

BUSHFIRE RISK MANAGEMENT PLAN

FOR PROPOSED

CARAVAN PARK EXTENSION

BONVILLE GARDENS CARAVAN PARK

PACIFIC HIGHWAY, BONVILLE

PREPARED BY
BUSHFIRESAFE
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APRIL 2008

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EXECUTIVE SUMMARY

Bushfiresafe (Aust) P/L has been engaged by Rick Bennell & Associates on behalf of their client, to undertake a complete Bushfire Risk Assessment for the proposed extension to the Bonville Gardens Caravan Park, Pacific Highway, Bonville. The assessment was conducted in accordance with section 91A of the Environmental Planning & Assessment Act (1979) and section 100B of the Rural Fires Act (1997), and followed the guidelines recommended in the Planning for Bushfire Protection manual (RFS, 2006).

The subject property (Lot 501, DP 606422) is located approximately 20km south of Coffs Harbour. The subject land is zoned 1(a) Rural Agricultural under the Coffs Harbour LEP (Coffs Harbour City Council, 2000). A 10m vegetated buffer designated as Zone 7(B) Environmental Protection ('scenic buffer') fronts the Pacific Highway to the west. The subject property comprises of managed grassland, currently utilised for livestock grazing. A small creek line flows west to east through the property and this creek is bordered by a narrow riparian community dominated by Camphor Laurel trees. An existing dwelling and associated outbuildings are located in the southeast corner with a constructed dam present along the eastern margin.

This Bushfire Risk Assessment was conducted through an on-site inspection undertaken in March 2008 and using the methodology set out in the *Planning for Bushfire Protection* manual (RFS, 2006). The on-site assessment included traversing the subject property and all lands within 140 metres from the proposed subdivision. This field survey identified an area of Grassy Woodland to the east of the subject property as the dominant bushfire prone vegetation.

After an onsite inspection and reference to the Planning for Bushfire Protection guidelines, the assessment concluded that the following Asset Protection Zone condition should be established:

- 40m APZ along the eastern margin of the subject property from the creekline to the northern boundary.

This Asset Protection Zone can be satisfied within the constraints of the proposed development. It is recommended that any proposed dwellings to be constructed on the subject property be assessed as requiring a **Medium** category for bushfire attack protection, due to the Special Fire Protection Purpose of the proposed development. Similarly, any non-inhabited building that may be constructed within the APZ (such as Community Hall) will need to comply with an **Extreme** category of bushfire attack protection with a level 3 construction standard when measured against Australian Standard AS3959.

The existing dwelling, located near the southeast corner of the subject property, was assessed using the following parameters, as being within the category of Medium Bushfire Attack risk:

- Grassy Woodland as the assessed bushfire prone vegetation;
- 0-<5° down slope as the effective slope having the most impact of any bushfire behaviour; and
- 80m distance separating woodland vegetation and the existing house.

The building will need to be upgraded for protection from bushfire ember attack should this building be inhabited.

There is a reticulated water supply to the property. The fire hydrant spacing, sizing and pressure of this reticulated water supply must comply with AS 2419.1 (2005) and that any fire hydrants are not located on any carriage way.

Access to the subject property will be via an 8m wide bitumen-surfaced, dual carriage way. This road will be bordered by a maintained grass verge, and at the most distant point from the main entry to the Park, will provide two single-direction loop-around turning areas. The bridge, constructed over the small creek flowing through the property, will provide dual carriage way access. Whilst for general safety of the travelling public, access to the caravan park is proposed to be from Bonville Station Rd, an alternative emergency access will be provided to the Pacific Highway such that the internal road system will operate as through roads during any emergency. The internal road system will therefore

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comply with all requirements for access listed in the PBP manual for a Special Fire Protection Purposes development (RFS, 2006). It is recommended that the internal access roads should be incorporated into the APZ of the proposed development and, where constructed towards the eastern boundary, be located between the bush fire hazard and any proposed habitable area. Furthermore, the bridge crossing and all roads should be clearly sign-posted, particularly the two single-direction turn around loops. Similarly, the emergency access to the Pacific Highway should be clearly identified and information regarding its existence passed to temporary residents on arrival.

