

BUSHFIRE ASSESSMENT

PROPOSED TWO LOT SUBDIVISION



**LOT 20 DP 1125086
1501 Paterson River Road, Mount Rivers**

Date: **8/05/2025**

Prepared for: **Adam and Jody Turner**

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Document Status

Revision No.	Issue	Description	Reviewed	Approved by Director
1	02/04/2025	Final	C. Couch	P. Couch
2	08/05/2025	Rev A – revised subdivision plan	C. Couch	P. Couch

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1.0 EXECUTIVE SUMMARY AND COMPLIANCE TABLES

This report has assessed the proposed two lot subdivision 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 proposes a performance-based solution examining alternate egress for the property access in accordance with Planning for Bush Fire Protection (2019) performance criteria.

TABLE 1 – PROPERTY DETAILS AND TYPE OF PROPOSAL

Applicant Name	Adam and Jody Turner		
Site Address	1501 Paterson River Road, Mount Rivers	Lot/Sec/DP	Lot 20 DP 1125086
Local Government Area	Dungog	FDI	100
Bushfire Prone Land	Yes, mapped bushfire prone land		
Type of development	Two lot subdivision	Type of Area	Isolated Rural
Special Fire Protection Purpose	No	Flame Temperature	1090K
Application Complies with Acceptable Solutions	A performance-based solution has been proposed examining the property access	Referral to NSW Rural Fire Service (NSW RFS) required	Yes. Bushfire Safety Authority Required

TABLE 2.0 – BUSHFIRE THREAT ASSESSMENT PROPOSED 201

	North	East	South	West
Vegetation Structure	Grassland	Grassland	Forest	Grassland
Distance to Vegetation	50 metres	50 metres	50 metres	50 metres
Slope Range	Level/Cross-slope	6 to 10 degrees downslope	1 to 5 degrees downslope	1 to 5 degrees downslope
Planning for Bush Fire Protection (2019) Table A1.12.2 Minimum Setbacks	10 metres	12 metres	13 metres	10 metres
AS3959 (2018) Bushfire Attack Level (BAL)	BAL-LOW	BAL-LOW	BAL-LOW	BAL-LOW

The highest BAL, being **BAL-LOW** applies to the potential building envelope provided that a 50 metre asset protection zone is maintained.

TABLE 2.1 – BUSHFIRE THREAT ASSESSMENT PROPOSED 202

	Northwest and Northeast	Southeast	Southeast	Southwest
Vegetation Structure	Grassland	Grassland	Forest	Grassland
Distance to Vegetation	50 metres	50 metres	100 metres	50 metres
Slope Range	>1 to 5 degrees downslope	>1 to 5 degrees downslope	>5 to 10 degrees downslope	>1 to 5 degrees downslope
Planning for Bush Fire Protection (2019) Table A1.12.2 Minimum Setbacks	12 metres	12 metres	36 metres	12 metres
AS3959 (2018) Bushfire Attack Level (BAL)	BAL-LOW	BAL-LOW	BAL-LOW	BAL-LOW

There is significant scope to have a building BAL-LOW with a 15 x 15 metre building footprint illustrated in figure 1. If a building is located within 50 metres of the grassland and within 100 metres of the forest, the building will be BAL-12.5 or higher.

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 except for the alternate egress.	<u>Performance Based Solution</u>
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 two lot subdivision of land located at Lot 20 DP 1125086, 1501 Paterson River Road, Mount Rivers. 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 1 into 2 lot rural subdivision. The site is 116.67 hectares in size and is zoned RU1: Primary Production. An existing dwelling is located on proposed lot 201 which was approved under Planning for Bush Fire Protection (2006).

2.3 SIGNIFICANT ENVIRONMENTAL FEATURES

The only known significant environmental features affecting the site are mapped waterways. The proposed building locations do not impact on mapped waterways.

2.4 ENVIRONMENTAL ASSETS

There are no known environmental assets on the subject site.

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 - PROPOSED LOT 202 LOOKING NORTH

View of a potential building envelope on proposed lot 202 looking north. Grazed pasture and a dam extends north of the site.



PHOTO 2 - PROPOSED LOT 202 SOUTHERN FOREST AND GRASSLAND

View of grassland and forest located south of the site. Eucalypts dominate the tree canopy of the forest with a low density understorey of grasses and native shrubs.

