FARM-STAY ACCOMMODATION & RURAL INDUSTRY DEVELOPMENT

LOT 7 DP228075

440 MULHOLLANDS ROAD

THIRLMERE. NSW. 2572

1. BUSH FIRE HAZARD ASSESSMENT
2. BUSH FIRE RISK & EMERGENCY MANAGEMENT PLAN




Prepared by SOWDES
3 July 2019

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1. Bush Fire Attack Level (BAL) Certificate – Entertainment Building

Site Address Details	440 Mulhollands Road, Thirlmere. NSW. 2572		
Property Details	Lot 7 DP228075		
Local Council Area	Wollondilly Shire Council	FDI	100

Type of Proposal		Land Zoning	
	New dwelling		Urban residential / Village / Commercial
✓	Farm-stay - accommodation	✓	Rural / other

Proximity, Aspect and Vegetative Formations in Relation to the Proposed Development

Category	North Arc NWŸ NŸ NE		South Arc SEŸ SŸ SW		East Arc NEŸ EŸ SE		West Arc NWŸ WŸ SW	
Distance	metres	>100	metres	38	metres	33	metres	>100
BAL for aspect	BAL	LOW	BAL	LOW	BAL	12.5	BAL	LOW
Vegetation formation within 140 metres		Rainforest		Rainforest		Rainforest		Rainforest
		Forest		Forest		Forest		Forest
		Forest Wetland		Forest Wetland		Forest Wetland		Forest Wetland
		Woodland		Woodland		Woodland		Woodland
		Tall heaths		Tall heaths		Tall heaths		Tall heaths
		Short heaths		Short heaths		Short heaths		Short heaths
		Shrublands		Shrublands		Shrublands		Shrublands
		Wetlands		Wetlands		Wetlands		Wetlands
		Alpine Complex		Alpine Complex		Alpine Complex		Alpine Complex
		Grasslands		Grasslands	✓	Grasslands		Grasslands
	✓	Managed land	✓	Managed land		Managed land	✓	Managed land
Slope under the hazard	Downslope 5° - 10°		Upslope / flat		Downslope 0 - 5°		Upslope / flat	

Overall Bush Fire Attack Level and AS3959 Building Construction Requirements

The highest BAL Rating that this development must achieve is:	BAL	12.5	AS3959 Requirement	Section	5

Water Supply Requirements

Development Type	Minimum Water Requirement	Planned	Existing
Main residential dwelling	20,000 litres		✓
Farm stay cabins x 5	10,000 litres per occupied building		✓

Static Water Supply

Description	Capacity (litres)	Planned	Existing
Concrete tank	20,000		✓
Poly tank	4 x 10,000 + 4 x 2,200		✓
Dam	1 x ~ 1 ML, 1 x >1ML		✓

Gas Supply

Type	Planned	Existing

Asset Protection Zone Requirements

		Inner Protection Area	Outer Protection Area		
Direction	Vegetation	(metres)		Planned	Existing
North	Managed lands	20	-		✓
South	Managed lands	20	-		✓
East	Grasslands	20	-		✓
West	Managed lands	20	-		✓

Asset Protection Zone and Bush Fire Attack Level Summary

Direction	Vegetation / load		Slope	Distance (m)	Total APZ	BAL
North	Managed lands	6t/ha	Downslope 5° - 10°	>100	20	LOW
South	Managed lands	6t/ha	Upslope / flat	38	20	LOW
East	Grasslands	6t/ha	Downslope 0 - 5°	33	20	12.5
West	Managed lands	6t/ha	Upslope / flat	>100	20	LOW

Access and Egress

Description	Condition			
Distance from building to main entrance point Approximately 60 metres	<200 metres	✓	>200 metres	
Internal carriageway construction	Sealed		Unsealed	✓
Service road construction (Springwood Avenue)	Sealed	✓	Unsealed	
Alternate access route (if applicable)	The distance from the accommodation cabins to the front gate is less than 200 metres therefore an alternate egress option is not required.			

Comments:
The required asset protection zones around the entertainment building as a place of safe refuge is 20 metres in all directions which is deemed to already exist. The distance from the accommodation cabins to the front entrance is less than 200 metres therefore an alternate egress route is not required. It is noted that the development precinct and egress route are actually located outside any mapped bush fire prone areas.

I hereby certify that this assessment has been undertaken in accordance with the procedures and requirements as specified within Section 4.14 of the Environmental Planning and Assessment Act 1979 and 100B of The Rural Fires Act (1997), with particular reference to the pre-release edition of *Building in Bush Fire Prone Areas, Single Dwellings*. NSW Rural Fire Service 2018, AS 3959-2018 *Construction of Buildings in Bush Fire Prone Areas*, and that the proposed development having a maximum **BAL rating of '12.5'** can satisfy the 'deemed to satisfy' and 'acceptable solutions' provisions of the respective standards and guidelines.

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This report is for the intended use of the property owners to determine the appropriate Bush Fire Attack Level relating to the proposed development at the address listed on this Certificate. This assessment is not an insurance against potential losses resulting from bush fire events. Changes to the design, site or surrounding environment will influence the accuracy of this assessment and therefore may invalidate this Certificate.

2. List of Abbreviations That May Be Used Throughout This Report

AA3	Addendum: Appendix 3 - Planning for Bush Fire Protection (2010)
APZ	Asset Protection Zone
AS 3959	AS3959 - 2009 Construction of Buildings in Bush Fire Prone Areas
BAL	Bush Fire Attack Level
BCA	Building Code of Australia
BFSA	Bush Fire Safety Authority
BPMs	Bush Fire Protection Measures
CC	Construction Certificate
DA	Development Application
DCP	Development Control Plan
EP&A ACT	Environmental Planning & Assessment Act (1979)
FDI	Fire Danger Index
IPA	Inner Protection Area
LEP	Local Environmental Plan
OPA	Outer Protection Area
PBP (2006)	Planning for Bush Fire Protection (2006)
PBP (2018)	Draft Release of Planning for Bush Fire Protection (2018)
RF Act	NSW Rural Fires Act (1997)
RF Reg	NSW Rural Fires Regulation (2008)
RFS	NSW Rural Fire Service
RHF	Radiant Heat Flux
ROS	Rate of Spread
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose

Acknowledgement: Some of the images used in the presentation of this report have been reproduced from the publications title "Planning for Bush Fire Protection" (2006) and the pre-release edition of "Planning for Bush Fire Protection" (2018) – both from the NSW Rural Fire Service, and "AS3959-2018 *Construction of Buildings in Bush Fire Prone Areas".*

FOR ELECTRONIC VERSIONS OF THIS REPORT PLEASE REFER TO THE ACCOMPANYING A1 DRAWING TITLED 'BUSH FIRE HAZARD ASSESSMENT SITE PLAN' – REF: 0070519-01D

3. Executive Summary.

The subject development land identified as Lot 7 DP228075 - 440 Mulhollands Road, Thirlmere. NSW. 2572 has been assessed in relation to the ongoing operation of an intensive horticulture and ancillary farm-stay accommodation development that includes five habitable cabins as a type of '*special fire protection purpose*' (SFPP) development in the bush fire weather area of the Wollondilly Shire Council which has a bush fire danger index (FDI) of 100.

With reference to the Wollondilly Shire Council Bush Fire Prone Land Mapping instruments, the development property is burdened by 'Category 1 - (forest and woodland)' bush fire vegetation located to the immediate north of the development precinct and consequently the property is subject to the assessment processes for developments that are undertaken within bush fire prone land.

The development proposal is for the formal consent and continued operation of five existing small farm-stay cabins and associated infrastructure as a form of short-term accommodation associated with a tourism development. The tourism component of the development is an ancillary activity to the main intensive horticultural enterprises on the site which are dominated by lavender farming and processing, and the propagation of ornamental plants, vegetables and fruit orchards. In accordance with the provisions of the pre-release edition of PBP (2018) Section 6.3.1 a farm-stay accommodation facility is assessed as a type of *Special Fire Protection Purpose* facility and therefore must obtain a Bush Fire Safety Authority from the NSW Rural Fire Service under Section 100B of the Rural Fires Act. Such developments are also Integrated Development under Section 4.46 of the EP&A Act 1979.