It is impossible to regulate the construction standards for bushfire protection with caravans. It is therefore recommended that all structures greater than 40m of the bushfire hazard that is to the east of the subject property, should comply with the Level 1 standards for Bushfire Attack as defined in the Australian Standard AS 3959-1999 Construction of Buildings in Bushfire Prone Areas (Standards Australia, 2001). The level of construction for the existing dwelling is unknown and predates any introduction of bush fire protection standards. Consequently, it should be upgraded for the protection of bushfire ember attack. Specifically, any upgrade will require that: any sub-floor area less than 600mm from the finished ground level be enclosed with non-flammable materials; all external openable windows (including louvers) and doors shall be fitted with corrosive – resistant steel, bronze or aluminium mesh screens with a maximum aperture size of 1.8mm; external wall breather vents shall be covered with spark guards made from corrosive – resistant steel, bronze or aluminium mesh screens with a maximum aperture size of 1.8mm; the roof/wall junction shall be sealed either by the use of fascias and eaves linings, or by sealing the gaps between the rafters with a suitable non-combustible material; and the dwelling and any other structure within 10m of the dwelling shall be fitted with an approved leaf guard system with a flammability index of not greater than 5 when tested in accordance with AS1530.3.

CONCLUSIONS

The proposed development will comply with the minimum requirements for:

- 1). Asset Protection Zones detailed in Table A2.6 (Minimum Specifications for Asset Protection Zones (APZ) for Special Fire Protection Purposes in bush fire prone areas.
- 2) Access in accordance with section 4.1.3-2 (Property Access) in the manual for Planning for Bushfire Protection (RFS, 2006).

In acknowledging the inherently greater risks to residents, visitors and emergency personnel during a bushfire for a Special Fire Protection Purpose development, it is a recommendation of this report, that, prior to an occupation certificate for the development be granted, a Bushfire Management Plan and a Bushfire Evacuation Plan be submitted for approval by the Rural Fire Service.

BUSH FIRE RISK MANAGEMENT PLAN

1.0 SCOPE OF THE PLAN

The Bushfire Risk Management Plan (BFRMP) is a strategic document which identifies: the level of bush fire risk for human habitation; strategies which will be implemented to manage the bush fire risk identified; and those persons responsible for implementing and maintaining this Bushfire Risk Management Plan.

1.1 Area

This Plan covers the proposed caravan park extension to provide an additional 36 sites for the Bonville Gardens Caravan Park, Pacific Highway, Bonville, within the Coffs Harbour City Council Local Government Area.

1.2 Period of Operation

Once approved by the Local Authority and the NSW Rural Fire Service this plan will have a period of operation of the life of the development.

1.3 Aim and objectives of the Plan

The aim of this plan is to provide for the mitigation of bush fires for the protection of life and property for the habitants, visitors and emergency personnel in bush fire situations Secondly, the Plan aims to reduce the treat to ecological and environmental assets. To achieve this aim, the Bushfire Risk Management Plan must address a number of specific objectives.

- i. Identify the area most at risk from bush fire attack;
- ii. Reduce the risk of bush fire damage to life and property;
- iii. Ensure that the developer/owner/occupier understands their bush fire management responsibilities;
- iv. Reduce the impact of bush fire on the development;
- v. Develop sustainable Asset Protection Zones (APZ) for the proposed Park extension

1.4 Bushfire Risk Management Strategies

This plan contains a number of strategies, which are directed at addressing the risk to the residential development from bushfire emergencies. This is achieved through addressing and managing fuel loads, separation distances from the assessed dominant bushfire vegetation, and recommending appropriate bushfire building standards.

1.5 Implementation

Implementation of the strategies in this Plan is the responsibility of the developer and shall be undertaken as part of the development infrastructure. The ongoing maintenance of the strategies in this Plan shall be the responsibility of the owner/manager of each proposed tourist facility to the limit of their property boundaries. Finally, the local authority or their delegated authority, for the life of the development shall monitor this Plan.

