REF: 7115BF

OCTOBER 29, 2024

VALID TO: 29/10/2025

BUSHFIRE HAZARD ASSESSMENT

PROPOSED 2 LOT SUBDIVISION

61 FOORD ROAD, RUN-O-WATERS

LGA: Goulburn-Mulwaree

Lot 336, DP 750015

Applicant: Mr & Mrs Cumming C/- Tina Dodson

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BUSHFIRE HAZARD ASSESSMENT

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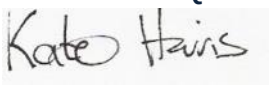

BPAD-L3-26927
MASTERS BUSH FIRE PROTECTION, WSU
GRAD DIP BUSH FIRE PROTECTION, UWS
GRAD DIP ENVIRO MANG HERTS, UK,
GRAD DIP NAT RES UNE,
BSC APP SC, AGRICULTURE HAC

VERSION CONTROL

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Prepared By	Simone Brewer			
Approved by:	Katherine Harris BPAD L3 26947			
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DISCLAIMER

The recommendations provided in the summary of this report are a result of the analysis of the proposal in relation to the requirements of Planning for Bushfire Protection 2019. Utmost care has been taken in the preparation of this report however there is no guarantee of human error. The intention of this report is to address the submission requirements for Development Applications on bushfire prone land. There is no implied assurance or guarantee the summary conditions will be accepted in the final consent and there is no way Harris Environmental Consulting is liable for any financial losses incurred should the recommendations in this report not be accepted in the final conditions of consent. This bushfire assessment provides a risk assessment of the bushfire hazard as outlined in the PBP 2019 and AS3959 2018. It does not provide protection against any damages or losses resulting from a bushfire event.

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EXECUTIVE SUMMARY

This Bushfire Hazard Assessment is for the proposed 2 Lot Subdivision of 61 Foord Road, Run-O-Waters The assessment confirms the subject lot is identified as bushfire prone.

The proposed subdivision layout will be:

- Lot 1: 1.3ha, with indicative building envelope;
- Lot 2: 8.4ha, retaining existing dwelling

This assessment classifies the bushfire-prone vegetation within 140m of proposed subject lots as:

	Vegetation Formation	Effective Slope	Distance from façade to hazard
Proposed Lot 1			
North	Grassland	0-5° Downslope	12 m
East	Grassland	Upslope/Flatland	10 m
South	Grassland	5-10° Downslope	13 m
	Woodland	Upslope	49 m
West	Grassland	0-5° Downslope	16 m
	Woodland	0-5° Downslope	53 m
Proposed Lot 2			
North	Grassland	0-5° Downslope	28 m
Northeast	Woodland	Upslope	69 m
Southeast	Woodland	Upslope	84 m
South	Grassland	0-5° Downslope	8 m
Southwest	Grassland	5-10° Downslope	24 m

The relevant technical bushfire protection provisions under the National Construction Code (NCC) for design and construction of building standards are under AS3959 - *2018 Construction for Buildings in Bushfire Prone Areas* and/or *NASH Standard Steel Framed Construction in Bushfire Areas (2014) if* a steel frame is proposed.

The *Planning for Bushfire Protection A Guide for Councils, Planners, Fire Authorities and Developers* 2019 (PBP) provides the specific development standards and guidance for designing and building on bushfire prone land in NSW.

No built development is included in the proposal and future dwellings on the new lots created will require a development application to be lodged within this subdivision will be subject to further bushfire assessment under *Section 4.14 of the Environmental Planning and Assessment Act 1979*. Therefore, no APZ is required to be established for approval. No indicative APZ is located on land mapped Biodiverse. This assessment confirms the APZs are indicative only and no vegetation clearing is required.

The existing dwelling is required to be upgraded to improve ember protection, unless already constructed to a relevant standard. This is to be achieved by enclosing all openings (excluding roof tile spaces) or covering openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm. Where applicable, this includes any sub floor areas, openable windows, vents, weep holes and eaves. External doors are to be fitted with draft excluders.

An APZ for the proposed Lots 1 and 2 should be established from the commencement of building works and maintained for perpetuity for the following dimensions:
Lot 1: BAL 29 APZ

- 12 m to the north;
- 10 m to the east;
- 13 m to the south; and
- 16 m to the west.

Lot 2:

- 13 m to the western elevation; and
- 12 m to the all other elevations.

The subject lot is located on Foord Road. This is a two-wheel drive, all-weather, no through road. Road surfaces and bridges are sufficient to carry fully loaded firefighting vehicles.
Any internal access is required to comply with the PBP- Property Access Table 7.4a. This includes:

- A minimum carriageway width of four metres;
- provide enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m;
- Curves a minimum inner radius of six metres;
- The minimum distance between inner and outer curves is six metres;
- The cross fall is not more than 10 degrees;
- Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads;
- The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
- There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

The current access into the existing lot is through a concrete gate that measures approximately 3.3m wide. This is not currently compliant and will be required to be upgraded to at least 3.5m to comply with PBP- Property Access Table 7.4a. Also a turning circle will be required that meets the requirements below as well as a water supply for fire fighting that is located withing 4 m of the access.

Each lot is required to have a 20,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available. Above ground tanks are required to be manufactured of concrete or metal and raised tanks have their stands protected. All above ground water pipes external to the building are required to be metal including and up to any taps. Pumps are to be shielded. Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm storz outlet and a gate or ball valve. Any bottled gas will be installed and maintained under AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used. Electrical transmission lines, if above ground, will be managed under specifications issued by Energy Australia.

