

BUSHFIRE ASSESSMENT

PROPOSED 2 LOT SUBDIVISION AND NEW SHED



**LOT 12 DP 621541
Chichester Dam Road, Bendolba**

Date: **23/02/2024**

Prepared for: **Galaah Pty Ltd**

NEWCASTLE BUSHFIRE CONSULTING

5 Chartley Street, Warners Bay NSW 2282
(ph) 02 40230149 (mob) 0423 923284
email: mail@newcastlebushfire.com.au

I hereby declare that I am a BPAD accredited bushfire practitioner.		
Accreditation No.	BPAD16132	
Signature		
Date	23/02/2024	

Couch Family Trust T/A
Newcastle Bushfire Consulting Pty Ltd A.B.N. 96 831 374 298
Bushfire and Building Sustainability Consultants

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Prepared By:



Phillip Couch GFireE
Bach Info Science
Grad Dip Design for Bushfire Prone Areas
FPAA BPAD – Level 3 Accreditation Number BPD-PA-16132
Director Newcastle Bushfire Consulting



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1.0 EXECUTIVE SUMMARY AND COMPLIANCE TABLES

This report has assessed the proposed 2-lot subdivision and new shed against the requirements of Section 100B of the Rural Fires Act 1997, AS3959 (2018) Construction of buildings in bushfire-prone areas and Planning for Bush Fire Protection (2019).

This report establishes that the development is capable of complying with the acceptable solutions of Planning for Bush Fire Protection (2019).

TABLE 1 – PROPERTY DETAILS AND TYPE OF PROPOSAL

Applicant Name	Galaah Pty Ltd		
Site Address	Chichester Dam Road, Bendolba	Lot/Sec/DP	Lot 12 DP 621541
Local Government Area	Dungog	FDI	100
Bushfire Prone Land	Yes, mapped bushfire prone land		
Type of development	2-lot subdivision and new shed	Type of Area	Rural
Special Fire Protection Purpose	No	Flame Temperature	1090K
Application Complies with Acceptable Solutions	Yes. Relevant specifications and requirements are satisfied	Referral to NSW Rural Fire Service (NSW RFS) required	Yes. Bushfire Safety Authority Required

TABLE 2.0 – BUSHFIRE THREAT ASSESSMENT – PROPOSED LOT 121 DWELLING LOCATION AND PROPOSED LOT 122 SHED

	Northwest	Northeast	Southeast	Southwest
Vegetation Structure	Grassland	Grassland	Grassland	Grassland
Distance to Vegetation	25 metres	25 metres	25 metres	25 metres
Slope Range	> 0 to 5 degrees downslope	> 0 to 5 degrees downslope	> 0 to 5 degrees downslope	> 0 to 5 degrees downslope
Planning for Bush Fire Protection (2019) Table A1.12.2 Minimum Setbacks	12 metres	12 metres	12 metres	12 metres
AS3959 (2018) Bushfire Attack Level (BAL)	BAL-12.5	BAL-12.5	BAL-12.5	BAL-12.5

The highest BAL, being **BAL-12.5** applies to the entire building.

TABLE 2.1 – BUSHFIRE THREAT ASSESSMENT – PROPOSED LOT 122 DWELLING LOCATION

	Northwest	Northeast	Southeast	Southwest
Vegetation Structure	Grassland	Grassland	Grassland	Grassland
Distance to Vegetation	25 metres	25 metres	25 metres	28 metres
Slope Range	> 0 to 5 degrees downslope	> 0 to 5 degrees downslope	> 0 to 5 degrees downslope	> 6 to 10 degrees downslope
Planning for Bush Fire Protection (2019) Table A1.12.2 Minimum Setbacks	12 metres	12 metres	12 metres	13 metres
AS3959 (2018) Bushfire Attack Level (BAL)	BAL-12.5	BAL-12.5	BAL-12.5	BAL-12.5

The highest BAL, being **BAL-12.5** applies to the entire building.

