Bushfire Assessment Report

1. Introduction

This is a Bush Fire Assessment Report (BFAR) prepared in accordance with the Submission Requirements for DAs on bush fire prone land at Section A4.2 of Appendix 4 of the *Planning for Bush Fire Protection* guidelines 2019 ("the Guidelines").
The BFAR applies to a development application for a 2 lot subdivision of land described as Lot 7 in DP258661 and addressed as 17 Maiden Smith Drive, Moama. The north-eastern part of the property is covered by a buffer zone applying to Vegetation Category 1.

The purpose of this BFAR is to demonstrate the level of compliance of the proposed development with the Guidelines.

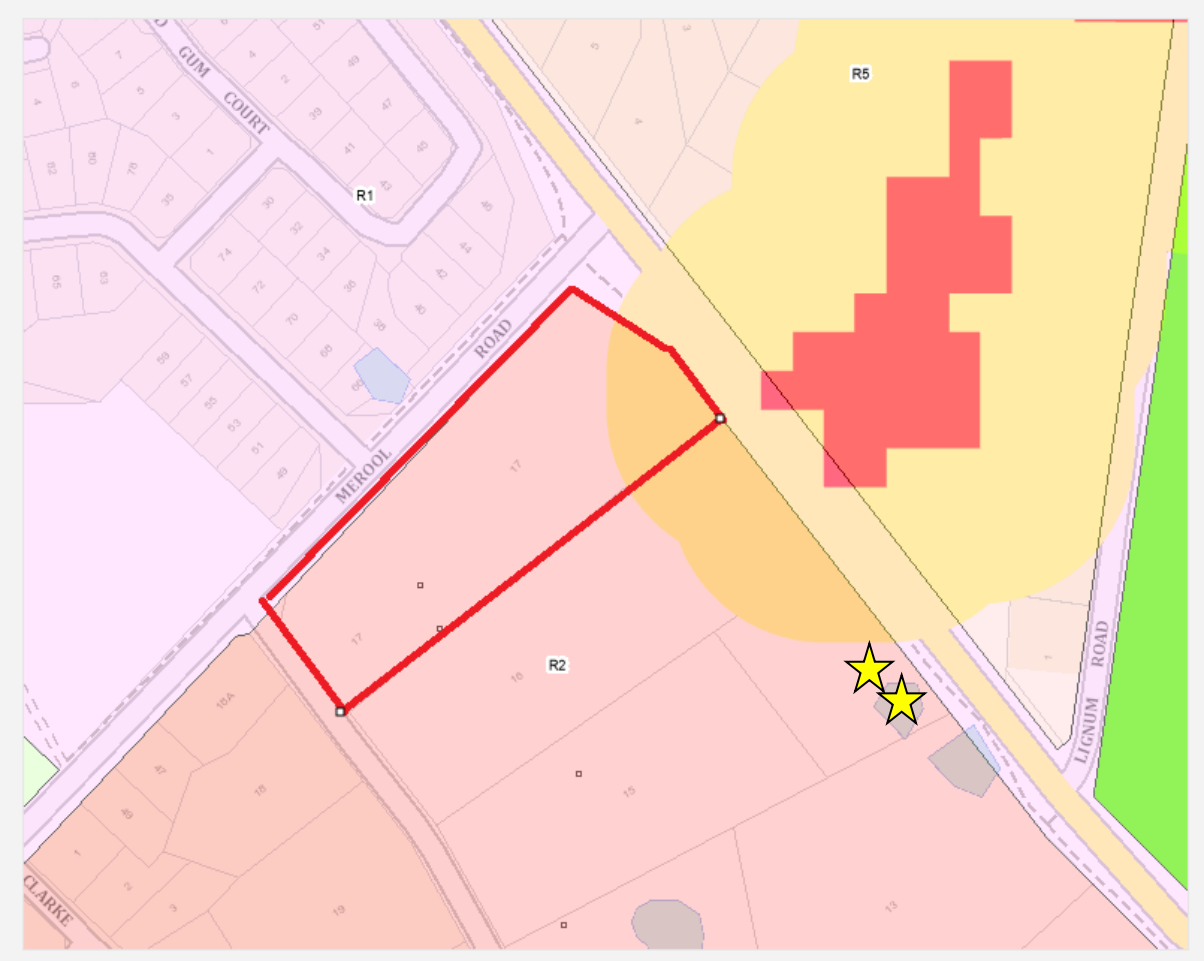

Figure 1 Bush fire prone land with subject land shown (black outline)