1. PROPOSAL

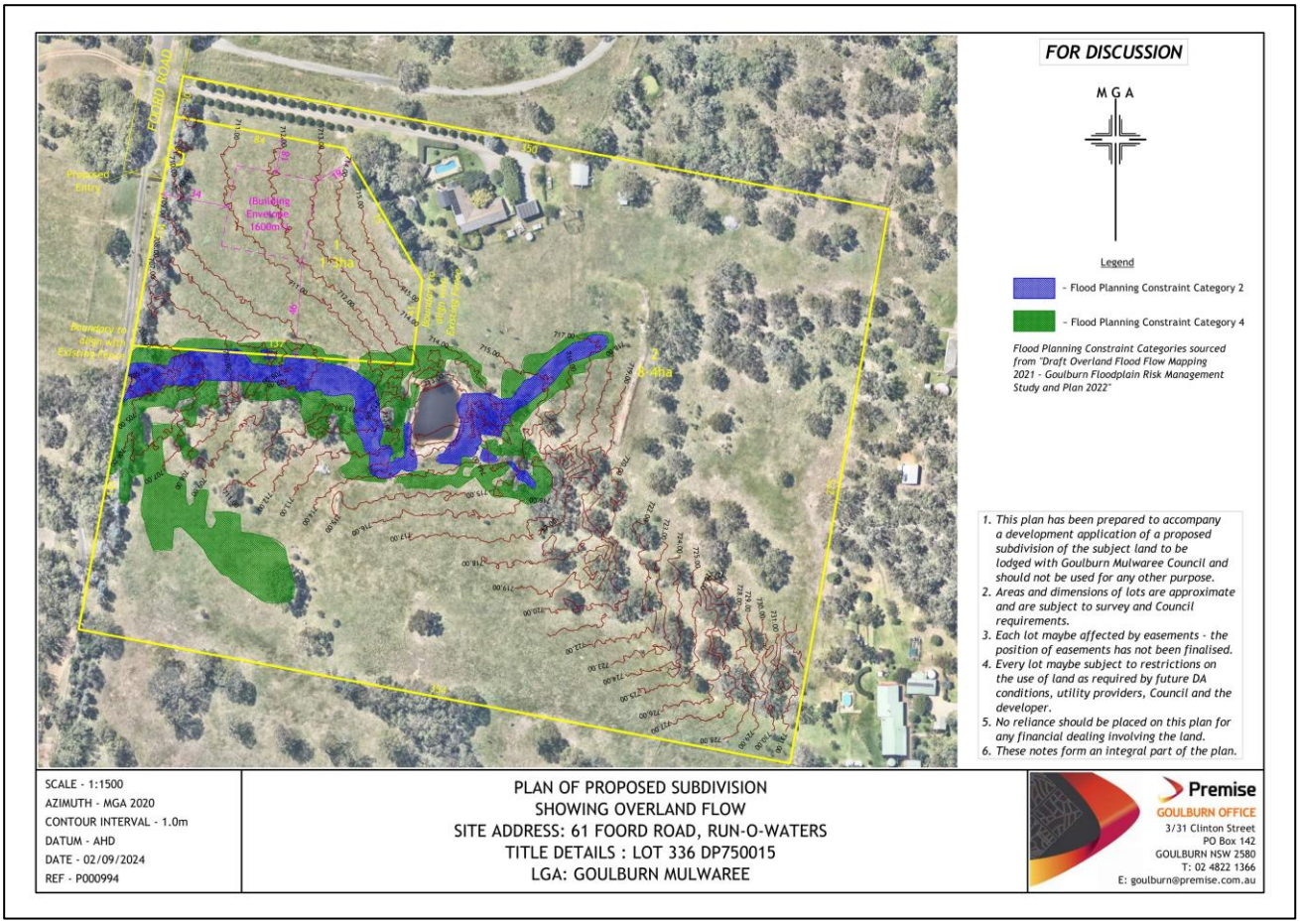
The proposal involves a 2 Lot Subdivision of Lot 336, DP 750015 of 61 Foord Road, Run-O-Waters . The proposed subdivision layout will be:

- Lot 1: 1.3ha, with indicative building envelope;
- Lot 2: 8.4ha, retaining existing dwelling

This assessment confirms the subject lot is mapped bushfire prone. Harris Environmental Consulting was commissioned to provide this bushfire assessment. Letara Judd (BPAD – L2) conducted a site assessment on October 4th, 2024.

Figure 1 shows the proposed subdivision plan.

FIGURE 1 PROPOSED SUBDIVISION PLAN



2. ASSESSMENT REQUIREMENTS

2.1 Regulation

As this proposal involves a subdivision it requires Integrated DA approval. This involves obtaining a Bushfire Safety Authority (BFSA) from the NSW Rural Fire Services (RFS).

Integrated development applications under section 100B of the *Rural Fires Act* (RF Act) and section 4.46 of the *EP&A Act* require the following detailed information:

- Description of property;
- Classification of vegetation out to 140 m from the development;
- An assessment of the effective slope to a distance of 100 m;
- Identification of any significant environmental features;
- Details of threatened species, populations, endangered communities and critical habitat known to the applicant;
- Details of Aboriginal heritage known to the applicant; and
- A bushfire assessment that demonstrates compliance with the relevant requirements of the PBP (2019) and AS 3959:2018.

These relevant specific objectives for subdivision in Chapter 5 of the PBP (2019) include:

- Minimise perimeters of the subdivision exposed to the bush fire hazard;
- Minimise bushland corridors that permit the passage of bush fire;
- Provide for the siting of future dwellings away from ridge tops and steep slopes;
- Ensure that separation distances (APZ) between a bush fire hazard and future dwellings enable conformity with deemed to satisfy requirements of the BCA;
- Ensure the ongoing maintenance of asset protection zones;
- Provide clear and ready access from all properties to the public road for residents and emergency services; and
- Ensure an adequate supply of water and other services to facilitate effective firefighting.

3. SITE LOCATION

The subject site is a rural property located west of the township of Goulburn.

Figure 2 shows the subject lot location.
Figure 3 provides a broad scale aerial view of the subject site.
Figure 4 shows a close-up view of the subject lot.