2.0 LEGISLATIVE BUSHFIRE HAZARD MANAGEMENT RESPONSIBILITIES

2.1 Coffs Harbour City Council

The Coffs Harbour City Council has responsibility, under Section 66 of the Rural Fires Act, to issue a notice in writing requiring an owner / occupier of any land within the LGA to carry out bushfire hazard reduction works on that land. Section 100E of the Rural Fires Act requires the council to issue bushfire hazard reduction certificates for hazard reduction to be undertaken on private lands.

2.2 New South Wales Rural Fire Service

The NSW Rural Fire Service (RFS) has the responsibility for undertaking fire suppression activities, hazard management activities and other functions relative to emergency management, within its areas of operation. Section 73 of the Rural Fires Act (1997) enables the Commissioner to carry out bush fire hazard reduction works on any land as required by a bush fire risk management plan if the work has not been carried out satisfactorily. Incurred costs can be recovered as a debt owed to the Crown.

2.3 NSW Fire Brigade

The NSW Fire Brigade has the responsibility for undertaking fire suppression activities, and other functions relative to emergency management, within its area of operation. Through mutual aid agreements, the NSW Fire Brigade can provide assistance to the NSW Rural Fire Service, particularly for structural fire operations within the NSW Rural Fire Brigade Districts. Furthermore, Hazmat operations within New South Wales are the responsibility of the NSW Fire Brigade.

2.4 Coffs Harbour Bush Fire Management Committee

The Coffs Harbour City Council Bushfire Management Committee has the responsibility for planning for co-ordinated fire fighting activities / hazard management activities on a local government level. It is not an operational organisation, a fire fighting organisation or a funding source for fire management activities. The Bush Fire Management Committee is supported by the following provisions of the Rural Fires Act (1997).

Section 50 of the Act requires the Bush Fire Co-ordinating Committee to constitute a Bush Fire Management Committee for the whole of the area of any local Council area for which a rural fire district is constituted.

Section 51(1A) requires a Bush Fire Management Committee to report to the Bush Fire Coordinating Committee on the implementation of the requirements of the Bushfire Risk Management Plan.

Section 52 requires each Bush Fire Management Committee to prepare a draft bush fire management plan for their local areas which includes a plan of operations and a bush fire risk management plan.

Section 54 of the Act specifies that a draft bush fire risk management plan is to 'set out schemes for the reduction of bush fire hazards in the rural fire district or other part of the State'. A draft bush fire risk management plan may also restrict or prohibit the use of fire or other fire hazard reduction activities in all or specified circumstances or places to which the plan applies.

2.5 Private Land Owners / Occupiers

The Rural Fires Act, 1997 provides several legislative opportunities to require land owners and occupiers to manage hazardous fuels. These are listed below:

Section 63(2) states that 'it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land'. In this section; 'notified steps' means any steps that:

- (a) a bushfire risk management plan (or the Co-ordinating Committee) advises a person to take;
- (b) are included in a bush fire risk management plan that applies to that land.

Section 87 allows the removal of hazards in the bush fire danger period by the provision of a permit system. The permits are valid for 21 days, excluding total fire ban (TOBAN) days. Section 10 permits are not required to adhere to Part V provisions of the Environmental Planning & Assessment Act (1979) (EP&A Act) in any assessment of impact, except for public authorities. An owner/occupier of private land must obtain from the NSW Rural Fire Service, a bushfire hazard reduction certificate before undertaking hazard reduction works on that land (see Section 100E of the Rural Fires Act (1997)).