At the time of preparing this assessment the transition period for the release of the new NSW Rural Fire Service guidelines – 'Planning for Bush Fire Protection (2018) was in effect and it is acknowledged that use of the guidelines within the draft could be considered as a 'performance solution' subject to referral to the NSW Rural Fire Service. As a type of *special fire protection purpose* development, the proposal must be referred the NSW Rural Fire Service under 100B of the Rural Fires Act for concurrence, therefore the majority of this assessment is using the draft PBP (2018) as the primary reference source.

It is particularly noted that the five accommodation cabins and an adjoining residential dwelling associated with the development are not intended to be a used a 'place of safe refuge' and therefore are not assessed within the scope of this assessment. A separate entertainment and dining building to the south of the cabins is the nominated place for safe refuge in a bush fire event where evacuation is not possible or practical and is assessed accordingly within this report.

It is noted however that the existing residential dwelling could also be used as a place of safe refuge as it is of a suitable construction standard and is also located in a 'low risk' bush fire environment.

The dominant and assessable vegetation type surrounding the development envelope that is the subject of this assessment is 'Grassland', and the slope under the vegetation in the 'worst case scenario' is downslope 0 to 5° to the east. Based on the site-specific conditions at the time of compiling this report, the greatest requirement for asset protection zones (APZ) as a type of 'special fire protection purpose' development is an inner protection area of 20 metres which occurs on all aspects of the cabin precinct, and the Bush Fire Attack Level (BAL) for the entire precinct is assessed to be '12.5'.

The construction requirements for a building in a bush fire prone area with an assessed BAL rating of '12.5' is to be undertaken in accordance with 'Section 5 - Construction for Bush Fire Attack Level '12.5' (BAL- '12.5') of "AS3959 - 2018 Construction of Buildings in Bush Fire Prone Areas" as applicable where that Section specifically stipulates any construction requirements. Additional construction and compliance requirements that may be applicable are detailed in the pre-release edition of "Planning for Bush Fire Protection (2018)" (NSW Rural Fire Service), and "Part 3A Rural Housing Code of the State Environmental Planning Policy (SEPP) - (Exempt and Complying Development Codes) 2008, Subdivision 9 Development standards for particular land, Clause 3A.37; Development standards for bush fire prone land"; which addresses matters such as access and egress, water and gas supply, and general siting and design elements.

It is a general requirement that if there are any other buildings or structures within 10 metres of the assessable structure, or attachments to the assessable structures (either at the time of construction or constructed at some time in the future) then the construction standards referenced in this section also apply to such buildings and / or attachments. In this matter it is noted that the existing accommodation cabins to the north and the adjoining main dwelling to the northwest are located slightly greater than 10 metres from the footprint of the entertainment and dining building and therefore they do not need to specifically comply with the construction requirements of this assessment.

In accordance with Table 6.4d of the pre-release edition of PBP (2018) for *Special Fire Protection Purpose* developments that include accommodation facilities there is a requirement to prepare an 'Bush Fire Emergency and Evacuation Management Plan' which is designed to minimise the impact of a bush fire event on both the guests/occupants of the facility, the owners or managers of such a facility, and emergency services personnel.

The first part of this document addresses the bush fire assessment component of the development, including an assessment of the vegetation formations, separation distances, Bush Fire Attack Level (BAL) rating, constructions standards and access provisions, whilst a separate Emergency Risk Management Plan forms the second part of this document.

It is particularly noted that the two primary structures on the site; the main residential dwelling and the entertainment and dining building have both been assessed and approved by Council under previous applications and are therefore deemed to be compliant with the majority of bush fire protection measure requirements. Having been subject to prior approvals neither of these two buildings form part of the 'continued use' development application and therefore are able to be retained irrespective of the development outcome. It is however due to their construction standards and assessment as a generally low bush fire risk that they could both be considered as a 'place of safe refuge' in a bush fire event. The specific use of the entertainment and dining building as the primary place of safe refuge is appropriate as it has a large open floor area with very few internal walls that can provide suitable space for well in excess of 50 people which is more than the maximum number expected on the site any particular time, and therefore meets the requirements of a safe refuge in a low risk bush fire environment.

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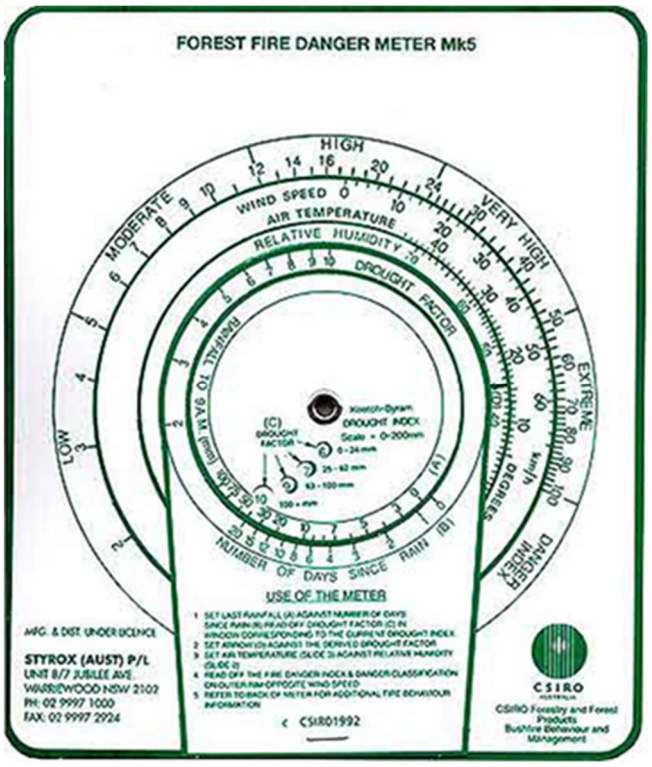
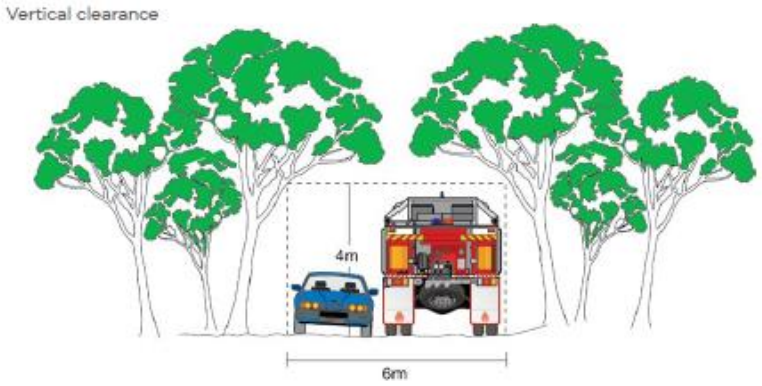
4.	Assessment Methodology.	
	General Information	The methodology employed to undertake a site risk assessment for potential bush fire hazard is consistent with Appendix 1 of the pre-release edition of PBP (2018) and the 'simplified procedure' set-out in Section 2 'Determining the Bush Fire Attack Level (BAL)' of "AS3959 -2018 'Construction of Buildings in Bush Fire Prone Area". The following six steps are generally undertaken in the assessment of the site: • Determine the relevant FDI (Fire Danger Index) for the local government jurisdiction where the development is to be undertaken • Determine the classified vegetation types. Where there is more than one vegetation type, each shall be classified separately with the worst-case scenario formation applied for assessment purposes • Determine the distance of the site from the classified vegetation types. Normally measured in the horizontal plane from the edge of the nearest building element of the proposed building to the margins of the vegetation type • Determine the effective slope under each of the classified vegetation types. This assessment is for the effective slope under the vegetation and not necessarily the slope between the proposed building site and the vegetation formation as the two can be completely different. • Determine the appropriate Bush Fire Attack Level (BAL) for each of the vegetation classifications and for each aspect or elevation of the proposed building from the relevant Tables using the appropriate FDI rating for the local government jurisdiction. • Determine the appropriate construction requirements from within AS3959 -2018 'Construction of Buildings in Bush Fire Prone Area' for each of the different vegetation classifications and building elevations. Not all elevations will necessarily have the same construction requirements, however consideration should be given to applying construction standards of the highest BAL rating to the entire structure.