FIGURE 2 LOCATION OF SUBJECT LOT

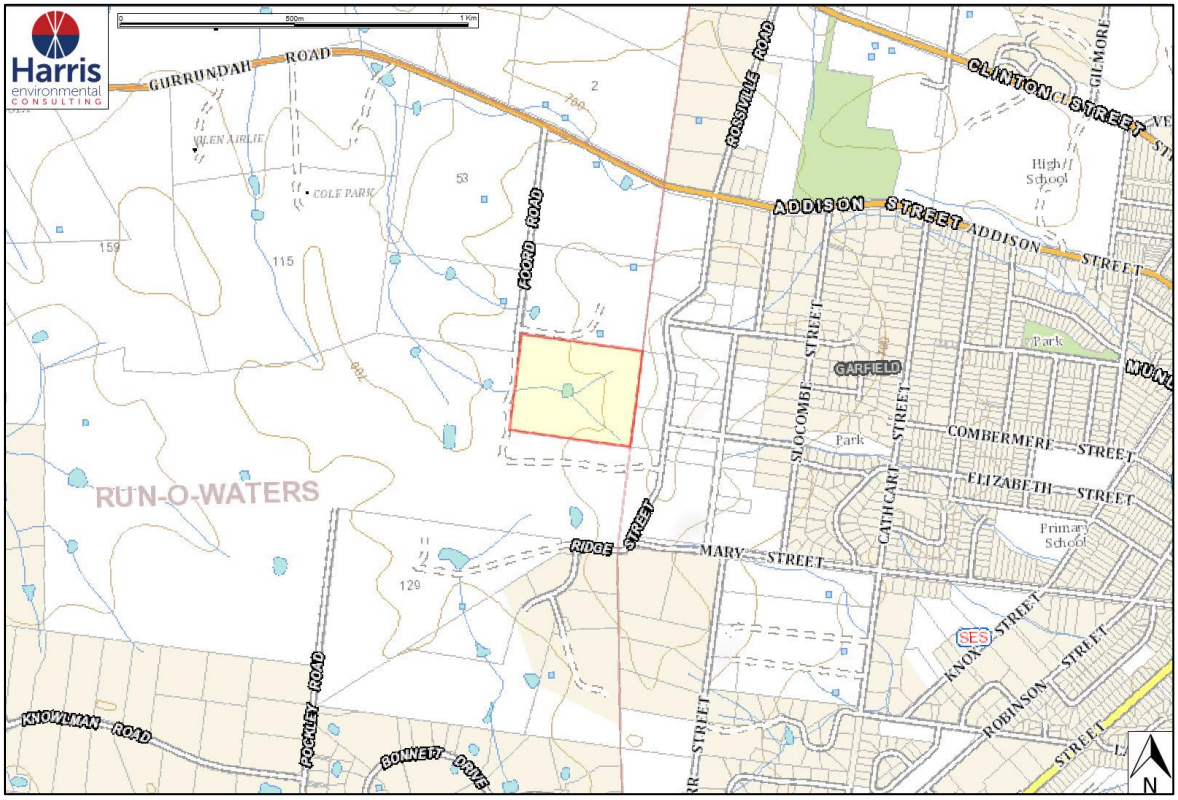


FIGURE 3 EXTENDED AERIAL VIEW OF THE SUBJECT LOT

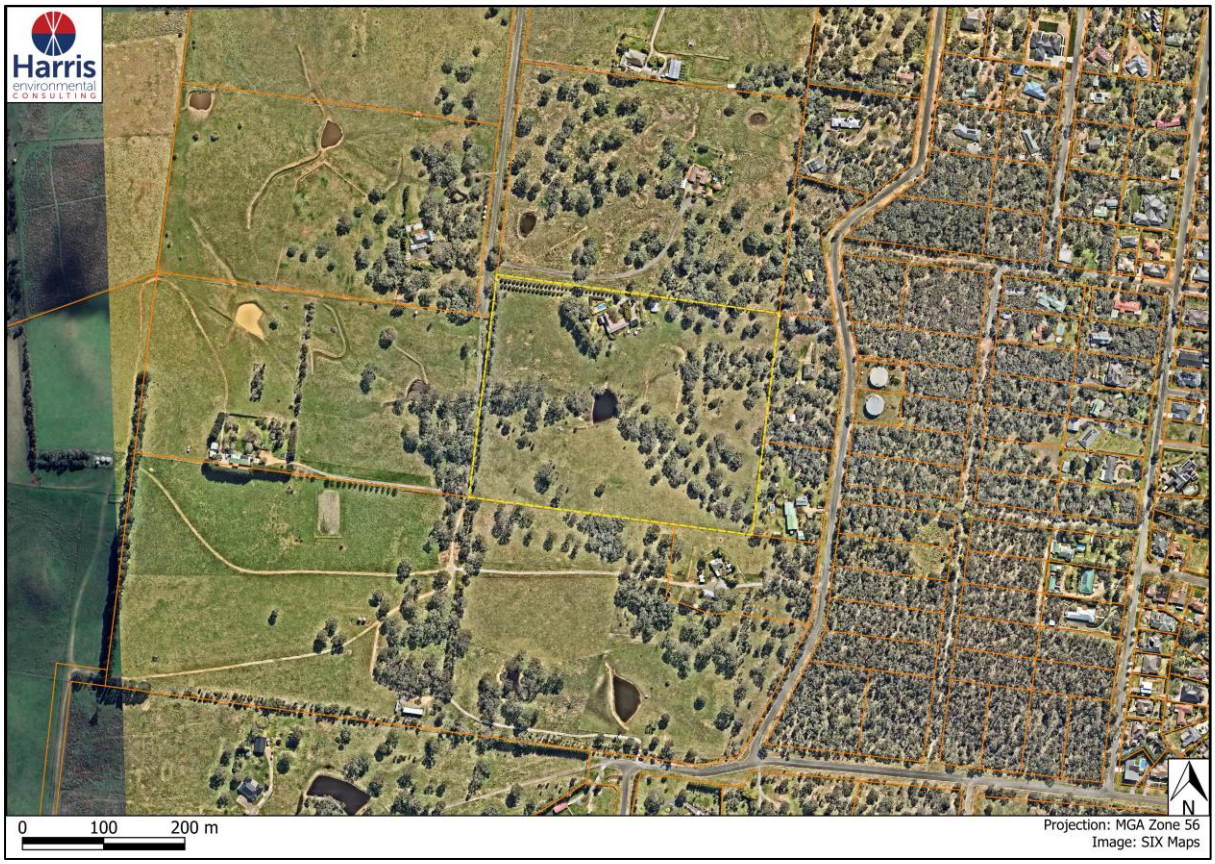


FIGURE 4 CLOSE-UP AERIAL

4. PLANNING LAYERS

The following planning layers are described in Table 1 and shown in the Figures below:

TABLE 1 PLANNING LAYERS

MAP	FIGURE	DESCRIPTION
Bushfire Prone Land Map	5	The subject lot is mapped "Vegetation Category 3".
LEP Zone Map	6	The subject lot is zoned as "RU6 – Transition".
Vegetation Mapping	7	The vegetation surrounding and within the subject lot is mapped as "Southern Tableland Grassy Woodlands" (DPIE, 2022).
Biodiversity Values Map	8	There is no land identified on 30/8/23 as having high biodiversity value under the Biodiversity Offsets Scheme under the *Biodiversity Conservation Act 2016.*
Hydrology	9	There is a creek to the southern elevation of the lot ending in a dam.

