

Bushfire Hazard Assessment Report

Proposed:
Alterations and Additions

At:
**63 Marine Parade,
Avalon**

Reference Number: 150071

Prepared For:
Richard Wiseman

29th July 2014

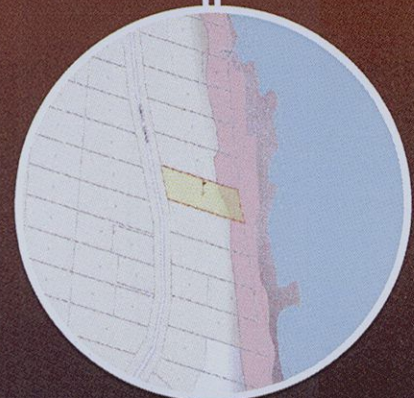
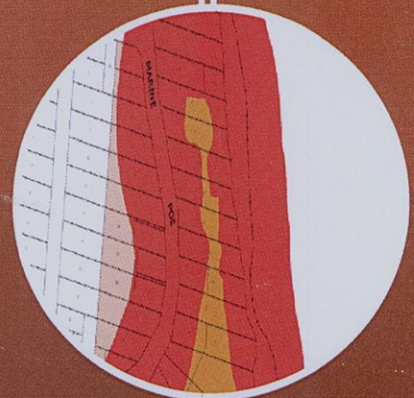


Prepared By:
**Building Code & Bushfire
Hazard Solutions Pty Limited**

Tel: (02) 9457 6530
Fax: (02) 9457 6532

PO Box 124
Berowra NSW 2081
ABN 19 057 337 774

www.bushfirehazardsolutions.com.au



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List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2009 as amended.
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Pittwater Council
DA	Development Application
EP&A Act	Environmental Planning and Assessment Act - 1979
ESD	Ecologically Sustainable Development
FRNSW	Fire & Rescue NSW
IPA	Inner Protection Area
NCC	National construction Code
NSP	Neighbourhood Safer Place
OPA	Outer Protection Area
PBP	Planning for Bush Fire Protection – 2006
ROW	Right of Way
RF Act	Rural Fires Act - 1997
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SWS	Static Water Supply

1.0 Introduction

The development proposal relates to the additions and alterations to an existing sole occupancy dwelling, including the creation of a secondary dwelling, within an existing residential allotment located at 63 Marine Parade, Avalon.

The subject property has street frontage to Marine Parade to the west and abuts private residential allotments to the north and south and the Tasman Sea to the east. The vegetation identified as being the hazard is to the south of the subject dwelling.

Pittwater Council's Bushfire Prone Land Map identifies the subject property as containing designated Category 1 Vegetation and its associated 100 metre buffer zone and therefore the application of Planning for Bush Fire Protection - 2006 (PBP) must apply in this instance.

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide the owners, and Council with an independent bushfire hazard determination together with appropriate recommendations for both new building construction and bushfire mitigation measures considered necessary having regard to construction within a designated 'bushfire prone' area.

The recommendations contained within this report may assist in forming the basis of any specific construction conditions and/or bushfire mitigation measures that Council and/or the NSW Rural Fire Service may elect to place within any consent conditions issued for the subject Development Application.

3.0 Scope of this Report

The scope of this report is limited to providing a bushfire hazard assessment and recommendations for the subject property. Where reference has been made to the surrounding lands, this report does not purport to directly assess those lands; rather it may discuss bushfire impact and/or progression through those lands and possible bushfire impact to the subject property.

Where Council considers a bushfire risk is associated with surrounding private lands or lands owned by an authority, Council could seek to issue notice under Section 66 of the Rural Fires Act on any or all surrounding properties for the purposes of reducing and maintaining safe levels of vegetation and thus reducing the possibility of bushfire impact to the subject property and any adjoining properties.

4.0 Referenced Documents and Persons

Comments provided are based on the requirements of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act), the RFS document known as 'Planning for Bush Fire Protection 2006' for the purposes of bushfire hazard determination and Australian Standard 3959 2009 titled 'Construction of buildings in bushfire-prone areas' as amended for building/structural provisions.