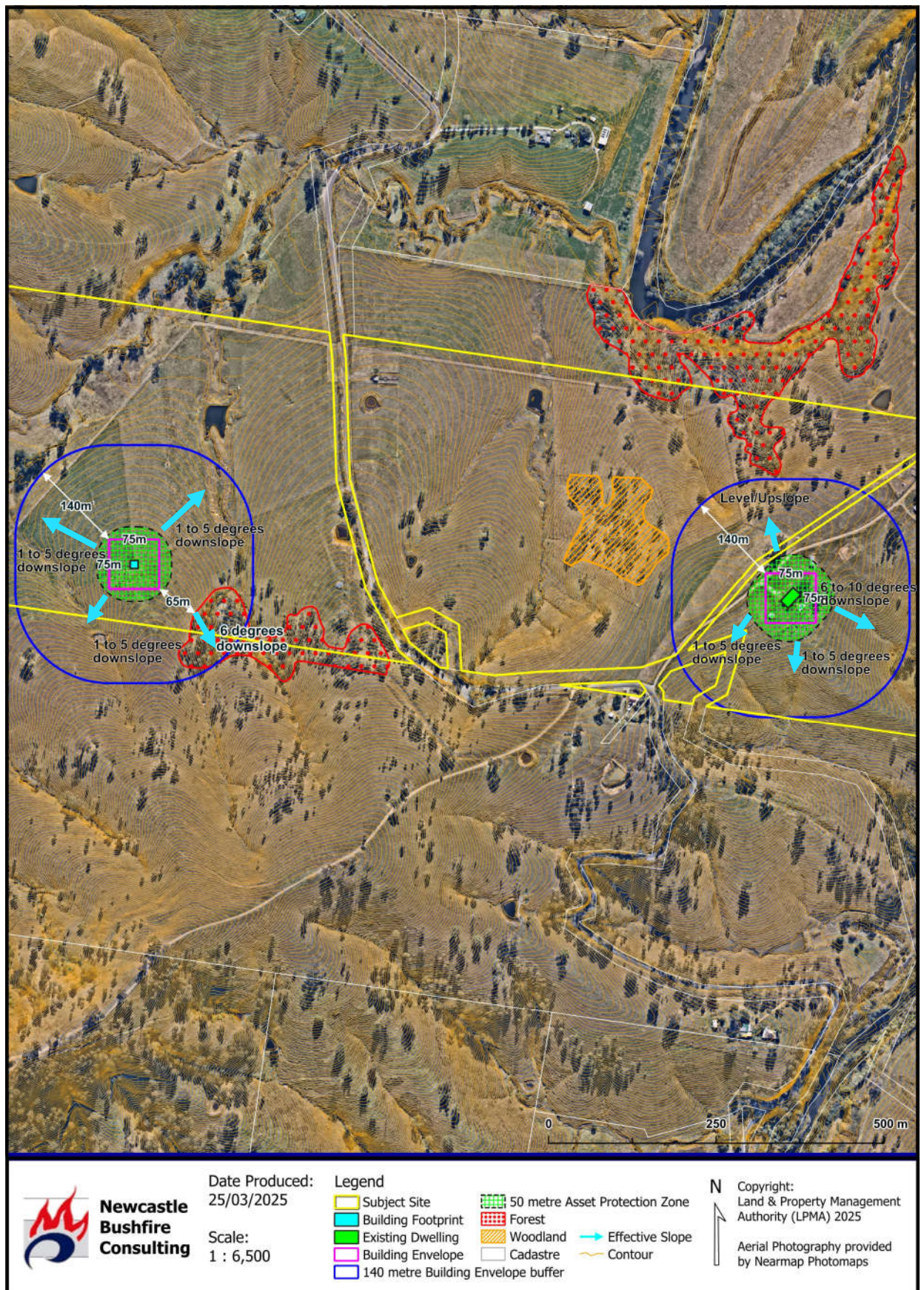


FIGURE 1 – SITE CONSTRAINTS MAP

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 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.