FIGURE 5 BUSHFIRE PRONE MAP

FIGURE 6 LEP ZONE MAP

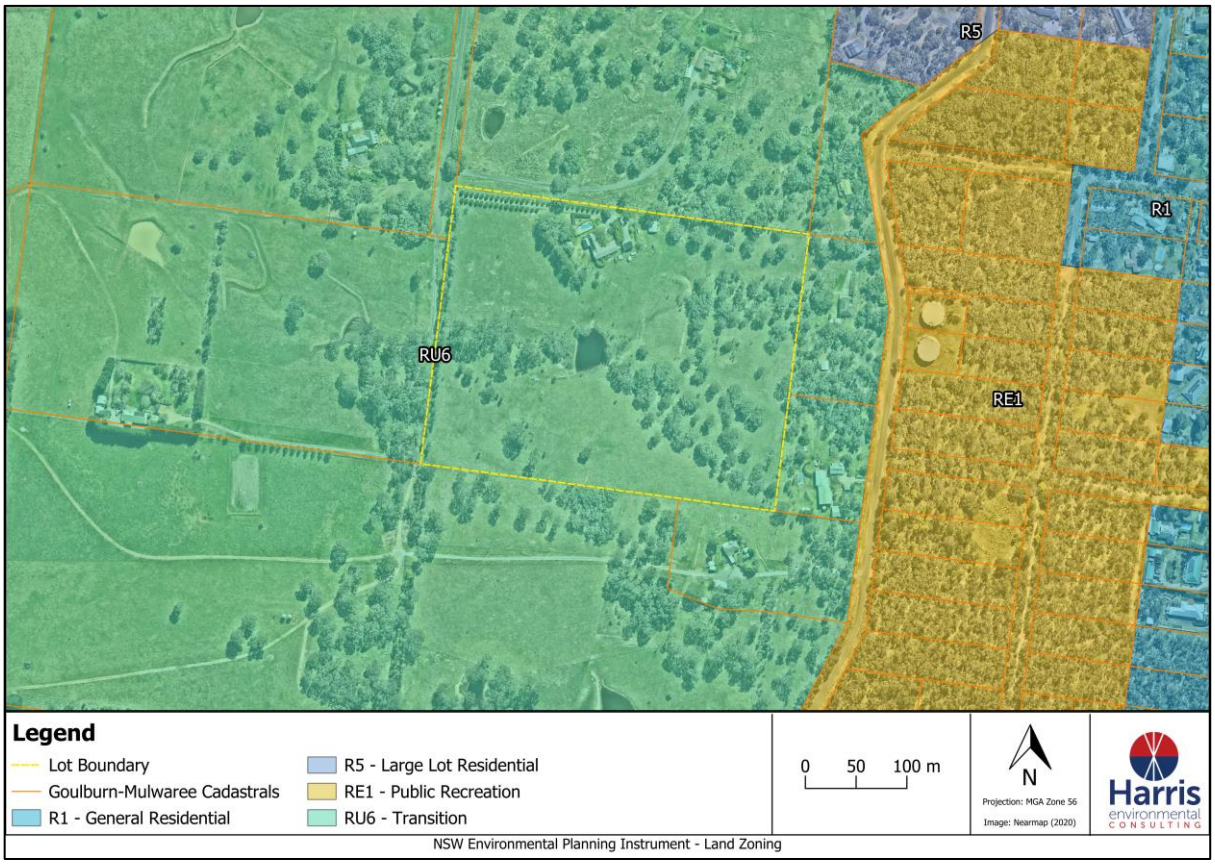


FIGURE 7 VEGETATION MAPPING

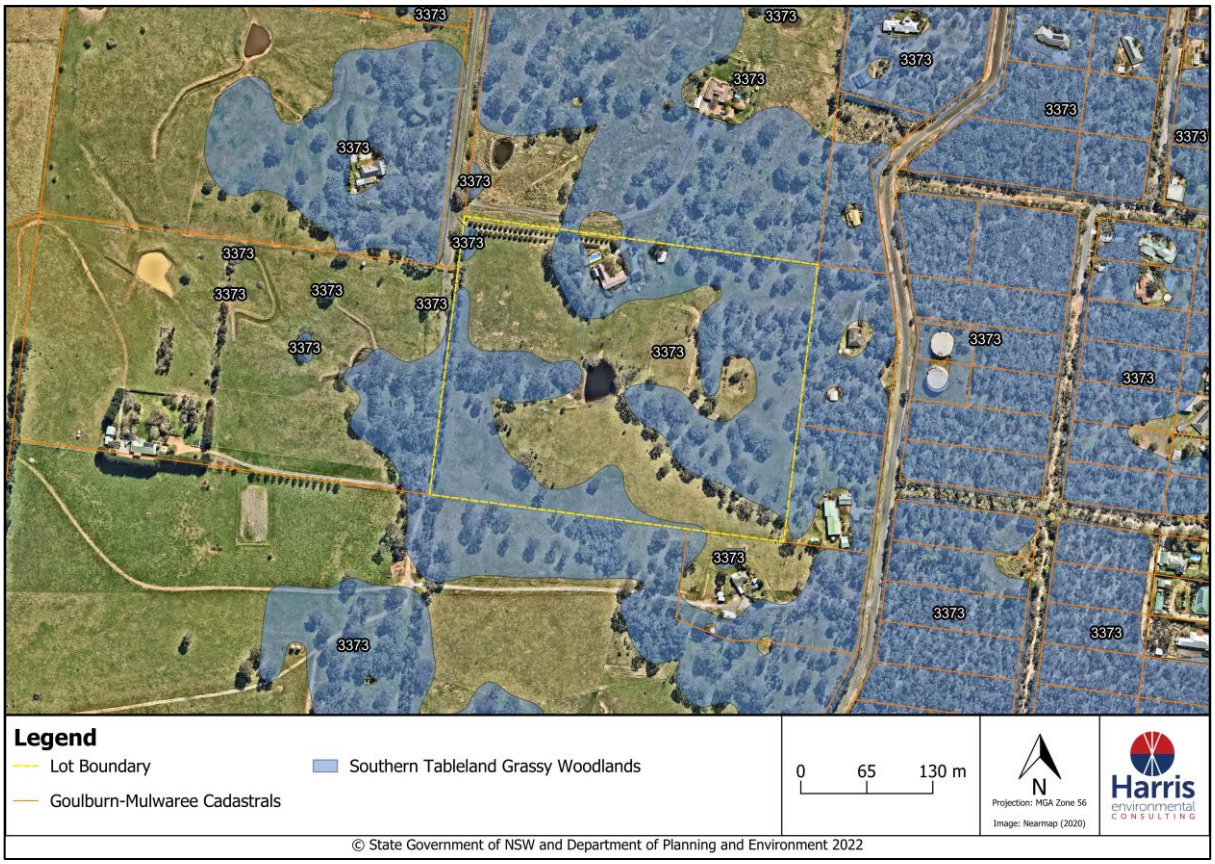
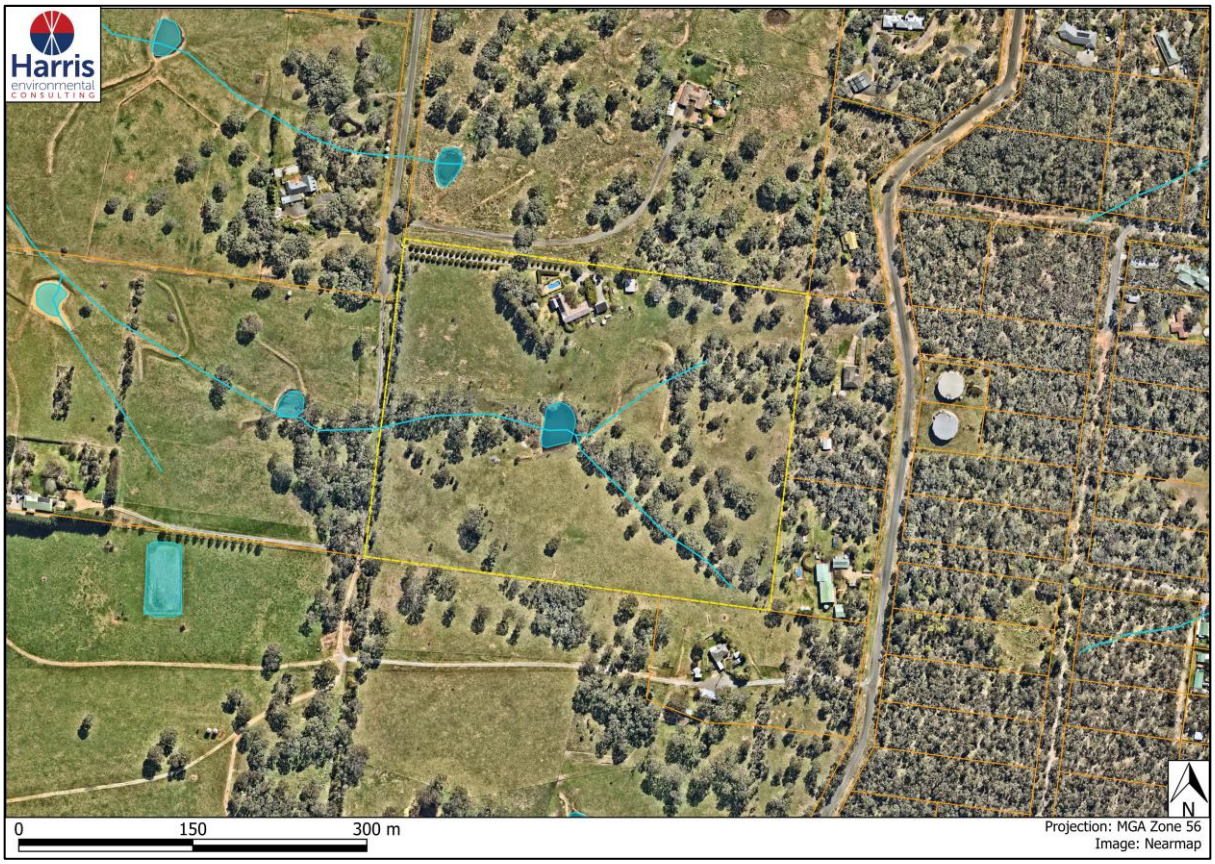


