the potential vulnerability of the location is assessed as **Low**.

As assessed elsewhere within this report, the bushfire hazard vegetation in the locality generally comprises Scrub interspersed with agricultural land, with landscape-scale areas of native vegetation at some distance removed. Development within the subdivision is expected to provide for a mosaic of native vegetation areas to be maintained. Significant expansion of native vegetation areas is not expected within the Rural Industry zoned land.

The overall threat represented by this combination of bushfire hazards is assessed as **Medium**.

The consequences of Low vulnerability subject to potentially Medium bushfire threat is assessed according to the following matrix:

Table 6: Consequence Rating Matrix

Vulnerability	Threat			
	Low	Medium	High	Extreme
High	Moderate	Major	Catastrophic	Catastrophic
Moderate	Minor	Moderate	Major	Catastrophic
Low	Minor	Minor	Moderate	Major

The potential consequence rating is thus assessed to be **Minor**.

Risk Assessment

The risk rating of the site based on the likelihood of bushfire and the potential consequences is determined as follows:

Table 7: Risk Rating Matrix

Likelihood	Consequence			
	Minor	Moderate	Major	Catastrophic
Almost certain	High	Very High	Extreme	Extreme
Likely	Medium	High	Very High	Extreme
Possible	Low	Medium	High	Very High
Unlikely	Low	Low	Medium	High

The risk rating is assessed to be **Medium**.

The bushfire risk of the site, assessed at an overall Medium rating, is considered to be characteristic of Rural Industry zoned land located within a Bushfire Prone Area. The proposal is not, therefore, assessed as exposing people, property, infrastructure or the environment to unacceptable risk.

The risk is thus determined to be **Tolerable** provided appropriate risk treatment strategies are adopted for the site.

8. Risk Treatment Strategies

The 'Schedule of Bushfire Mitigation Measures' is attached to this document as Appendix 1.

The Schedule of Bushfire Mitigation Measures may be updated or amended over time, subject to periodic review of the potential hazards and the available mitigation alternatives. Following is the initial combination of recommended strategies to address the assessed bushfire risk:

Design & Construction

- a) Milling shed, silos and water tanks to be constructed of non-combustible materials.
- b) Milling shed and silos to be ventilated as regulated.
- c) Milling shed to be fitted with dust extractor(s).

Fire Protection / Suppression

- d) Dry chemical fire extinguishers located within buildings.
- e) External firefighting water tank supply of 50,000L.
- f) External, shielded, nonelectric firefighting pump with sufficient hose to service the external areas of the milling shed, silos, office and vehicle hard stand areas.
- g) The onsite firefighting water supply is to be fitted with approved couplings for ready access by firefighting appliances.

Firefighting Access

- h) Vehicle access for trucks including clear turnaround capability for fire appliances to access all onsite buildings and structures.
- i) Install firebreaks with 3m width and 4.5m vertical clearance immediately inside all external boundaries of the property.
- j) Accessible vehicle hard stand within 4m of the firefighting water tank outlet valve.

Vegetation Management & Landscaping

- k) Any onsite landscaping and/or retained vegetation to be maintained for low bushfire threat to the standards of an Asset Protection Zone.

Site Management

- l) Implement milling practices to minimise flour dust.
- m) Regular removal and offsite disposal of accumulated milling dust.
- n) Manage and minimise the risk from potential ignition sources, such as electrical equipment, milling machinery, internal combustion engines, or any required hot works or maintenance.
- o) Manage incoming and outgoing delivery vehicle movements.
- p) Install clearly visible signage advising the onsite hazards.
- q) Prohibit the smoking of cigarettes, e-cigarettes, or other smoking implements in the vicinity of the milling shed and grain storage.