2. Site Analysis

2.1 Subject Land

This application relates to twenty three lot subdivision described as Lots 7 in DP258661, and addressed as 17 Maiden Smith Drive , Moama. The lot comprise a single holding making up an entire 'semi-urban

block' with a total area of approximately 3.08 hectares. The subject land is located to the western side of the Moama urban area, with established dwellings located on the western side of lot, and vacant land to the east porton.

Below shows the subject land in context to the urban area of Moama and shows the aerial view of the subject land.

2.2 Existing Conditions
The land contains a residences and shedding.

The property has been cleared, but contains planted trees surrounding the house western portion of the lot.

2.3 Topography
The topography of the site is flat, there is a depression in the adjacent land to the south of the lot (eastern portion only)

2.4 Roads and Access
Access to the property is presently made via Mainden Smith Drive, via a property driveway.

2.5 Surrounding Context
The surrounding area is a mix of conventional established residential properties, rural-residential Lots, public open space and rural farmland. The surrounding context is shown in **Figure 2** below.

Land to the north is the generally undeveloped land surrounding the property east and west of the property are residential areas of varying densities whereas land to the south consists of residential properties as well.

Figure 2. Overview of site location in comparison to Moama (site is shown via Yellow Star).

3. Proposed Development

The proposal generally comprises the subdivision of the existing parcel into twenty three (23) lots and construction of roads and services to facilitate the workings of the future purpose Specifically, the proposal includes:

- House Demolition, Earth works , service install and road construction

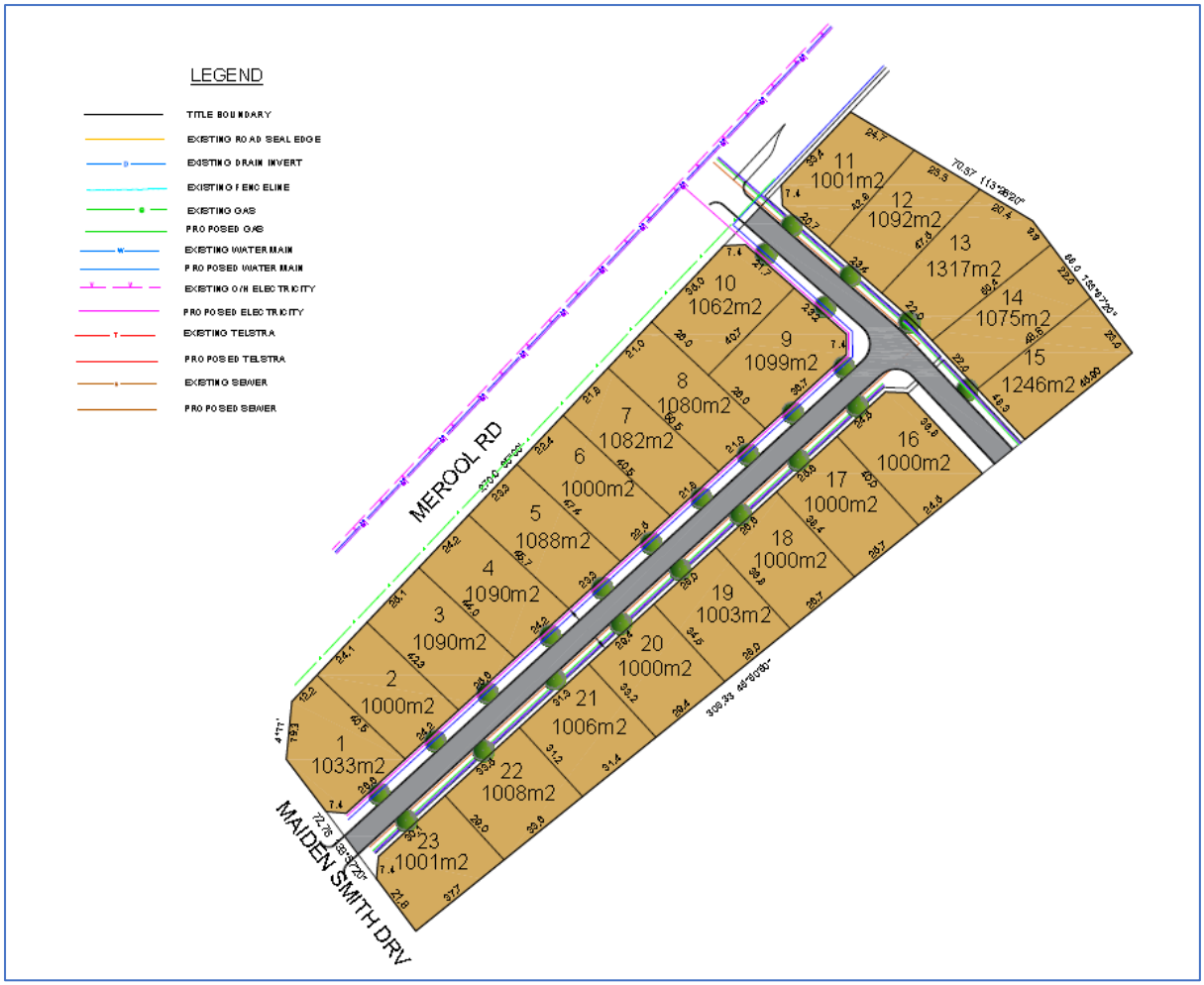

Figure 3 Proposed outline development plan

4. Assessment of Conditions

4.1 Vegetation Classification

The vegetation associated with Category 1 land assignment is Woodland, located on the north side of Perricoota Rd.

4.2 Slope

The topography of the subject land is flat, with only a very minimal fall from east to west, estimated to be less than 2%. Surrounding land has similar topographical .

4.3 Significant Environmental Features

The subject land includes a few native trees consistent with the vegetation character of the surrounding landscape. Outside of the vegetation contained, the subject land does not contain any significant environmental features.

4.4 Threatened Species

N/A

4.5 Aboriginal Heritage

N/A

5. Standards for Bush Fire Protection

5.1 Summary

This section represents an assessment of the proposal against performance criteria and acceptable solutions for bush fire protection relating to residential subdivision as specified in section 5.2 of the Guidelines.

5.2 Asset Protection Zone

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	RESPONSE
Radiant heat levels at any point on a proposed building will not exceed 29 kW/m2	An APZ is provided in accordance with the relevant tables/figures in Appendix 2 of the Guideline	The APZ has been calculated at 20 metres, being woodland vegetation on flat/upslope land, FFDI 80.
APZs are managed and maintained to prevent the spread of a fire towards the building.	The APZ is the adjacent 20m road reserve (Pericoota Rd). The road is currently maintained with regular slashing and clearing.	A 20 metre APZ is applied the hazard side interfaces of the subject land being to the north-east. **Perricoota road, from the north-east property edge comprises of a grass nature strip with dispersed trees shrubs and the road seal is to comprise a wide APZ on the north east frontage, which can exceed the required 20 metre width. The existing understorey is maintained , with overstorey to be open enough for this frontage along the road reserve to be managed as an APZ. No APZ is proposed to the other boundaries interfaces as hazards are not identified in these directions.** **Managed urban lands and roadways exist in this area.**
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated	The APZ is located on lands with a slope less than 18 degrees. The APZ identified comprises managed road reserves which are highly accessible and managed by Council as part of the ongoing maintenance regime.	The APZ identified comprises managed road reserves which are highly accessible and managed by Council as part of the ongoing maintenance regime.