FIGURE 8 BIODIVERSITY VALUES MAP

FIGURE 9 HYDROLOGY



5. SITE DESCRIPTION

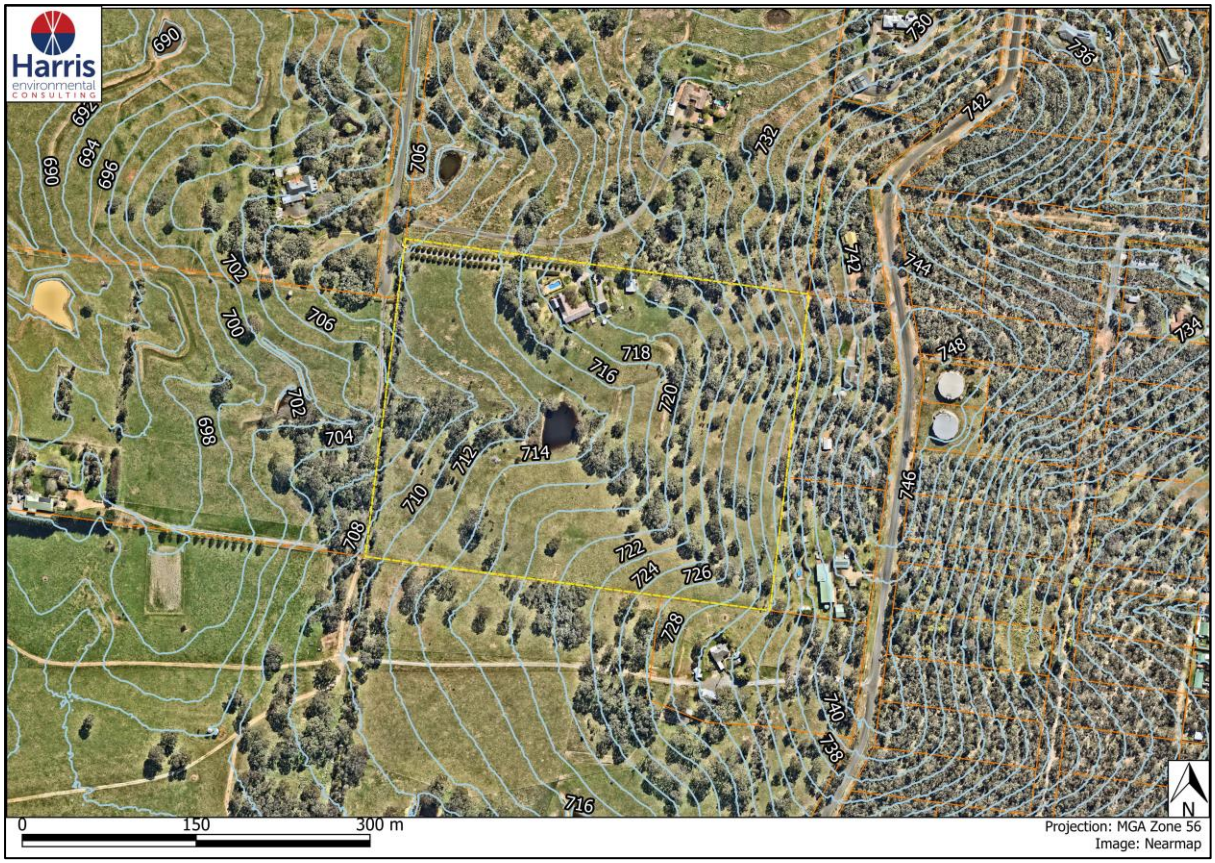
5.1. Slope and aspect of the site within 100 m

The slope that would most significantly influence fire behaviour was determined over 100 m. This assessment uses 2 m contour intervals.

The Australian Standard AS3959 - 2018 and PBP 2019 identify that the slope of the land under the classified vegetation is much more important than the slope between the site and the edge of the classified vegetation.

As can be seen in Figure 10 the subject site is located on topography that gently undulates across the site, with a general downslope towards the creek and dam in the centre of the lot.

FIGURE 10 SLOPE



5.2. Identification of significant environmental features

The owner has not provided any studies of environmental significance.

5.3. Vegetation formation within 140 m of proposed development

Figures 11-13 show the managed and unmanaged land within 140 m of the proposed subdivision. The vegetation formations are described below and summarised in Tables 2 and 3. Photos 1 and 2 have been provided by Letara Judd (BPAD – L3) after the site assessment on October 4th, 2024.

The surrounding vegetation is mapped as "Southern Tableland Grassy Woodlands" (2022), and has been classified as 'Woodland' in accordance with the *Planning for Bush Fire Protection 2019* and the site assessment.

The remaining unmanaged vegetation within and surrounding the subject lots have been classified as 'Grassland' in accordance with *PBP 2019*.

TABLE 2 PREDOMINATE VEGETATION CLASSIFICATION FOR PROPOSED LOT 1

	Vegetation Formation	Effective Slope	Distance from façade to hazard
North	Grassland	0-5° Downslope	12 m
East	Grassland	Upslope/Flatland	10 m
South	Grassland	5-10° Downslope	13 m
	Woodland	Upslope	49 m
West	Grassland	0-5° Downslope	16 m
	Woodland	0-5° Downslope	53 m

TABLE 3 PREDOMINATE VEGETATION CLASSIFICATION FOR PROPOSED LOT 2

	Vegetation Formation	Effective Slope	Distance from façade to hazard
North	Grassland	0-5° Downslope	28 m
Northeast	Woodland	Upslope	69 m
Southeast	Woodland	Upslope	84 m
South	Grassland	0-5° Downslope	8 m
Southwest	Grassland	5-10° Downslope	24 m