A company representative has made a site inspection of the subject property and the surrounding area. The plans prepared by Shimdesign; Dated: May 2014; DWG: 0514 - 2-5/5 have been relied upon for this assessment.

5.0 Compliance Tables & Notes

The following table sets out the projects compliance with *Planning for Bush Fire Protection – 2006*.

	North	East	South	West
Vegetation Structure	Maintained curtilages	Maintained curtilages	Shrubland	Maintained curtilages
Slope	N/A	N/A	0 degrees & up	N/A
Minimum required APZ	N/A	N/A	10 metres	N/A
Available APZ	N/A	N/A	>13 metres	N/A
Significant Environmental Features	Neighbouring residential allotments	Large escarpment / Tasman Sea	Neighbouring residential allotments	Marine Parade
Threatened Species	APZ Existing	APZ Existing	APZ Existing	APZ Existing
Aboriginal Relics	APZ Existing	APZ Existing	APZ Existing	APZ Existing
Bushfire Attack Level	N/A	N/A	BAL 19	N/A
Required Construction Level	BAL 12.5	BAL 19	BAL 19	BAL 12.5

Asset Protection Zones Compliance

The subject property was found to consist of built upon and hard stand areas surrounded by maintained lawns and gardens and urban landscaping. The separation from the hazard interface to the proposed works include maintained land within the subject property and land “*equivalent to an Asset Protection Zone*” within a neighbouring private residential allotment.

Construction Level Compliance

The highest Bushfire Attack Level to the proposed works has been determined from Table 2.4.2 of AS3959 - 2009 to be ‘BAL 19’. The proposed works are required to comply with section 3 and BAL 19 section 6 under AS 3959 – 2009 and Appendix 3 under PBP 2006.

In accordance with Section 3.5 of AS3959 – 2009, works to the northern and western aspects have been downgraded to ‘BAL 12.5’ due to shielding provided by the dwelling itself. Therefore works to the northern and western aspects are required to comply with section 3 and ‘BAL 12.5’ section 5 under AS 3959 – 2009 and Appendix 3 under PBP 2006.

A copy of these requirements has been provided to the client.

Access and Services

Guideline Ref.	Proposed Development Determinations	Compliance
Property Access (Driveway)	The most distant external point of the proposed dwelling is within 70 metres of a public road supporting a hydrant network and therefore the Property Access requirements detailed in section 4.1.3 (2) of PBP are <u>not</u> applicable.	Yes
Water Supply	The most distant external point of the building footprint will be within 70 metres from a public road supporting a hydrant network and therefore a Static Water Supply is <u>not</u> required.	Yes
Evacuation	Evacuation is possible by utilising existing road infrastructure. It is encouraged that the occupants complete a Bush Fire Safety Plan addressing "Prepare, Act, Survive" as advocated by the NSW RFS http://www.rfs.nsw.gov.au/ under publications / bushfire safety	Yes
Electrical Supply	Supply provided.	N/A

6.0 Aerial view of the subject allotment



Image 01: Aerial view of the subject area Land and Property Management Authority 2014

7.0 Bushfire Hazard Assessment

7.01 Preface

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and or the Rural Fire Service. All property development within affected areas is subject to the conditions detailed in the document 'Planning for Bush Fire Protection - 2006' (PBP). Set back distances for the purpose of creating Asset Protection Zones (APZ's) must be applied and any buildings must then conform to corresponding regulations detailed in Australian Standard 3959 – 2009 'Construction of buildings in bushfire prone areas'.

Planning for Bush Fire Protection – 2006, (PBP) formally adopted on the 1st March 2007 and amended May 2010 (Appendix 3) provides for the protection of property and life (including fire-fighters and emergency service personnel) from bushfire impact.

