



# Building Code & Bushfire Hazard Solutions

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Keith Root Building Services P/L  
Po Box 577  
AVALON NSW 2107

27<sup>th</sup> February 2020  
Our Ref: 190070D

Attn: Matthew Root

**Re: PROPOSED ALTERATIONS AND ADDITIONS TO AN EXISTING SOLE OCCUPANCY DWELLING  
67 MARINE PARADE, AVALON BEACH NSW  
PROVISION OF UPDATED BUSHFIRE ASSESSMENT**

Dear Matthew,

We understand that you are compiling the submission documents for the proposed alterations and additions to an existing dwelling at 67 Marine Parade, Avalon Beach.

Building Code & Bushfire Hazard Solutions P/L prepared a Bushfire Assessment Report (Reference No. 190070, Dated 8<sup>th</sup> August 2018) for a previous development application (DA2018/1333) which was approved and involved the alterations and additions to the existing dwelling and installation of a new swimming pool at 67 Marine Parade, Avalon Beach.

We have reviewed the plans relating to the new application prepared by Sketcharc, Project No 1816, Dated 07/02/2020.

We are satisfied that the proposed works do not alter the findings and / or recommendations made within the Bushfire Assessment Report prepared by Building Code & Bushfire Hazard Solutions P/L, Reference No. 190070, Dated 8<sup>th</sup> August 2018 which accompanied the previous development application.

We are therefore in support of the proposed Alterations and Additions with no additional Bushfire Protection Measures other than those already detailed in the aforementioned Bushfire Assessment Report.

Should you have any questions please do not hesitate in contacting our office.

Prepared by  
Building Code & Bushfire Hazard Solutions

**Andrew Muirhead**

Diploma of Engineering

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

**Stuart McMonnies**

Manager Bushfire Section  
G. D. Design in Bushfire Prone Areas.  
Certificate IV Fire Technology  
Fire Protection Association of Australia BPAD – L3 Accredited Practitioner  
Certification number – BPAD 9400



# Bushfire Assessment Report

***Proposed:***  
**Alterations and  
Additions**

***At:***  
**67 Marine Parade,  
Avalon**

*Reference Number:* 190070B

*Prepared For:*  
Matthew Root  
C/- SketchArc

**22<sup>nd</sup> August 2019**



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

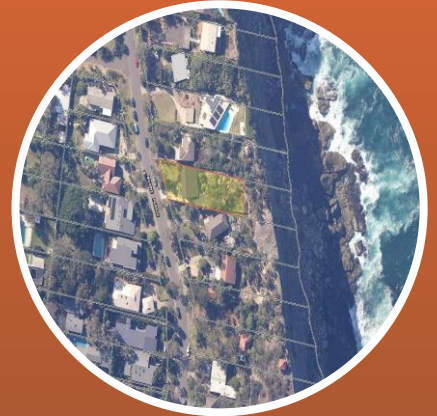
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**SILVER  
MEMBER**  
Fire Protection  
Association Australia



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**Legal status:**

This report has been prepared as a submission document in support of a development application to Council and in instances may rely upon information provided by a number of external sources including Councils, State Government Agencies and it is assumed that the information provided was accurate at the time. This report cannot be relied upon for commencement of works or construction until such time as it has been endorsed or otherwise included within the consent conditions issued by Council as part of the DA determination.

S4.14 applications (under the Environmental Planning and Assessment Act 1979) and all infill development applications may be referred by Council to the NSW Rural Fire Service for review and concurrence during the DA process. S100B applications under the Rural Fires Act 1997 (subdivisions and Special Fire Protection Purpose Developments), Flame Zone determinations and Alternate Solutions must be referred by Council to the NSW Rural Fire Service for review and receipt of a Bushfire Safety Authority (BSA) or other such recommended conditions from the NSW Rural Fire Service before the consent can be granted.

The onus is on the applicant to cross reference this document with any conditions of consent issued by Council or any requirements supplied by the NSW Rural Fire Service following development approval. BCBHS can review and cross reference these documents however the onus is on the applicant to provide them to us and request this review – Building Code and Bushfire Hazard Solutions Pty. Ltd. is not in a position to track every DA through Council and we rely upon the applicant to undertake this role as project co-ordinator.

Where any discrepancy between this document and the development approval or the NSW Rural Fire Service requirements is found, the conditions of consent always take precedence until such time as an application to review, amend or vary these conditions is approved.

**Disclaimer:**

This report has been prepared with due care and diligence by Building Code and Bushfire Hazard Solutions Pty. Ltd and the statements and opinions contained in this report are given in good faith and in the belief on reasonable grounds that such statements and opinions are correct and not misleading bearing in mind the necessary limitations noted in previous paragraphs.