FIGURE 11 BUSHFIRE PRONE VEGETATION WITHIN 140 M FOR PROPOSED LOT 1

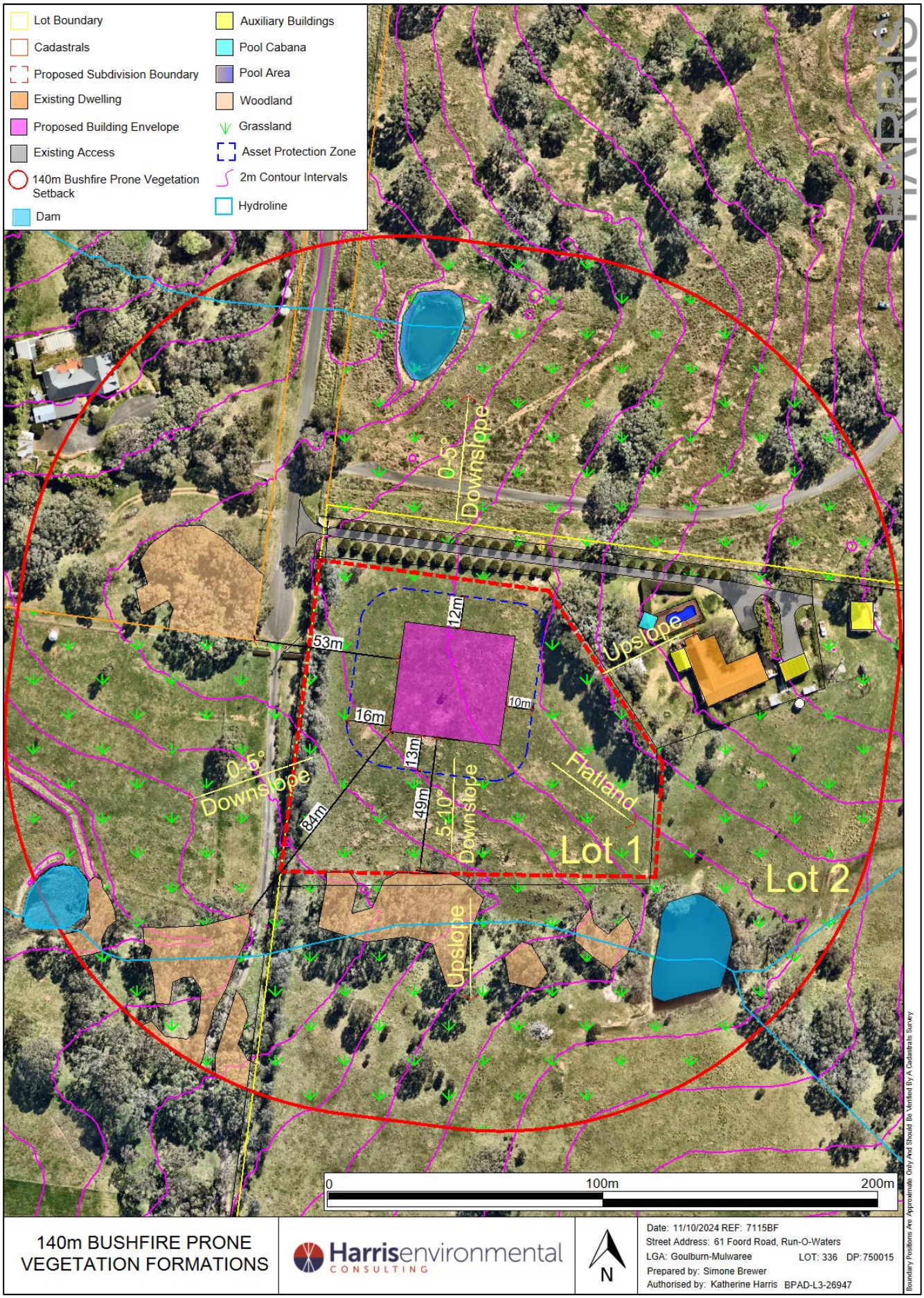


FIGURE 12 BUSHFIRE PRONE VEGETATION WITHIN 140M FOR PROPOSED LOT 2

PHOTO 1 VIEW OF PROPOSED LOT 2, FACING NORTH.

PHOTO 2 VIEW OF EXISTING LOT ACCESS, FACING WEST.

6. BUSHFIRE THREAT ASSESSMENT

6.1. Asset Protection Zones (APZ)

The required APZ for the proposed development is calculated using the vegetation and slope data from Table A1.12.5 *Planning for Bush Fire Protection 2019*.

Tables 4 and 5, and Figures 14 and 15 show the proposed APZ and BALs for the proposed subdivision of the subject lot.

No built development is included in the proposal and future dwellings on the new lots created will require a development application to be lodged within this subdivision will be subject to further bushfire assessment under *Section 4.14 of the Environmental Planning and Assessment Act 1979*. Therefore, no APZ is required to be established for approval. No indicative APZ is located on land mapped Biodiverse. This assessment confirms the APZs are indicative only and no vegetation clearing is required.

An APZ for the proposed Lots 1 and 2 should be established from the commencement of building works and maintained for perpetuity for the following dimensions:

Lot 1: BAL 29 APZ

- 12 m to the north;
- 10 m to the east;
- 13 m to the south; and
- 16 m to the west.

Lot 2:

- 13 m to the western elevation; and
- 12 m to the all other elevations.

TABLE 4 APZ AND BAL DETERMINATION FOR PROPOSED LOT 1, PROPOSED BUILDING ENVELOPE

	NORTH	***EAST***	***SOUTH***	***WEST***
Vegetation	Grassland	Grassland	Grassland	Woodland
Gradient	0-5° Downslope	Upslope/Flatland	5-10° Downslope	0-5° Downslope
Between façade and vegetation	12 m	10 m	13 m	16 m
BAL 29 required APZ	12 -< 17 m	10 -< 15 m	13 -< 20 m	16 -< 23 m
BAL Proposed	**BAL 29**	**BAL 29**	**BAL 29**	**BAL 29**

TABLE 5 APZ AND BAL DETERMINATION FOR PROPOSED LOT 2, EXISTING DWELLING

	NORTH	***EAST***	***SOUTH***	***WEST***
Vegetation	Grassland	Woodland	Grassland	Grassland
Gradient	0-5° Downslope	Upslope	0-5° Downslope	5-10° Downslope
Between façade and vegetation	28 m	69 m	8 m	24 m
BAL 29 required APZ	12 -< 17 m	12 -< 18 m	12 -< 17 m	13 -< 20 m
BAL Proposed	**BAL 29**	**BAL 29**	**BAL 29**	**BAL 29**

FIGURE 13 APZ AND BAL DETERMINATION FOR PROPOSED LOT 1, PROPOSED BUILDING ENVELOPE

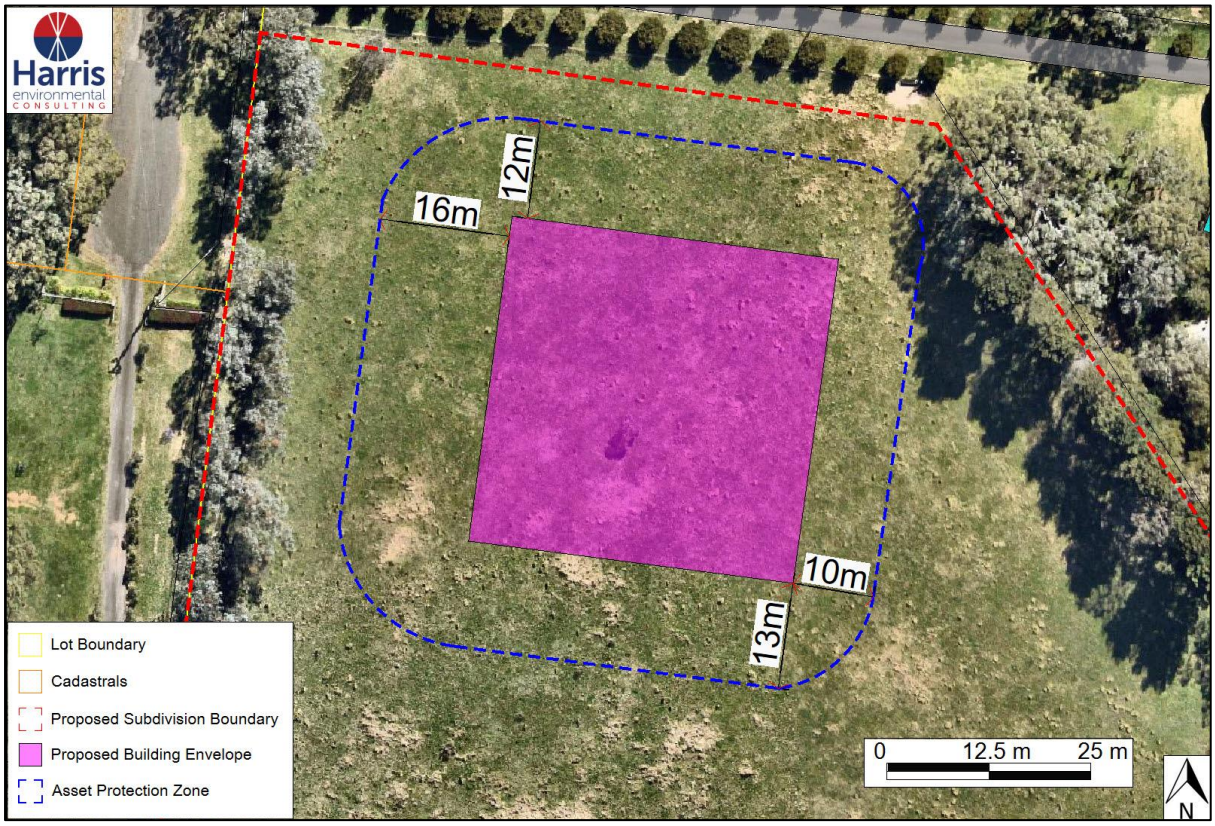


FIGURE 14 APZ AND BAL DETERMINATION FOR PROPOSED LOT 2, EXISTING DWELLING

6.2. Relevant Construction Standard

The Australian Standard AS3959 – 2018 and/or *NASH Standard Steel Framed Construction in Bushfire Areas* (2014) are the enabling standards that address the performance requirements of both parts 2.3.4 and Part GF5.1 of the Building Code of Australia for the Construction of Class 1, 2 and Class 3 buildings within a designated Bushfire Prone Area.