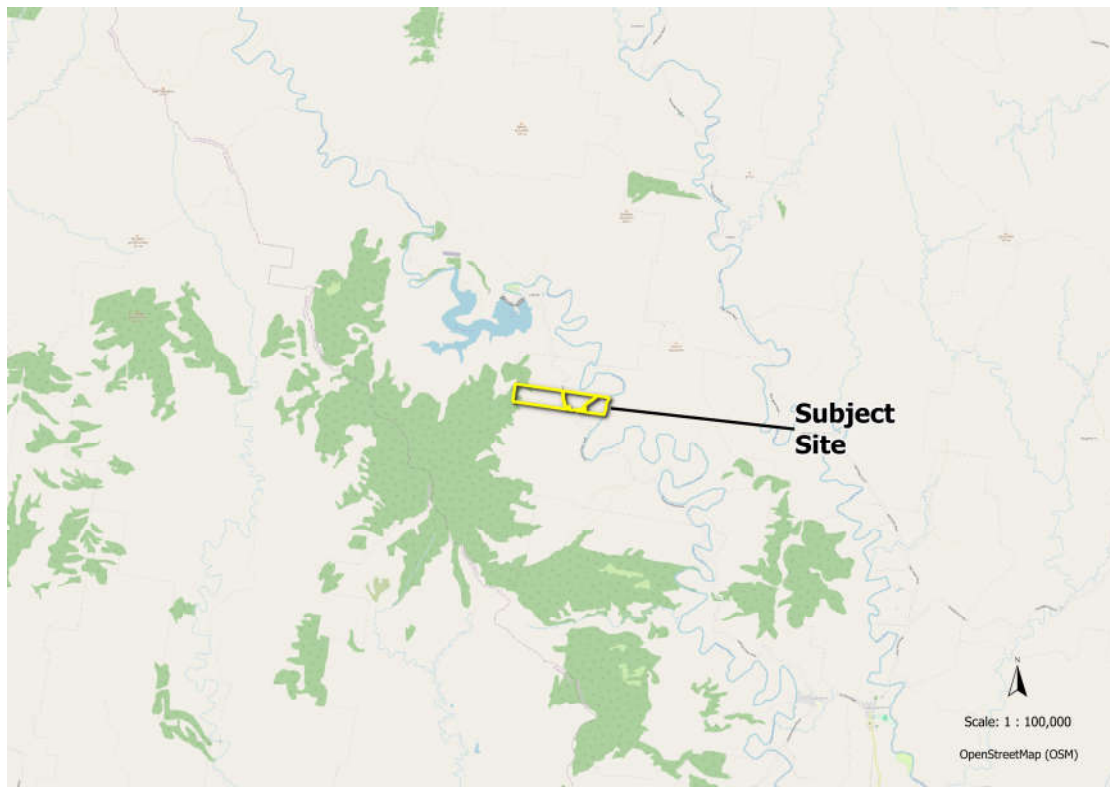


FIGURE 2 – LOCALITY MAP
Courtesy of OpenStreetMap

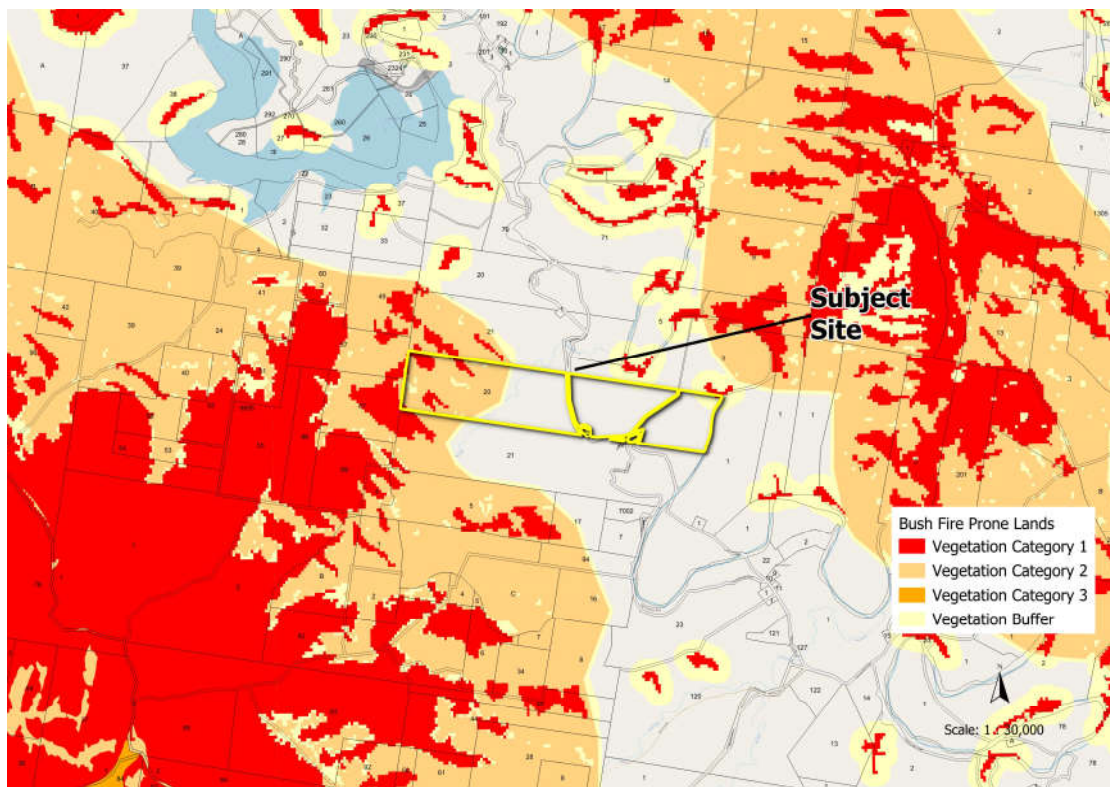


FIGURE 3 – COUNCIL'S BUSHFIRE PRONE LAND MAP

4.0 UTILITY SERVICES AND INFRASTRUCTURE

4.1 WATER SERVICES

The site is greater than a hectare in size with no hydrant access. A static water supply, with provision for a minimum 20,000 litres shall be provided with the final dwelling if grassland deeming provisions do not apply. 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

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 LOT 201 LOOKING WEST

View of mown grass surrounding the existing dwelling and grassland extend west of the building.