TABLE 3 – PLANNING FOR BUSH FIRE PROTECTION (2019) SECTION 5 COMPLIANCE

Performance Criteria	Proposed Development Determinations	Method of Assessment
Asset Protection Zone	Asset Protection Zones have been determined in accordance with Planning for Bush Fire Protection (2019). The Asset Protection Zone will be maintained for the life of development and defensible space is provided onsite.	Acceptable Solution
Landscaping	Landscaping to comply with Planning for Bush Fire Protection (2019) Appendix 4.	Acceptable Solution
Public Road Access	No new public roads are proposed for this development.	Acceptable Solution
Property Access	Property access offers compliance with Planning for Bush Fire Protection (2019) Section 5.3b.	Acceptable Solution
Fire Trail Access	No new fire trails are proposed for this development.	Acceptable Solution
Water and Utility Services	Water, electricity and gas services offer compliance with Planning for Bush Fire Protection (2019) Section 5.	Acceptable Solution

2.0 INTRODUCTION

2.1 PURPOSE OF REPORT

The purpose of this report is to establish suitable bushfire mitigation measures for the proposed 2-lot subdivision and new shed to be constructed at Lot 12 DP 621541, Chichester Dam Road, Bendolba. The assessment acknowledges the requirements of Section 100B of the Rural Fires Act 1997 and Planning for Bush Fire Protection (2019) to protect persons, property and the environment from dangers that may arise from a bushfire.

Under the provisions of Section 100B of the Rural Fires Act 1997 as amended, a Bushfire Safety Authority (BFSA) is required from the Commissioner of the NSW Rural Fire Service.

This report complies with Rural Fires Regulation 2008 Clause 44 Application for Bushfire Safety Authority. The assessment encompasses the subject site and neighbouring areas.

The recommendations within this report address the aims and objectives of Planning for Bush Fire Protection (2019) to reduce the risk of ignition of the development in a bushfire event.

2.2 PROPOSED DEVELOPMENT

The proposed development includes a 2-lot subdivision and the construction of a freestanding shed. No new dwellings are proposed as part of this development. The existing site is 40.6 hectares in size and has a dual zoning of RU1 Primary Production and R5 Large Lot Residential.

2.3 SIGNIFICANT ENVIRONMENTAL FEATURES

The only known significant environmental features affecting the site are mapped waterways running through the property.

2.4 ENVIRONMENTAL ASSETS

There are no known environmental assets on the subject site. A 20-metre riparian buffer has been used in determining the potential building locations.

2.5 ABORIGINAL HERITAGE

Searches of NSW National Parks and Wildlife Service's database identify no known aboriginal relics or aboriginal places, as defined by National Parks and Wildlife Act 1974, to exist on the site.



PHOTO 1 - SITE PHOTO LOOKING SOUTH

View of the subject site looking south. The site is predominantly grazing pasture with thin bands of eucalypts straddling drainage lines. The eucalypts are identified as low-threat and represent limited bushfire threat.



PHOTO 2 - SOUTHEASTERN LOW-THREAT ROAD CORRIDOR

View of grassland located onsite and low-threat road corridor of eucalypts adjacent to Chichester Dam Road.

