

Bush Fire Assessment Report

Proposed:
New Dwelling

At:
**1127 Barrenjoey Road,
Palm Beach**

Reference Number: 210380

Prepared For:
Dr & Mrs Kennedy

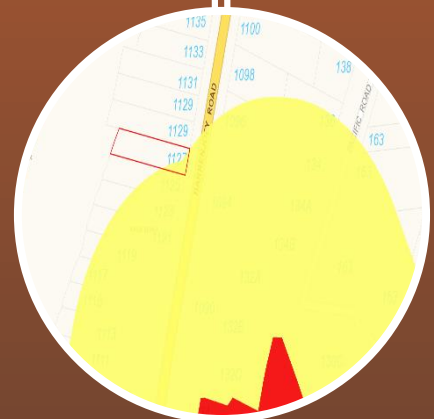
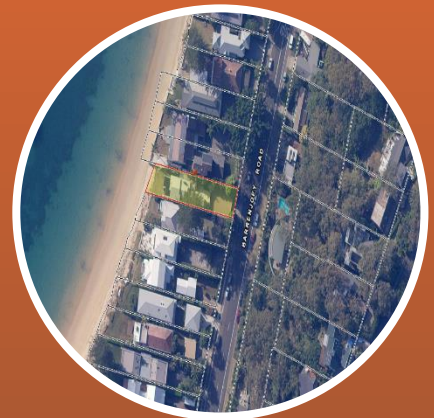
12th October 2020



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

Tel: (02) 9457 6530
PO Box 124
Berowra NSW 2081
ABN 19 057 337 774

www.bushfirehazardsolutions.com.au



Contents

	<u>Page No.</u>
Copyright and Disclaimer	2
List of Abbreviations	3
1.0 Introduction	4
2.0 Purpose of Report	5
3.0 Scope of Report	5
4.0 Compliance Table and Notes	5 - 6
5.0 Aerial view of the subject allotment	7
6.0 Site Assessment	8 - 11
7.0 Bushfire Assessment	12 - 15
8.0 Recommendations	16
9.0 Conclusion	17
10.0 Annexure	18
- List of referenced documents and attachments	
- Attachments	

Copyright:

Where agreed to by Building Code and Bushfire Hazard Solutions Pty. Ltd, this report may only be copied, distributed or forwarded to other parties in its original format. No part of this document including any wording, images, or graphics can be modified, changed or altered in any way without the express permission of Building Code and Bushfire Hazard Solutions Pty. Ltd. (Copyright Act 1968).

Where this document is found to have been used or altered in any way without the express permission of Building Code and Bushfire Hazard Solutions Pty. Ltd. including any wording, images, or graphics, Building Code and Bushfire Hazard Solutions Pty. Ltd. will not be held liable for any incidental or consequential loss or damages, financial or otherwise resulting from the use of the modified document. Building Code and Bushfire Hazard Solutions Pty. Ltd. will if it considers it necessary, seek to advise third parties including authorities of such illegal use or modifications.

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.

Section 4.14 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.

Further, no responsibility is accepted by Building Code and Bushfire Hazard Solutions Pty. Ltd. or any of its officers or employees for any errors, including errors in data which is supplied by a third party, or which Building Code and Bushfire Hazard Solutions Pty. Ltd. is required to estimate, or omissions howsoever arising in the preparation of this report, provided that this will not absolve Building Code and Bushfire Hazard Solutions Pty. Ltd. from liability arising from an opinion expressed recklessly or in bad faith.

Any representation, statement of opinion, or advice expressed or implied in this document is made in good faith on the basis that Building Code and Bushfire Hazard Solutions Pty. Ltd. employees and / or agents are not liable (whether by reason of negligence, lack of care or any other reason) to any person, company or their agents 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.

Version Control				
Version	Date	Author	Reviewed by	Details
1	12/10/2020	Ian Tyerman	Stuart McMonnies BPAD Accreditation No. 9400	Final Release

List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2018 as amended
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 demolition of an existing dwelling and the construction of a new sole occupancy dwelling within an existing residential allotment located at 1127 Barrenjoey Road, Palm Beach.

The subject property has street frontage to Barrenjoey Road to the east, Pittwater (Snapperman Beach) to the west and abuts similar residential allotments to the north and south.