Bushfire Awareness & Response

- r) Monitor DFES & Emergency channels for potential bushfire conditions.
- s) Cease milling operations on days when a Fire Danger Index of 'Extreme' or 'Catastrophic' is forecast.
- t) Remain alert and ready to cease milling operations if a Bushfire 'Advice' is issued for the locality.
- u) Cease milling operations if a Bushfire 'Watch & Act' or 'Emergency Warning' is issued for the locality.

Emergency & Evacuation Planning

- v) Develop and adopt appropriate emergency management and evacuation procedures for the site.
- w) Account for all onsite staff and any contractors or visitors.

Staff Training

- x) Staff induction and ongoing training including for onsite hazards, site management, bushfire awareness & responses, firefighting pump/hose & extinguishers, emergency plans & evacuation procedures.

9. Implementation and Management

The responsibilities for implementing and maintaining the required bushfire protection measures are summarised in Table 8.

Table 8: *Implementation & Management Schedule*

Developer & Landowner – ongoing responsibilities	
Implement the Schedule of Bushfire Mitigation Measures included in Appendix 1, incorporating the following standards from the Guidelines for Planning in Bushfire Prone Areas:	
A	Install and maintain an Asset Protection Zone over the entire subject land in accordance with 'Schedule 1: Standards for Asset Protection Zones' from the Guidelines for Planning in Bushfire Prone Areas, as detailed in Appendix 2.
B	Install and maintain the driveway, including turnaround areas near the milling shed and caretaker residence, in accordance with the Guidelines for Planning in Bushfire Prone Areas, as detailed in Appendix 3.
C	Install and maintain the 50,000L firefighting water tank with approved fittings accessible by firefighting appliances, in accordance with 'Schedule 2: Water Supply Dedicated for Bushfire Firefighting Purposes' from the Guidelines for Planning in Bushfire Prone Areas, as detailed in Appendix 4.

10. Conclusion

The objective of this report is to avoid unacceptable bushfire threats, either impacting upon the site or from the inherent hazards from the proposed development itself.

The development site is assessed as capable of achieving the required bushfire protection measures from the *Guidelines for Planning in Bushfire Prone Areas* v1.4. Furthermore, the assessment of the onsite hazards associated with the proposal determines the bushfire risk to be Tolerable, subject to the adoption of a range of risk treatment measures.

In the author's professional opinion, the proposed development demonstrates compliance with the *Guidelines for Planning in bushfire Prone Areas* subject to the measures detailed within this report. The proposal is thus acceptable under State Planning Policy 3.7.

Appendix 1

Schedule of Bushfire Risk Treatment Measures

Item	Schedule of Bushfire Risk Treatment Measures -- Lot 42 Hoy Road Coonabidgee	Category	Timing
A	Milling shed, silos and water tanks to be constructed of non-combustible materials.	Design & Construction	Prior to commencement.
B	Milling shed and silos to be ventilated as regulated.	Design & Construction	Prior to commencement.
C	Milling shed to be fitted with dust extractor(s).	Design & Construction	Prior to commencement.
D	Dry chemical fire extinguishers located within buildings.	Fire Protection / Suppression	Prior to commencement and ongoing.
E	External firefighting water tank supply of 50,000L.	Fire Protection / Suppression	Prior to commencement and ongoing.
F	External, shielded, nonelectric firefighting pump with sufficient hose to service the external areas of the milling shed, silos, office and vehicle hard stand areas.	Fire Protection / Suppression	Prior to commencement and ongoing.
G	The onsite firefighting water supply is to be fitted with approved couplings for ready access by firefighting appliances.	Fire Protection / Suppression	Prior to commencement and ongoing.
H	Vehicle access for trucks including clear turnaround capability for fire appliances to access all onsite buildings and structures.	Firefighting Access	Prior to commencement and ongoing.
I	Install firebreaks with 3m width and 4.5m vertical clearance immediately inside all external boundaries of the property.	Firefighting Access	Prior to commencement and ongoing.
J	Accessible vehicle hard stand within 4m of the firefighting water tank outlet valve.	Firefighting Access	Prior to commencement and ongoing.
K	Any onsite landscaping and/or retained vegetation to be maintained for low bushfire threat to the standards of an Asset Protection Zone.	Vegetation Management & Landscaping	Prior to commencement and ongoing.
L	Implement milling practices to minimise flour dust.	Site Management	Prior to commencement and ongoing.
M	Regular removal and offsite disposal of accumulated milling dust.	Site Management	Ongoing.
N	Manage and minimise the risk from potential ignition sources, such as electrical equipment, milling machinery, internal combustion engines, or any required hot works or maintenance.	Site Management	Prior to commencement and ongoing.
O	Manage incoming and outgoing delivery vehicle movements.	Site Management	Ongoing.