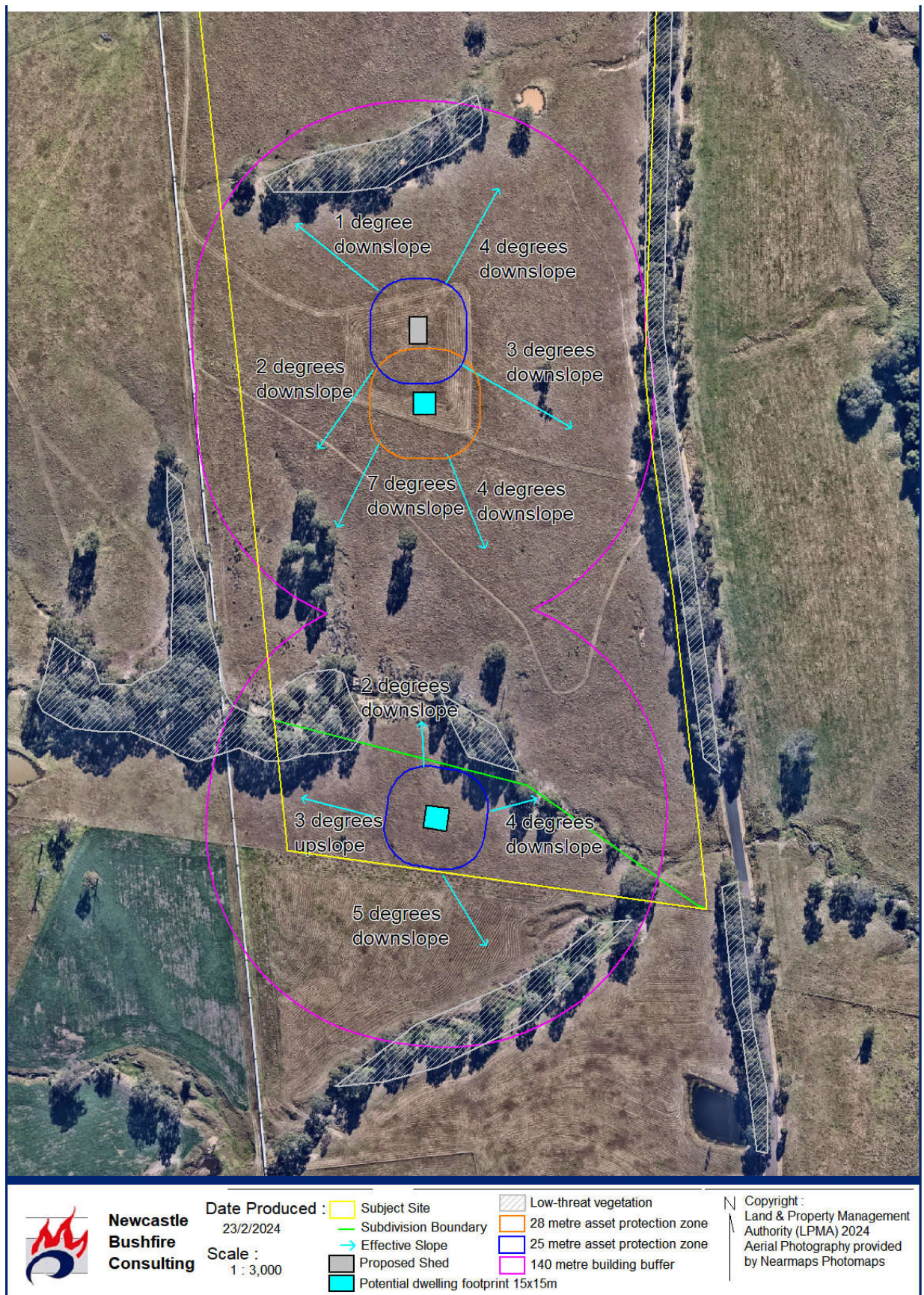


FIGURE 1 – SITE CONSTRAINTS MAP

3.0 BUSHFIRE ATTACK ASSESSMENT

3.1 VEGETATION CLASSIFICATION

Potential bushfire hazards were identified from Dungog Council bushfire prone mapping as occurring within the investigation area. Aerial mapping and inspection of the site reveals that the bushfire prone land map is somewhat inaccurate in respect to the current bushfire hazard. The grassland throughout the site is identified as categorised threat.

The major vegetative threats have been determined using Keith (2004) to derive vegetation structures listed in Planning for Bush Fire Protection (2019).

Primary Vegetation Structures have been identified in Figure 1 – Site Constraints Map and separation distances shown in Table 2 – Bushfire Attack Assessment.

3.2 EFFECTIVE SLOPE

Effective slope was measured using 2-metre contour data obtained from The Department of Lands and verified by a laser hypsometer on site. The laser hypsometer verified slope within the vegetation, calculating effective fire run slope from 5 separate measurements in each dominant direction.

Effective slopes have been identified in Figure 1 – Site Constraints Map and slope ranges are shown in Table 2 – Bushfire Threat Assessment.

3.3 MINIMUM SETBACKS AND ASSET PROTECTION ZONES

Minimum setbacks have been determined in accordance with Planning for Bush Fire Protection (2019) Table A1.12.2. The minimum Asset Protection Zone for subdivision has been demonstrated in Section 1.0 Executive Summary and Compliance Tables.

The required Asset Protection Zone is available within the subject site and neighbouring managed lands. All dwellings will be exposed to less than 29 kw/m² of radiant heat.