The following was determined for this site:

Relevant fire danger index……FDI 100
Flame temperature ……1090 K

No development is proposed in this Development Application. All lots can provide APZ's that meets BAL 29 (<29kW/m^2) or less.

The existing dwelling is required to be upgraded to improve ember protection, unless already constructed to a relevant standard. This is to be achieved by enclosing all openings (excluding roof tile spaces) or covering openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm. Where applicable, this includes any sub floor areas, openable windows, vents, weep holes and eaves. External doors are to be fitted with draft excluders.

6.3. Emergency Management

The applicants are advised to obtain the *NSW Rural Fire Service – "Guidelines for the Preparation of Bush Fire Evacuation Plans"* & *'Bush Fire Survival Plan'.* In the event of emergency, the any future owners should ensure they are familiar with the RFS Bush Fire Alert Levels and use their Bush Fire Survival Plan.

6.4. Adequate Water and Utility Services

Each lot is required to have a 20,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available. Above ground tanks are required to be manufactured of concrete or metal and raised tanks have their stands protected. All above ground water pipes external to the building are required to be metal including and up to any taps. Pumps are to be shielded. Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm storz outlet and a gate or ball valve.

Any bottled gas will be installed and maintained in accordance with AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Electrical transmission lines, if above ground, will be managed in accordance with specifications issued by Energy Australia.

6.5. Safe Operational Access

The PBP (2019) requires the provision of safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

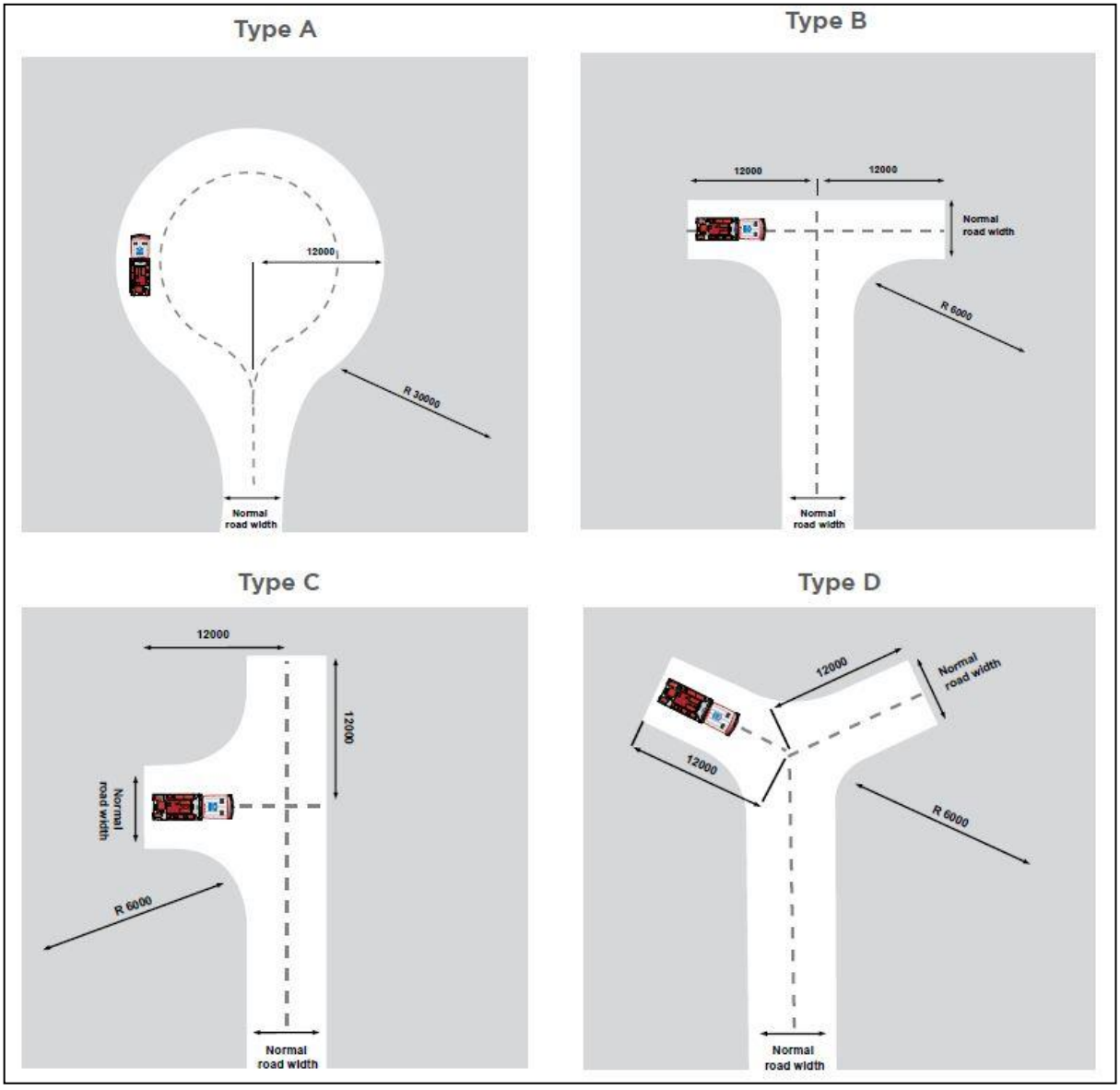
The subject lot is located on Foord Road. This is a two-wheel drive, all weather, no through road. The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles.

Internal access is required to be upgraded to comply with the PBP- Property Access Table 7.4a. This includes:

- A minimum carriageway width of four metres;
- provide enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m;
- Curves a minimum inner radius of six metres;
- The minimum distance between inner and outer curves is six metres;
- The cross fall is not more than 10 degrees;
- Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads;
- The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
- There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

The current access into the existing lot is through a concrete gate that measures approximately 3.3m wide. This is required to be 3.5 m to meet PBP- Property Access Table 7.4a. Multi point turning areas for firefighting trucks will need to be provided as the access is longer than 70 m.

FIGURE 15 MULTIPOINT TURNING OPTIONS



7. HOW THIS PROPOSAL MEETS DEEMED TO SATISFY

The following tables show how the proposal meets the Performance Based Controls of the PBP (2019) Chapter 5.