P	Install clearly visible signage advising the onsite hazards.	Site Management	Prior to commencement.
Q	Prohibit the smoking of cigarettes, e-cigarettes, or other smoking implements in the vicinity of the milling shed and grain storage.	Site Management	Ongoing.
R	Monitor DFES & Emergency channels for potential bushfire conditions.	Bushfire Awareness & Response	Ongoing.
S	Cease milling operations on days when a Fire Danger Index of 'Extreme' or 'Catastrophic' is forecast.	Bushfire Awareness & Response	Ongoing
T	Remain alert and ready to cease milling operations if a Bushfire 'Advice' is issued for the locality.	Bushfire Awareness & Response	Ongoing
U	Cease milling operations if a Bushfire 'Watch & Act' or 'Emergency Warning' is issued for the locality.	Bushfire Awareness & Response	Ongoing
V	Develop and adopt appropriate emergency management and evacuation procedures for the site.	Emergency & Evacuation Planning	Prior to commencement and ongoing.
W	Account for all onsite staff and any contractors or visitors.	Emergency & Evacuation Planning	Ongoing
X	Staff induction and ongoing training including for onsite hazards, site management, bushfire awareness & responses, firefighting pump/hose & extinguishers, emergency plans & evacuation procedures.	Staff Training	Prior to commencement and ongoing.

Appendix 2

Asset Protection Zone Standards

*source: Department of Planning, Lands & Heritage,
Guidelines for Planning in Bushfire Prone Areas version 1.4*



ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	<ul style="list-style-type: none"> 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 <6 millimetres in thickness)	<ul style="list-style-type: none"> Should be managed and removed on a regular basis to maintain a low threat state. Should be maintained at <2 tonnes per hectare (on average). Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	<ul style="list-style-type: none"> 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 <15 per cent of the total APZ area. Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. <p>Figure 19: Tree canopy cover – ranging from 15 to 70 per cent at maturity</p> <p>15% 30% 70%</p>
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	<ul style="list-style-type: none"> Should not be located under trees or within three metres of buildings. Should not be planted in clumps >5 square metres in area. Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	<ul style="list-style-type: none"> 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 >100 millimetres in height.



ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Grass	<ul style="list-style-type: none">• Grass should be maintained at a height of 100 millimetres 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	<ul style="list-style-type: none">• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	<ul style="list-style-type: none">• Should be located on the side of a building furthest 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.

* Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes

Appendix 3

Driveway Standards

*source: Department of Planning, Lands & Heritage,
Guidelines for Planning in Bushfire Prone Areas version 1.4*



ELEMENT 3: VEHICULAR ACCESS

PERFORMANCE PRINCIPLE

P3iv

Vehicular access is provided which allows emergency service vehicles to directly access all habitable buildings and water supplies and exit the lot without entrapment.

ACCEPTABLE SOLUTIONS

A3.6 Private driveways

There are no private driveway technical requirements where the private driveway is:

- within a lot serviced by reticulated water;
- no greater than 70 metres in length between the most distant external part of the development site and the public road measured as a hose lay; and
- accessed by a public road where the road speed limit is not greater than 70 km/h.