3.4 BUSHFIRE ATTACK LEVELS

BALs and relevant construction levels in accordance with Planning for Bush Fire Protection (2019) have been demonstrated in Section 1.0 Executive Summary and Compliance Tables, Table 2 Bushfire Threat Assessment.

BALs and relevant construction levels in accordance with AS3959 (2018) have been demonstrated in Table 4 BALs Individual Allotments. The below assessments are based on the present vegetation with a more updated assessment required if future clearing occurs.

TABLE 4 – BUSHFIRE ATTACK LEVELS INDIVIDUAL ALLOTMENTS

Vegetation and Direction from the lot	Separation Distance	Recommended Construction Standards
Grassland Proposed Lot 121 Southern Allotment – Dwelling	> 50 metres from Grassland	BAL-LOW
	25 – 50 metres from Grassland	BAL-12.5 (Sections 3 and 5 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)
	17 – 25 metres from Grassland	BAL-19 (Sections 3 and 6 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)
	12 – 17 metres from Grassland	BAL-29 (Sections 3 and 7 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)
Grassland Proposed Lot 122 Northern Allotment – Dwelling	> 50 metres from Grassland	BAL-LOW
	28 – 50 metres from Grassland	BAL-12.5 (Sections 3 and 5 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)
	20 – 28 metres from Grassland	BAL-19 (Sections 3 and 6 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)
	13 – 20 metres from Grassland	BAL-29 (Sections 3 and 7 of AS3959 (2018) and Planning for Bush Fire Protection (2019) Section 7.5.2)

The above distances are indicative only and a site-specific bushfire assessment shall be prepared for the future building works.



FIGURE 2 – LOCALITY MAP
Courtesy of OpenStreetMap

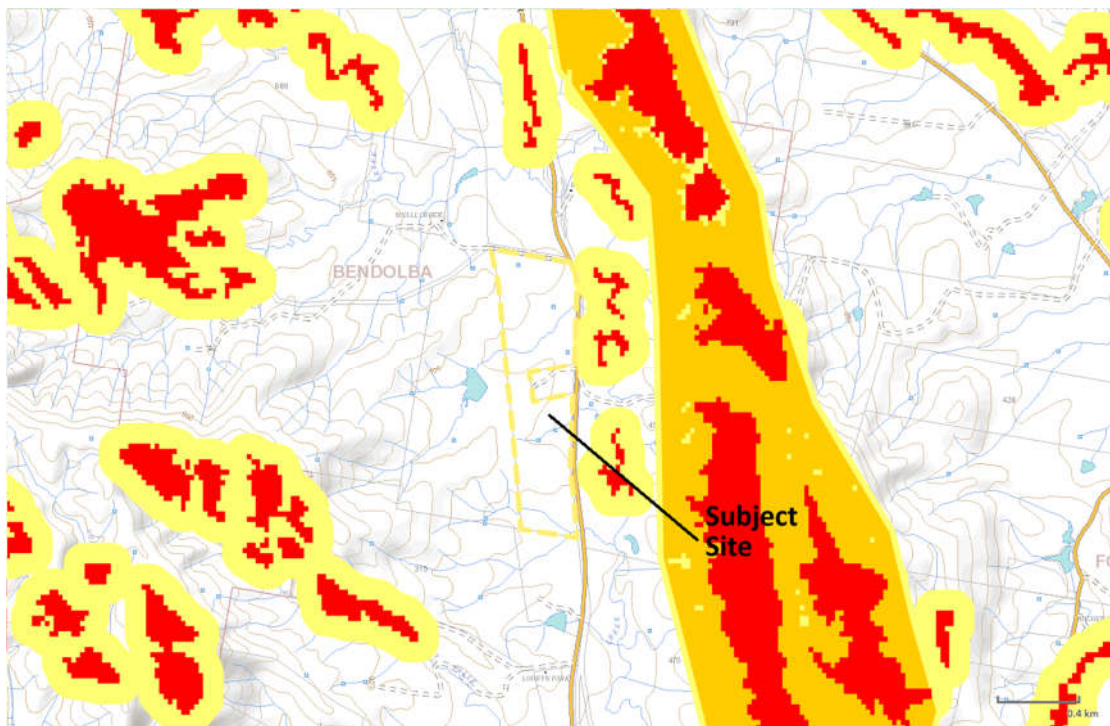


FIGURE 3 – COUNCIL'S BUSHFIRE PRONE LAND MAP

4.0 UTILITY SERVICES AND INFRASTRUCTURE

4.1 WATER SERVICES

Both allotments will be greater than a hectare in size with no hydrant access. A static water supply, with provision for a minimum 20,000 litres, should be provided. The 20,000-litre water supply may be either a tank or pool, providing that the 20,000 litres is available for firefighting purposes. The following requirements should be adhered to for the water supply:

- a) a connection for firefighting purposes is located within the Inner Protection Area (IPA) or non-hazard side and away from the structure; 65 millimetres Storz outlet with a ball valve is fitted to the outlet;
- b) ball valve and pipes are adequate for water flow and are metal;
- c) supply pipes from tank to ball valve have the same bore size to ensure flow volume;
- d) underground tanks have an access hole of 200 millimetres to allow tankers to refill directly from the tank;
- e) a hardened ground surface for truck access is supplied within 4 metres;
- f) above-ground tanks are manufactured from concrete or metal;
- g) raised tanks have their stands constructed from non combustible material or bushfire resisting timber (AS3959 (2018) Appendix F);
- h) unobstructed access can be provided at all times;
- i) underground tanks are clearly marked;
- j) tanks on the hazard side of the building are provided with adequate shielding for the protection of firefighters;
- k) all exposed water pipes external to the building are metal, including any fittings.

4.2 ELECTRICITY SERVICES

The existing electrical supply is via overhead, electrical transmission lines. Where overhead, electrical transmission lines are proposed:

- lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and
- no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.

4.3 GAS SERVICES

- Reticulated or bottled gas to be installed and maintained in accordance with AS1596 (2002) and the requirements of the relevant authorities. Metal piping is to be used.
- Fixed gas cylinders to be kept clear of flammable material by a distance of 10 metres and shielded on the hazard side of the installation.
- Gas cylinders close to the dwelling are to have the release valves directed away from the building and be at least 2 metres from flammable material with connections to and from the gas cylinder being of metal.
- Polymer-sheathed, flexible gas supply lines to gas meters adjacent to the buildings are not to be used.



PHOTO 3 - PROPOSED SHED LOCATION LOOKING NORTH

View of the proposed shed location looking north. Grassland surrounds the site with a thin band of low-threat eucalypts located more than 80 metres to the north.