The thrust of the document is to ensure that developers of new properties or sub-divisions include the constraints associated with the construction of buildings in bushfire prone areas within their proposed development sites. PBP is applicable to proposed development inside a determined Category 1 or 2 areas and also inside a buffer zone radius of 100m from a Category 1 bushfire area or 30m from a Category 2 bushfire area.

The document also acknowledges 'infill' developments associated with re-development of existing properties and allows some higher levels of building safety where the increased 'set backs' (APZ's) may not be achievable.

The subject development relates to the additions and alterations to an existing sole occupancy dwelling, including the creation of a secondary dwelling, within an existing residential allotment. Although this type of development is considered infill under section 79BA of the Environmental Planning and Assessment Act 1979, to accord with PBP the development has been assessed against compliance with section 100B of the Rural Fires Act 1997 as if it was a residential subdivision.

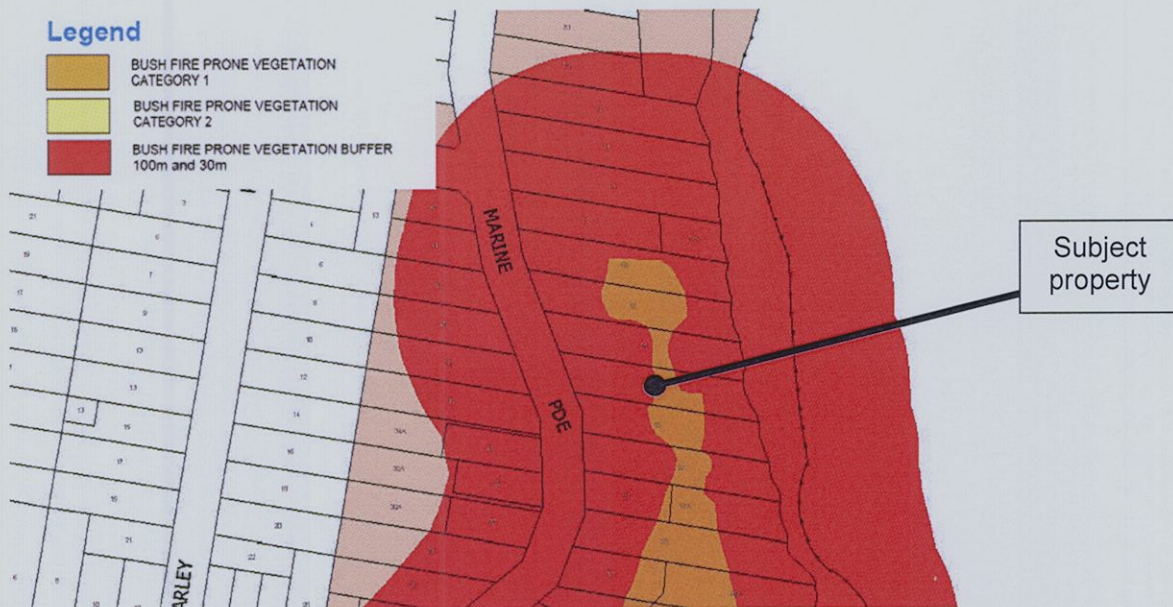


Image 02: Extract from Pittwater Council's Bushfire Prone Land Map

7.02 Location

The subject property is known as 63 Marine Parade, Avalon (Lot 109 in DP 8394) and is a residential allotment located within Pittwater Councils Local Government Area. The subject property has street frontage to Marine Parade to the west and abuts private residential allotments to the north and south and the Tasman Sea to the east.

The property is susceptible to possible bushfire impact from vegetation within neighbouring private allotments to the south.



Photograph 01: View east from Marine Parade toward the subject property



Image 03: Extract from street-directory.com.au

7.03 Vegetation

The predominate vegetation found within the subject property and neighbouring private residential allotments to the north was found to consist of landscaped gardens, urban landscaping and mown lawns.

The neighbouring property to the south was found to be currently in the process of fuel reduction, providing a greater than 13 metre separation to any unmanaged vegetation. The current unmanaged vegetation within this adjacent allotment has link to a narrow band of unmanaged vegetation within the next adjoining residential property to the south before widening.