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 relevant specifications and requirements detailed in the document '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.

The subject site is identified on Northern Beaches Council's Bushfire Prone Land Map (BPLM) as containing the 100 metre buffer zone from Category 1 Vegetation, therefore the application of PBP must apply in this instance.

The subject development relates to the construction of a sole occupancy dwelling within an existing residential allotment. The development is classified as infill development and assessed as a S4.14 application under the *Environmental Planning and Assessment Act 1979* and chapter 7 'Residential Infill Development' of PBP applied.

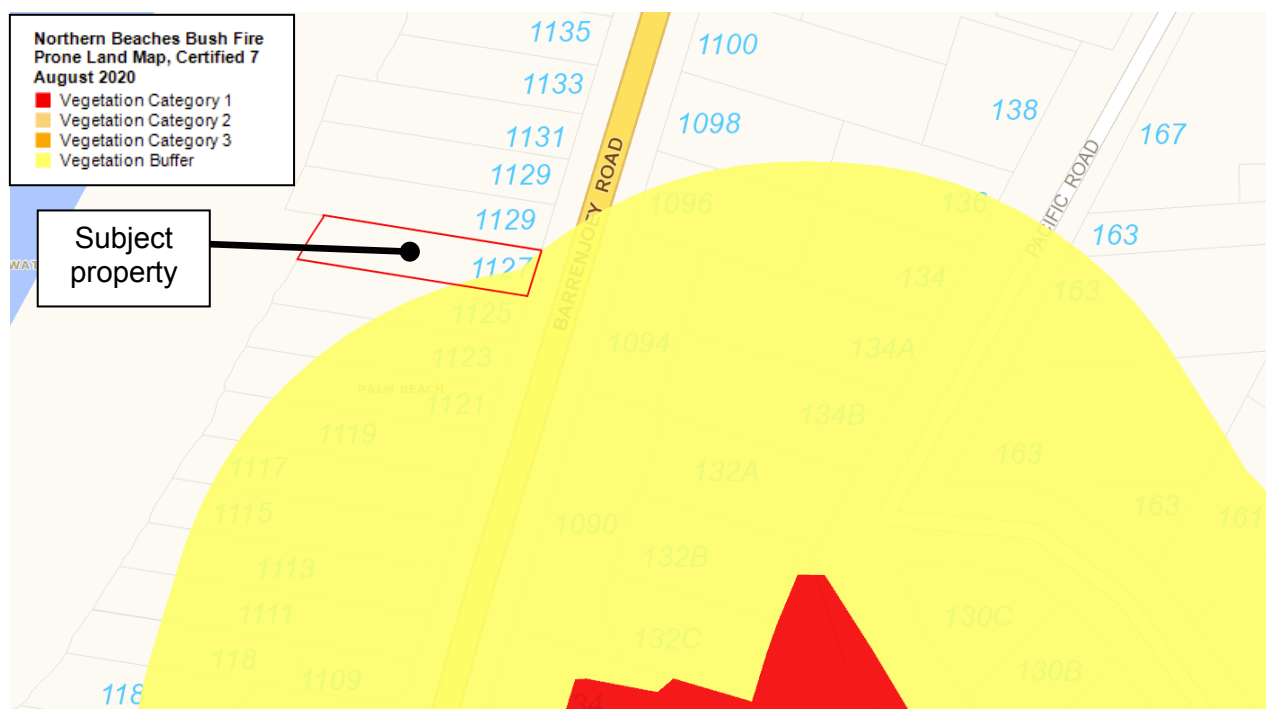


Figure 01: Extract from Northern Beaches Council's Bushfire Prone Land Map

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide the owners and Council with an independent bushfire 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 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	West	South	East
Vegetation Structure	Maintained grounds	Maintained grounds	Maintained grounds	Remnant
Slope	N/A	N/A	N/A	0 degrees & upslope
Existing Asset Protection Zone	>100 metres	>100 metres	>100 metres	>36 metres
Significant Landscape Features	Neighbouring residential allotment	Neighbouring residential allotment	Neighbouring residential allotment	Barrenjoey Road
Threatened Species	APZ Existing	APZ Existing	APZ Existing	APZ Existing
Aboriginal Relics	APZ Existing	APZ Existing	APZ Existing	APZ Existing
Bushfire Attack Level	BAL Low	BAL Low	BAL Low	BAL 12.5
Required Construction Level	BAL 12.5	BAL 12.5	BAL 12.5	BAL 12.5

Compliance Summary of Bushfire Protection Measures			
Bushfire Protection Measure	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 Compliance

The available Asset Protection Zone was measured to be >36 metres from hazard interface to the east.

