

Bushfire Assessment Report

Proposed:
**Alterations and
additions**

At:
**49 Careel Head Road
Avalon Beach**

Reference Number: 211579

Prepared For:
Dan Morley

15th October 2021



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

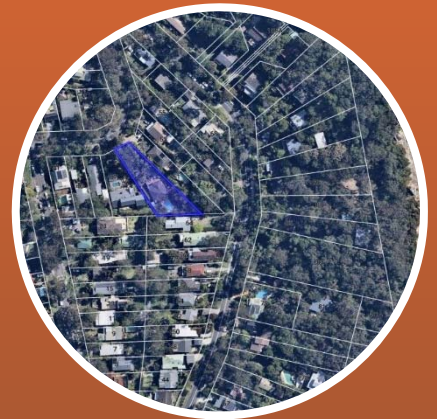
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**SILVER
MEMBER**
Fire Protection
Association Australia



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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.

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Version Control				
Version	Date	Prepared by	Reviewed by	Details
1	15/10/2021	Duncan Armour	David McMonnies BPAD Accreditation No. 2354	Final Report

List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2018
BAL	Bushfire Attack Level
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	<i>Environmental Planning and Assessment Act - 1979</i>
ESD	Ecologically Sustainable Development
FRNSW	Fire and Rescue NSW
IPA	Inner Protection Area
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
NP	National Park
NSP	Neighbourhood Safer Place
OPA	Outer Protection Area
PBP	<i>Planning for Bush Fire Protection – November 2019</i>
ROW	Right of Way
RF Act	<i>Rural Fires Act - 1997</i>
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 alterations and additions to an existing residential dwelling within an existing residential allotment located at 49 Careel Head Road, Avalon Beach (Lot 31 DP 11909).

The subject property has a street frontage to Careel Head Road to the north and abuts private residential allotments to the remaining aspects.

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 application of the relevant specifications and requirements of *Planning for Bush Fire Protection - 2019* (PBP).

PBP formally adopted on the 1st March 2020 provides for the protection of property and life (including fire-fighters and emergency service personnel) from bushfire impact.

Northern Beaches Council's Bushfire Prone Land Map identifies the subject property as partially containing the 100 metre buffer zone from Category 1 Vegetation therefore PBP must apply in this instance.

As the subject development relates to the alterations and additions of an existing dwelling within an existing residential allotment it is classified as infill development and assessed as a s4.14 application under the *Environmental Planning and Assessment Act 1979* and section 7 'Residential Infill Development' of PBP applied.