The vegetation providing the potential path of fire within the neighbouring allotments to the south was found to consist of shrubs 1-2 metres in height. It was noted that there is a high percentage of rock outcrops scattered throughout this vegetation, restricting fuel connectivity.

The vegetation posing a hazard is mapped as Coastal Headland Clay Heath on the NSW Government Land and Property Management Authority 2014 mapping database.

For the purpose of this assessment the vegetation posing a hazard to the subject property has been determined to be the Shrubland.



Neighbouring dwelling within HN 59 Marine Parade

Photograph 02: View south of the vegetation posing a hazard to the subject site

7.04 Slope and Topography

The slope that would most significantly affect bushfire behaviour must be assessed for at least 100 metres from the proposed dwelling.

The most significant bushfire impact from the south is expected to be from a bushfire burning downslope toward the subject site. It was noted that the high presence of rock outcrops throughout the hazard would restrict fire progression toward the site.

The slope that would **most significantly** influence bushfire impact was determined onsite using an inclinometer and verified from topographic imagery to be:

- 0 degrees up slope within the hazard to the south



Photograph 03: View south toward the bushfire hazard

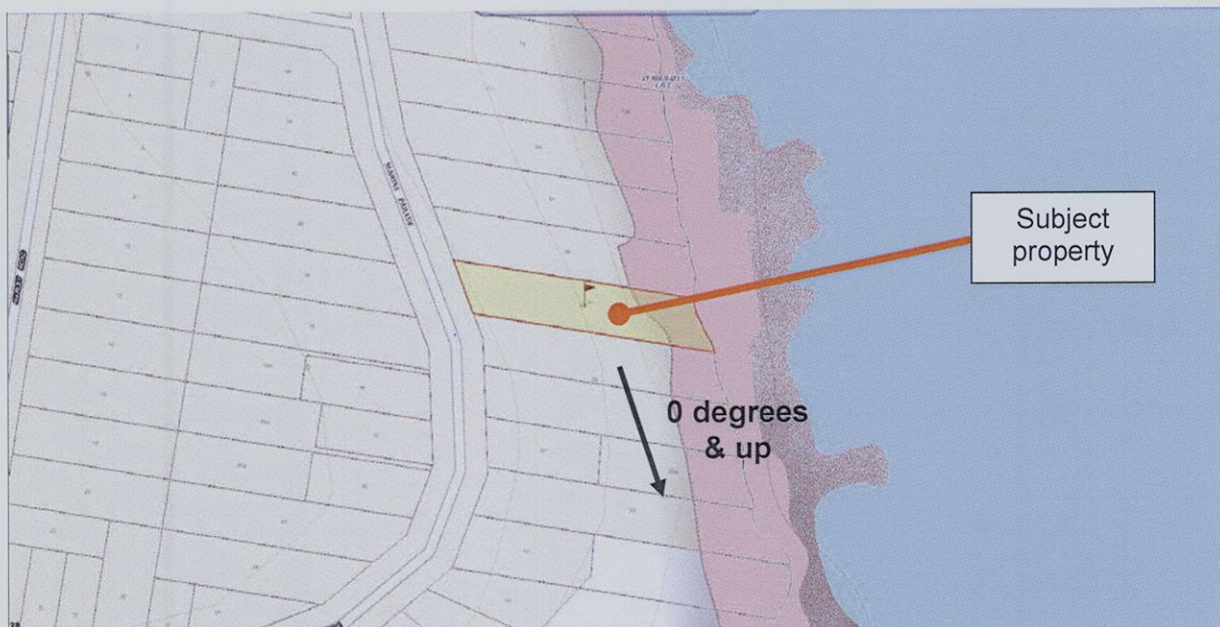


Image 04: Extract from Land and Property Management Authority Spatial Information Exchange

7.05 Asset Protection Zones

The minimum required Asset Protection Zone was determined from Table 2.4 of Planning for Bush Fire Protection 2006 to be 10 metres.