5.	Legislation and Planning Instruments.	
	General Information	The development property is zoned 'RU1' Primary Production within the Wollondilly Local Environmental Plan (2011) (Land Zoning Maps LZN-008 & 008C) and therefore operation of an 'farm-stay facility' is a permissible activity with consent under the objectives described for the land. This bush fire hazard assessment follows the procedures for determining the appropriate construction requirements for the proposed development in a designated bush fire prone area as set-out in the pre-release edition of "Planning for Bush Fire Protection (2018)" (NSW Rural Fire Service). Parts of the proposed development are considered infill development and therefore Section 4.14 of the EP& A Act (1979) applies which states the following: **4.14 Consultation and development consent--certain bush fire prone land** (1) Development consent cannot be granted for the carrying out of development for any purpose (other than a subdivision of land that could lawfully be used for residential or rural residential purposes or development for a special fire protection purpose) on bush fire prone land unless the consent authority: (a) is satisfied that the development conforms to the specifications and requirements of the document entitled *Planning for Bush Fire Protection, ISBN 0 9751033 2 6*, prepared by the NSW Rural Fire Service in co-operation with the Department of Planning (or, if another document is prescribed by the regulations for the purposes of this paragraph, that document) that are relevant to the development (**"the relevant specifications and requirements"**), or (b) has been provided with a certificate by a person who is recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment stating that the development conforms to the relevant specifications and requirements.

		(1A) If the consent authority is satisfied that the development does not conform to the relevant specifications and requirements, the consent authority may, despite subsection (1), grant consent to the carrying out of the development but only if it has consulted with the Commissioner of the NSW Rural Fire Service concerning measures to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bush fire. (1B) This section does not apply to State significant development. (2) In this section: **"special fire protection purpose"** has the same meaning as it has in section 100B of the *Rural Fires Act 1997*. With particular reference to item 1(a) above, the major considerations of 'Planning for Bush Fire Protection' is the establishment of appropriate asset protection zones around any habitable buildings, the location and siting of such buildings, the design considerations in the architecture of the buildings, construction standards, access and egress, adequate water supply, gas supply, general landscaping and maintenance. The following relevant policies and guidelines have been considered in this site assessment: • Pre-release edition of "Planning for Bush Fire Protection" (2018) • "AS3959 - 2018 Construction in Bush Fire Prone Areas" • The National Construction Code (formerly the Building Code of Australia (BCA)) • Wollondilly Local Environmental Plan (2011) • Wollondilly Shire Council Development Control Plan (2016) • Part 3A Rural Housing Code of the State Environmental Planning Policy (SEPP) - (Exempt and Complying Development Codes) 2008 **It is noted that as an interim measure until the adoption of PBP (2018) developments that conform with the requirements of the pre-release edition of PBP (2018) can be considered under section 4.14(1A) of the Act. Compliance with the pre-release edition of PBP 2018 may be used as means of satisfying the NSW Rural Fire Service concerning measures to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bush fire.**

6.	Fire Weather	
	General Information	The FDI (Fire Danger Index) rating system was developed by McArthur (CSIRO) in the 1960's to help predict the chance of a fire starting, its rate of spread, its intensity and the difficulty of its suppression according to the various combinations of air temperature, relative humidity, wind speed and both the long and short term drought effects. An FDI of 100 was considered to be the maximum danger rating given the worst possible combination of fire conditions when the Forest Fire Danger Index was initially introduced, and still stands as the fire weather indicator for all NSW local government areas despite the fact that the maximum potential FDI ratings have been calculated well in excess of 100 in some weather districts. The warning classifications have been updated recently in line with improved knowledge of weather and fire behaviour to the extent that the classification system introduced a new level of danger being "Catastrophic" which reflects conditions in excess of an FDI of 100.
	Site Specific Comment	**The Wollondilly Shire Council is located within the Illawarra / Shoalhaven fire area of NSW and therefore has an FDI rating of 100 assumed as a 1:50 year event.**



7.	Access and Egress	
	General Information	Table 7.4a of the pre-release edition of PBP (2018) requires that in forest, woodland and heath situations rural property roads have passing bays every 200m (or less) that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay. The minimum width for internal access roads must be four metres plus one metre either side which is maintained to provide a clear opening of four metres between ground level and any overhanging vegetation in accordance with the below Figure. There must also be a turning provision of not less than 12 metres near to the dwelling site which will allow emergency services vehicles clear access to the dwelling.  General construction requirements for internal property access roads in rural areas as prescribed by the NSW Rural Fire Service
	Site Specific Comment	**The development property is accessed from the Mulhollands Road traffic corridor which junctions off Oaks Road approximately 4 kilometres northwest of the village of Thirlmere. Both Mulhollands Road and Oaks Road are sealed road formations. In the event of a bush fire emergency that required evacuation from the site the route along Oaks Road southeast to the village of Thirlmere where there is two recognised 'places of safe haven' would be the best option.** **The farm-stay accommodation precinct is located approximately 90 metres from where the main entrance driveway junctions off Mulhollands Road which is located approximately 110 metres from the junction with Oaks Road to the west. The entertainment and dining building which is the nominated place of safe refuge is located closer to the front entrance – approximately 60 metres.**

		The internal carriageway leading to the carpark area for the cabin and entertainment building precinct traverses through open and managed lands comprised of well-established and maintained gardens and lawns. **The internal carriageway leading to the cabin precinct is an unsealed gravel formation that satisfies the construction standards as specified in Table 7.4a of the pre-release edition of PBP (2018) and as described at the commencement of this section. There is an ongoing requirement for the property owners that the carriageway be regularly inspected, and any clearing undertaken 'as necessary' to maintain the required clearances in both the horizontal vertical planes as stipulated in the guidelines.** **It is also noted that the requirements to provide a minimum 12 metre radius turning circle near the farm-stay accommodation and general development precinct for emergency service vehicle access is already created. Refer to the accompanying 'Bush Fire Hazard Assessment Site Plan' – Ref: 0070519-01D for the location of the internal carriageways, access / egress points, and the turning circle provisions discussed above.**

View of the existing entrance driveway and turning circle in the general carparking area

8. Water Supply

General Information

In rural areas where the development block is not located within a service area that has access to reticulated water supply, the provision of a dedicated and static water supply is considered essential. The provision of a dedicated water supply in rural areas provides opportunities for fire fighters to replenish their tanker supplies and also aims to ensure that there is adequate water provisions for the property owners to undertake their own protection activities. As a general rule the capacity of the static water requirement is based on the Lot size and the type of development, with the typical requirements summarised in the following Table.

It should be emphasised that the water requirements listed in Table 1 are a minimum requirement, and where site specific firefighting systems have been installed such as fire hose reels, drencher systems and other fire suppression measures, additional water storage will be required - and the overall capacity of this additional requirement should be based on a site-specific design. The minimum water storage requirements applicable to this development without any site-specific fire protection detail is highlighted in Table 1.

Table 1. Water supply requirements - adopted from Table 5.3d from the pre-release edition of PBP (2018)

Development Type	Residential Lots (<1000m²)	Residential Lots (1000 - 10,000m²)	Large Rural / Lifestyle Lots (>10,000m²)	Multi Dwelling / Dual Occupancy	Farm-stay Facility (SFPP) (Table 6.4c)
Water Requirement	5,000 litres / Lot	10,000 litres / Lot	20,000 litres / Lot	2,500 litres / Unit	10,000 litres per occupied building

Site Specific Comment

The development property is connected to the utility provider's maintained reticulated water supply however the service is limited to a long extension of a domestic supply line from the water main with a water meter connection at the front of the property – approximately 15 metres to the west of the main entrance. The nearest spring hydrant outlet to the property off the water main is located at the intersection of Mulhollands and Oaks Roads, approximately 120 metres from the front entrance which exceeds the maximum distance for firefighting purposes in accordance with the provisions of AS2419.1 -2005 – '*Fire Hydrant Installations, Part 1 System Design, Installation and Commissioning*'.