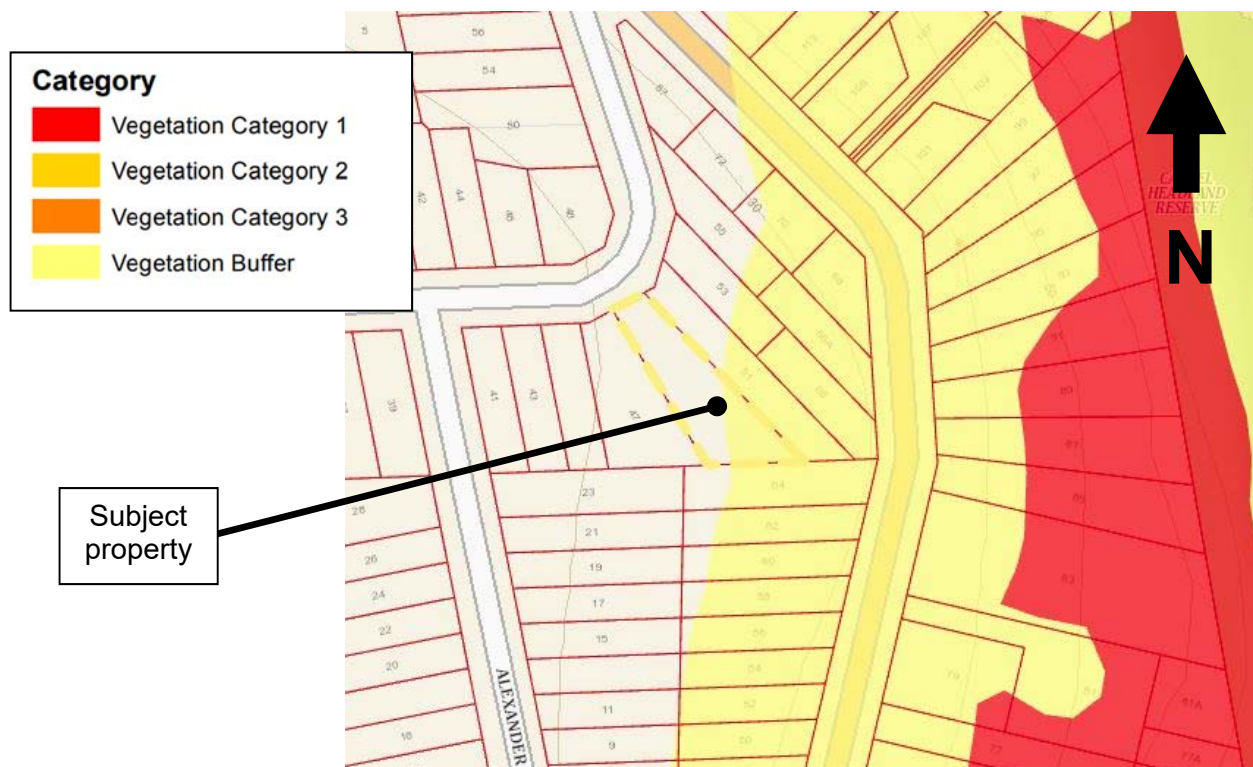


Figure 01: Extract from Northern Beaches Council's Bushfire Prone Land Map

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide owners and Council with an independent bushfire assessment 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 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 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.

4.0 Compliance Tables & Notes

The following table sets out the projects compliance with *Planning for Bush Fire Protection – 2019*.

	North	South	East	West
Vegetation Structure	Maintained curtilages	Maintained curtilages	Forest	Maintained curtilages
Slope	N/A	N/A	0 degrees & up	N/A
Asset Protection Zone	>100 metres	>100 metres	>70 metres	>100 metres
Significant Landscape Features	Careel Head Road	Neighbouring private residential allotments	Neighbouring private residential allotments	Neighbouring private residential allotments
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 12.5	N/A
Required Construction Level	BAL 12.5	BAL 12.5	BAL 12.5	BAL 12.5

Compliance Summary of Bushfire Protection Measures			
Bushfire Protection Measure (s7.4 PBP)	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.02
Construction Standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.03
Access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.04
Water Supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.05
Gas and Electrical Supplies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.05

Asset Protection Zones

The available Asset Protection Zone was measured to be >70 metres to the east of the proposed works. The APZ consists of maintained grounds within the subject property and land equivalent to an APZ within neighbouring residential allotments and Whale Beach Road.

Construction Level

The highest Bushfire Attack Level to the proposed works was determined from Table A1.12.5 of PBP to be 'BAL 12.5'. The proposed works will be constructed to sections 3 & 5 (BAL 12.5) under AS 3959 – 2018 and the additional construction requirements detailed in section 7.5 of PBP 2019.

Access and Services

Guideline Ref.	Proposed Development Determinations
Property Access (Driveway)	The most distant external point of the subject building is within 70 metres of a public road supporting a hydrant network and therefore the Access requirements detailed in Table 7.4a of PBP are <u>not</u> applicable.
Water Supply	The most distant external point of the building footprint is <90 metres from an operational hydrant and therefore a Static Water Supply is not required under AS2419.1 – 2017 (Appendix E, Figure E7) and section 7.4 of PBP.
Evacuation	Evacuation is possible by utilising existing road infrastructure. It is encouraged that the occupants complete a Bush Fire Survival Plan.
Electrical Supply	Existing aerial supply provided.
Gas Supply	New connections must comply with Table 7.4a of PBP 19.