TABLE 6 DEMONSTRATION OF PBP 2019 TABLE 5.3A COMPLIANCE

	Performance Criteria	Acceptable Solution	Demonstration of Compliance
ASSET PROTECTION ZONES	Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot.	APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	Both proposed lots can support a BAL 29 APZ.
	APZs are managed and maintained to prevent the spread of a fire to the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	Can comply
	The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	The indicative APZs are located wholly within their respective lot boundaries.
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZ are located on lands with a slope less than 18 degrees.	The land is less than 18 degrees downslope.
LANDSCAPING	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4; and Fencing is constructed in accordance with section 7.6.	Will be required to comply.

TABLE 7 DEMONSTRATION OF PBP 2019 TABLE 5.3B COMPLIANCE

	Performance Criteria	Acceptable Solution	Demonstration of Compliance
ACCESS (GENERAL REQUIREMENTS)	Firefighting vehicles are provided with safe, all-weather access to structures.	Property access roads are two-wheel drive, all-weather roads.	Is required to comply.
		Perimeter roads are provided for residential subdivisions of three or more allotments.	Not applicable.
		Subdivisions of three or more allotments have more than one access in and out of the development.	Not applicable.
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	Not applicable.
		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.	Can comply.
		All roads are through roads.	Not applicable. No public road proposed.
		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.	Is required to comply.
		Where kerb and guttering are provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	Not applicable. No public road proposed.
		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.	Not applicable.
	The capacity of access roads is adequate for firefighting vehicles	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.	Is required to comply.
	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.	Not applicable.
		Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005 - Fire hydrant installations System design, installation and commissioning; and	Not applicable
		There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	Is required to comply.

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 8m 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 500m. Curves of roads have a minimum inner radius of 6m. 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 4m to any overhanging obstructions, including tree branches, is provided.	Not applicable. No perimeter roads are proposed.
NON-PERIMETER ROADS	Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5m 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 these are linked to the internal road system at an interval of no greater than 500m. Curves of roads have a minimum inner radius of 6m. The road crossfall does not exceed 3 degrees; and A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Not applicable. Only property access proposed.

PROPERTY ACCESS	firefighting vehicles can access the dwelling and exit the property safely.	minimum 4m carriageway width;	Is required to comply
		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;	Not applicable
		a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;	Is required to comply
		provide a suitable turning area in accordance with Appendix 3;	Is required to comply
		curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;	Is required to comply
		the minimum distance between inner and outer curves is 6m;	Is required to comply#
		the crossfall is not more than 10 degrees;	Is required to comply
		maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and	Is required to comply
		a development comprising more than three dwellings has access by dedication of a road and not by right of way.	Not applicable.

TABLE 8 DEMONSTRATION OF PBP 2019 TABLE 5.3C COMPLIANCE

	Performance Criteria	Acceptable Solution	Demonstration of Compliance
WATER SUPPLIES	An adequate water supply is provided for firefighting purposes.	Reticulated water is to be provided to the development, where available; and Or a 20,000 L minimum static water supply is provided where no reticulated water is available.	Is required to comply.
	Water supplies are located at regular intervals; and The water supply is accessible and reliable for firefighting operations.	Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005. Hydrants are not located within any road carriageway; and Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Is required to comply.
	Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	Is required to comply.
	The integrity of the water supply is maintained.	All above-ground water service pipes external to the building are metal, including and up to any taps.	Is required to comply.
ELECTRICITY SEVICES	Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where practicable, electrical transmission lines are underground; and Where overhead, electrical transmission lines are proposed as follows: • 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.*	Is required to comply.
GAS SERVICES	Location and design 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/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used. All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side. Connections to and from gas cylinders are metal. polymer-sheathed flexible gas supply lines are not used; and Above-ground gas service pipes are metal, including and up to any outlets.	Is required to comply.

8. LANDSCAPING

An APZ is required to be established and should be maintained for perpetuity.

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

Appendix 4 (*PBP 2019*) provides guidelines for landscaping and Bushfire Provisions within the APZ. To incorporate bushfire protection measures into future development, the owner is advised to consider the following:

- Avoid planting trees species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopy.
- Avoid planting deciduous species that may increase fuel at surface/ground level by the fall of leaves.
- Avoid climbing species to walls and pergolas.
- Locate combustible materials such as woodchips/mulch, flammable fuel stores (LPG gas bottles) away from the building.
- Locate combustible structures such as garden sheds, pergolas, and materials such as timber furniture away from the building.
- Ensure any vegetation planted around the house is a suitable distance away so these plants do not come into physical contact with the house as they mature.
- The property should be developed to incorporate suitable impervious area surrounding the house, including courtyards, paths, and driveways.

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well-maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity.
- trees at maturity should not touch or overhang the building.
- lower limbs should be removed up to a height of 2m above the ground.
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided.
- shrubs should not be located under trees.
- shrubs should not form more than 10% ground cover: and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- 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.

9. SUMMARY

- No development is proposed in this Development Application. All lots can provide APZ's that meets BAL 29 (<29kW/m2) or less.

- The existing dwelling is required to be upgraded to improve ember protection, unless already constructed to a relevant standard. This is to be achieved by enclosing all openings (excluding roof tile spaces) or covering openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm. Where applicable, this includes any sub floor areas, openable windows, vents, weep holes and eaves. External doors are to be fitted with draft excluders.

- An APZ for the proposed Lots 1 and 2 should be established from the commencement of building works and maintained for perpetuity for the following dimensions:
  Lot 1: BAL 29 APZ
  - 12 m to the north;
  - 10 m to the east;
  - 13 m to the south; and
  - 16 m to the west.

  Lot 2:
  - 13 m to the western elevation; and
  - 12 m to the all other elevations.

- The subject lot is located on Foord Road. This is a two-wheel drive, all-weather, no through road. Road surfaces and bridges are sufficient to carry fully loaded firefighting vehicles.

- Any internal access is required to comply with the PBP- Property Access Table 7.4a. This includes:
  - A minimum carriageway width of four metres;
  - provide enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m;
  - Curves a minimum inner radius of six metres;
  - The minimum distance between inner and outer curves is six metres;
  - The cross fall is not more than 10 degrees;
  - Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads;
  - The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
  - There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

- Each lot is required to provide a 20,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available. Above ground tanks are required to be manufactured of concrete or metal and raised tanks have their stands protected. All above ground water pipes external to the building are required to be metal including and up to any taps. Pumps are to be shielded. Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm storz outlet and a gate or ball valve.

- Any bottled gas will be installed and maintained in accordance with AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

- Electrical transmission lines, if above ground, will be managed in accordance with specifications issued by Energy Australia.

10. REFERENCES

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APPENDIX I DEFINITION OF ASSET PROTECTION ZONES

Vegetation within the APZ should be managed in accordance with APZ specifications for the purposes of limiting the travel of a fire, reducing the likelihood of direct flame contact and removing additional hazards or ignition sources. The following outlines some general vegetation management principles for APZs:

1) Discontinuous shrub layer (clumps or islands of shrubs not rows);

2) Vertical separation between vegetation stratums;

3) Tree canopies not overhanging structures;

4) Management and trimming of trees and other vegetation in the vicinity of power lines and tower lines in accordance with the specifications in “Vegetation Safety Clearances” issued by Energy Australia (NS179, April 2002);

5) Maintain low ground covers by mowing / whipper snipper / slashing; and

6) Non-combustible mulch e.g., stones and removing stores of combustible materials;

7) Vegetation to be planted should consist of fire retardant/ less flammable species strategically located to reduce attack from embers (i.e., as ember traps when in small clumps and short wind breaks).