		The development property does however have several rainwater tanks distributed around the development precinct varying in capacity and construction materials, in additional to access to dam water. **There is four 10,000 litre and four 2,200 litre poly water tanks distributed across the development precinct and curtilage that whilst not of non-combustible materials are generally positioned against the walls of buildings constructed from non-combustible materials which act as a form of screening.** **A separate 20,000 litre concrete water tank is located at the northern end of the machinery shed complex which is accessible by firefighting vehicles.** **To the north of the machinery shed is a shared dam with the western neighbouring property that has an estimated storage volume of at least 1 megalitre, and a larger dam is located to further to the north in the centre of the property. The two dams each have permanent pumps set-up which are used for irrigating the horticultural activities on the property that surround the development precinct and therefore provide a supplementary form of water supply for firefighting purposes.** **It is recommended that at least two firefighting pumps be available on the property at all times, and that each pump be accompanied by a durable 30 metre hose within a minimum internal diameter of 19mm. The pump and hose sets should be able to be transported around the property on standard utility or farm vehicles to provide a rapid response and coverage across the site. The outlet from each of the 10,000 litres poly tanks and the 20,000 litre concrete tank should have a tee branch that provides a connection to the pump system off one outlet, and an isolation valve with 65mm face diameter storz connection on the other outlet for access by the NSW Rural Fire Service.** **To provide a reliable means of delivering water at pressure from the static water storages to the fire protection measures around the development precinct it is recommended that the 'fire pump' be at least a 5-horse-power petrol or 3kW diesel-powered motor.**

		It is important to remember that whilst the protection and defensive measures addressed in this report are principally focused on the requirements for bush fire events, other fires including general building fires can occur at any time and therefore the provisions of this report are intended to extend to all probable fire events. **It is for this reason that firefighting measures, such as firefighting pumps being connected to the water supply, should be in place at all times and not simply in the recognised bush fire season.**
	Additional Information	The following items are adopted in part from Table 6.4c and Table 7.4a of the pre-release edition of the PBP (2018) and are considered mandatory installation conditions across all development types that are to be applied where applicable: • a suitable connection for firefighting purposes is made available and located within the IPA (Inner Protection Area) or non-hazard side and away from the structure. A 65mm Storz outlet with a suitable gate or ball valve fitted to the outlet • suitable valving and pipes are the same bore size to ensure adequate volume and water flow and are metal rather than plastic, • underground tanks where installed have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole. • above ground tanks are manufactured of concrete or metal – plastic tanks are not used. Unobstructed access can be provided at all times. Raised tanks have their stands constructed from non-combustible materials or bush fire resisting timbers in accordance with the list in Appendix F of AS3959-2018. Tanks on the hazard side of a building are provided with adequate shielding for the protection of fire fighters. • all above ground water pipes and fittings external to the building are metal including and up to any taps. Pumps are shielded. • tap connections for handheld hoses to be used in firefighting applications should not be connected to the potable water supply as this supply is normally operated with an electric pump which may not be operative during a fire event.

		• where pumps are provided, they are a minimum 5-horse-power petrol or 3kW diesel-powered motor, and are shielded against bush fire attack; any hose and reel for firefighting connected to the pump shall be 19mm (internal diameter) • fire hose reels are constructed in accordance with AS/NZS1221:1997 Fire hose reels, and installed in accordance with AS2441:2005 Installation of fire hose reels • a petrol operated firefighting pump be connected to the dedicated water supply and regularly checked to ensure proper operation and easy start function.

Example of a storz connection associated with a dedicated water storage tank used for dedicated firefighting purposes

Dam located to the north of the machinery shed along the western boundary with pump shed in the foreground.

Portion of the Wollondilly Shire Council Bush Fire Prone Map showing the extent of 'Category 1' (forest and woodland) bush fire prone vegetation and associated buffer zone within and surrounding the development property. Note that the development precinct and egress route are located outside the mapped bush fire prone areas.

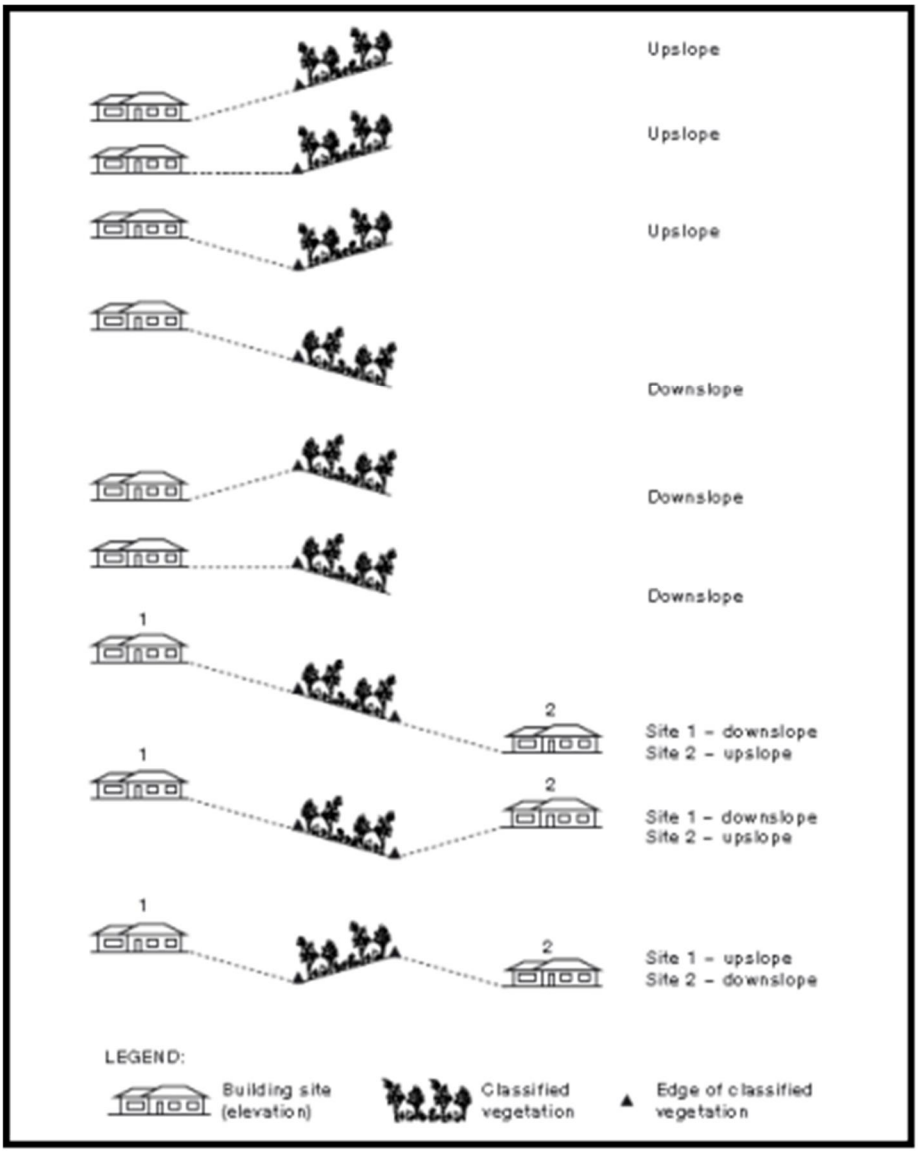
9.	Gas Supply	
	General Information	Gas and other combustible materials should not be stored within the inner protection area of the dwelling or close to significant stands of vegetation formations. In particular Table 5.3c and Table 6.4c of the pre-release edition of PBP (2018) states the following: • reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used. • all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. • if gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal. • polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.
	Site Specific Comment	**It is noted that there are two 45kg gas cylinders located on the northern aspect of the main dwelling. It is anticipated that all plumbing and drainage works associated with the existing buildings has be performed by licensed plumbers and that all gas supply work has be undertaken in accordance with AS/NZS 5601-2013 "*Gas Installations*" and AS/NZS1596:2014 "*The Storage and Handling of LP Gas"*** **It is conditional on the installation of LPG gas services that a certificate plate of compliance which can only be completed by accredited trade certifiers be installed at the point of the gas connection between the storage bottles and the supply point. Connection of the gas supply is not permitted where the certificate plate is not fixed or visible at the connection point which ensures that the installation methods and the material components comply with the relevant codes and standards. In this matter it is noted that the supply point has a certificate plate fitted and is visible at the connection point.** **As a precautionary note - all small and portable gas bottles should be stored outside of buildings, and no gas bottles should be operated inside a building.**