5.0 Aerial view of the subject allotment

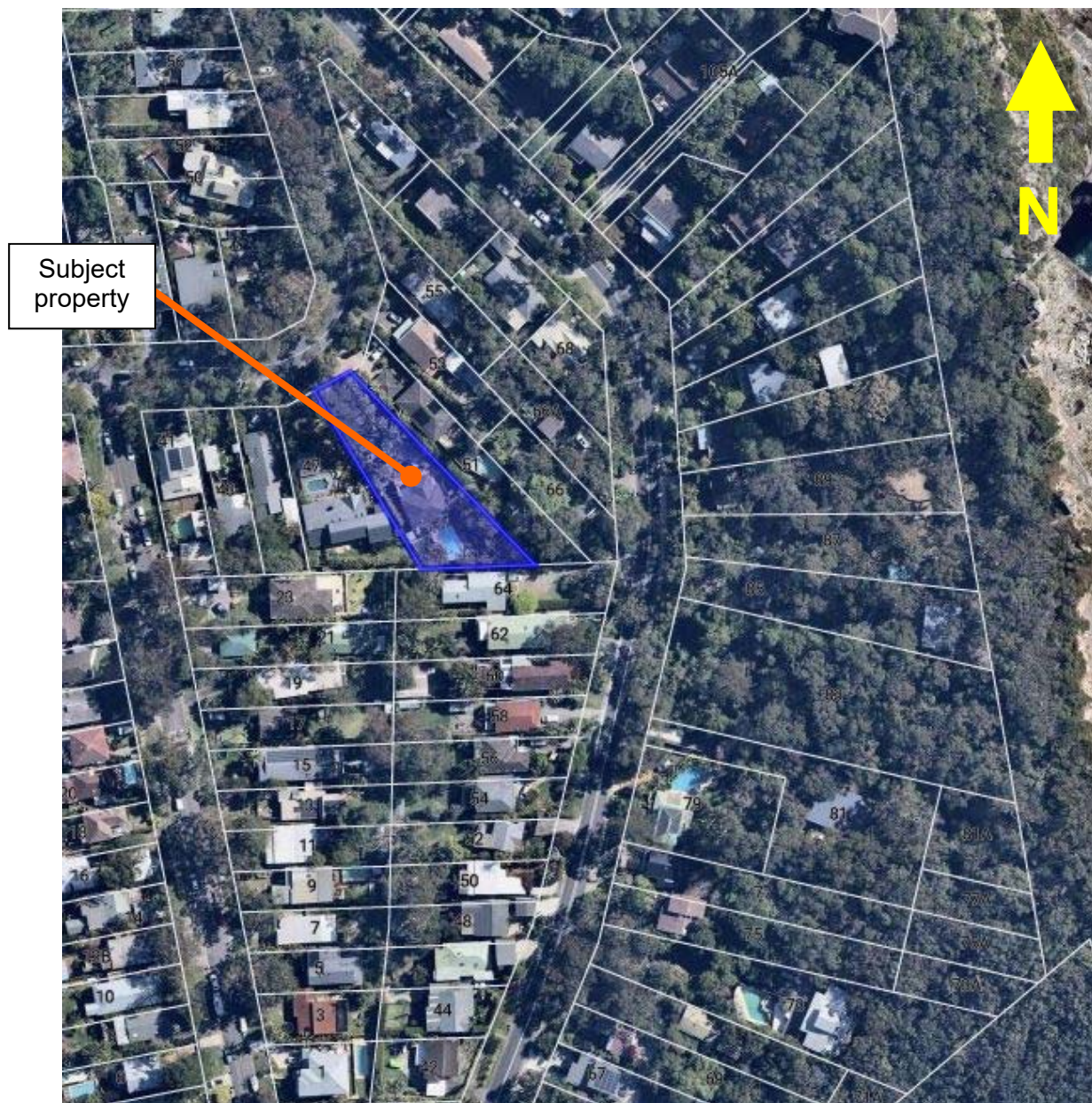


Figure 02: Aerial view of the subject area C/- Nearmap – October 2021

6.0 Site Assessment

6.01 Location

The subject property is known as 49 Careel Head Road, Avalon Beach (Lot 31 DP 11909) and is a residential allotment (Zoned R2: Low Density Residential) located within Northern Beaches Councils Local Government Area.