The proposed works were found to be located >13 metres from the hazard interface to the south. The Asset Protection Zone includes maintained land within the subject property and land “equivalent to an Asset Protection Zone” within a neighbouring private residential allotment.

All grounds within the subject property not built upon will be maintained as an Asset Protection Zone (Inner Protection Area) as detailed in the NSW Rural Fire Service’s document ‘Standards for Asset Protection Zones’. Note: This will allow for gardens (including native trees and shrubs) in the APZ managed as clumps or islands, covering no more than 20% of the area.



Photograph 04: View southwest from within the subject property toward Marine Parade



Photograph 05: View south from within the subject property toward the hazard interface

7.06 Property Access – Fire Services & Evacuation

The subject property has street frontage to Marine Parade to the west. Persons seeking to egress the subject property are able to do so via the existing access drive and existing road infrastructure.

The most distant external point of the building footprint will be within 70 metres of a public road supporting a hydrant network and therefore the Property Access requirements detailed in section 4.1.3 (2) of PBP are not applicable.

Fire services have free pedestrian access around the building footprint. Attending fire crews can access the hazard via Marine Parade and neighbouring private allotments for hazard reduction or fire suppression activities without the need to enter the subject property.

Access for fire services and opportunities for occupant evacuation are considered adequate for this property.

7.07 Fire Fighting Water Supply

The subject dwelling is connected to the reticulated town's water main in Marine Parade for its domestic needs. Existing in ground hydrants are available along Marine Parade and surrounding streets for the replenishment of attending fire services.

The most distant external point of the building footprint will be less than 70 metres from a public road supporting a hydrant network and therefore a Static Water Supply is not required.

The existing water supply is considered adequate for the replenishment of attending fire services.

8.0 Site & Bushfire Hazard Determination

8.01 Planning for Bush Fire Protection - 2006

Planning for Bush Fire Protection – 2006 (PBP) is applicable to those lands determined as being within a 'bushfire prone area' in accordance with a local Bushfire Prone Land Map as provided by the Rural Fire Service and Council.

The most appropriate method of determining site bushfire hazard under the terms of PBP is to consider the site in a singular form.

Bushfire prone areas are defined as those areas;

- *within or within 100m of high or medium bushfire hazards; or*
- *within or within 30m of low bushfire hazards.*

In this instance the subject property has been identified as being bushfire prone land therefore it is appropriate to apply PBP as follows:

Southern Aspect:

- a) Vegetation Structure Shrubland
- b) Slope 0 degrees & upslope
- c) A 10 metre APZ is required
- d) A >13 metre APZ is available
- e) The Bushfire Attack Level was determined to be 'BAL 19'

8.02 Australian Standard AS 3959 – 2009 'Construction of buildings in bushfire –prone areas'

Australian Standard 3959 – 2009 'Construction of buildings in bushfire-prone areas' provides for six (6) levels of building construction these being BAL - Low, BAL - 12.5, BAL - 19, BAL - 29, BAL - 40 and BAL - FZ. The Australian Standard 3959 specifies construction standards for buildings within various Bushfire Attack Levels as determined by the Planning for Bush Fire Protection – 2006 document. The NSW Rural Fire Service will not accept deemed to satisfy provisions for BAL Flame Zone and therefore have a NSW variation to the listed standard provisions of BAL FZ under AS3959 - 2009.

8.03 Correlation between bushfire impact and AS3959

Bushfire Attack Level	Maximum radiant heat impact (kW/m ²)	Level of construction under AS3959-2009
Low		No special construction requirements
12.5	≤12.5	BAL - 12.5
19	12.6 to 19.0	BAL - 19
29	19.1 to 29.0	BAL - 29
40	29.1 to 40.0	BAL - 40
Flame Zone	>40.0	BAL FZ No deemed to satisfy provisions

8.04 Site Specific Bushfire Hazard Determination

All property development must be assessed on an individual basis as broad-brush approaches of documents such as PBP may not be applicable in every instance. The proposed development located at 63 Marine Parade, Avalon was assessed against the requirements of Planning for Bush Fire Protection 2006 noting the following:

- a) Existing water supplies for fire fighting purposes are adequate and will not be altered as part of this development.
- b) Access to the subject property will be available from Marine Parade and the existing access drive.
- c) Access to the hazard is available without the need to enter the subject site.
- d) The proposed development is within the existing pattern of development.
- e) Recommendations to maintain the Asset Protection Zones within the subject property will be included.

