Bushfire Assessment Report

90 Cypress Road, Narrandera, NSW 2700 Lot 4, DP 659936

Prepared for Helen Ryan



| | | | Document Verification Schedule | | |
|--------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------|--|--|
| | | Project | | | |
| CAF <u>an Ulum</u> Building & town planning consulting | | Subdivision of One (1) Lot into Four (4) Lots for Residential Purposes 90 Cypress Road, Narrandera, NSW 2700 | | | |
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1 INTRODUCTION

1.1 OVERVIEW

The Bushfire Assessment Report (BAR) (EP&A Act S.4.14) has been prepared on behalf of Helen Ryan (the client) to form part of a Development Application (DA) seeking Council's consideration for the Subdivision of One (1) Lot into Four Lots for residential purposes on the land known as 90 Cypress Road, Narrandera (the site). An aerial image of the subject site and its surrounds is exhibited in Figure 1 below. Note – The cadastre layer is incorrect and illustrates that the eastern boundary incorporates a tree line along the eastern boundary – this tree line is wholly contained within the adjoining allotment.



Figure 1 Aerial Image of the development site and surrounds (Source: Six Maps)

The assessment aims to provide a bushfire risk assessment which considers the bushfire hazard and associated potential bushfire threat relevant to the proposed development on a landscape scale. The assessment outlines the minimum mitigative measures which would be required in accordance with the Bushfire Assessment Report (BAR), provisions of the New South Wales Rural Fire Service (RFS) publication *Planning for Bushfire Protection 2019* (PBP 2019) and the *Rural Fires Regulation 2013* (RF Reg).

Proposals for subdivision and Special Fire Protection Purpose development on Bush Fire Prone Land require an approval from the NSW Rural Fire Service in the form of a Bush Fire Safety Authority under Rural Fires Act 1997, s.100B. Development requiring a Bush Fire Safety Authority is considered Integrated Development under the Environmental Planning & Assessment Act 1979, s.4.46.

The Bush Fire Safety Authority is critical in ensuring these key developments are designed and located in a manner that is suitable to protect human life and facilitate appropriate operational firefighting arrangements. This is a means by which the NSW RFS Commissioner fulfils their statutory obligation to ensure the protection of the community, including firefighters from the impacts of bush fire.

1.2 AIMS AND OBJECTIVES

This BAR aims to assess the bushfire threat and recommends a series of bushfire protection measures that aim to minimise the risk of adverse impact of bush fires on life, property, and the environment, and endeavours to:

- o Afford buildings and their occupants protection from exposure to a bush fire;
- Provide for a defendable space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;
- Ensure that appropriate operational access and egress for emergency service personnel and occupants is available;
- Provide for ongoing management and maintenance of BPMs; and
- Ensure that utility services are adequate to meet the needs of firefighters.

The BAR has been created to demonstrate the suitability of the proposed subdivision, with the following provisions being considered, as relevant:

- access and egress within the developable land and along the adjoining public road system which is required to include safety provisions for attending emergency service vehicles and evacuating residents, including road widths and management of vegetation along road verges.;
- subdivision design including perimeter roads separating developable lots from hazardous bushland areas, as required;
- o access for maintenance of APZ and other fuel management activities; and
- firefighting water supply and associated firefighting equipment (i.e., pump and hose) for each dwelling in addition to any reticulated water supplies

2 DESCRIPTION

2.1 SITE DESCRIPTION

Table 1 Site Description

| Address | 90 Cypress Road, Narrandera, NSW 2700 | |
|---------------------------|------------------------------------------|--|
| LOT/SECTION/PLAN NO | Lot 12, DP 848130 | |
| Council | Narrandera Shire Council | |
| LOCAL ENVIRONMENTAL PLANS | Narrandera Local Environmental Plan 2013 | |
| LAND ZONING | RU5 Village | |
| LAND AREA | 3.82ha | |
| BUSHFIRE PRONE LAND | Yes (Category 2) | |
| FDI | 80 | |
| | CAF Consulting 4 | |

2.2 BUSHFIRE PRONE LAND

Bushfire activity is prevalent in landscapes that carry fuel, and the two predominant bushfire types are grassland and forest fires. Factors such as topographic characteristics and quantity of fuel loads influence the fires rate of spread and flame height (ultimate level of radiant heat flux).

Refer to Figure 1 below, identifying bushfire prone land mapping for the site.