The subject property has a street frontage to Careel Head Road to the north and abuts private residential allotments to the remaining aspects.

The vegetation identified as being the hazard is located within Bangalley Head Reserve to the north of the subject dwelling.



Subject property

Photograph 01: View south from Careel Head Road toward the subject property



Location of the subject property

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

6.02 Vegetation

The predominant vegetation within the subject property and most neighbouring private residential allotments was found to consist of landscaped gardens and urban landscaping.

The vegetation identified as being the hazard is located within Bangalley Head Reserve to the east of the subject dwelling. The vegetation posing a hazard was found to consist of trees 10 - 20 metres in height with 50 - 70% foliage cover, the understorey consisted of low trees, shrubs and exotics.

For the purpose of assessment under PBP we have determined the vegetation posing a hazard to the east to be Forest.



Photograph 02: View of vegetation to the east of the subject property



Photograph 03: View into the vegetation within Bangalley Head Reserve to the east of the subject property

6.03 Slope and Topography

The slope of the land under the classified vegetation has a direct influence on the forward rate of spread, fire intensity and radiant heat exposure. The effective slope is considered to be the slope under the classified vegetation which will most significantly influence bushfire behaviour toward the development site.

In accordance with A1.4 'Determine slope' of PBP the slope assessment is to be derived from the most detailed contour data available.

The slope that would most significantly influence bushfire behaviour was determined from topographic imagery in conjunction with site observations to be:

- 0 degrees and up slope within the hazard to the east



Figure 04: Extract from ELVIS - Geoscience Australia (1 metre contours)

7.0 Bushfire Protection Measures

7.01 Planning for Bush Fire Protection - 2019

Planning for Bush Fire Protection – 2019 (PBP) is applicable to development located on land determined as being 'bushfire prone' in accordance with the local Bushfire Prone Land Map.

Bushfire prone land are defined as those areas;

- containing or within 100m of Category 1 Vegetation; or
- containing or within 30m of Category 2 Vegetation.

Northern Beaches Council's Bushfire Prone Land Map identifies the subject property as partially containing the 100 metre buffer zone from Category 1 Vegetation therefore PBP must apply in this instance.

The application of Planning for Bush Fire Protection requires satisfactory demonstration of the aim and objectives and the following bushfire protection measures (BPMs):

- Asset Protection Zones
- Building construction, siting & design
- Access arrangements
- Water supply & utilities
- Emergency management arrangements
- Landscaping

As the proposal relates to the alterations and additions to an existing residential dwelling in addition with the aim and objectives the proposal must comply with the bushfire protection measures detailed within Chapter 7 'Residential Infill Development' of PBP.

7.02 Asset Protection Zones

The subject property is a residential allotment located in an area of similar properties. The vegetation identified as being the hazard is located within Bangalley Head Reserve to the east of the subject dwelling.

The available Asset Protection Zone was measured to be >70 metres to the east. The APZ consists of maintained grounds within the subject property and land equivalent to an APZ within neighbouring residential allotments and Whale Beach Road.

All grounds within the subject property are to be maintained in accordance with an Inner Protection Area (IPA) as detailed in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones'.

7.03 Building construction, siting & design

Australian Standard 3959 – 2018 'Construction of buildings in bushfire-prone areas' (AS3959) specifies construction standards for buildings within various Bushfire Attack Levels as determined by Planning for Bush Fire Protection – 2019.