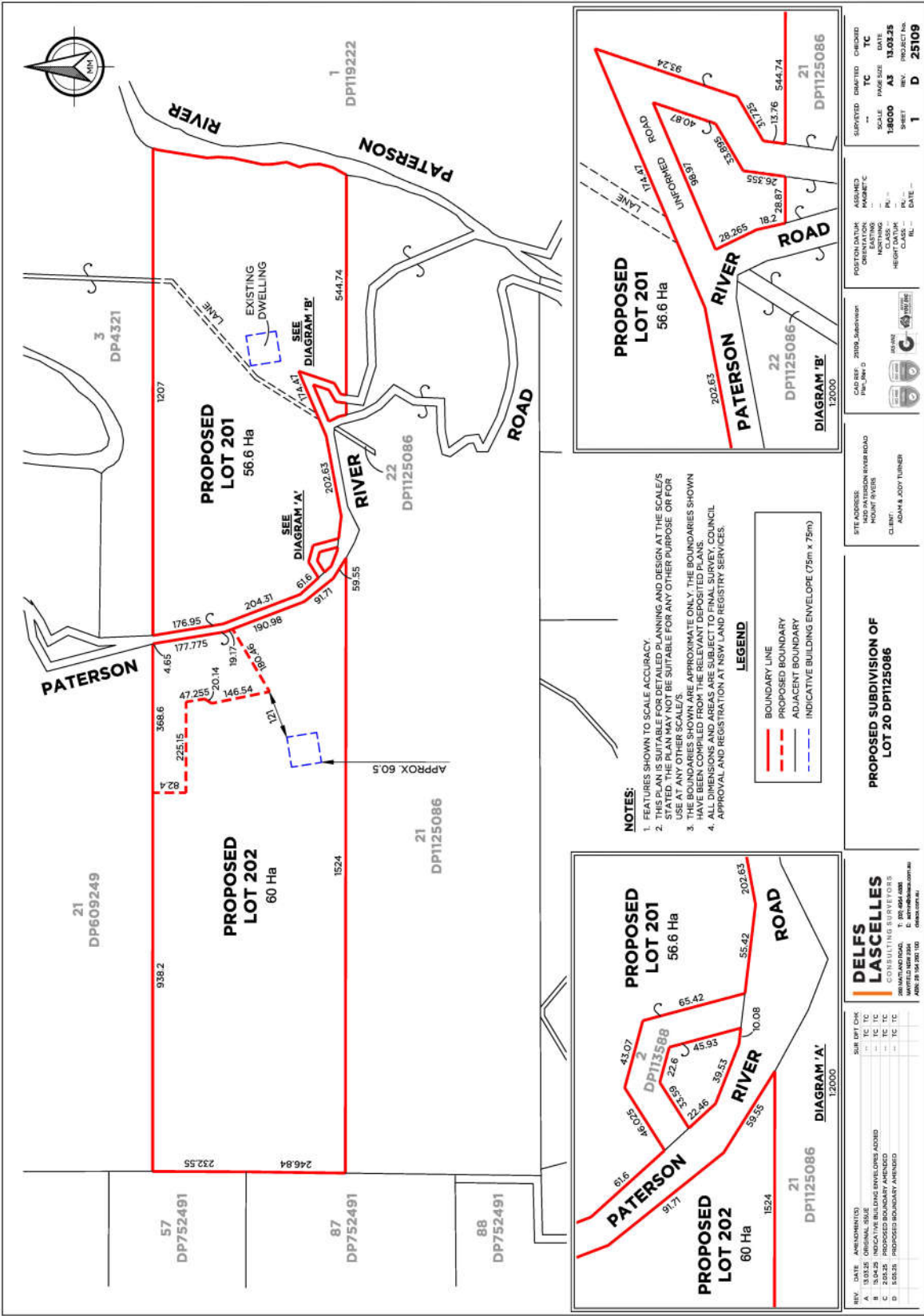


FIGURE 4 – SITE PLAN

5.0 PROPERTY ACCESS

The existing public road network is deemed adequate to handle increased volumes of traffic in the event of a bushfire emergency. There will be limited increased traffic volume generated by the development. No new public roads are proposed.

ACCESS (GENERAL REQUIREMENTS)	
Firefighting vehicles are provided with safe, all-weather access to structures.	<p>Property access roads are two-wheel drive, all-weather roads;</p> <p>Perimeter roads are provided for residential subdivisions of three or more allotments;</p> <p>Subdivisions of three or more allotments have more than one access in and out of the development;</p> <p>Traffic management devices are constructed to not prohibit access by emergency service vehicles;</p> <p>Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient;</p> <p>All roads are through roads;</p> <p>Dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12-metre outer radius turning circle, and are clearly sign posted as a dead end;</p> <p>Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;</p> <p>Where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; and</p> <p>One-way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.</p>
<p>Compliance: No new public roads are proposed. A performance solution has been proposed to address, "Dead-end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12-metre outer radius turning circle, and are clearly sign posted as a dead end;"</p>	
The capacity of access roads is adequate for firefighting vehicles.	<p>The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.</p>
<p>Compliance: No new public roads are proposed.</p>	