In circumstances where all of the above conditions are not met, or the private driveway is in a non-reticulated water area, the private driveway is to meet all the following require:

- requirements in Table 6, Column 4;
- passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and
- turn-around area as shown in Figure 28 and within 30 metres of the habitable building.

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way ¹	3 Fire service access route ¹	4 Battle-axe and private driveways ²
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road ³	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road ³		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

¹ To have crossfalls between 3 and 6%.

² Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

³ Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle.



EXPLANATORY NOTES

E3.6 Private driveways

In areas serviced by reticulated water, where the road speed limit is not greater than 70 km/h, and where the distance from the public road to the further part of the habitable building is no greater than 70 metres, emergency service vehicles typically operate from the street frontage.

In the event the habitable building cannot be reached by hose reel from the public road, then emergency service vehicles will need to gain access within the property. Emergency service vehicles will also need to gain access within the property, where access to reticulated water (fire hydrants) is not possible. In these situations, the driveway and battle-axe (if applicable) will need to be wide enough for access for an emergency service vehicle and a vehicle to evacuate.

Turnaround areas should be available for both conventional two-wheel drive vehicles of residents and Type 3.4 fire appliances. Turn-around areas should be located within 30 metres of habitable buildings. Circular and loop driveway design may also be considered.

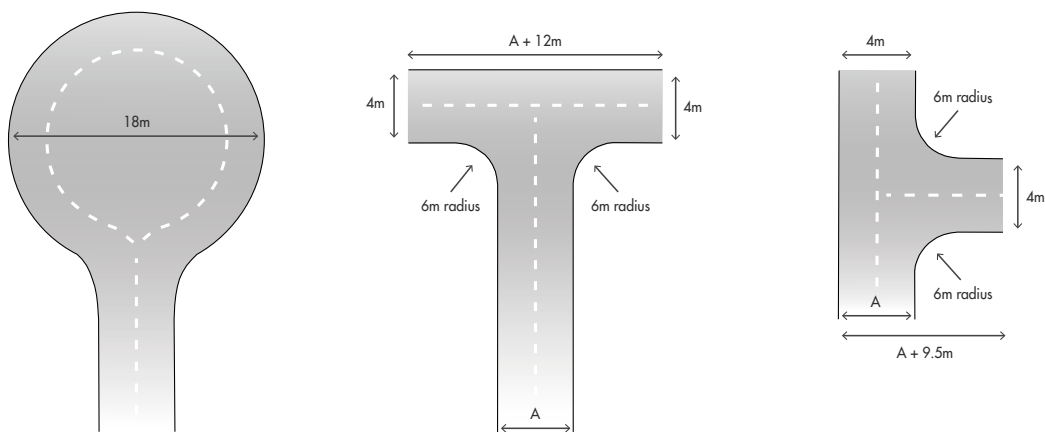
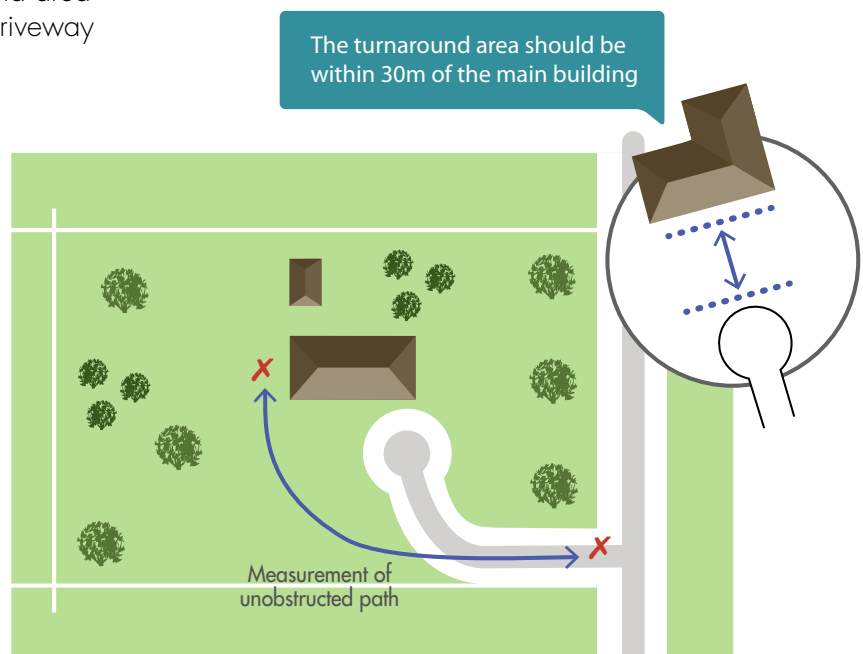