AS3959 provides for six (6) levels of building construction these being BAL - Low, BAL - 12.5, BAL - 19, BAL - 29, BAL - 40 and BAL - FZ.

Bushfire Attack Level	Maximum radiant heat impact (kW/m ²)	Level of construction under AS3959-2018
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

Table 01: Correlation between bushfire impact and AS3959

The highest Bushfire Attack Level to the proposed works was determined from Table A1.12.5 of PBP to be 'BAL 12.5'. The proposed works are required to be constructed to sections 3 & 5 (BAL 12.5) under AS 3959 – 2018 and the additional construction requirements detailed in section 7.5 of PBP 2019.

7.04 Access

The subject property has a street frontage to Careel Head Road to the north. Persons seeking to egress from the subject property are able to do so via the existing access drive and public roads.

The most distant external point of the proposed works to the subject dwelling is less than 70 metres from a public road supporting the operational use of fire fighting vehicles and therefore the Access requirements detailed in Table 7.4a of PBP are not applicable.

Access to the hazard is available via Whale Beach Road and trails within Bangalley Head Reserve for hazard reduction or fire suppression activities.

The existing access is considered adequate and will not be altered as part of this development.

7.05 Water Supply & Utilities

Hydrants are available throughout Careel Head Road and surrounding streets for the replenishment of fire service vehicles. The most distant external point of the building footprint is <90 metres from an operational hydrant and therefore a Static Water Supply is not required under AS2419.1 – 2017 (Appendix E, Figure E7) and section 7.4 of PBP.

The existing water supply is considered adequate for this development.

The existing dwelling has an aerial connection to the existing electrical network.

Any new gas connections must comply with Table 7.4a of PBP.



Photograph 04: View from an existing hydrant toward the subject property

7.06 Emergency management arrangements

Evacuation is possible by utilising existing road infrastructure.

It is encouraged that the occupants complete a Bush Fire Survival Plan. The template for this plan is available at <https://www.rfs.nsw.gov.au/resources/bush-fire-survival-plan>.

7.07 Landscaping

Any new landscaping must comply with Section 3.7 'Landscaping' of *Planning for Bush Fire Protection* 2019.

7.08 Aim & Objectives of PBP

The following table details the aim and objectives of Planning for Bush Fire Protection 2019 and the proposals ability to comply.

Aim / Objective	Comment
<p>The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.</p>	<p>With the inclusion of the recommendations made herein it is of our opinion that the aim of PBP has been satisfied.</p>
<p>(i) afford buildings and their occupants protection from exposure to a bush fire;</p>	<p>The proposed works will be constructed to BAL 12.5 under section 5 of AS3959 – 2018 being the relevant Bushfire Attack Level.</p>
<p>(ii) provide for a defensible space to be located around buildings;</p>	<p>The maintained lawns and gardens and Whale Beach Road provide a suitable defensible space for attending fire services.</p>
<p>(iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;</p>	<p>The proposed works being constructed to BAL 12.5 will minimise potential material ignition.</p>
<p>(iv) ensure that appropriate operational access and egress for emergency service personnel and occupants is available;</p>	<p>The most distant external point of the proposed works to the subject building is less than 70 metres from a public road supporting the operational use of fire fighting vehicles.</p>
<p>(v) provide for ongoing management and maintenance of bush fire protection measures, (BPMs); and</p>	<p>All grounds within the subject site will be maintained in accordance with an Inner Protection Area as detailed in Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW Rural Fire Service publication 'Standards for Asset Protection Zones'.</p> <p>Any new landscaping is to comply with the provisions of Table 7.4a and Appendix 4 of PBP – 2019.</p>

Aim / Objective	Comment
(vi) ensure that utility services are adequate to meet the needs of firefighters.	<p>Hydrants are available throughout Careel Head Road and surrounding streets for the replenishment of fire service vehicles.</p> <p>The most distant external point of the subject building is within 90 metres of a hydrant.</p>

It is therefore of our opinion that the proposal can satisfactorily comply with the aim and objectives of Planning for Bush Fire Protection 2019.