5.3 Public Roads

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	RESPONSE
Fire fighters are provided with safe all-weather access to structures (thus allowing more efficient use of firefighting resources)	Public roads are two-wheel drive, all-weather roads. Public roads up to 6.5 metres wide provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.	Sealed public roads will provide access to each lot. The road geometry will comply with requirements of the RFS.
Public road widths and design that allow safe access for firefighters while residents are evacuating an area.	Urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions. Non perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle).	The road geometry will comply with requirements of the RFS.
	The perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas.	Interval between internal and external road is less than 100m
	Traffic management devices are constructed to facilitate access by emergency services vehicles.	N/A
	Public roads have a cross fall not exceeding 3 degrees.	The road geometry will comply with requirements of the RFS.
	All roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends 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 and direct traffic away from the hazard.	N/A
	Curves of roads (other than perimeter roads) are a minimum inner radius of six	The road geometry will comply with requirements of the RFS.

	metres and minimal in number, to allow for rapid access and egress.	
	The minimum distance between inner and outer curves is six metres.	The road geometry will comply with requirements of the RFS.
	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.	The road geometry will comply with requirements of the RFS.
	There is always a minimum vertical clearance to a height of four metres above the road.	Street trees will be selected and maintained to provide for required vertical clearance.
Roads that are clearly signposted (with easily distinguishable names) and buildings/properties that are clearly numbered.	One way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.	Roads will be clearly sing posted.
There is clear access to reticulated water supply	Public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression.	Hydrants are provided within the surrounding network.
	Public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression.	The road geometry will comply with requirements of the RFS.
Parking does not obstruct the minimum paved width	Parking bays are a minimum of 2.6 metres wide from kerb edge to road pavement. No services or hydrants are located within the parking bays.	The road geometry will comply with requirements of the RFS.
	Public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road.	Not Applicable

5.4 Property Access

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	RESPONSE
Access to properties is provided in recognition of the risk to fire fighters and/ or evacuating occupants.	At least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200 metres from a public through road.	Second access / egress is provided.
The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles.	Bridges clearly indicate load rating and pavements and bridges are capable of carrying a load of 15 tonnes	Roads will have capacity for all service and Emergency services vehicles.
All-weather access is provided.	Roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge).	Yes
Road widths and design enable safe access for vehicles	A minimum carriageway width of four metres for rural-residential areas, rural landholdings or urban areas with a distance of greater than 70 metres from the nearest hydrant point to the most external part of a proposed building (or footprint).	The road geometry will comply with requirements of the RFS.
	In forest, woodland and heath situations, rural property access roads have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six metres at the passing bay.	Adequate access can be made along the public road system, which includes wide sealed roads. No provision is to be made for passing bays.
	A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches.	Vertical clearance of at least 4 metres can be achieved on all public roads.
	Internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum 12 metre outer radius.	NA
	Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.	The road geometry will comply with requirements of the RFS.

	The minimum distance between inner and outer curves is six metres.	Proposal will not exceed the minimum distance requirement.
	The crossfall is not more than 10 degrees	The proposed roads and existing roads will not exceed a crossfall of 10 degrees.
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.	The proposed roads and existing roads will not exceed a grade of 15 degrees.
	Access to a development comprising more than three dwellings have formalised access by dedication of a road and not by right-of-way.	Access to the development is made via a public road.

5.5 Fire Trails

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	RESPONSE
The width and design of the fire trails enables safe and ready access for fire fighting vehicles	A minimum carriageway width of four metres with an additional one metre wide strip on each side of the trail (clear of bushes and long grass) is provided.	No fire trails are considered necessary in this instance as the proposal includes roads edging the bushfire hazard area.
Public road widths and design that allow safe access for fire fighters while residents are evacuating an area.	The trail is a maximum grade of 15 degrees if sealed and not more than 10 degrees if unsealed.	No fire trails are proposed, as the road network will provide perimeter access to the land. Refer to comments at Section 5.3
	A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches is provided.	
	The crossfall of the trail is not more than 10 degrees.	
	The trail has the capacity for passing by:	All surrounding roads include capacity for through access.
	Reversing bays using the access to properties to reverse fire tankers, which are six metres wide and eight metres deep to any gates, with an inner minimum turning radius of six metres and outer minimum radius of 12 metres; and/or	