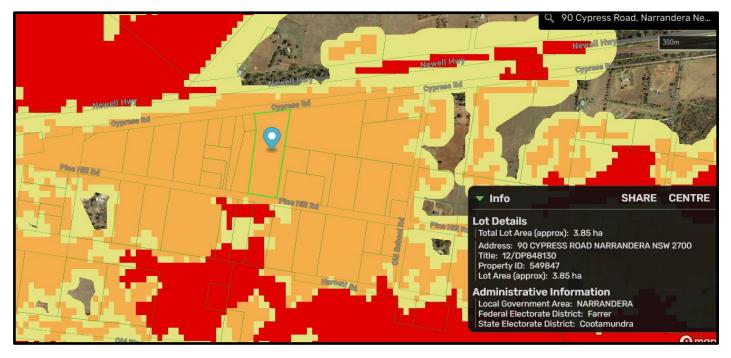


Figure 2 NSW Bush Fire Prone Land Map (Source: Mecone Mosaic)

2.3 **PROPOSED DEVELOPMENT**

This application seeks approval for the subdivision of one (1) allotment into four (4) allotments for residential purposes.

Proposed Subdivision:

The subdivision proposed under this application will create 4 allotments that incorporate the following areas:

- Proposed Lot 1: 1.007 Ha
- Proposed Lot 2: 1.557 Ha
- Proposed Lot 3: 0.6205 Ha
- Proposed Lot 4: 0.6343 Ha

All lots are generally rectangular in shape.

Proposed lots 1 and 2 will be afforded access from Cypress Road, which is a council managed all weather local roadway.

Proposed lot 2 will also accommodate the existing dwelling house and associated outbuildings.

Proposed lots 3 and 4 will be afforded access from Pine Hill Road which is also a council managed all weather local roadway.

All proposed allotments will be serviced by all required services, including on site sewerage CAF Consulting 5

management, water, electricity and telecommunications.

No trees or other vegetation is required to be removed as a result of this proposal.

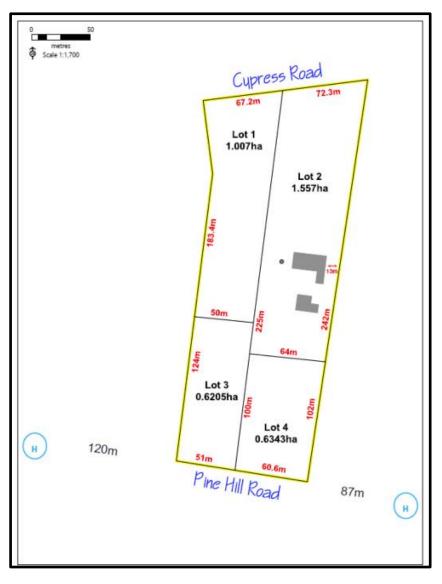


Figure 3 Proposed Plan of Subdivision (Source: Helen Ryan)

2.4 VEGETATION ASSESSMENT

In accordance with Appendix 1 of the PBP 2019, an assessment of the vegetation over a distance of 140 metres in all directions from the site was undertaken. Vegetation (Woodland and Grassland) that may considered a bushfire hazard was found to be located within 140 metres from the development site.

The woodland located on the property comprises of remnant patches of native vegetation in the form of River Red Gum, Red Box & White Box woodland and riparian scrubland.

Grassland exists in the form of modified introduced pastures and native grassland.

The existing dwelling and proposed allotments are affected by the following vegetation formations over a distance of 140 metres:

- North Grasslands (Managed) and Woodland (Scattered trees)
- South Grassland (Managed) and Woodland (Scattered trees)
- West Grassland (Managed) and Woodland (Scattered trees)
- East Grassland (Managed) and Woodland (Scattered trees)

For the purpose of this BAR, the identified vegetation / threat is classed as Woodlands and Grasslands as per David Keith's Ocean Shore to Desert Dunes.

It should be noted that Section A1.10 'Low threat vegetation – exclusions' of the Planning for Bushfire Protection 2019, provides:

Modified landscapes, coastal wetlands and riparian areas vary significantly in structure and composition, but are generally considered as bush fire hazards, with the exception of saline wetlands. The following exclusions of AS 3959 apply, and are not required to be considered for the purposes of PBP, as detailed below:

- Single areas of vegetation less than 1 hectare in area and greater than 100 metres separation from other areas of Category 1 or 2 vegetation.
- Multiple areas of vegetation less than 0.25 hectares in area and not within 20m of the site, or each other or of other areas of vegetation being classified vegetation.
- Strips of vegetation less than 20 metres in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20m of the site or 2 each other, or other areas of vegetation being Category 1, 2 or 3 vegetation.
- Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load, including grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses such as playing areas and fairways, maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens and other non-curing crops, cultivated gardens, arboretums, commercial nurseries, nature strips and windbreaks. Note:
 - 1. Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bush fire attack (recognizable as short cropped grass for example, to a nominal height of 100 mm).
 - 2. A windbreak is considered a single row of planted trees located on a boundary and used as a screen or to reduce the effect of wind on the leeward side of the trees.
- Existing areas of managed gardens and lawns within curtilage of buildings.
- Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.