10.	Vegetation Assessment	
	General Information	The vegetation around the development site has been classified using recommended references including "Ocean Shores to Desert Dunes" (Keith, 2004), "AS3959 - 2018 Construction of Buildings in Bush Fire Prone Areas", and the pre-release edition of PBP (2018). Where applicable, the dominant vegetation types and formations have been identified for each aspect or elevation of the proposed dwelling to a distance of 140 metres, or the nearest distance if the assessable vegetation formation is less than 140 metres from the development site. As a general rule of the assessment process, the vegetation assessment that is deemed manageable by the property owners shall only be conducted to the extents of the boundaries of the subject property if the distance to the property boundary is less than 140 metres as the property owners normally do not have any direct control on the vegetation that lies in adjacent properties. Where the distance from the development site to the property boundary is less than 140 metres and the assessable vegetation formation is immediately on the neighbouring side of that boundary, it is presumed that for the lifetime of the development that this vegetation will be a 'constant' within the assessment process irrespective of any agreement between the two property owners to undertake any clearing or maintenance within the area. An exception applies if the area is to be maintained by a supply authority as part of a service easement - such as overhead power lines. Table 2 summarises the vegetation classifications surrounding the development envelope out to a distance of approximately 140 metres.
	Site Specific Comment	**The vegetation formations surrounding development precinct are dominated by mixed horticultural activities including a large lavender plot, ornamental and market gardens, and vegetable beds to the north, and a large fruit orchard to the west.** **Within the horticultural plots and surrounding the main structures and habitable buildings are well-established and maintained lawns and gardens amongst pathways and carriageways.**

		Outside the horticultural plots the remainder of the property is set to open grazing paddocks with scattered eucalyptus trees along defined drainage lines and as discontinuous formations along the outer boundaries. **The southern, southwestern and southeastern boundaries are also lined with a continuous row of conifers to provide an element of screening for privacy purposes from the neighbouring properties and passing traffic, as well as a form of windbreak.** **The terrain under the vegetation on the northern aspect is downslope and slightly variable at an average grade of 7%, whilst the eastern aspect has a lesser fall away at approximately 5% and the southern and western aspects are flat or upslope in relation to the main buildings.** **The entertainment and dining building as the place of safe refuge is located approximately 33 metres from the eastern boundary, 38 metres from the roadside front southern boundary, and greater than 100 metres to the northern and western boundaries.** **These measurements have been used to determine the appropriate vegetation formations within the property, however where the boundary distance is less than 100 metres the vegetation in its current form outside these boundaries has been used as the worst case formations – grassland in the neighbouring property to the east and managed lands within the road reserve to the south, and beyond.** **It is noted that the road reserve along the southern boundary is 20 metres wide with overhead power transmission lines along the southern portion of the road formation and only a single row of trees along the northern side of the road formation.**

Table 2. Vegetation Assessment.

Direction	Distance (metres)	Vegetation classification, estimated fuel load and slope			
		Vegetation	Fuel load	Slope	Image
North	>100	Managed lands	6t/ha	Downslope 5° - 10°	1
South	38	Managed lands	6t/ha	Upslope / flat	2
East	33	Grasslands	6t/ha	Downslope 0 - 5°	3
West	>100	Managed lands	6t/ha	Upslope / flat	4



Example of the methods used for determining the effective slope under the vegetation formation.

Image 1. View to the north from the development envelope (Managed lands - Downslope 5° - 10°)

Image 2. View to the south from the development envelope (Managed lands - Upslope / flat)

Image 3. View to the east from the development envelope (Grasslands - Downslope 0 - 5°)

Image 4. View to the west from the development envelope (Managed lands - Upslope / flat)

11.	Asset Protection Zone	
	General Information	Asset protection zones are areas of reduced fuel accumulation between the assessable vegetation classification and any habitable building. This separation area provides a defendable space whereby persons attempting to combat the fire will have some protection from the radiant heat that the burning fuel might generate in an intense fire event. The establishment and maintenance of the asset protection zone is required to achieve specific bush fire attack level ratings (BAL) which in turn is used to determine the relevant construction requirements. There are two protection areas within an asset protection zone: the inner protection area and the outer protection area, and the following details should be applied as appropriate to the particular development. The inner protection area is that area immediately around the building envelope that aims to reduce the combustible fuel levels and thereby reduce the possible impacts of direct flame contact and radiant heat to the building elements. The inner protection area should have a tree canopy of less than 15% with no part of any tree within 2 metres of the roofline of the dwelling. Gardens with shrubs and other woody plant materials should not be located under trees such that they could provide a ladder for fire to reach the tree canopy, and they should also not be planted within 10 metres of any exposed window or door of the defendable structure. All trees should be maintained such that there are no limbs below 2 metres from the ground surface. The outer protection area which is normally associated with forested vegetation formation should have a tree canopy of less than 30% and should have the lower strata vegetation mowed and managed to reduce the rate of fire spread. The aim of reducing the density of the tree canopy is to reduce the rate of crown fire spread, and to help filter some of the flying embers by the remaining trees. The following asset protection zones have been calculated with reference to Table A1.12.2 'Minimum Distances for APZ's – Residential Subdivision Development, FD1 100 Areas (≤29kW/m²)' and Table A1.12.3 'Allowable Outer Protection Areas (in metres) Within an APZ for Forest Vegetation' of the pre-release edition of PBP (2018).

		The distances estimated for the inner and outer protection areas using these Tables are the minimum requirements, however there are occasions where the asset protection areas may need to be expanded to satisfy other assessment requirements, for example the bush fire attack level (BAL). It is noted that the measurement to the margins of the asset protection zones are not taken from the centre of the development zone, but rather from the edge of the nearest structural elements on any given aspect, which includes any Class 10 structures (sheds) within 10 metres of habitable buildings.

Table 3. Asset Protection Zone requirements.

Direction	Vegetation	Inner Protection Area	Outer Protection Area	Asset Protection Zone
		(metres)		
North	Managed lands	20	-	20
South	Managed lands	20	-	20
East	Grasslands	20	-	20
West	Managed lands	20	-	20

	<u>Site Specific Comments</u>	**The entire development precinct is set to managed lands comprised of established lawns and gardens around the habitable and main buildings, and intensive horticultural activities in the surrounding paddock areas.** **The horticultural plots that are set to lavender, market gardens, vegetables and a fruit orchard are tendered every day by two to three staff that constantly plant, harvest and manage the crops.** **Spent and discarded organic matter from the harvesting and processing activities is stockpiled in a composting area at the rear of the machinery shed or in the paddocks where they are grown further for later incorporation back into the soils.** **The rows of conifers along the southern, southwestern and southeastern boundaries are relatively established and therefore provide a means of screening to mitigate advancing embers during bush fire events as well as providing a screen for privacy and windbreak purposes.**

12. Bush Fire Attack Level (BAL)

General Information

The Bush Fire Attack Level (BAL) is defined as "a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared, and the basis for establishing the requirements for construction to improve protection of building elements from attack by bush fire".

There are several 'levels' within the range of BAL assessments, each with differing construction standards - and these are explained in the image below.