Figure 28: Design requirements for a turn-around area for a private driveway or battle-axe

The turnaround area should be within 30m of the main building

Figure 29: Design requirements for a private driveway where required under A3.6



Appendix 4

Firefighting Water Standards

*source: Department of Planning, Lands & Heritage,
Guidelines for Planning in Bushfire Prone Areas version 1.4*



SCHEDULE 2: WATER SUPPLY DEDICATED FOR BUSHFIRE FIREFIGHTING PURPOSES

2.1 Water supply requirements

Water dedicated for firefighting should be provided in accordance with Table 7 below, and be in addition to water required for drinking purposes.

Table 7: Water supply dedicated for bushfire firefighting purposes

PLANNING APPLICATION	NON-RETICULATED AREAS
Development application	10,000L per habitable building
Structure Plan / Subdivision: Creation of 1 additional lot	10,000L per lot
Structure Plan / Subdivision: Creation of 3 to 24 lots	10,000L tank per lot or 50,000L strategic water tank
Structure Plan / Subdivision: Creation of 25 lots or more	50,000L per 25 lots or part thereof Provided as a strategic water tank(s) or 10,000L tank per lot

2.2 Technical requirements

2.2.1 Construction and design

An above-ground tank and associated stand should be constructed of non-combustible material. The tank may need to comply with AS/NZS 3500.1:2018.

Below ground tanks should have a 200mm diameter access hole to allow tankers or emergency service vehicles to refill direct from the tank, with the outlet location clearly marked at the surface. The tank may need to comply with AS/NZS 3500.1:2018. An inspection opening may double as the access hole provided that the inspection opening meets the requirements of AS/NZS 3500.1:2018. If the tank is required under the BCA as part of fire hydrant installation, then the tank will also need to comply with AS 2419.

Where an outlet for an emergency service vehicle is provided, then an unobstructed, hardened ground surface is to be supplied within four metres of any water supply.

2.2.2 Pipes and fittings

All above-ground, exposed water supply pipes and fittings should be metal. Fittings should be located away from the source of bushfire attack and be in accordance with the applicable section below, unless otherwise specified by the local government.

2.2.2.1 Fittings for above-ground water tanks:

- Commercial land uses: 125mm Storz fitting; or
- Strategic water tanks: 50mm or 100mm (where applicable and adapters are available) male camlock coupling with full flow valve; or
- Standalone water tanks: 50mm male camlock coupling with full flow valve; or
- Combined water tanks: 50mm male camlock coupling with full flow valve or a domestic fitting, being a standard household tap that enables an occupant to access the water supply with domestic hoses or buckets for extinguishing minor fires.

2.2.2.2 Remote outlets

In certain circumstances, it may be beneficial to have the outlet located away from the water supply. In such instances in which a remote outlet is to be used, the applicant should consult the local government and DFES on their proposal.