3.0 INTRODUCTION

Development applications for Special Fire Protection Purposes (SFPP) such as this caravan park on bush fire prone land must be accompanied by a bush fire assessment report that demonstrates compliance with the aim and objectives of the Planning for Bushfire Protection (PBP) guidelines. In particular, the following matters must be addressed:

- a) A statement that the site is bush fire prone land, where applicable;
- b) The location, extent and vegetation formation of any bushland on or within 100m of the site;
- c) The slope and aspect of the site and of any bush fire prone land within 100m of the site, which may determine the likely path of any bush fire;
- d) Any features on or adjoining the site that may mitigate the impact of a high intensity bush fire on the proposed development; and
- e) A statement of the likely environmental impact of any proposed bush fire protection measures.

Whilst there is a continuance of the application of the principle of adopting a number of bushfire protection measures in combination, for a Special Fire Protection Purpose development, there is more of an emphasis on the space surrounding the dwellings as defendable space and Asset Protection Zones and less on the standard of building construction.

3.1 Background

Bushfiresafe (Aust) P/L has been engaged by Rick Bennell & Associates on behalf of their client, to undertake a complete Bushfire Risk Assessment for the proposed extension to the Bonville Gardens Caravan Park, Pacific Highway, Bonville. The assessment was conducted in accordance with section 91A of the Environmental Planning & Assessment Act (1979) and section 100B of the Rural Fires Act (1997), and followed the guidelines recommended in the Planning for Bushfire Protection manual (RFS, 2006).

The assessment has involved the following activities:

- i. Verifying of terrain attributes in relation to the assessed bushfire vegetation.
- ii. Identification of the appropriate bushfire protection for any identified environmental assets.
- iii. Determination of the location of adequate water supplies for fire fighting purposes.

- iv. Identifying the capacity of public roads to handle increased volumes of traffic in a bushfire situation.
- v. Identification of adequacies for implementation of fire trails which link to Public roads in the vicinity.
- vi. Identification of adequacy of arrangements for access and egress from the development for the purposes of an emergency response.
- vii. Identification of construction standards to be used for building elements in the development.
- viii. Identification of adequacy of bushfire maintenance plans and fire emergency procedures for the development.
- ix. Identification of additional bushfire protection measures.

3.2 Description of property

The subject property (Lot 501, DP 606422) is located approximately 20km south of Coffs Harbour. The subject land is zoned 1(a) Rural Agricultural under the Coffs Harbour LEP (Coffs Harbour City Council, 2000). A 10m vegetated buffer designated as Zone 7(B) Environmental Protection ('scenic buffer') fronts the Pacific Highway to the west.

The subject property comprises managed grassland, currently utilised for livestock grazing. A small creek line flows west to east through the property and this creek is bordered by a narrow riparian community dominated by Camphor Laurel trees. An existing dwelling and associated outbuildings are located in the southeast corner with a constructed dam present along the eastern margin.

3.3 NSW Rural Fire District BFRMP

The Coffs Harbour City Council's Bushfire Management Options are to:

- (a) **reduce the hazard** - encourages the development of asset protection zones along the settlement area - bushland interface.
- (b) **reduce vulnerability** - maintain development and building controls and standards appropriate to the level of hazard.

4.0 VEGETATION CLASSIFICATION

The vegetation of the subject property and adjacent properties up to 140m (where practicable) from the proposed and existing building envelope were assessed during a site visit on the 6th of March, 2008. The vegetation communities present were identified and classified into formations as described in Keith (2004).

Appendix A2.3 of Planning for Bushfire Protection (PBP) manual (RFS, 2006) outlined the methodology for determining the predominant bushfire prone vegetation to the distance of at least 140 metres in all directions from the proposed development of this site. Vegetation was classified using Table A2.1 of Planning for Bushfire Protection manual (RFS, 2006), which classified vegetation types into the following groups:

(a) *Forests [wet & dry sclerophyll forests];*

(b) *Woodlands;*

(c) Plantations – being pine plantations not native plantations;
(d) Forested Wetlands;
(e) Tall Heaths;
(f) Freshwater Heaths;

(g) Short Heaths;
(h) Alpine Complex;
(i) Semi – arid Woodlands;
(j) Arid Woodlands; and
(k) Rainforests.