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## List of Abbreviations:

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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	Northern Beaches Council
DA	Development Application
ELVIS	Elevation and Depth Foundation Spatial Data
EP&A Act	Environmental Planning and Assessment Act - 1979
ESD	Ecologically Sustainable Development
IPA	Inner Protection Area
NCC	National Construction Code
NSP	Neighbourhood Safer Place
NSWFR	NSW Fire & Rescue
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

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The development proposal relates to the alterations and additions to an existing sole occupancy dwelling within an existing residential allotment located at 67 Marine Parade, Avalon (Lot 1 DP 1205310).

The subject property has street frontage to Marine Parade to the west and abuts private residential allotments to the north and south and a vacant allotment followed by the Tasman Sea to the east. The vegetation identified as being the hazard is within neighbouring private allotments to the south of the proposed works.

Northern Beaches 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

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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

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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

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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 sketchArc, Project No 1816, Dwg No DA3, Dated 02/08/2019 has 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
<b>Vegetation Structure</b>	Maintained curtilages	Maintained curtilages	Scrub	Maintained curtilages
<b>Vegetation Width</b>	N/A	N/A	24 metres	N/A
<b>Slope</b>	N/A	N/A	0 degrees & up	N/A
<b>Asset Protection Zone</b>	N/A	N/A	>30 metres	N/A
<b>Significant Environmental Features</b>	Neighbouring residential allotments	Large escarpment / Tasman Sea	Neighbouring residential allotments	Marine Parade
<b>Threatened Species</b>	APZ Existing	APZ Existing	APZ Existing	APZ Existing
<b>Aboriginal Relics</b>	APZ Existing	APZ Existing	APZ Existing	APZ Existing
<b>Bushfire Attack Level</b>	N/A	N/A	BAL 12.5	N/A
<b>Required Construction Level</b>	BAL 12.5	BAL 12.5	BAL 12.5	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 alterations and additions includes maintained land within the subject property and land “equivalent to an Asset Protection Zone” within neighbouring private residential allotments.

### Construction Level Compliance

The highest Bushfire Attack Level to the proposed alterations and additions was determined from Table 2.4.2 of AS3959 - 2009 to be ‘BAL 12.5’. The proposed works 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 subject 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 <a href="http://www.rfs.nsw.gov.au/">http://www.rfs.nsw.gov.au/</a> 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



## 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 1<sup>st</sup> 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 alterations and additions to an existing sole occupancy dwelling within an existing residential allotment. To accord with PBP the development is classified as infill development and assessed as a s4.14 application under the Environmental Planning and Assessment Act 1979.

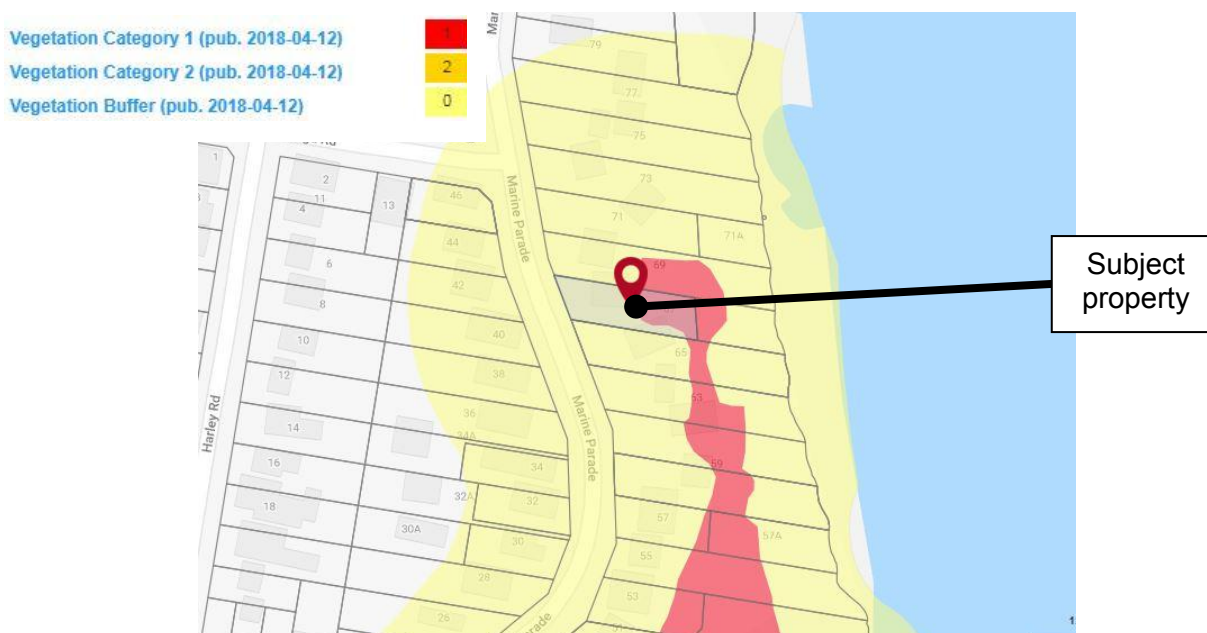


Image 02: Extract from NSW Planning Portal of Northern Beaches Councils Bushfire Prone Land Map