There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; Hydrants are provided in accordance with the relevant clauses of AS2419.1 (2005) - Fire hydrant Installations - System design, installation and commissioning; and There is suitable access for a Category 1 fire appliance to within 4 metres of the static water supply where no reticulated supply is available.
Compliance: No new public roads are proposed.	
PERIMETER ROADS	
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating, as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Are two-way sealed roads; Minimum 8 metre carriageway width kerb to kerb; Parking is provided outside of the carriageway width; Hydrants are located clear of parking areas; Are through-roads, and these are linked to the internal road system at an interval of no greater than 500 metres; Curves of roads have a minimum inner radius of 6 metres; The maximum grade road is 15 degrees and average grade of not more than 10 degrees; The road crossfall does not exceed 3 degrees; and A minimum vertical clearance of 4 metres to any overhanging obstructions, including tree branches, is provided.
Compliance: No new public roads are proposed.	
NON-PERIMETER ROADS	
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5 metre carriageway width kerb to kerb; Parking is provided outside of the carriageway width; Hydrants are located clear of parking areas; Roads are through-roads and are linked to the internal road system at an interval of no greater than 500 metres; Curves of roads have a minimum inner radius of 6 metres; The road crossfall does not exceed 3 degrees; and A minimum vertical clearance of 4 metres to any overhanging obstructions, including tree branches, is provided.
Compliance: No new public roads are proposed.	

Fire Trails

Fire trails do not intersect the vegetation in the local area. No new fire trails are proposed.