The location of all vegetation communities recorded during the site inspection is illustrated on Attachment 1

4.1 Vegetation communities present on the Property

Two vegetation communities are present over the subject property.

Community 1: Grassy Woodland (Riparian). A narrow belt of this vegetation borders a small creek line that traverses the property (Figure 1). It is almost entirely comprised of mature Camphor laurel trees with an occasional Tallowwood present. This community has been identified as being Primary Koala Habitat (Lunney *et al.*, 1999), despite the fragmented nature and absence of key koala feeding trees. Under the proposed concept plan for the development, the Camphor Laurel trees will be removed and the margins of this creek line will be landscaped to include walking trails, gardens and open spaces. No set back is required from this vegetation.



Figure 1. View looking southeast showing the Camphor Laurel-dominated riparian vegetation along a small west to east flowing creek line, managed grassland is present in the foreground (Photograph W. Hadaway).

Community 2: Managed Grassland. The majority of the subject property has been utilised for livestock grazing and hence is dominated by managed agricultural grassland. The south eastern corner of the subject property has been modified for domestic habitation included a dwelling, outbuildings, driveway and gardens.

4.2 Vegetation within 140m from the subject land boundary

To the north of the subject land, intensively cropped agricultural land, currently planted to sorghum, is present which is separated from the development property by approximately 15m wide grassy area which is utilised by the farmer to access the perimeter of the cropped area (Figure 2). This agricultural activity does not constitute bushfire prone vegetation and hence no set back will be required. Immediately to the south are two rural residential / lifestyle properties with managed gardens. Agricultural grazing woodlands are present further to the south and across the Pacific Highway to the west of the subject property. The Pacific Highway and Bonville Station Rd provide appropriate set backs from these vegetation communities.



Figure 2. Sorghum planted on agricultural cropping land to the north of the subject property (Photograph W. Hadaway).

To the east of the subject property, an open woodland, comprising introduced grasses, bracken fern and Wattle as an understorey with a small clump of Flooded Gum trees currently exists (Figure 3). Inspection of a time series of aerial photographs has indicated that this community is regularly slashed. Such maintenance would encourage the growth of colonising plants such as Bracken Fern and Wattle with the almost complete absence of any juvenile Flooded Gum plants. This vegetation community merges into riparian woodland along the banks of a creek. As above, the riparian

vegetation is almost completely dominated by Camphor Laurel with sparse Tallowwood and Wattle trees present. Beyond the creek, rural residential properties occur with maintained gardens, lawns and open space being the only vegetation present in this direction (Figure 4A, B).



Figure 3. Flooded Gum woodland with an understorey of introduced grasses, Bracken Fern, Wattle and Camphor Laurel (Photograph W. Hadaway).



Figure 4. A: Open-space currently utilised as a horse paddock to the east of the Creek with a single row of planted pine trees along the eastern fence line. B: A view of the managed grasslands further beyond the Pine trees noted in the previous image (Photographs, W. Hadaway).

To the south east, a rural residential property is present with managed open space and recreation. This does not constitute a bushfire hazard and no set back will be required along the eastern boundary of the subject property to the south of the creek.

4.3 Assessed Bushfire Vegetation in Relation to the Development

According to the Coffs Harbour Fire Prone Lands (CHFPL) map, the riparian vegetation along the small creek line is assessed as being Category 1 Bushfire prone land. However, this community has already been significantly fragmented due to the prior development of the caravan park on the adjacent land. Furthermore, current Coffs Harbour City Council strategies to progressively remove Camphor Laurel trees will further reduce the bushfire potential of this community. All remaining area of the property is assessed as being within the 100m Buffer to bushfire prone vegetation.

The dominant bushfire prone vegetation in relation to this proposed caravan park extension was assessed to be the Grassy Woodland community to the east of the property. Whilst there is currently a significant separation between this community and the eastern boundary of the subject property and that the intervening open space appears to be regularly maintained through slashing of undergrowth, such actions cannot be relied upon in the future. Consequently, the following assessment has assumed a worst case scenario that the Grassy Woodland community will, over time, expand in area reaching the eastern boundary.