Appendix 5 – Vegetation Assessment

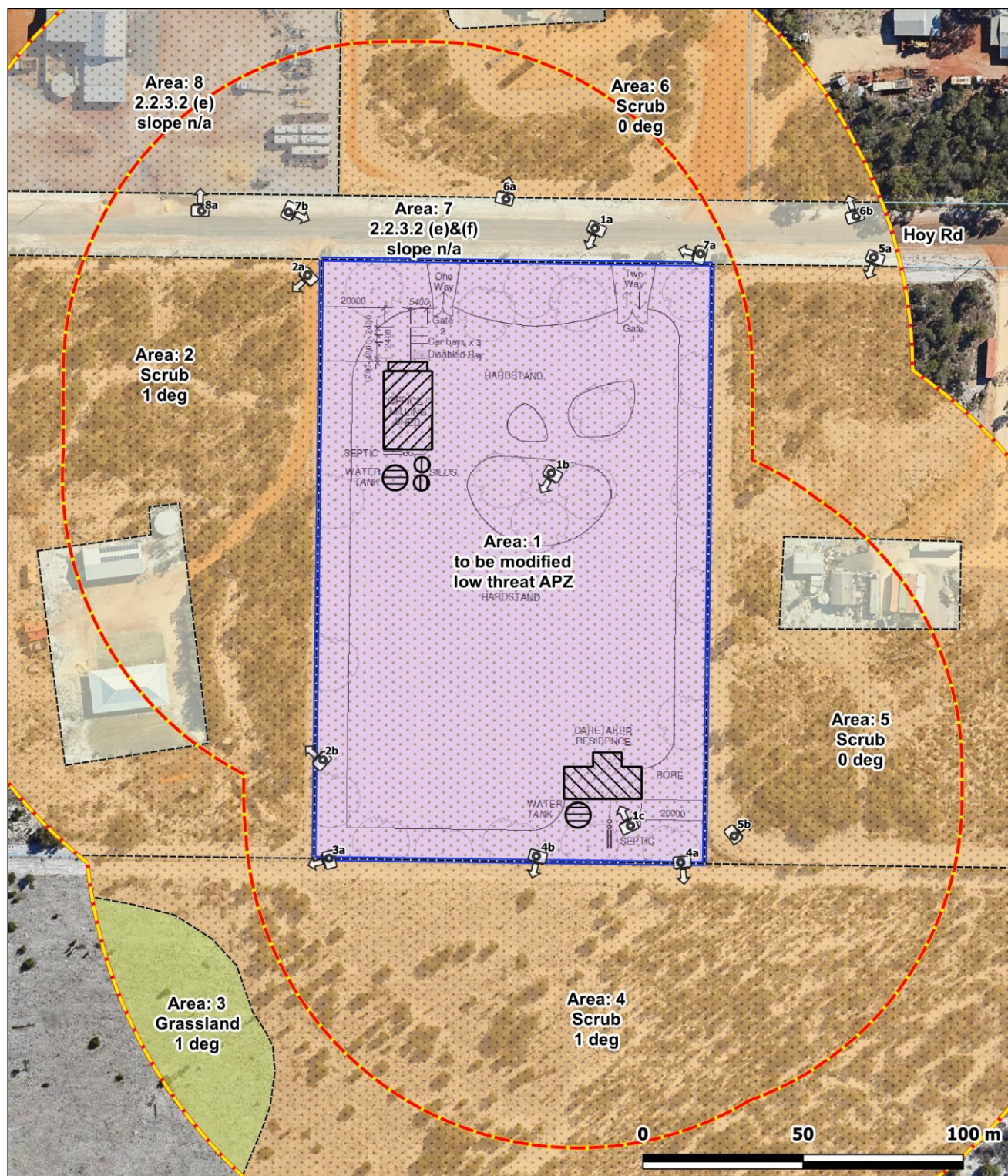


Photo Reference Map

Size: A4
Scale: 1:1,500





☐ Cadastre
☒ Subject land


 100m BAL extent
 150m assessment



 Photo points



Jeremy Durston
BPAD: 36525, Level 3
Bushfire West Pty Ltd


Area 1	
Classification	Pre-development: Class D Scrub Post-development: Exclusions 2.2.3.2 (e)&(f)
Effective Slope	n/a
Notes	Subject land currently predominately Banksia and Grasstrees, required to be fully modified to an Asset Protection Zone.
<div><div>BushfireWest HOYa 7/2/2023 205 deg(T) -31.34617° +115.86324°</div></div> <div>Photo ID: 1a</div>	
<div><div>BushfireWest HOYa 7/2/2023 211 deg(T) -31.34686° +115.86308°</div></div> <div>Photo ID: 1b</div>	
<div><div>BushfireWest HOYa2 7/2/2023 336 deg(T) -31.34788° +115.86345°</div></div> <div>Photo ID: 1c</div>	


Area 2	
Classification	Class D Scrub
Effective Slope	Downslope 1 deg.
Notes	Predominately Banksia below 4m in height with Grasstrees.
<div> <div>  </div> <div> BushfireWest HOYc 7/2/2023 227 deg(T) -31.34630° +115.86229° </div> </div> <p>Photo ID: 2a</p>	
<div> <div>  </div> <div> BushfireWest HOYc 7/2/2023 312 deg(T) -31.34773° +115.86231° </div> </div> <p>Photo ID: 2b</p>	


Area 3	
Classification	Class G Grassland
Effective Slope	Downslope 1 deg
Notes	Agricultural land comprising pasture with isolated shade trees.
<div> <div>  </div> <div> BushfireWest HOYi 7/2/2023 255 deg(T) -31.34790° +115.86233° </div> </div> <p>Photo ID: 3a</p>	

Area 4	
Classification	Class D Scrub
Effective Slope	Downslope 1 deg.
Notes	Predominately low Melaleuca and Banksia below 3m in height with grass.