## 7.02 Location

The subject property is known as 67 Marine Parade, Avalon (Lot 1 in DP 1205310) and is a residential allotment located within Northern Beaches 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 a vacant allotment followed by the Tasman Sea to the east.

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



Subject dwelling

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



Approx location of the subject property

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

### 7.03 Vegetation

The predominate vegetation found within the subject property, neighbouring private residential allotments to the north and HN 65 Marine Parade was found to consist of landscaped gardens and mown lawns.

The properties further south of HN 65 Marine Parade were also found to have maintained areas around the built assets however it appears that there is a possible path for fire along the edge of the escarpment.

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

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



Scrub

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



Photograph 03: View south toward the bushfire hazard



## 7.04 Slope and Topography

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

The most significant bushfire impact from the south is expected to be from a bushfire burning across slope 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 04: View south toward the bushfire hazard

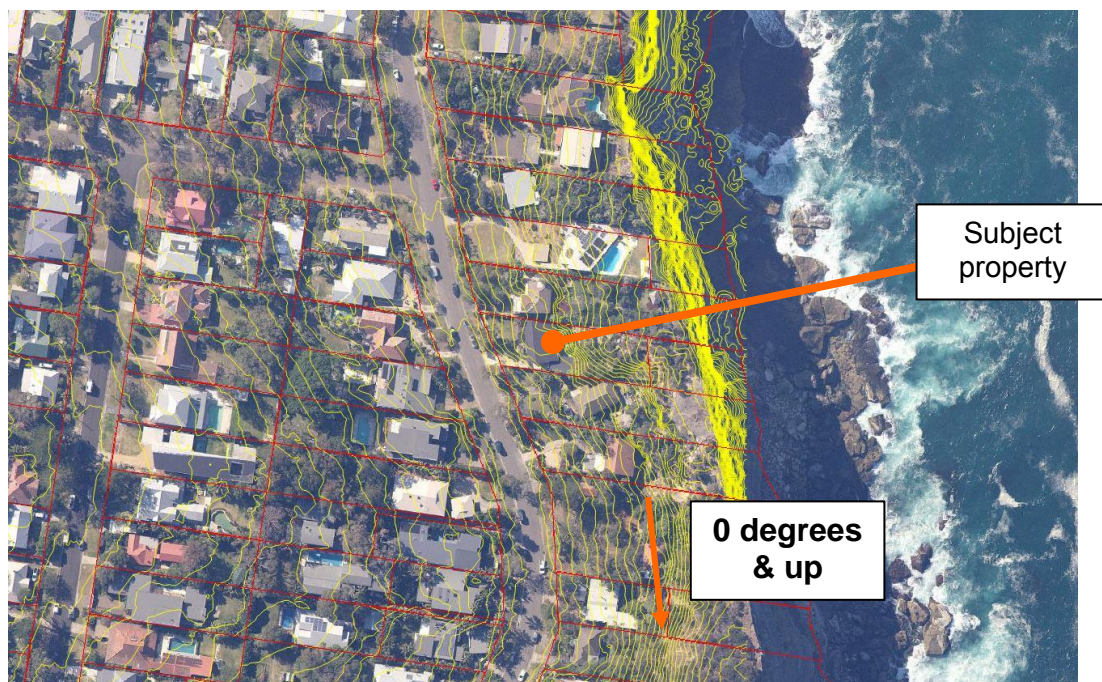


Image 04: Extract from ELVIS – Geoscience Australia (1 metre Contours)

## 7.05 Asset Protection Zones

The proposed alterations and additions are within the existing pattern of development and were found to be located >30 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 neighbouring private residential allotments.

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 05: View west from within the subject property toward Marine Parade

## 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 dwelling will be able to do so via the 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 existing 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. Regardless the proposed swimming pool will provide a static water supply within the subject property.