Property Access

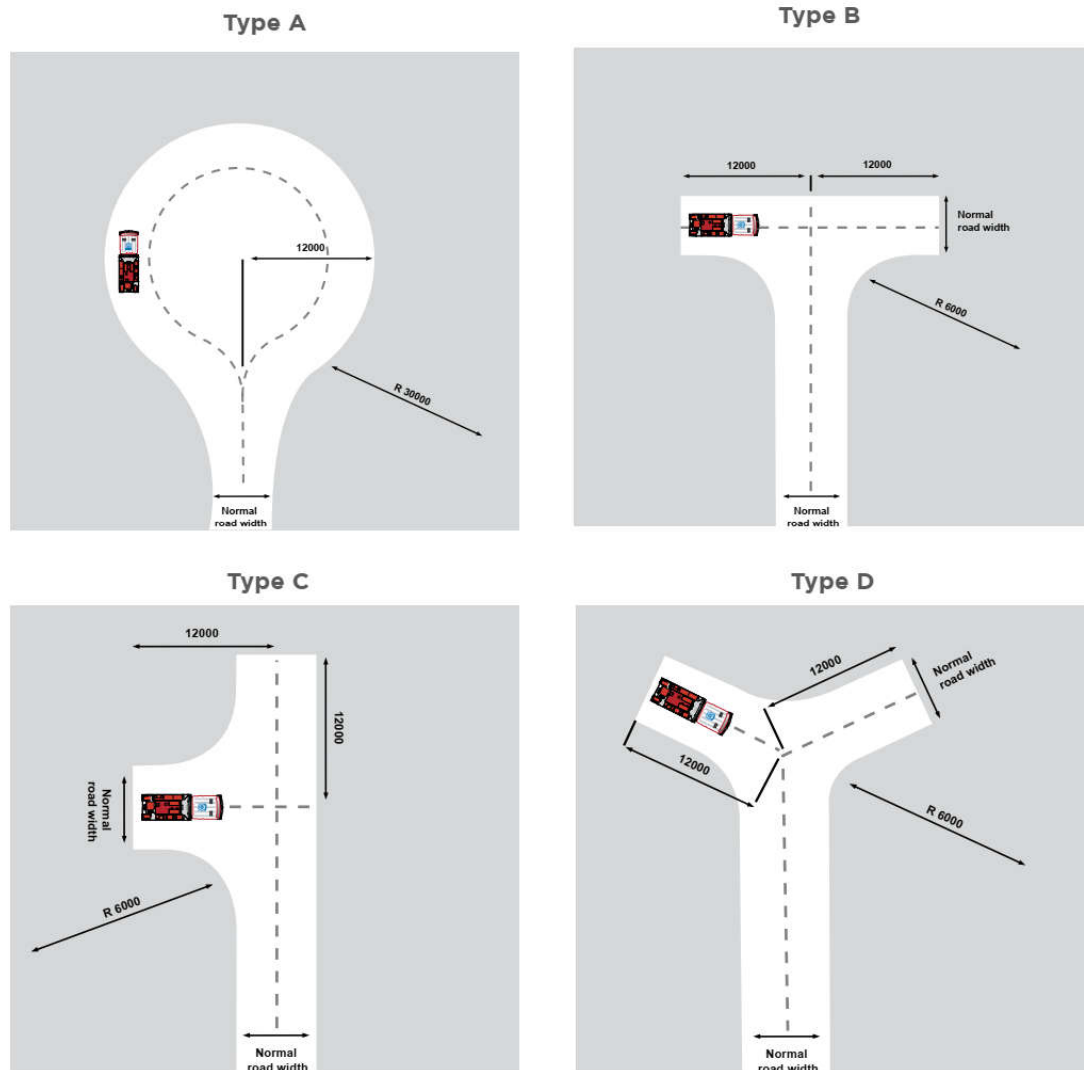
Property access is provided by way of Elderslie Road providing access from the public road system to the private land, giving firefighters access to the building.