5.0 LANDFORM ASSESSMENT

Inspection of published topographic maps (Grafton 9438) and an on-site assessment using an inclinometer verified the following land forms were present over the subject land. Slopes were recorded for the subject land of either flat or gently downwards to the south and east at 0-<5°.

5.1 Assessed Dominant Slope in relation to identified bushfire prone vegetation

Appendix 2 of Planning for Bushfire Protection (RFS, 2006) recommends that slopes should be assessed, over a distance of at least 100m from a development site and that the dominant gradient of the land should be determined on the basis of which will most significantly influence the fire behaviour at the site. Table 1 summarises the slope assessments for each vegetation community observed over the subject land. This information will be used as the basis for determining those aspects of the proposed development that may require provisions for, and implementation of appropriate Asset Protection Zones.

Table 1 Site Assessment Summary – vegetation communities

Vegetation	Aspect	Classification (PBP)	Slope	Comments
Woodland (riparian)	On-Site	Rainforest	0-<5° down	Less than 20m in width
Managed Grassland		Grassy Woodland	Flat	Agricultural land
Adjacent lands to 140m				
Open Woodland	East	Grassy Woodland	Flat	Regularly managed
Riparian Woodland	East	Rainforest	0-<5° down	Less than 20m in width

6. ENVIRONMENTAL CONSIDERATIONS

No fauna or flora surveys were conducted for this report, and information regarding threatened species has not been provided to Bushfiresafe (Aust). In the absence of any further information, no assessment of the environmental constraints for this development can be undertaken.

7.0 BUSHFIRE ASSESSMENT FOR PROPOSED DEVELOPMENT

7.1 Asset Protection Zones

Based on the assessment of the vegetation communities and slopes present on and adjacent to the subject property, and in accordance with Appendix 2 Table A2.6 (Minimum specifications for Asset Protection Zones (m) for Special Fire Protection Purposes) listed in the Planning for Bushfire Protection (RFS 2006), this bushfire risk assessment recommends that Asset Protection Zones (APZ), Inner Protection Area (IPA) and Outer Protection Area (OPA) should be established as follows:

The bushfire risk assessment undertaken in relation to the proposed caravan park extension recommends a 40 metre APZ be implemented along the eastern boundary of the development property; the APZ will commence from the northern property boundary and extend along the eastern boundary joining the landscaped creek area. The APZ shall consist of an Inner Protection Area (IPA) only.

Table 2 Asset Protection Zones for the proposed caravan park extension

Aspect	Width of APZ (m)	IPA (m)	OPA (m)	Compliance with PBP	Comments
N	-	-	-	Yes	No Bushfire Hazard
S	-	-	-	Yes	No Bushfire Hazard
E	40	40	0	Yes	Woodland Hazard
W	-	-	-	Yes	No Bushfire Hazard

The Asset Protection Zone for all aspects of the development shall be measured from the gutter or fascia (if a gutterless roof is used) of an existing, or proposed dwelling, to the foliage drip line, and shall be implemented and maintained to the specifications as outlined below.

Inner Protection Area (IPA) shall be maintained in such a manner that;

- there is minimal fire fuel at ground level that could be set alight by bushfire (e.g. long grass, tree branches etc.);
- vegetation does not provide a path for the transfer of fire to the development;
- trees are a minimum of 5 metres away from any building, measured from the edge of the foliage to the roof line or any open balconies;
- bark chips and the like are not present within 5 metres of any building;
- any trees present have a minimum canopy separation of 2 metres; and
- any trees present are not species that retain dead material or deposit excessive amounts of ground fuel in a short time.

Attachment 1 shows a designated APZ along the eastern boundary for the proposed development. It is recommended that this zone include all features that are not regarded as being a bushfire hazard including non-vegetated areas (roads, cycle ways, paths, waterways, non-inhabited buildings, visitor parking bays, etc) and reduced vegetation (such as maintained lawns, playgrounds, BBQ areas and gardens).