The APZs consist of maintained grounds within the subject property and land equivalent to an APZ within neighbouring residential allotments and Barrenjoey Road.

Construction Level Compliance

The highest Bushfire Attack Level to the proposed dwelling was determined from Table A1.12.5 of PBP to be 'BAL 12.5'. The proposed new dwelling is required to comply with BAL 12.5 section 5 under AS 3959 – 2018 and the additional construction requirements under section 7.5 of PBP.

Access and Services

Property Access (Driveway)	The most distant external point of the subject dwelling will be 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 will be within 70 metres from a public road supporting a hydrant network and therefore a Static Water Supply is <u>not</u> required under Chapter 7 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 01: Aerial view of the subject area. Courtesy Nearmap

6.0 Site Assessment

6.01 Location

The subject property is known as 1127 Barrenjoey Road, Palm Beach and is an existing residential allotment Zoned E4 Environmental Living located within Northern Beaches Councils local government area.

The subject property has street frontage to Barrenjoey Road to the east, Pittwater (Snapperman Beach) to the west and abuts similar allotments to the north and south. The vegetation identified as being the hazard is to the east beyond neighbouring dwellings and Barrenjoey Road.



Subject Property

Photograph 01: View from Barrenjoey Road toward the subject property



Figure 02: Extract from street-directory.com.au

6.03 Vegetation

The subject property and most neighbouring private residential allotments were found to consist of landscaped gardens and mown lawns around existing buildings. T

The vegetation identified as being the hazard is to the east beyond neighbouring private allotments and southeast within McKay Reserve.

The vegetation posing a hazard to the east was found to consist of trees 10 - 30 metres in height with 30 - 70% foliage cover, the understorey consisted of low trees and ferns and weeds.

The vegetation to the southeast is additionally heavily influenced in regards to bushfire impact by a 20m high cliff which would effectively reduce the lateral spread of fire from the east and southeast.

The vegetation to the east and southeast was also found to be <50 metres in width and although the vegetation to the southeast provides a tenuous linkage to a larger hazard further to the south, the potential of a fully developed fire impacting the site from this direction is considered negligible.

PBP states:

A1.11.1 Simplified approach

"The simplified approach provides an acceptable method for assessing remnant vegetation. Remnant vegetation is a parcel of vegetation with a size of less than 1 Ha or a shape that provides a potential fire run that could threaten buildings not exceeding 50m. These remnants are considered a low hazard and APZ setbacks and building construction standards for these may be the same as for rainforests.

The effective slope is to be determined under the remnant that provides the most significant bush fire behavior."

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



Photograph 02: View into the hazard to the southeast of the subject property



Photograph 03: View from Barrenjoey Road showing the vegetation and cliff to the southeast



Photograph 04: View southeast from the subject site showing the vegetation southeast

6.04 Slope and Topography

The slope that would most significantly influence bushfire behaviour must be assessed for a distance of 100 metres from within the hazard. The most significant bushfire impact from the east is expected to be a bushfire travelling down slope toward the subject property.