Bushfire Assessment: Lot 12 DP 621541, Chichester Dam Road, Bendolba

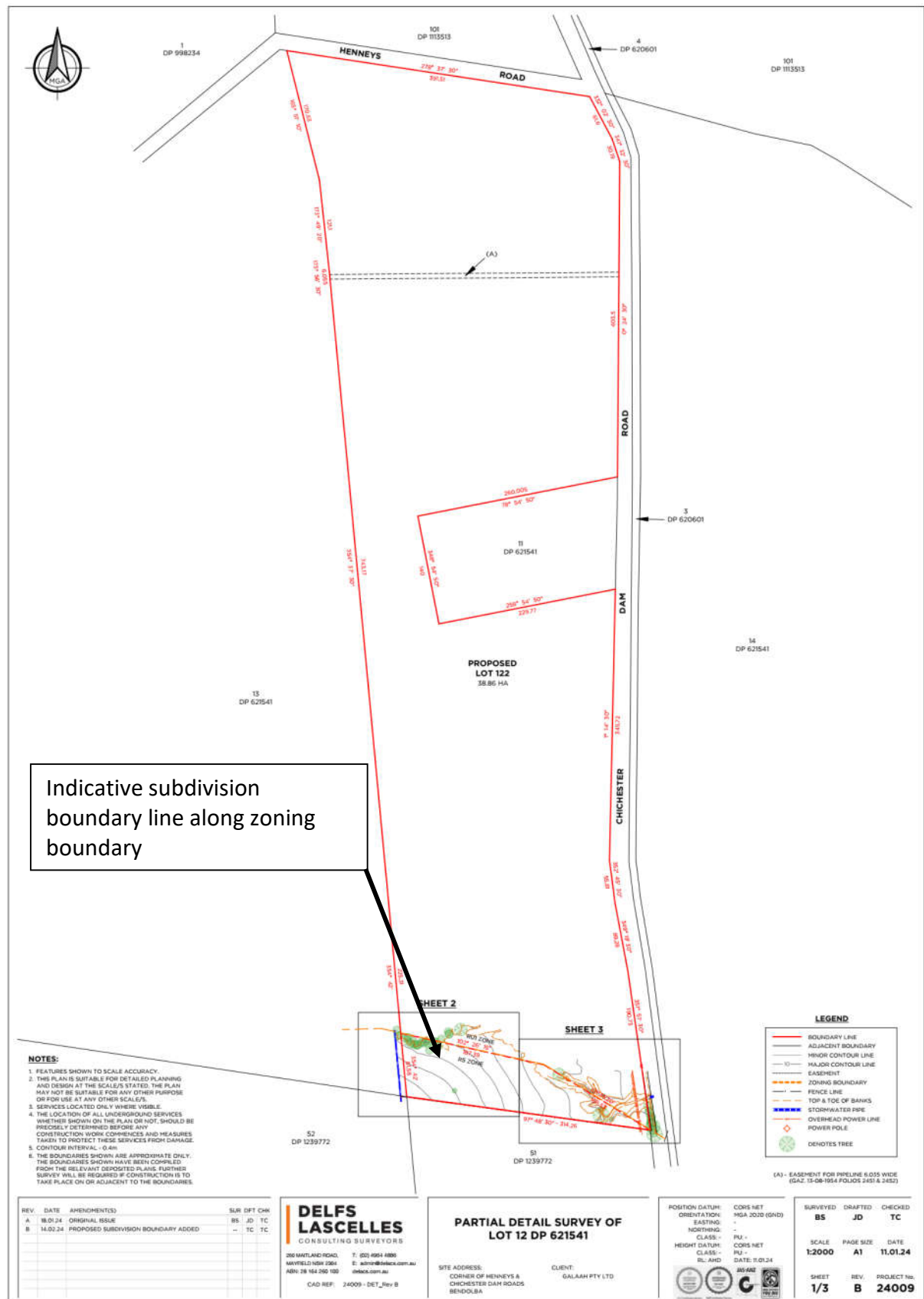


FIGURE 4 – PARTIAL SURVEY PLAN

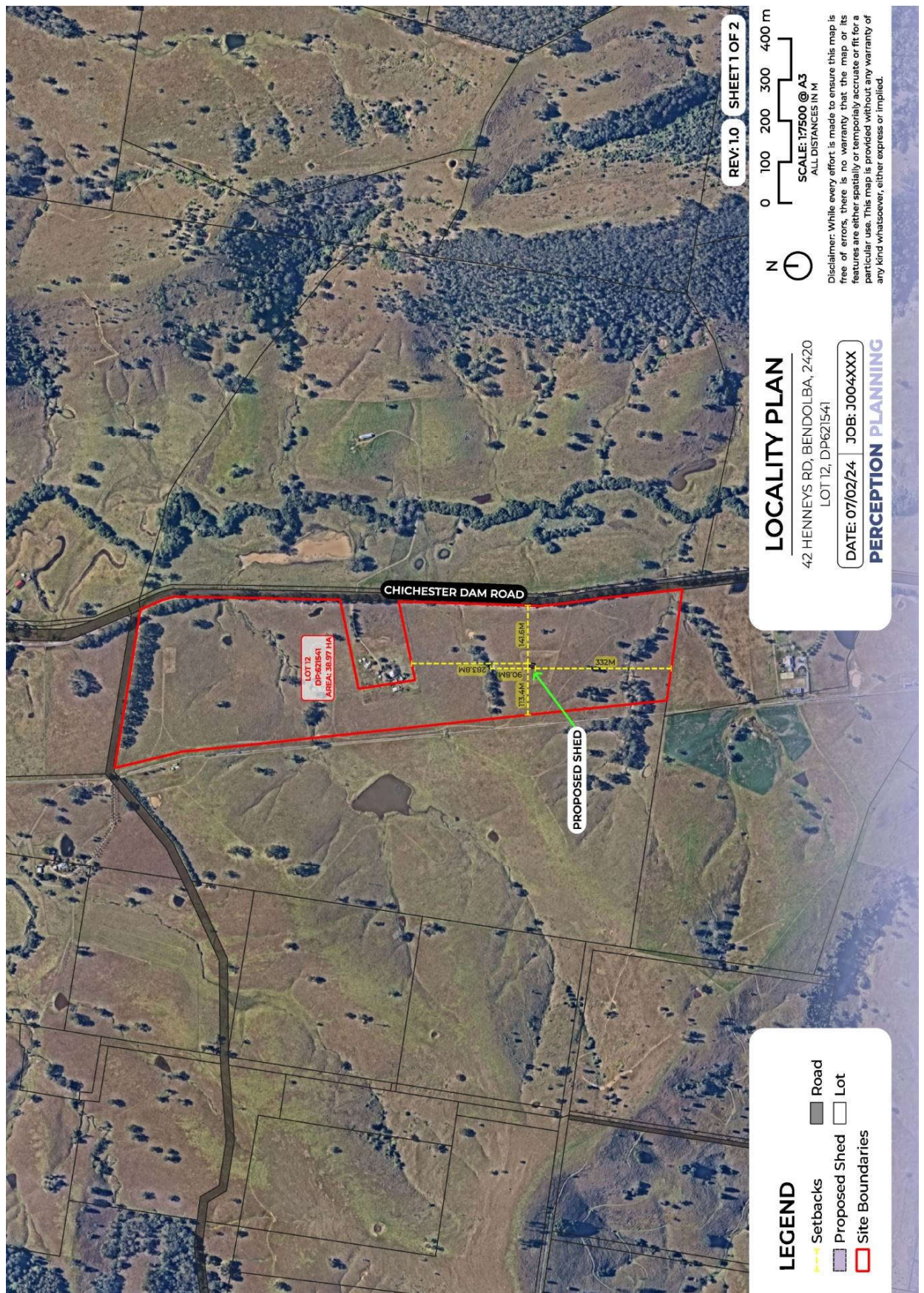


FIGURE 5 – SHED LOCATION PLAN

5.0 PROPERTY ACCESS

The existing public road network is expected to be adequate to handle increased volumes of traffic in the event of a bushfire emergency from the additional property. The existing public road network will remain unchanged.

Fire Trails

Fire trails do not intersect the vegetation in the local area. Public roads in the vicinity that link with the fire trail network have two-way access.

Property Access

Property access is provided by way of Chichester Dam Road providing access from the public road system directly to the private land, giving firefighters access to the building.

Property access roads shall comply with Planning for Bush Fire Protection (2019) Section 5.3b.

The Property Access Road should comply with the following conditions:

- minimum 4m carriageway width;
- a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;
- provide a suitable turning area in accordance with Appendix 3;
- curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;
- the minimum distance between inner and outer curves is 6m;
- the crossfall is not more than 10 degrees;
- maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads;

6.0 LANDSCAPING MAINTENANCE

It is recommended that landscaping is undertaken in accordance with Planning for Bush Fire Protection (2019) Appendix 4 and maintained for the life of the development.

Trees should be located greater than 2 metres from any part of the roofline of a building. Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10 metres from an exposed window or door. Trees should have lower limbs removed up to a height of 2 metres above the ground.

The landscaped area should be maintained free of leaf litter and debris. The gutter and roof should be maintained free of leaf litter and debris.

Landscaping should be managed so that flammable vegetation is not located directly under windows.

Ground fuels such as fallen leaves, twigs (less than 6 millimetres in diameter) and branches should be removed on a regular basis, and grass needs to be kept closely mown and, where possible, green.

7.0 EMERGENCY AND MAINTENANCE PLANS

7.1 BUSHFIRE MAINTENANCE PLANS

There is no known Bushfire Maintenance Plan for the site. A condition of development will be to maintain the nominated asset protection zone as an Inner Protection Area which should be monitored by the property owner or building user.

7.2 FIRE EMERGENCY PROCEDURES

It is recommended that the future property owners or building occupants prepare a bushfire survival plan for each residence when they occupy the building.