8.0 Recommendations

The following recommendations are provided as the minimum necessary for compliance with Planning for Bush Fire Protection – 2019 and Australian Standard 3959 'Construction of buildings in bushfire-prone areas - 2018. Additional recommendations are provided to supplement these minimum requirements where considered necessary.

Asset Protection Zones

1. That all grounds within the subject property are 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 4 of *Planning for Bush Fire Protection 2019*.

Note: At the time of our inspection the APZ is existing and no vegetation modification is required to implement the aforementioned APZ

Construction

2. That all new works shall comply with Australian Standard 3959 - 2018 "Construction of buildings in bush fire-prone areas" Sections 3 & 5 (BAL 12.5) and Section 7.5 of *Planning for Bush Fire Protection 2019*.

Landscaping

3. That any new landscaping is to comply with Section 3.7 'Landscaping' under *Planning for Bush Fire Protection 2019*.

Emergency management

4. That the occupants of the subject building complete a Bush Fire Survival Plan.

9.0 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 – 2019 and of the construction requirements of AS3959 – 2018. 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 vegetation identified as being the hazard is located within Bangalley Head Reserve to the north of the subject dwelling. The vegetation posing a hazard was determined to be Forest on a 10 - 15 degree down slope.

The highest Bushfire Attack Level to the proposed works was determined from Table A1.12.5 of PBP to be 'BAL 12.5'. The proposed works must be constructed to sections 3 & 5 (BAL 12.5) under AS 3959 – 2018 and the additional construction requirements detailed in section 7.5 of PBP 2019.

The existing water supply and access provisions are considered adequate for this development.

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



Duncan Armour
Bushfire Consultant

Reviewed and endorsed by
Building Code & Bushfire Hazard Solutions



David McMonnies, AFSM. / M I Fire E
Masters of Const. Mgt. / G. D. Design in
Bushfire Prone Areas
Managing Director.
FPA Australia BPAD Level 3 Accredited Practitioner
BPAD Accreditation No. BPAD2354



10.0 Annexure 01

List of Referenced Documents

Australian Building Codes Board (2019). *National Construction Code Volume Two - Building Code of Australia*. ABCB

ELVIS -Elevation -Foundation Spatial Data. Elevation.fsdf.org.au. Available at:
<http://elevation.fsdf.org.au/>

Keith, D. (2004). "Ocean Shores to Desert Dunes" Department of Environment and Conservation, Sydney

NSW Department of Planning and Environment (2019). *Planning Portal*. Accessed at:
<https://www.planningportal.nsw.gov.au/>

NSW Rural Fire Service (2019). *Planning for Bushfire Protection. A Guide for Councils, Planners, Fire Authorities and Developers*.

Rural Fire Service NSW (2005). *Standards for Asset Protection Zones*

Site plan prepared by Map Architecture + Interiors, DWG No. DA-002, Revision A, Dated 20/09/2021

Standards Australia (2018). *AS3959 Construction of buildings in bushfire-prone areas*.

Standards Australia (2014). *AS/NZS 1596 The storage and handling of LP Gas*

Acknowledgements to:

Geoscience Australia
Nearmap
NSW Department of Lands – SIXMaps
Street-directory.com.au

Attachments

Attachment 01: s4.14 Compliance 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:	49 Careel Head Road, Avalon Beach
DESCRIPTION OF PROPOSAL:	Alterations and additions
PLAN REFERENCE: (relied upon in report preparation)	Site plan prepared by Map Architecture + Interiors, DWG No. DA-002, Revision A, Dated 20/09/2021
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 NO <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:	211579
REPORT DATE:	15 th October 2021
CERTIFICATION NO/ACCREDITED SCHEME	BPAD2354

I David 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*:

- That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in bushfire risk assessment; and
- 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 2019*.

Signature: 

Date: 15th October 2021