	A passing bay every 200 metres, 20 metres long by three metres wide, making a minimum trafficable width of seven metres at the passing bay.	
Fire trails are trafficable under all weather conditions. Where the fire trail joins a public road, access shall be controlled to prevent use by non-authorised persons.	The fire trail is accessible to fire fighters and maintained in a serviceable condition by the owner of the land.	No fire trails are proposal, as the road network will provide perimeter access to the land. Refer to comments at Section 5.3
	Appropriate drainage and erosion controls are provided.	
	The fire trail system is connected to the property access road and/or to the through road system at frequent intervals of 200 metres or less.	
	Fire trails do not traverse a wetlands or other land potentially subject to periodic inundation (other than a flood or storm surge).	
	Gates for fire trails are provided and locked with a key/lock system authorized by the local RFS.	
Fire trails designed to prevent weed infestation, soil erosion and other land degradation	Fire trail design does not adversely impact on natural hydrological flows.	No fire trails are proposal, as the road network will provide perimeter access to the land. Refer to comments at Section 5.3
	Fire trail design acts as an effective barrier to the spread of weeds and nutrients.	
	Fire trail construction does not expose acid-sulphate soils.	

5.6 Water and Utility Services

PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS**	**RESPONSE**
Reticulated water supplies		
Water supplies are easily accessible and located at regular intervals	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Reticulated water will be provided in new mains for all properties
	Fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the	Minimum Hydrant spacing will be provided.

	water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles.	
	Hydrants are not located within any road carriageway All above ground water and gas service pipes external to the building are metal, including and up to any taps.	No above ground water or gas pipes are proposed.
	The provisions of parking on public roads are met.	N/A
<u>Non-reticulated water supply areas</u>		
For rural-residential and rural developments (or settlements) in bush fire prone areas, a water supply reserve dedicated to firefighting purposes is installed and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the subdivision (community titled subdivisions), or held individually on each lot.	The minimum dedicated water supply required for firefighting purposes for each occupied building excluding drenching systems, is provided in accordance with Table 4.2.	Not applicable as the proposal is an urban subdivision with a reticulated water supply (at pressure).
	A suitable connection for firefighting purposes is made available and located within the IPA and away from the structure. A 65mm Storz outlet with a Gate or Ball valve is provided.	
	Ball valve and pipes are adequate for water flow and are metal rather than plastic.	
	Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole.	
	Above ground tanks are manufactured of concrete or metal and raised tanks have their stands protected. Plastic	

	tanks are not used. Tanks on the hazard side of a building are provided with adequate shielding for the protection of fire fighters.	
	All above ground water pipes external to the building are metal including and up to any taps. Pumps are shielded.	
Electricity Services		
Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings	Where practicable, electrical transmission lines are underground.	Electricity will be provided from underground services.
Regular inspection of lines is undertaken to ensure they are not fouled by branches.	Where overhead electrical transmission lines are proposed: Lines are installed with short pole spacing (30 metres), 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 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002).	NA.
Gas services		
Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	Reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used.	Gas services will be reticulated, installed and maintained in accordance with AS 1596 and the requirements of relevant authorities.
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation.	Not applicable.
	If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal.	Not applicable.

	Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.	Not applicable.

6. Conclusion & Recommendations

In this instance, the subject land is affected by bushfire hazards along north eastern boundary, from nearby woodland vegetation. The land contains patches native and exotic trees which will be mostly cleared. The proposed subdivision design is considered to provide a safe and accessible design with regard to bushfire protection. The specific bush fire protection measures identified for the development are:

- Provision of an external 20 metre APZ, being managed to an internal protection zone standard, to the Perricoota Rd road reserves, which are to be managed road reserves with no significant understorey grasses and only scattered trees with open canopies;
- Provision of lots which can allow for future building envelopes which satisfy the construction standards and design;
- Safe and convenient access away from the hazard via sealed urban type roads;
- Provision of roads with dimensions capable of allowing two-way movement, parking and turning
  by emergency vehicles; and
- Provision of water supply via mains supply within the development.

Accordingly, the proposal has the potential to satisfy the subdivision criteria set out in the Guidelines.