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:

PROPERTY ACCESS	
Firefighting vehicles can access the dwelling and exit the property safely.	<ul style="list-style-type: none">a) minimum 4m carriageway width;b) in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay;c) a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;d) provide a suitable turning area in accordance with Appendix 3;e) curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;f) the minimum distance between inner and outer curves is 6m;g) the crossfall is not more than 10 degrees;h) maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads;i) a development comprising more than three dwellings has access by dedication of a road and not by right of way.
Compliance: Property access roads shall comply with Planning for Bush Fire Protection (2019) Section 5.3b excepting the provision of alternate egress for a property access more than 200 metres from the public road. A performance-based solution has been proposed examining the performance criteria of “firefighting vehicles can access the dwelling and exit the property safely.”	

Multipoint turning options.



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 PERFORMANCE BASED SOLUTION

At the request of the client, I have been asked to provide an unbiased safety model for the proposed development. The proposed performance-based solution offers compliance with Planning for Bush Fire Protection (2019).

Proposed Performance Based Solution

The proposed development departs from the acceptable solutions of Planning for Bush Fire Protection (2019) due to their being a single property access more than 200 metres in length from the public road.

Methodology of Assessment

Pursuant to Section A2.4(c) of Appendix 2 in Planning for Bush Fire Protection (2019), the assessment method used by the performance solution to demonstrate compliance with the nominated performance criteria.

The general access requirements for section 5.3b has the performance criteria of, “firefighting vehicles are provided with safe, all-weather access to structures.” All acceptable solutions are achieved except the following:

“Dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;”

Qualitative Assessment

The driveway traverses grassland and managed land and therefore the risk of the access being cut off by falling trees and other obstructions are significantly reduced.

There are no passing bays required through grassland which gives an indication of the lesser bushfire risk relating to property access.

Grassfires have a fire front residence of 5-15 seconds which allow for adequate evasion if impacting the property access. The short fire front residence time in conjunction with an asset protection zone and landscape requirements will not have the same impact on the asset as that of a forest or heath fire and less likelihood of

the occupants feeling like they need to evacuate the site when the fire front is in the vicinity of the asset protection zone interface.

The need for alternate egress is negated by the reduced threat posed by grassfires and the ability to shelter in a suitably resilient building constructed to AS3959. Turning areas shall be provided adjacent to the dwelling to allow the safe access and egress of both residents and firefighters.

There is a small area of the property access that is located adjacent, however there is significant grazing pasture surrounding both dwellings, with there being moderate risk to building occupants and firefighters.

Evaluation of Performance Based Solution

The proposed allotments offer the potential to achieve compliance with the property access requirements excepting the provision of alternate egress. There is significant scope to provide a building envelope that is BAL-29 or less, with the property access providing safe access and egress to the site. The grassland on each site and surrounding the property access represents reduced fire threat and will achieve the intent of, "firefighting vehicles are provided with safe, all-weather access to structures." through the provision of all property access requirements of Planning for Bush Fire Protection (2019) Table 5.3b excepting alternate egress.

8.0 EMERGENCY AND MAINTENANCE PLANS

8.1 BUSHFIRE MAINTENANCE PLANS

There is no known Bushfire Maintenance Plan for the site. An asset protection zone has been approved for the dwelling on the proposed lot 201 and the asset protection zone for any future dwelling on proposed lot 202 will be determined at time of development approval.

8.2 FIRE EMERGENCY PROCEDURES

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

9.0 RECOMMENDATIONS

There is presently a single approved dwelling 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 approval. The below recommendations provide an indication of recommended measures for a future dwelling, however specific consideration should be made with the development application:

1. An indicative 75 x 75 metre building envelope has been nominated for proposed lot 202 which will provide a building envelope that is less than BAL-29 with minimal clearing of grassland. A site specific BAL shall be determined with the specific development submission.
2. Water, electricity and gas are to comply with Section 5 of Planning for Bush Fire Protection (2019).

Water Services

- a. A 20,000 static water supply with firefighting fittings is required for any future development that does not achieve grassland deeming provisions.
3. The future property access shall comply with Section 5.3b of Planning for Bush Fire Protection (2019) unless grassland deeming provisions can be demonstrated.
4. Landscaping is to be undertaken in accordance with Planning for Bush Fire Protection (2019) Appendix 4 and managed and maintained in perpetuity.
5. 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.
6. The existing dwelling was approved under Planning for Bush Fire Protection (2006) and should require no ember upgrade.

10.0 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.

11.0 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 Services “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. Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
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.

12.0 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.