8.05 Viable Construction Method

The objectives of Planning for Bush Fire Protection – 2006 are for the protection of life including fire fighters. Provided these objectives can be met the construction of buildings is feasible and both the Rural Fire Service and Council should be in a position to consider such applications.

The highest Bushfire Attack Level to the proposed works has been determined from Table 2.4.2 of AS3959 - 2009 to be 'BAL 19'. The proposed works are required to comply with section 3 and BAL 19 section 6 under AS 3959 – 2009 and Appendix 3 under PBP 2006.

In accordance with Section 3.5 of AS3959 – 2009, works to the northern and western aspects have been downgraded to 'BAL 12.5' due to shielding provided by the dwelling itself. Therefore works to the northern and western aspects are required to comply with section 3 and 'BAL 12.5' section 5 under AS 3959 – 2009 and Appendix 3 under PBP 2006.

8.06 Risk Rating

In assessing the bushfire threat to the site and its structures it is important to have a holistic approach and assess the risk of a bushfire occurring and impacting the subject property. It is also important to include the risk the site poses to neighbouring properties.

Table 01 is an overview of risk to the proposed dwelling. This model takes a holistic approach and assesses the risk of a bushfire occurring and impacting the site. This risk level can be reduced by either an increase in preparedness by the owners/occupants of the dwelling (e.g. good house keeping, maintained lawns & bushfire awareness) and/or hazard reduction activities by local fire agencies. Alternatively this risk level can increase if the preparedness level decreases and/or hazard reduction activities are neglected for the area.

The below matrix is for risk only, it does not reflect the Bushfire Attack Level determined within PBP 2006. Note: All new work will comply with the requirements of Planning for Bush Fire Protection 2006.

		CONSEQUENCE			
		Minor	Moderate	Major	Catastrophic
L I K E L I H O O D	Almost Certain	High	Very High	Extreme	Extreme
	Likely	Medium	High	Very High	Extreme
	Possible	Low	Medium	High	Very High
	Unlikely	Low	Low	Medium	High

Image 01: Risk Matrix

9.0 Recommendations

The following recommendations are provided as the minimum necessary for compliance with Planning for Bush Fire Protection – 2006 and Australian Standard 3959 'Construction of buildings in bushfire-prone areas' - 2009. Additional recommendations are provided to supplement these minimum requirements where considered necessary.

Asset Protection Zones

1. That all grounds not built upon within the subject property continue to be maintained as an Asset Protection Zone (Inner Protection Area) as detailed in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones' and Appendix 2 of Planning for Bush Fire Protection 2006.

Construction

2. New construction facing east and south shall comply with section 6 (BAL 19) Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and section A3.7 Addendum Appendix 3 of "Planning for Bush Fire Protection".
3. New construction facing north and west shall comply with section 5 (BAL 12.5) Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and section A3.7 Addendum Appendix 3 of "Planning for Bush Fire Protection".

Landscaping

4. That all new landscaping is to comply with Appendix 5 'Landscaping and Property Maintenance' under Planning for Bush Fire Protection 2006.

New Fencing

5. Where a fence does not connect to a dwelling and has a minimum of 1 metre separation from the dwelling then the fence may be constructed from hardwood, or non-combustible material.
6. Where a fence connects directly to or has less than 1 metre separation from a dwelling it should be constructed from non-combustible materials only.
7. In all cases where timber fences are proposed, care should be taken in the selection, location and maintenance of landscaping adjoining the fence. Unmanaged landscaping could promote fire activity due to ember, radiant heat and direct flame contact and then further impact timber fencing.