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

- >15 degrees up slope within the hazard to the east

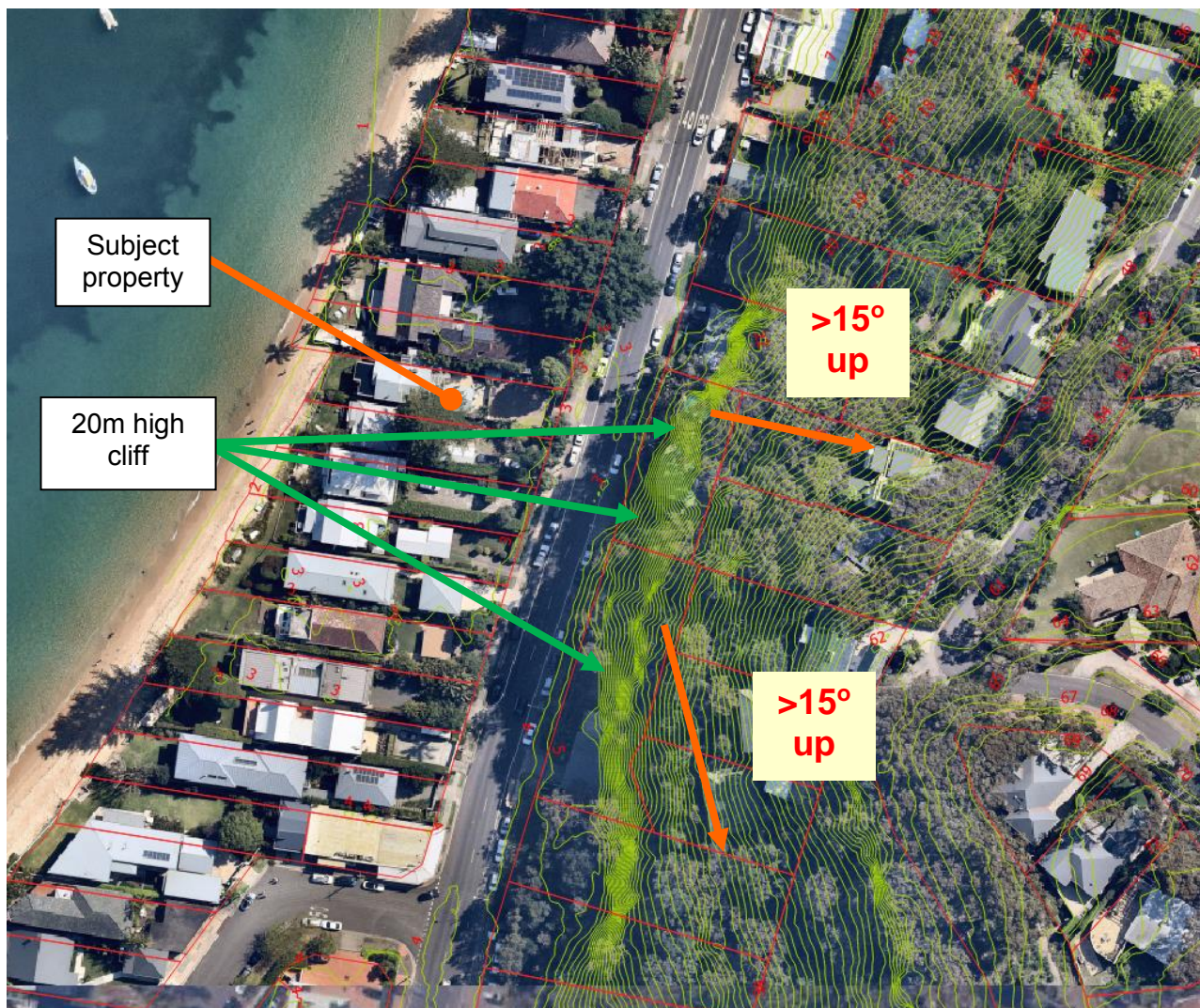


Figure 03: Extract from ELVIS – Geoscience Australia (1m Contours).

7.0 Bushfire Assessment

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 or 3 Vegetation.

Northern Beaches Council's Bushfire Prone Land Map identifies the subject property as containing the 100 metre buffer zone from Category 1 Vegetation, therefore the application of 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 construction of a new sole occupancy dwelling the proposal must comply with the bushfire protection measures detailed within Chapter 7 'Residential Infill Development' of PBP.

7.02 Asset Protection Zones

The available Asset Protection Zones (APZs) were measured to be >36 metres to the east of the proposed dwelling. The APZs consist of maintained grounds within the subject property and land 'equivalent to an APZ' within neighbouring private allotments and Barrenjoey Road.

All grounds within the subject property are to be maintained in accordance with an Asset Protection Zone (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.

Correlation between bushfire impact and AS3959		
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

The highest Bushfire Attack Level to the proposed dwelling was determined from Table A1.12.5 of PBP to be 'BAL 12.5'. The proposed new dwelling is required to comply with sections 3 & 5 (BAL 12.5) under AS 3959 – 2018 and the additional construction requirements under section 7.5 of PBP.