The following bush fire attack level assessments have been determined with reference to Table A1.12.5 'Determination of Bush Fire Attack Level - FDI 100, Residential Developments' of the pre-release edition of PBP (2018) based on the appropriate vegetation formations and slopes in relation to the assessed building and/or proposed building site.

Table 4. BAL rating.

Direction	Vegetation / load		Slope	Distance (m)	Total APZ	BAL rating
North	Managed lands	6t/ha	Downslope 5° - 10°	>100	20	LOW
South	Managed lands	6t/ha	Upslope / flat	38	20	LOW
East	Grasslands	6t/ha	Downslope 0 - 5°	33	20	12.5
West	Managed lands	6t/ha	Upslope / flat	>100	20	LOW

Radiant heat flux exposure and appropriate bush fire attack level (BAL)

Heat flux exposure	Description	AS 3959 construction level
N/A	Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements.	Bush fire attack level: Low (BAL-LOW)
≤12.5	Attack by burning debris is significant with radiant heat (not greater than 12.5kW/m²). Radiant heat is unlikely to threaten building elements (such as unscreened glass). Specific construction requirements for ember protection and accumulation of debris are warranted.	Bush fire attack level: 12.5 (BAL-12.5)
>12.5 ≤19	Attack by burning debris is significant with radiant heat flux (not greater than 19kW/m²) threatening some building elements (such as screened glass). Specific construction requirements for embers and radiant heat are warranted.	Bush fire attack level: 19 (BAL-19)
>19 ≤29	Attack by burning debris is significant and radiant heat flux (not greater than 29kW/m²) threatens building integrity. Specific construction requirements for ember and higher radiant heat are warranted. Some flame contact is possible.	Bush fire attack level: 29 (BAL-29)
>29 ≤40	Radiant heat flux and potential flame contact could threaten building integrity.	Bush fire attack level: 40 (BAL-40)
>40	Significant radiant heat and significant higher likelihood of flame contact from the fire front will threaten building integrity and result in significant risk to residents.	Bush fire attack level – Flame Zone (BAL-FZ)

Note: Attack from burning debris increases with the bush fire attack level.

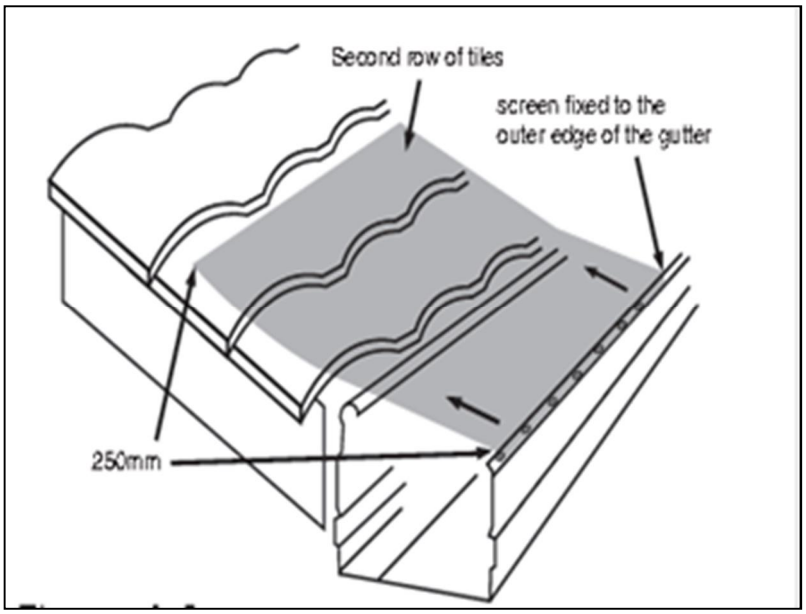
13.	Construction Standards	
	General Information	"AS3959 - 2018 Construction in Bush Fire prone Areas" sets out the construction requirements for building elements in order to reduce the likelihood of ignition of the building during a bush fire event. The level of building construction is defined as Bush Fire Attack Level (BAL) and is equivalent to the BAL rating derived from the above assessment. This development has a BAL rating of '12.5' and therefore must refer to Section 5 Construction for Bush Fire Attack Level 12.5 (BAL- 12.5) "AS3959 - 2018 Construction in Bush Fire Prone Areas". The incorporation of the construction standards of the Section 5 Construction for Bush Fire Attack Level 12.5 (BAL- 12.5) are to be applied as appropriate as not all clauses and conditions within that Section may be applicable to the proposed design. In addition to the construction standards set out in Section 5 Construction for Bush Fire Attack Level 12.5 (BAL - 12.5) "AS3959 - 2018 Construction in Bush Fire Prone Areas", the requirements previously discussed in this report pertaining to access and egress, water supply, gas supply and the asset protection zones must also be undertaken as each of the bush fire protection measures must be considered as a 'whole of system' approach to bush fire protection rather than undertaking individual components in isolation. *If there are any other buildings or structures within 10 metres, or attachments to the habitable buildings (either at the time of construction or constructed at some time in the future), then the construction standards referenced in this section also apply to such buildings and / or attachments.*
	Site Specific Comments	**The existing farm-stay cabins have not been assessed in accordance with the requirements of the Building Code of Australia (BCA) hence it is not the intention of this bush fire assessment that they be used as a place of safe refuge or be recognised as being fully compliant with the construction requirements of AS3959-2018 to the relevant BAL rating for farm-stay accommodation units.** **The existing main dwelling whilst outside the specific considerations of this assessment is an approved dwelling with an assessed BAL rating of BAL-12.5 and is deemed compliant with the minimum construction standards as prescribed in Section 5 of AS3959-2018.**

		It is proposed that the entertainment and dining building located in the southeastern corner of the site will be the nominated place of safe refuge as it is has a fully enclosed subfloor area supporting a concrete slab, the roof deck is continuous corrugated iron sheeting, and the underside of all eaves are lined with a non-combustible material. **Internally the building has a large open floor plan with very few partition walls, and there is ample space to safely house 50 or more people.** **There is a requirement to check that opening portion of all windows and doors are fitted with a screen to the external side that is made entirely from non-combustible materials as prescribed in Section 3 and Section 5.5.2 of the standard AS3959-2018 'Construction in Bush Fire Prone Areas'.** **The building is located approximately 20 metres from the farm-stay cabins, and the required asset protection zone of 20 metres on all aspects is already established.**

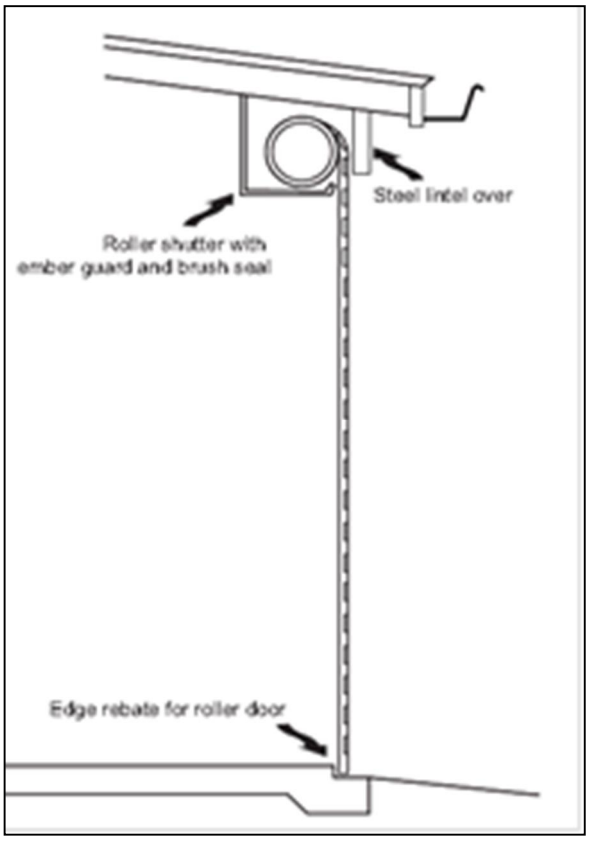
Image of the entertainment and dining building that is nominated as the place of safe refuge on the site due to its construction standard, open floor plan and large floor area inside, and the proximity to the front entrance.