8.0 RECOMMENDATIONS

There are presently no dwellings located onsite and no dwelling is proposed as part of this development application. Any future dwelling will be assessed separately under legislation current at time of submission. The below recommendations provide an indication of recommended measures for a future dwelling, however specific consideration should be made with the development submission:

1. The proposed shed is located more than 6 metres from a dwelling and has no specific bushfire construction requirements. A non-combustible shed will reduce the chances of fire damage from grass fire.
2. At the commencement of building works and in perpetuity, the property around the building to a minimum distance of 25 metres, shall be maintained as an inner protection area (IPA) as outlined within Appendix 4 of Planning for Bush Fire Protection (2019) and the NSW Rural Fire Service's document Standards for Asset Protection Zones.
3. Indicative BALs for a potential dwelling have been provided in Table 4.

4. Water, electricity and gas are to comply with Section 5 of Planning for Bush Fire Protection (2019).

Water Services

- a. A 20,000-litre static water supply with firefighting fittings shall be provided for future dwellings when completed.
5. The property access shall comply with Section 5.3b of Planning for Bush Fire Protection (2019).
6. Landscaping is to be undertaken in accordance with Planning for Bush Fire Protection (2019) Appendix 4 and managed and maintained in perpetuity.
7. It is recommended that the property owner or building users familiarise themselves with the relevant bushfire preparation and survival information provided by the NSW RFS.

9.0 CONCLUSION

The final recommendation is that the proposed development offers compliance with Planning for Bush Fire Protection (2019). There is potential for bushfire attack at this site and a list of recommendations has been included in the above assessment to reduce that risk.

10.0 APPENDIX 1.0 – ASSET PROTECTION ZONES SUMMARY

Below is a summary of Asset Protection Zones outlined in appendix 4 of Planning for Bush Fire Protection (2019) and the NSW Rural Fire Service's "Standards for Asset Protection Zones". The property owner(s) should obtain these two documents and familiarise themselves with their content.

Generally

Asset Protection Zones (APZ) refer to the area between the bushfire threat and the asset (i.e. building). The APZ may contain two areas; the Inner Protection Area (IPA) and the Outer Protection Area (OPA). Some areas should be managed entirely as an Inner Protection Area (IPA). Refer to the plans for locations of APZ and distances from Assets.

Inner Protection Area (IPA)

The inner protection area is located adjacent to the asset and is identified as a fuel-free zone.

A. Shrubs (consisting of plants that are not considered to be trees)

1. Large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be created;
2. Shrubs should not be located under trees;
3. Shrubs should not form more than 10% ground cover; and
4. Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

B. Trees: Maintain a minimum 2-5 metre canopy separation.

1. Tree canopy cover should be less than 15% at maturity;
2. Trees at maturity should not touch or overhang the building;
3. Lower limbs should be removed up to a height of 2m above the ground;
4. Tree canopies should be separated by 2 to 5m; and
5. Preference should be given to smooth barked and evergreen trees.

Outer Protection Area (OPA)

The Outer Protection Area (OPA) is located adjoining the vegetation. The OPA should be maintained as a fuel-reduced area. This assumes trees may remain but with a significantly reduced shrub, grass, and leaf litter layer. In many situations leaf litter and the shrub layer may not require maintenance at all.

A. Shrubs:

1. Shrubs should not form a continuous canopy;
2. Shrubs should form no more than 20% of ground cover.

B. Trees:

1. Existing trees can be retained.
2. Tree canopy cover should be less than 30%; and
3. Canopies should be separated by 2 to 5m.

Grass (throughout the entire asset protection zone)

Grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and leaves and vegetation debris should be removed.

11.0 REFERENCES AND DISCLAIMER

References

Standards Australia AS3959 (2018) Construction of buildings in bushfire-prone areas.

Keith D. "Ocean Shores to Desert Dunes", Department of Environment and Conservation, Sydney, (2004).

Environmental Planning and Assessment Act 1979.

New South Wales Rural Fire Service Planning for Bush Fire Protection (2019).

Disclaimer

Despite the recommendations in this report, it is impossible to remove the risk of fire damage to the building entirely. This report assesses and provides recommendations to reduce that risk to a manageable level. It is of paramount importance that the recommendations are adhered to for the life of the structure and that all maintenance is performed to ensure a level of protection is provided to the building, occupants and firefighters.

Planning for Bush Fire Protection (2019) states that notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, always remains.

AS3959 (2018) Construction of buildings in bushfire-prone areas states that the standard is designed to lessen the risk of damage to buildings occurring in the event of the onslaught of bushfire. There can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion. External combustible cladding is not recommended.