It is considered for the purpose of the subject site that the following provisions of Section A1.10 would apply in relation to the location of the proposed development:

- Single areas of vegetation less than 1 hectare in area and greater than 100 metres separation from other areas of Category 1 or 2 vegetation.
- Multiple areas of vegetation less than 0.25 hectares in area and not within 20m of the site, or each other or of other areas of vegetation being classified vegetation.
- Existing areas of managed gardens and lawns within curtilage of buildings.

However, this report will continue to demonstrate compliance with Section 5 of the PBP 2019.

2.5 SLOPE ASSESSMENT

The effective slope for the bushfire assessment is the slope under the classified vegetation as it has a direct influence on the bushfires behaviour in terms of the rate of fire spread and the ultimate level of radiant heat flux vegetation. PBP 2019 requires the effective slope to be determined under the dominant vegetation type for a distance of 100 metres.

The site incorporates a very gentle slope from south east to north west.

The slope assessment for the subject site relative to the proposed subdivision and existing dwelling is considered to be All Upslope (Flat Land).

3 DETAILED BUSHFIRE ASSESSMENT

3.1 ASSET PROTECTION ZONE (APZ)

An APZ is a buffer zone between a bush fire hazard and buildings. The APZ is managed to minimise fuel loads and reduce potential radiant heat levels, flame, localised smoke and ember attack. The appropriate APZ distance is based on vegetation type, slope and the nature of the development.

The APZ can include roads or properties managed to be consistent with APZ standards set out in Appendix 4 and the NSW RFS document Standards for Asset Protection Zones. A fuel-reduced, physical separation between buildings and bush fire hazards is a key element in the suite of bush fire measures and has a major influence on the type of construction necessary to mitigate bush fire attack.

The site is affected by the Bushfire Prone Land Risk Categories:

Category 2

It has been confirmed that vegetation formations that exist on land adjoining the site, in the form of woodland, which may loosely pose a bushfire threat to the existing dwelling house.

Again, it should be noted that the location of the vegetation within the existing and adjoining properties is managed and maintained. The bushfire threat is considered low.

Any proposed future dwellings on the newly created allotments may require an APZ which shall be determined in accordance with Table 7.4 a of the PBP 2019 at the time of future development applications.

Asset protection zones for the newly created allotment / subdivision can readily achieve the following DTS provisions of Table 5.3a:

- APZs to be provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.
- APZs are to be managed in accordance with the requirements of Appendix 4.
- APZs are wholly within the boundaries of the development site.
- APZs are located on land with a slope less than 18 degrees.
- Landscaping is to be in accordance with Appendix 4; and
- Fencing is to be constructed in accordance with section 7.6.

If required, any proposed future development will require an APZ to be maintained in perpetuity as it is imperative in preparing a property for a bushfire.

The existing dwelling house provides for an asset protection zone (over 22metres) to the managed tree line on the adjoining eastern boundary.

The asset protection zone provided for the existing dwelling house as illustrated in the figure below is a minimum of 22 metres.

Any proposed future dwelling houses on the created allotments will be readily able to achieve an APZ between 22 – 100 metres.

The required width of the APZ varies with slope and the type of hazard. An APZ can consist of both an inner protection area (IPA) and an outer protection area (OPA). In this instance the entire APZ shall be managed as an IPA. Generally, the greater the APZ the lower the risk.