Gas (where applicable)

8. That reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities.
9. Metal piping is to be used.
10. 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.
11. 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.
12. Connections to and from gas cylinders are metal.
13. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.

10.0 Conclusion

Given that the property is deemed bushfire prone under Pittwater Council's Bushfire Prone Land Map any development would need to meet the requirements of Planning for Bush Fire Protection – 2006 and of the construction requirements of Australian Standard 3959 'Construction of buildings in bushfire-prone areas' - 2009. The determination of any bushfire hazard must be made on a site-specific basis that includes an assessment of the local bushland area and its possible impact to the subject property.

The subject property is a residential allotment within an area of similar properties. The hazard was identified as being located within neighbouring private allotments to the south of the proposed works. The vegetation posing a hazard was determined to be Shrubland.

The minimum required Asset Protection Zone was determined from Table 2.4 of Planning for Bush Fire Protection 2006 to be 10 metres.

The proposed works were found to be located >13 metres from the hazard interface to the south. The Asset Protection Zone includes maintained land within the subject property and land "equivalent to an Asset Protection Zone" within a neighbouring private residential allotment.

The highest Bushfire Attack Level to the proposed works has been determined from Table 2.4.2 of AS3959 - 2009 to be 'BAL 19'. The proposed works are required to comply with section 3 and BAL 19 section 6 under AS 3959 – 2009 and Appendix 3 under PBP 2006.

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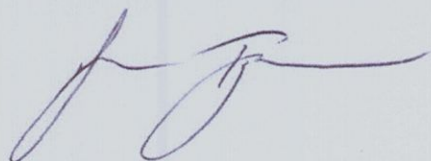
Existing access and water supply is considered adequate and satisfy section 4.1.3 of Planning for Bush Fire Protection 2006.

In accordance with the bushfire safety measures contained in this report, and consideration of the site specific bushfire risk assessment it is our opinion that when combined, they will provide a reasonable and satisfactory level of bushfire protection to the subject development and also satisfy both the Rural Fire Service's concerns and those of Council in this area.

We are therefore in support of the development application.

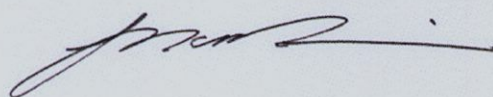
Should you have any enquiries regarding this project please contact me at our office.

Prepared by
Building Code & Bushfire Hazard Solutions



Ian Tyerman
Bushfire Consultant

Reviewed and endorsed by
Building Code & Bushfire Hazard Solutions P/L



Stuart McMonnies
G. D. Design in Bushfire Prone Areas.
Certificate IV Fire Technology
Fire Protection Association of Australia BPAD – L3 Certified Practitioner
Certification number – BPD – PA-09400

Disclaimer:

Quote from Planning for Bush Fire Protection 2006, 'Any representation, statement opinion, or advice expressed or implied in this publication is made in good faith on the basis that the State of New East Wales, the NSW Rural Fire Service, its agents and employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement or advice referred to above..'

Similarly the interpretations and opinions provided by Building Code and Bushfire Hazard Solutions in regard to bushfire protection are also given in the same good faith.

11.0 Annexure 01

List of Referenced Documents

- a) Environmental Planning and Assessment Act - 1979
- b) Rural Fires Act 1997
- c) 'Planning for Bush Fire Protection'- 2006 - NSW Rural Fire Services & Planning NSW
- d) 'Construction of buildings in bushfire prone areas' - AS 3959 – 2009 (as - amended) – Standards Australia
- e) 'Pittwater Council's Bushfire Prone Land Map'
- f) Acknowledgements to: NSW Department of Lands – SixViewer
Street-directory.com.au
- g) Plans by: Shimdesign; Dated: May 2014; DWG: 0514 - 2-5/5

Attachments

Attachment 01: 79BA Certificate