<div><div>BushfireWest HOYh 7/2/2023 175 deg(T) -31.34797° +115.86345°</div></div> <div>Photo ID: 4a</div>	
<div><div>BushfireWest HOYh 7/2/2023 195 deg(T) -31.34794° +115.86302°</div></div> <div>Photo ID: 4b</div>	

Area 5	
Classification	Class D Scrub
Effective Slope	Flat/upslope
Notes	Predominately Banksia to 4m in height with low Melaleuca and Grasstrees.
<div><div>BushfireWest HOYg 7/2/2023 201 deg(T) -31.34627° +115.86440°</div></div> <div>Photo ID: 5a</div>	
<div><div>BushfireWest HOYg2 7/2/2023 52 deg(T) -31.34784° +115.86364°</div></div> <div>Photo ID: 5b</div>	

Area 6	
Classification	Class D Scrub
Effective Slope	Flat/upslope
Notes	Predominately Banksia below 4m in height with Grasstrees and isolated, introduced Eucalypts.
<div><div>BushfireWest HOYe 7/2/2023 12 deg(T) -31.34608° +115.86293°</div></div> <div>Photo ID: 6a</div>	
<div><div>BushfireWest HOYf 7/2/2023 343 deg(T) -31.34615° +115.86416°</div></div> <div>Photo ID: 6b</div>	

Area 7	
Classification	Exclusions 2.2.3.2 (e) & (f)
Effective Slope	n/a
Notes	Hoy Road and verges, predominately non-vegetated with grass patches maintained below 100mm.
<div><p>BushfireWest HOYb 7/2/2023 286 deg(T) -31.34621° +115.86349°</p></div> <p>Photo ID: 7a</p>	
<div><p>BushfireWest HOYb 7/2/2023 116 deg(T) -31.34611° +115.86223°</p></div> <p>Photo ID: 7b</p>	

Area 8	
Classification	Exclusions 2.2.3.2 (e)
Effective Slope	n/a
Notes	Section of fully developed Rural Industry land cleared of all vegetation.
<div><div>BushfireWest HOYd 7/2/2023 1 deg(T) -31.34610° +115.86194°</div><div>Photo ID: 8a</div></div>	