Table A1.12.6

Determination of BAL, FFDI 80 - residential development

| | BUSH FIRE ATTACK LEVEL (BAL) | | | | |
|-----------------------------------------------------------------------------------------------------------------|------------------------------|------------------|-----------------|------------------|-----------|
| EITH VEGETATION FORMATION | BAL-FZ | BAL-40 | BAL-29 | BAL-19 | BAL-12.5 |
| | C | istance (m) asse | t to predominan | t vegetation cla | ss |
| Rainforest | < 7 | 7 -< 9 | 9 -< 14 | 14 -< 20 | 20 -< 100 |
| Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland | < 15 | 15 -< 20 | 20 -< 29 | 29 -< 40 | 40 -< 100 |
| Grassy and Semi-Arid Woodland (including Mallee) Forested Wetland (excluding Coastal Swamp Forest) | < 8 | 8 -< 11 | 11 -< 16 | 16 -< 22 | 22 -< 100 |
| Forested Wetland (excluding Coastal Swamp Forest) | < 6 | 6 -< 8 | 8 -< 12 | 12 -< 18 | 18 -< 100 |
| Tall Heath | < 12 | 12 -< 16 | 16 -< 23 | 23 -< 32 | 32 -< 100 |
| Tall Heath Short Heath Arid-Shrublands (acacia and chenopod) | < 7 | 7 -< 9 | 9 -< 14 | 14 -< 20 | 20 -< 100 |
| Arid-Shrublands (acacia and chenopod) | < 5 | 5 -< 6 | 6 -< 9 | 9 -< 14 | 14 -< 100 |
| Freshwater Wetlands | < 4 | 4 -< 5 | 5 -< 7 | 7 -< 11 | 11 -< 100 |
| Grassland | < 7 | 7 -< 10 | 10 -< 14 | 14 -< 20 | 20 -< 50 |

Figure 4 Determination of BAL, FFDI 80 - Residential Development (Source: PFBP, Table A1.12.6)

A minimum APZ of between 22 and 100 metres is required and is provided for the existing dwelling house to allow for BAL 12.5 construction.

Again, it is contended that the vegetation that is mapped as being a vegetation threat is managed land and thus in accordance with Section A1.10 of the PBP the land is considered low threat and no BAL construction requirements or APZ is required.

The acceptable solutions in table 5.3a can and are met.

Section A1.10 'Low threat vegetation – exclusions' of the Planning for Bushfire Protection Guideline is considered to apply to this development and site.

The section provides that:

'Modified landscapes, coastal wetlands and riparian areas vary significantly in structure and composition, but are generally considered as bush fire hazards, with the exception of saline wetlands.

The following exclusions of AS 3959 apply, and are not required to be considered for the purposes of PBP, as detailed below:

- Single areas of vegetation less than 1 hectare in area and greater than 100 metres separation from other areas of Category 1 or 2 vegetation.
- Multiple areas of vegetation less than 0.25 hectares in area and not within 20m of the site, or each other or of other areas of vegetation being classified vegetation. Strips of vegetation

less than 20 metres in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20m of the site or 2 each other, or other areas of vegetation being Category 1, 2 or 3 vegetation.

 Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load, including grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses such as playing areas and fairways, maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens and other non-curing crops, cultivated gardens, arboretums, commercial nurseries, nature strips and windbreaks.

Note: 1. Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bush fire attack (recognizable as short cropped grass for example, to a nominal height of 100 mm). 2. A windbreak is considered a single row of planted trees located on a boundary and used as a screen or to reduce the effect of wind on the leeward side of the trees.

- Existing areas of managed gardens and lawns within curtilage of buildings.
- Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.

3.2 Access

The proposed subdivision is provided with access via Council managed, all weather, local roadways.

Proposed lots 1 and 2 will be afforded access from Cypress Road, which is a council managed all weather local roadway.

Proposed lots 3 and 4 will be afforded access from Pine Hill Road which is also a council managed all weather local roadway.

In relation to the proposed subdivision, access is provided for the newly created allotments and can readily achieve the following DTS provisions of Table 5.3b, as applicable:

- property access roads are two-wheel drive, all-weather roads (Council roads);
- 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 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;
- 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 AS 2419.1:2005 Fire hydrant installations *System design, installation and commissioning*, 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. Lots will be serviced by a reticulated water supply;
- hydrants are located clear of parking areas;
- the maximum grade of perimeter roads 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.

The proposed subdivision complies with the applicable acceptable solutions identified in Table 5.3b.

In relation to the existing dwelling house, Table 7.4a of the NSW RFS Planning for Bushfire Protection Guideline outlines acceptable solutions relating to access.

Access to the existing dwelling house complies with all applicable acceptable solutions identified in Table 7.4a.

3.3 SERVICES – WATER, ELECTRICITY AND GAS

3.3.1 WATER

The proposed subdivision complies with the applicable provisions of Table 5.3c in relation to services.

The subdivision complies with the following DTS provisions of Table 5.3c:

Water:

- Reticulated water will be supplied to the allotments;
- fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005;
- fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.
- all above-ground water service pipes will be metal, including and up to any taps.