14.	Other General Bush Fire Protection Requirements – Siting and Design Principles	

	General Information	The performance of a building during a bush fire attack can be greatly enhanced by adopting the following general siting and design principles as applicable:
		(NOTE: These are not mandatory requirements)
		
		• avoid building on ridge tops and saddles;
		• building on level ground wherever possible;
		• where buildings must be constructed on sloping land, they are built on cut-in benches rather than elevated or above fill;
		• avoid raised floors, utilise concrete slabs (raft construction);
		• locating the habitable buildings near the property entrance for easier access/egress;
		• the use of non-combustible fencing (or other class 10a buildings) which is located within close proximity to the main building;
		• reducing the bulk of a building (height and width) facing a bush fire hazard;
		• simplifying the design of buildings to reduce the numbers of re-entrant corners;
		• providing more simplified rooflines;
		• guttering and gutter valleys being:
		  ○ installed with gutter guarding having a flammability index of not more than 5, when tested to AS 1530.2;
		  ○ limited to the lowest possible levels (bottom fascia) to improve access and maintenance; and
		  ○ covered with a mesh of aluminium bronze or stainless steel with a maximum aperture of 5 mm fixed to the outer edge of the gutter (or valley) and be located beneath the second (or higher) row of tiles or roof sheeting for a distance of 250mm;
		• use of barriers (e.g. courtyards, fenced off areas for gardens, BBQ areas and the like); and
		• where garages are located under the roofline of the main building, garage doors are to be ember proofed and employ ember traps and or brushes to prevent the entry of embers into the garage area (see requirements for garages and other structures in above diagram)

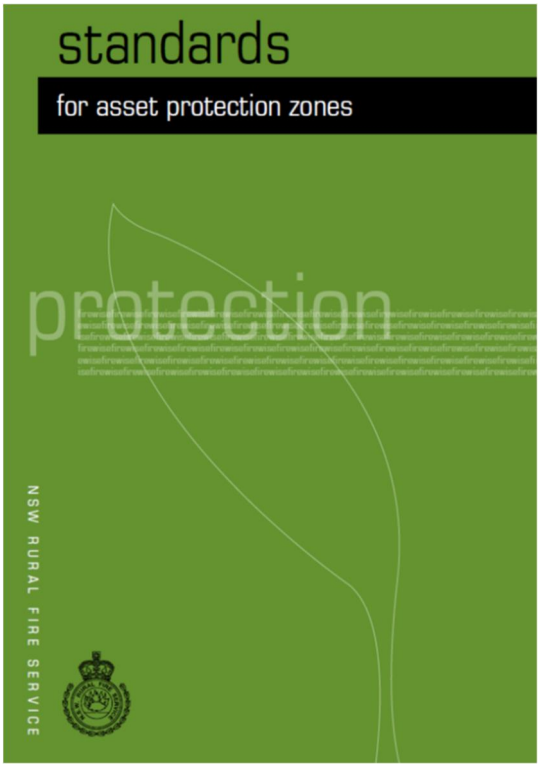


Leafless gutters enhance building performance



Example of a roller shutter door installation

15.	General Maintenance and Landscaping.	
	General Information	The establishment of gardens and lawns are often a dominant part of the rural lifestyle choice as they help to provide seclusion, shelter and a general beautification of the landscape, however consideration needs to be given to the type and structure of the landscaping components to ensure that they do not form a continuum between the classified vegetation formations and the building elements. Selection of appropriate vegetation types and form for landscaping purposes are important considerations, as is the location and positioning of various plantings. It is important that critical asset protection areas are not compromised by the establishment of landscaping features, and that the longer-term maintenance requirements of established gardens do not in fact add to the potential fire fuel loads around the property. The publication "Standards for Asset Protection Zones" (2006) from the NSW Rural Fire Service provides good advice and guidelines for the establishment of asset protection areas, landscaping and longer-term maintenance requirements and should be referenced prior to the design and installation of landscaping features. More Information is available from: http://www.rfs.nsw.gov.au/__data/assets/pdf_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf



16. ASSESSMENT OF PROPOSED DEVELOPMENT AGAINST TABLES 6.4a, 6.4b and 6.4c "*PERFORMANCE CRITERIA AND ACCEPTABLE SOLUTIONS FOR SPECIAL FIRE PROTECTION PURPOSE DEVELOPMENTS"* OF THE PRE-RELEASE EDITION OF 'PLANNING FOR BUSH FIRE PROTECTION (2018)
BED & BREAKFAST – FARM STAY ACCOMMODATION DEVELOPMENTS

ASSET PROTECTION ZONES		
Performance Criteria	Acceptable Solutions	How Does the Development Comply
The intent may be achieved where:		
The building or structure will not be exposed to radiant heat levels exceeding 29kW/m²	• an APZ is provided in accordance with Table 1.12.2 of the pre-release edition of PBP (2018) around the entire building or structure	The entertainment and dining building is the nominated place of safe refuge on the site. It is surrounded by established lawns and gardens on all aspects for a distance of at least 30 metres which satisfies the minimum distance requirements set out in Table 1.12.2 of the pre-release edition of PBP (2018)
Issues relating to slope are addressed: maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.	• the APZ is not located on lands with a slope exceeding 18°	The terrain under the vegetation for a distance of at least 100 metres to in each direction is less than 10% and the site and surrounds are established on natural surface levels without any modifications. The gentle sloping nature of the development precinct ensures that the asset protection zones can be easily maintained
APZs are managed and maintained to prevent the spread of a fire towards the building	• the APZ is managed in accordance with the requirements of Appendix 4 of the pre-release edition of PBP (2018), and is wholly within the boundaries of the development site • mechanisms are in place to provide for the maintenance of the APZ over the life of the development • other structures located within the APZ need to be located further than 6m from the refuge building	The entertainment and dining building is located well off the boundaries of the property such that the required APZ's are contained wholly within the legal boundaries. The property is owned and operated by the proponent and therefore ongoing maintenance of the APZ's will be assured for the life of the development. The requirement for a separation distance of at least 6 metres from other structures is established. It is noted that there is an attached covered play area to the immediate south of the refuge building, but it is constructed with no enclosed walls and has a large sand base for playing.

Vegetation is managed to prevent flame contact and reduce radiant heat to buildings, minimise embers and reduce the effect of smoke on residents and fire-fighters.	• landscaping is in accordance with the 'Asset Protection Zone Requirements' of Appendix 4 of the pre-release edition of PBP (2018),	The separation distance between adjoining buildings and the managed nature of the vegetation surrounding the entertainment and dining building on all aspects ensures that the radiant heat levels will not exceed 29kW/m². The established rows of conifers on the southern, southwestern and southeastern aspects of the development precinct help to block prevailing winds and provide an element of screening from the neighbouring properties and passing traffic, they also provide a mechanism to filter out ember attack from those respective aspects.
The proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact	• construction is applied in accordance with AS3959 (2018) or NASH and Table A1.12.2 within Appendix 1 of the pre-release edition of PBP (2018)	The entertainment and dining building is an approved structure that at the time of construction was deemed to meet the necessary bush fire construction requirements. The building site is assessed to have a BAL rating of BAL-12.5 and the construction standards generally meet the requirements of AS3959-2018 Section 5, however there is a requirement to check that opening portion of all windows and doors are fitted with a screen to the external side that is made entirely from non-combustible materials as prescribed in Section 5.5.2 of the standard.