7.04 Property Access

The subject property has street frontage to Barrenjoey Road to the east. Persons seeking to egress from the subject property will be able to do so via the existing access drive and public roads.

The most distant external point of the proposed footprint 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 2019 are not applicable.

The existing and modified access is considered adequate for this development.

7.05 Water Supply & Utilities

Hydrants are available throughout Barrenjoey Road and surrounding roads for the replenishment of fire service vehicles.

The most distant external point of the subject dwelling is within 70 metres of a public road that 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 site.

The existing water supply is considered adequate and will be supplemented as part of this development.

The proposed dwelling will have a new connection to the existing electrical network.

Any new gas connections must comply with Table 7.4a of PBP 19.

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
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.	With the inclusion of the recommendations made herein it is of our opinion that the aim of PBP has been satisfied.
(i) afford buildings and their occupants protection from exposure to a bush fire;	The proposed dwelling will be constructed to BAL 12.5, being the relevant Bushfire Attack Level.
(ii) provide for a defensible space to be located around buildings;	<p>The APZ to the southwest is >36 metres to the hazard interface from the proposed dwelling.</p> <p>This APZ includes a formed public road which is serviced by hydrants and a logical fire fighting platform for attending emergency services.</p>
(iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;	The APZ to the east is >36 metres to the hazard interface from the proposed dwelling.
(iv) ensure that appropriate operational access and egress for emergency service personnel and occupants is available;	Existing roads and neighbouring private allotments provide access the hazard interface

Aim / Objective	Comment
(v) provide for ongoing management and maintenance of bush fire protection measures, (BPMs); and	<p>All grounds within the subject site will be maintained in accordance with an Asset Protection Zone / 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>
(vi) ensure that utility services are adequate to meet the needs of firefighters.	<p>Hydrants are available throughout Barrenjoey Road and surrounding roads for the replenishment of fire service vehicles.</p> <p>The most distant external point of the proposed dwelling is within 70 metres of a public road that supporting a hydrant network.</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 not built upon within the subject property be maintained as an Asset Protection Zone 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.

Construction

2. New construction shall comply with Sections 3 and 5 (BAL 12.5) of Australian Standard AS3959-2018 Construction of buildings in bush fire-prone areas or NASH Standard (1.7.14 updated) 'National Standard Steel Framed Construction in Bushfire Areas – 2014' as appropriate.
3. New construction shall comply with the Additional construction requirements detailed in section 7.5 of Planning for Bush Fire Protection 2019.

Landscaping

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

Gas (where applicable)

5. That any new gas services are to comply with Table 7.4a of Planning for Bush Fire Protection 2019 as follows:
 - 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;
 - polymer-sheathed flexible gas supply lines are not used; and
 - above-ground gas service pipes are metal, including and up to any outlets.

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. 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 site is a residential allotment within an area of similar properties. The vegetation posing a hazard was determined to be Remnant.

The available Asset Protection Zone (APZ) was measured to be >36 metres from the hazard interface to the east. The APZ consists of maintained grounds within the subject property and managed land within neighbouring private allotments and Barrenjoey Road.

The highest Bushfire Attack Level to the proposed dwelling was determined from Table A1.12.5 of PBP to be 'BAL 12.5'. The proposed dwelling is required to comply with BAL 12.5 section 5 under AS 3959 – 2018 and the additional construction requirements under section 7.5 of PBP.

The existing access provisions and water supply are considered adequate.

In consideration of the site specific bushfire risk assessment it is our opinion a reasonable and satisfactory level of bushfire protection is provided to the subject development.

We are therefore in support of the development application.

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

Prepared by
Building Code & Bushfire Hazard Solutions



Ian Tyerman

Senior Bushfire Consultant
Planning for Bushfire Prone Areas
UTS Sydney

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



Stuart McMonnies

G. D. Design in Bushfire Prone Areas.
Certificate IV Fire Technology
FPA Australia BPAD Level 3 Accredited Practitioner
BPAD Accreditation No. BPAD9400



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*.

OEH (2016). *The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles*. Version 3.0. NSW Office of Environment and Heritage, Sydney.

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

Plans by Treagale & Associates, In-Progress (12/09/20)

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
Northern Beaches Bushfire Prone Land Map
NSW Department of Lands – SIXMaps
Street-directory.com.au

Attachments

Attachment 01: s4.14 Compliance Certificate