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



Photograph 06: View east from an existing hydrant toward the subject property

## 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 Scrub
- b) Vegetation Width 24 metres
- c) Slope 0 degrees & upslope
- d) A >30 metre APZ is available
- e) The Bushfire Attack Level was determined to be 'BAL 12.5'

### 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 <sup>2</sup> )	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 67 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 be supplemented as part of this development.
- b) Access to the subject property will be available from Marine Parade and the 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 was determined from Table 2.4.2 of AS3959 – 2009 to be 'BAL 12.5'. The proposed works is required to comply with section 3 and BAL 12.5 section 5 under AS 3959 – 2009 and the Addendum to Appendix 3 of PBP.

## 9.0 Recommendations

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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 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. That the proposed alterations and additions be constructed to that of section 3 and BAL 12.5 under section 5 of AS3959 – 2009.
3. That the proposed works be constructed to that of the 'Additional Construction Requirements' detailed in A3.7 of the Addendum to 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.

## 10.0 Conclusion

Given that the property is deemed bushfire prone under Northern Beaches 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 Scrub.

The proposed alterations and additions were found to be located >30 metres from the hazard interface. The Asset Protection Zone includes land within the subject property and land "*equivalent to an Asset Protection Zone*" within neighbouring private allotments.

The highest Bushfire Attack Level to the proposed works was determined from Table 2.4.2 of AS3959 – 2009 to be 'BAL 12.5'. The proposed works are required to comply with BAL 12.5 as detailed within section 3 and BAL 12.5 section 5 within AS 3959 – 2009 and the Addendum to Appendix 3 of PBP.

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.

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



**Andrew Muirhead**

Bushfire Consultant  
Diploma of Engineering

Reviewed by  
Building Code & Bushfire Hazard Solutions P/L



**Stuart McMonnies**

Manager Bushfire Section  
G. D. Design in Bushfire Prone Areas.  
Certificate IV Fire Technology  
Fire Protection Association of Australia BPAD – L3 Accredited Practitioner  
Certification number – BPAD 9400





## 11.0 Annexure 01

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### List of Referenced Documents

- a) Environmental Planning and Assessment Act - 1979
- b) 'Planning for Bush Fire Protection' - 2006 - NSW Rural Fire Services & Planning NSW
- c) 'Construction of buildings in bushfire prone areas' - AS 3959 – 2009 (as - amended) – Standards Australia
- d) 'Northern Beaches Council's Bushfire Prone Land Map'
- e) Acknowledgements to:
  - Geoscience Australia
  - NSW Department of Lands – Sixmaps
  - Street-directory.com.au
- f) Site plans by sketchArc, Project No 1816, Dwg No DA3, Dated 02/08/2019

### Attachments

Attachment 01: s4.14 Certificate



# Building Code & Bushfire Hazard Solutions

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## BUSHFIRE RISK ASSESSMENT CERTIFICATE UNDER PART 4 DIVISION 4.3 SECTION 4.14 OF THE EP&A ACT 1979 NO 203

PROPERTY ADDRESS:	67 Marine Parade, Avalon
DESCRIPTION OF PROPOSAL:	Alterations and Additions
PLAN REFERENCE: (relied upon in report preparation)	Site Plan prepared sketchArc, Project No 1816, Dwg No DA3, Dated 02/08/2019
BAL RATING:	BAL 12.5 <small>(If the BAL rating is FZ the application is to be referred to NSW RFS for assessment)</small>
DOES THE PROPOSAL RELY ON ALTERNATE SOLUTIONS:	YES <input checked="" type="radio"/> NO <input type="radio"/> <small>(Circle the relevant response)</small> <small>(If YES the application is to be referred to NSW RFS for assessment)</small>
BUSHFIRE ASSESSMENT REPORT REFERENCE:	190070B
REPORT DATE:	22 <sup>nd</sup> August 2019
CERTIFICATION NO/ACCREDITED SCHEME	BPAD9400

I Stuart McMonnies of Building Code and Bushfire Hazard Solutions Pty Ltd hereby certify, in accordance with Part 4 Division 4.3 Section 4.14 of the *Environmental Planning and Assessment Act 1979 No 203*:

1. That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in bushfire risk assessment; and
2. That subject to the recommendations contained in the Bushfire Risk Assessment Report the proposed development conforms specifications and requirements of the documents entitled *Planning for Bush Fire Protection* prepared by the NSW Rural Fire Service in co-operation with the Department of Planning and any other documents as prescribed by Part 4 Division 4.3 Section 4.14 of the *Environmental Planning and Assessment Act 1979 No 203*.

I am aware that the Bushfire Assessment Report, prepared for the above mentioned site is to be submitted in support of a development application for this site and will be relied upon by Council as the basis for ensuring that the bushfire risk management aspects of the proposed development have been addressed in accordance with *Planning for Bushfire Protection 2006*.

Signature:  Date: 22<sup>nd</sup> August 2019