ACCESS – PROPERTY ACCESS REQUIREMENTS		
Performance Criteria	Acceptable Solutions	How Does the Development Comply
The intent may be achieved where:		
Firefighting vehicles access the building and exit safely	No specific access requirements apply in a urban area where a 70 metre unobstructed path can be demonstrated between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles (i.e. a hydrant or water supply). In circumstances where this cannot occur, the following requirements apply: • minimum carriageway width of 4m • 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; and a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches • provide a suitable turning area in accordance with Appendix 3 • curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress • the minimum distance between inner and outer curves is 6m; and the crossfall is not more than 10° • maximum grades for sealed roads do not exceed 15° and not more than 10° for unsealed roads • a development comprising more than three dwellings has formalised access by dedication of a road and not by right of way.	The development precinct is accessed from the Mulhollands Road traffic corridor by a short section of unsealed gravel carriageway. The end of the carriageway formation has a large radius turning circle in front of the main dwelling which provides ample space for emergency services vehicles to turn around with parking off to the sides and under a separate carport. There are no other portions of land benefited by the existing access.

The capacity of access roads is adequate for firefighting vehicles	• the capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating	There are no bridges along the length of the formation, and there are no significant drainage crossings or depressions that would impede or prohibit access.
There is appropriate access to water supply	• hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression • hydrants are provided in accordance with AS2419.1:2005 • 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 internal carriageways leading to the outlying paddocks and sheds are suitable for emergency services vehicles to access water supplies, particularly the large concrete tank at the rear of the machinery shed and the dam in the same paddock to the immediate north.

ACCESS – PERIMETER ROADS		
Performance Criteria	Acceptable Solutions	How Does the Development Comply
The intent may be achieved where:		
Perimeter access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface	• there are two-way sealed roads • 8m carriageway width kerb to kerb • parking is provided outside of the carriageway width • hydrants are to be located clear of parking areas • there 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° and average grade is 10° • the road crossfall does not exceed 3° • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided	Not applicable
Non-perimeter access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while occupants are evacuating	• minimum 5.5m width kerb to kerb • parking is provided outside of the carriageway width • hydrants are located clear of parking areas • there 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 • he maximum grade road is 15° and average grade is 10° • the road crossfall does not exceed 3° • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Not applicable

SERVICES – WATER, GAS & ELECTRICITY		
Performance Criteria	Acceptable Solutions	How Does the Development Comply
The intent may be achieved where:		
A water supply is provided for firefighting purposes	• reticulated water is to be provided to the development, where available, or • a 10,000 litres minimum static water supply dedicated for firefighting purposes is provided for each occupied building where no reticulated water is available.	Whilst the development property has a metered water supply from the reticulated system formal access to hydrant outlet off the water supply in accordance with AS2419.1-2005 is not available due to distances therefore onsite water provisions must be provided
Reticulated water supplies 1/. Water supplies are easily accessible and located at regular intervals. 2/. The water supply is accessible and reliable for firefighting operations 3/. Flows and pressure are appropriate 4/. The integrity of the water supply is maintained	• fire hydrant spacing, design and sizing comply with the Australian Standard AS2419.1:2005 • hydrants are not located within any road carriageway • reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads, and • fire hydrant flows and pressures comply with AS2419:2005 • all above-ground water service pipes external to the building are metal, including and up to any taps	Not applicable
Non-reticulated water supply area. A static water supply is provided for firefighting purposes in areas where reticulated water is not available	• a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; a 65mm Storz outlet with a ball valve is fitted to the outlet • ball valve and pipes are adequate for water flow and are metal • supply pipes from tank to ball valve have the same bore size to ensure flow volume • underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank • a hardened ground surface for truck access is supplied within 4m of the access hole	The development property has several rainwater tanks distributed around the development precinct varying in capacity and construction materials, in additional to access to dam water. There is four 10,000 litre and four 2,200 litre poly water tanks distributed across the development precinct and curtilage that whilst not of non-combustible materials are generally positioned against the walls of buildings constructed from non-combustible materials which act as a form of screening. A separate 20,000 litre concrete water tank is located at the northern end of the machinery shed complex which is accessible by firefighting vehicles.

	• above-ground tanks are manufactured from concrete or metal • raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F of AS3959-2018) • all exposed water pipes external to the building are metal, including any fittings • where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; any hose and reel for firefighting connected to the pump shall be 19mm (internal diameter) • fire hose reels are constructed in accordance with AS/NZS 1221:1997 Fire hose reels, and installed in accordance with AS 2441:2005 Installation of fire hose reels	To the north of the machinery shed is a shared dam with the western neighbouring property that has an estimated storage volume of at least 1 megalitre, and a larger dam is located to further to the north in the centre of the property. The two dams each have permanent pumps set-up which are used for irrigating the horticultural activities on the property that surround the development precinct and therefore provide a supplementary form of water supply for firefighting purposes. It is recommended that at least two firefighting pumps be available on the property at all times, and that each pump be accompanied by a durable 30 metre hose within a minimum internal diameter of 19mm. The pump and hose sets should be able to be transported around the property on standard utility or farm vehicles to provide a rapid response and coverage across the site. The outlet from each of the 10,000 litres poly tanks and the 20,000 litre concrete tank should have a tee branch that provides a connection to the pump system off one outlet, and an isolation valve with 65mm face diameter storz connection on the other outlet for access by the NSW Rural Fire Service.

Electricity
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
	• where overhead, electrical transmission lines are proposed as follows:
	  ○ lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas
	  ○ no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3
		The development precinct is connected to mains power supply by existing overhead infrastructure arrangements that enters the property from the southern aspect. A private pole is located inside the boundary of the allotment and then is installed underground to the remainder of the buildings within the development precinct.
		It is considered that the supply of electricity meets the relevant requirements for developments within bush fire prone areas as required by the service provider.

	Guideline for Managing Vegetation Near Power Lines	
Gas 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 • if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion • polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not used • above-ground gas service pipes external to the building are metal, including and up to any outlets.	It is noted that there are two 45kg gas cylinders located on the northern aspect of the main dwelling. It is anticipated that all plumbing and drainage works associated with the existing buildings has be performed by licensed plumbers and that all gas supply work has be undertaken in accordance with AS/NZS 5601-2013 "*Gas Installations*" and AS/NZS1596:2014 "*The Storage and Handling of LP Gas"* It is conditional on the installation of LPG gas services that a certificate plate of compliance which can only be completed by accredited trade certifiers be installed at the point of the gas connection between the storage bottles and the supply point. Connection of the gas supply is not permitted where the certificate plate is not fixed or visible at the connection point which ensures that the installation methods and the material components comply with the relevant codes and standards. In this matter it is noted that the supply point has a certificate plate fitted and is visible at the connection point. As a precautionary note - all small and portable gas bottles should be stored outside of buildings, and no gas bottles should be operated inside a building.

EMERGENCY AND EVACUATION PLANNING		
Performance Criteria	Acceptable Solutions	How Does the Development Comply
The intent may be achieved where:		
A bush fire emergency and evacuation management plan is prepared	• a bush fire emergency management and evacuation plan is prepared consistent with the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan, and the Australian Standard AS 3745:2010 Planning for emergencies in facilities • for proposals in isolated or remote areas which involve large travel distances through bush fire prone vegetation, the following issues should also be determined and addressed: o the amount of travel likely to be generated during an emergency evacuation o the capacity of the broader road network to facilitate safe emergency evacuation o limitations/constraints inherent in the road system o management of potential traffic conflicts (such as emergency vehicles versus evacuating members of the public) • the emergency management and evacuation plan should include a mechanism for the early relocation of occupants on days when adverse fire weather is notified or adverse fire activity occurs in the local government area in which the development operates. Note: A copy of the bush fire emergency management and evacuation plan shall be provided to the Local Emergency	Referred to the accompanying Bush Fire Emergency Management Plan for proposed emergency evacuation protocols related to the development. These protocols are new and subject to ratification in consultation with the NSW Rural Fire Service and other emergency services providers.

	Management Committee for its information prior to occupation of the development.	
Suitable management arrangements are established for consultation and implementation of the emergency and evacuation management plan.	• an Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual, and • detailed plans of all emergency assembly areas including 'on-site' and 'off-site' arrangements as stated in AS 3745 are clearly displayed, and an annual (as a minimum) trial emergency evacuation is conducted.	Not applicable