7.2 Assessed Bushfire Attack Category

An assessment of the bushfire attack categories applicable to the proposed development was carried out using the methodology detailed in Appendix 3 of Planning for Bushfire Protection (RFS, 2006). The bushfire risk management assessment undertaken in relation to the proposed development concluded a **Medium** bushfire attack category proposed for the caravan park extension, after reference to Table A 3.4 Determination of Category of Bushfire Attack, FDI 80 in the Planning for Bushfire Protection manual (RFS, 2006) with the following parameters:

- Open Woodland Riparian vegetation as the assessed bushfire prone vegetation;
- 0-<5° down slope as the effective slope having the most impact of any bushfire behaviour; and
- A recommended asset protection zone of 40 metres separating the woodland vegetation and any dwelling.

The **Medium** category for bush fire attack protection as listed in PBP (RFS, 2006) indicates that attack by burning debris may be significant, whilst radiant heat is unlikely to threaten building elements. Specific construction requirements are only warranted for ember protection and accumulation.

Under the proposed concept plan for the caravan park extension, there is the opportunity to position a Community Hall within the APZ along the eastern margin of the property, within the defined APZ. Any structure so constructed should satisfy the standards for an **Extreme** bush fire attack category. Importantly, access to these buildings should be through the façade located away from any bushfire hazard.

7.3 Electricity Supply

Where possible electrical transmission lines should be underground; where overhead electrical transmission lines are installed, lines should be installed with short pole spacing, unless crossing gullies, gorges or riparian areas. No part of a tree should be closer to a power line than the distance set by the appropriate authority. Regular inspection of lines is required to ensure they are not fouled by branches.

7.4 Adequacy of Water Supply

There is a reticulated water supply to the property. The fire hydrant spacing, sizing and pressure of this reticulated water supply must comply with AS 2419.1 (2005) and that any fire hydrants are not located on any carriage way.

7.5 Public Road Capacity to Handle Increased Volumes of Traffic in a Bushfire Emergency

The public roads (Pacific Highway and Bonville Station Rd), in the vicinity of the subject property are adequate to handle increased volumes of traffic in a bushfire emergency. These roads;

- have a bitumen surface;
- are two-way, allowing traffic to pass in opposite directions; and
- have the capacity to carry fully loaded fire fighting vehicles.

7.6 Adequacy of Access and Egress in Bushfire Situations

The road system in a bushfire prone area for Special Fire Protection Purposes should provide alternative access or egress for fire-fighters and residents during a bush fire emergency if part of the road system is cut by fire. Consideration should be given to:

- a) Internal roads that are two-wheel drive, sealed, and trafficable in all weather conditions;
- b) Minimum road widths are 8m kerb to kerb width shoulders allowing traffic to pass in each direction;
- c) Roads are through roads, where dead-end roads are required, they are short, not more than 100m from the through road and clearly sign-posted;
- d) Roads do not traverse through a wetland or other area subject to periodic inundation;
- e) Roads are clearly sign-posted and bridges clearly indicate load ratings; and
- f) The internal road surfaces and bridges have a capacity to carry fully-loaded fire fighting vehicles (15 tonnes).

Access to the subject property will be via an 8m wide bitumen-surfaced, dual carriage way. This road will be bordered by a maintained grass verge, and at the most distant point from the main entry to the Park, will provide two single-direction loop-around turning areas. The bridge, constructed over the small creek flowing through the property, will provide dual carriage way access. Whilst for general safety of the travelling public, access to the caravan park is proposed to be from Bonville Station Rd, an alternative emergency access will be provided to the Pacific Highway such that the internal road system will operate as through roads during any emergency. The internal road system will therefore comply with all requirements for access listed in the PBP manual for a Special Fire Protection Purposes development (RFS, 2006).

It is recommended that the internal access roads should be incorporated into the APZ of the proposed development and, where constructed towards the eastern boundary, be located between the bush fire hazard and any proposed habitable area. Furthermore, the bridge crossing and all roads should be clearly sign-posted, particularly the two single-direction turn around loops. Similarly, the emergency access to the Pacific Highway should be clearly identified and information regarding its existence passed to temporary residents on arrival.