The development complies with the acceptable solutions identified in table 7.4 a relating to water for the existing dwelling house.

3.3.2 ELECTRICITY

Electricity services are available to the site will be located overhead.

Electricity:

- overhead, electrical transmission lines are existing and:
 - lines are installed with short pole spacing of 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 ISSC3 Guideline for Managing Vegetation Near Power Lines.

The existing dwelling is serviced by overhead electricity and the new allotments will be serviced in the same manner.

The development complies with the acceptable solutions identified in tables 5.3c and 7.4 a, relating to electricity.

3.3.3 GAS SERVICES

Reticulated gas is not connected to the site. Should bottled gas be utilised, it would be installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities and metal piping would be used.

Any fixed gas cylinders would be kept clear of all flammable material to a distance of 10 metres and shielded on the hazard side. All connections to and from the gas cylinders would be metal.

The development complies with the acceptable solutions identified in tables 5.3c and 7.4 a relating to gas services.

3.4 CONSTRUCTION STANDARDS: BUSHFIRE ATTACK LEVEL

The BAL for the existing dwelling house has been determined in accordance with Appendix 1 and Table A1.12.6 with the assessed vegetation, slope, and distance to the vegetation ensues in a BAL-Low rating.



The existing dwelling must comply with the construction requirements identified in Australian Standard 3959 for BAL 12.5.

| BAL 12.5 – AS3959 Cor | nstruction Requirements |
|-----------------------|--------------------------------------------------|
| Building Component | Construction Requirement |
| SUBFLOOR SUPPORTS | No special construction requirements |
| FLOORS | No special construction requirements |
| EXTERNAL WALLS | External walls – Parts less than 400m above |
| | ground or decks etc to be of non-combustible. |
| | material, 6mm fibre cement clad or bushfire |
| | resistant/naturally fire resistant timber |
| EXTERNAL WINDOWS | Protected by bushfire shutter, completely |
| | screened with steel, bronze or aluminium |
| | mesh or 5mm toughened glass or glass |
| | blocks within 400mm of ground, deck etc. |
| | Openable portion metal screened with frame |
| | of metal or metal reinforced PVC-U or |
| | bushfire resisting timber |
| EXTERNAL DOORS | Protected by bushfire shutter, or screened with |
| | steel bronze or aluminium mesh or glazed with |
| | 5mm toughened glass, non-combustible or |
| | 35mm solid timber for 400mm above |
| | threshold, metal or bushfire resisting timber |
| | framed for 400mm above ground, decking, etc |
| | tight fitting with weather |
| | strips at base |
| ROOFS | Non-combustible covering. |
| | Roof/wall junction sealed. |
| | Openings fitted with non-combustible ember |
| | guards. Roof to be fully sarked |
| VERANDAHS DECKS ETC | Enclosed sub-floor space – no special required |
| | for materials except within 400mm of ground. |
| | No special requirements for supports or framing. |
| | Decking to be non-combustible or bushfire |
| | resistant within 300mm horizontally and |
| | 400mm vertically from a glazed element |
| | |

A summary of BAL 12.5 – AS3959 Construction requirements are listed in the table below:

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3.5 LANDSCAPING

Landscaping is existing and is considered to be established and maintained in accordance with Appendix 4 of the PBP in relation to the existing dwelling.

Landscaping for the existing dwelling is managed as follows:

Trees -

- 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.

Landscaping for proposed new dwellings will comply with the acceptable solutions identified in Table 7.4a of the NSW RFS Planning for Bushfire Protection Guideline.

4 CONCLUSION

This Bushfire Assessment Report has been prepared to support a development application for the Subdivision of One (1) Lot into Four (4) Lots on the land known as 90 Cypress Hill Road, Narrandera.

The vegetation formation, effective slope, FFDI and APZ have been determined in accordance with the Site Assessment Methodology outlined in Appendix 1 of the PBP.

The proposal can comply with all relevant DTS Provisions of Tables 5.3 and 7.4 a of the PBP 2019 – although it is contended that the existing dwelling is located on a low threat site and should be excluded from any AS3959 Construction Requirements in accordance with the requirements under Section A1.10 Low threat vegetation – exclusions of the PBP 2019.

Subject to recommendations, the assessment concludes that the proposed residential development can generally achieve the required specifications of the NSW Planning for Bushfire Protection (2019)

through the use of acceptable solutions which ensures that each bush fire protection measure (BPMs) are met.