8.0 BUSHFIRE CONSTRUCTION STANDARD

It is impossible to regulate the construction standards for bushfire protection with caravans. For all structures within 40-100m of the bushfire hazard (Grassy Woodland) that is to the east of the subject property, compliance with the level 1 construction standard as defined in the Australian Standard AS 3959-1999 (Standards Australia, 2001), is recommended.

The existing dwelling, located in the southeast corner of the subject property has been built prior to the introduction of PBP 2001 with no apparent construction standard when measured against Australian Standard AS3959 (Construction of Buildings in Bushfire Prone Areas), therefore this dwelling shall be upgraded to protect against ember attack. Any such upgrade will require that: any sub-floor area less than 600mm from the finished ground level be enclosed with non-flammable materials; all external open-able windows (including louvers) and doors shall be fitted with corrosive – resistant steel, bronze

or aluminium mesh screens with a maximum aperture size of 1.8mm; external wall breather vents shall be covered with spark guards made from corrosive – resistant steel, bronze or aluminium mesh screens with a maximum aperture size of 1.8mm; the roof/wall junction shall be sealed either by the use of fascias and eaves linings, or by sealing the gaps between the rafters with a suitable non-combustible material; and the dwelling and any other structure within 10m of the dwelling shall be fitted with an approved leaf guard system with a flammability index of not greater than 5 when tested in accordance with AS1530.3.

9.0 LANDSCAPING AND PROPERTY MAINTENANCE – BUSHFIRE PROVISIONS

According to the PBP manual, the principles of landscaping for bush fire protection are to: prevent flame impingement on the dwelling; provide a defendable space for property protection; reduce fire spread; deflect and filter embers; provide shelter from radiant heat; and reduce wind speed. Careful consideration of the species selection, their location relative to their flammability, and on-going maintenance to readily remove flammable fuels (leaf litter, twigs and debris) is critical to providing for bushfire protection (RFS, 2006). The proposed landscaping along a margins of the creek line should reflect these requirements. It would be expected that the on-going property maintenance would ensure that the APZs incorporating any garden or landscaping will function as a suitable protection barrier from bushfire.

10.0 ADDITIONAL PROTECTION MEASURES

During emergencies, the risk to fire-fighters and other emergency services personnel can be high through prolonged exposure, where door-to-door warnings are being given and exposure to the bush fire is imminent. As such, a specific objective for Special Fire Protection Purposes developments requires the preparation of a bush fire evacuation plan to minimise the risks to occupants and emergency service personnel (RFS, 2006).

It is a recommendation of this report, that,

1. The proposed development comprises of tourist facility with large areas of open space recreation and landscaped areas; the bushfire risk assessment concluded that prior to the issue of a construction certificate, a bushfire management plan is prepared to address the ongoing maintenance of the open space recreation and landscaped areas.
2. Prior to the issue of an occupation certificate for the proposed development a Bushfire Evacuation Plan for proposed development shall be prepared and submitted to the NSW Rural Fire Service for approval/comment.

11.0 EXTENT OF COMPLIANCE AND/OR DEVIATION FROM SPECIFICATIONS

The proposed development will comply with the minimum requirements for:

- 1). Asset Protection Zones detailed in Table A2.6 (Minimum Specifications for Asset Protection Zones (APZ) for Special Fire Protection Purposes in bush fire prone areas).
- 2) Access in accordance with section 4.1.3-2 (Property Access) in the manual for Planning for Bushfire Protection (RFS, 2006).

GLOSSARY

APZ	Asset Protection Zone
BFRMP	Bushfire Risk Management Plan
CHFPL	Coffs Harbour Fire Prone Lands map
IPA	Inner Protection Area
LGA	Local Government Area
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection manual
RFS	Rural Fire Service of New South Wales
SFPP	Special Fire Protection Purpose
TOBAN	Total Fire Ban

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