

Bushfire Assessment Report

Proposed:
**Alterations &
Additions**

At:
**282 Thuddungra Road,
Duffys Forest**

Reference Number: 191293

Prepared For:
Cadence & Co Design Pty Ltd

8th August 2019

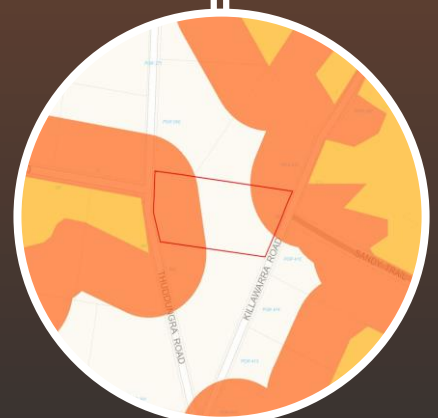
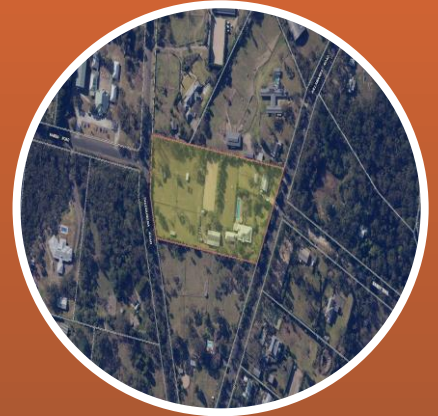


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S4.14 applications (under the Environmental Planning and Assessment Act 1979) and all infill development applications may be referred by Council to the NSW Rural Fire Service for review and concurrence during the DA process. S100B applications under 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.

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.

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Version Control				
Version	Date	Author	Reviewed by	Details
1	08/08/2019	Andrew Muirhead	Stuart McMonnies BPAD Accreditation No. 9400	Final Report

List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2009 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 – Geoscience Australia
EP&A Act	Environmental Planning and Assessment Act - 1979
ESD	Ecologically Sustainable Development
FRNSW	Fire & Rescue NSW
IPA	Inner Protection Area
LPMA	Land and Property Management Authority
NCC	National Construction Code
NP	National Park
NSP	Neighbourhood Safer Places
OPA	Outer Protection Area
PBP	<i>Planning for Bush Fire Protection – 2006</i>
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 of an existing dwelling within an existing residential allotment located at 282 Thuddungra Road, Duffys Forest (Lot 282 DP 752017).

The subject property has a street frontage to Thuddungra Road to the west and Killawarra Road to the east and abuts private allotments to the north and south. The vegetation identified as being the hazard is within neighbouring allotments to the northeast and west of the proposed works.

Northern Beaches Council's Bushfire Prone Land Map identifies the subject property as containing the 100 metre buffer zone from designated Category 1 Vegetation, therefore the application of *Planning for Bush Fire Protection* (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 pre-release 'Planning for Bush Fire Protection – 2018' 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 representative of Building Code and Bushfire Hazard Solutions has undertaken a physical inspection of the subject site and surrounding area. We have also referenced the Site Plan by Cadence & Co Design, Project No H18/109, Date 06/08/2019.

5.0 Compliance Table and Notes

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

	North	South	Northeast	West
Vegetation Structure	Maintained Curtilages	Maintained Curtilages	Forest	Forest
Slope	N/A	N/A	0 - 5 degrees down	N/A
Asset Protection Zone	N/A	N/A	>69 metres	>100 metres
Significant Environmental Features	Neighbouring allotments	Neighbouring allotments	Killawarra Road	Thuddungra Road
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	BAL Low
Required Construction Level	BAL 12.5	BAL 12.5	BAL 12.5	BAL 12.5

Compliance Summary of Bushfire Protection Measures Assessed			
Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.05
Construction Standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.05
Access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.06
Water Supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.07
Gas and Electrical Supplies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.08

Asset Protection Zones Compliance

The proposed works within the subject site was found to be located >69 metres from the hazard interface to the northeast and >100 metres from the hazard interface to the west. The separation from the hazard interfaces includes maintained land within the subject property and land equivalent to an APZ being Thuddungra Road, Killawarra Road and maintained grounds within neighbouring allotments.

Construction Level Compliance

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 therefore required to comply with section 3 and BAL 12.5 section 5 under AS 3959 – 2009 and the Addendum to Appendix 3 under PBP.

Access and Services

	Proposed Development Determinations
Property Access (Driveway)	The subject allotment is considered to be "Rural", therefore the Property Access requirements detailed in section 4.1.3 (2) of PBP should be considered.
Water Supply	The most distant external point of the proposed building footprint is less than 70 metres of a public road supporting the operational use of fire fighting vehicles and therefore a Static Water Supply is not required.
Evacuation	Evacuation is possible by utilising existing road infrastructure. It is encouraged that the occupants of the proposed dwelling 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.

6.0 Aerial view of the subject allotment



Image 01: Aerial view of the subject area from sixmap

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 (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 3rd 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 of an existing sole occupancy dwelling within an existing allotment. This type of development is considered infill under section 4.14 of the Environmental Planning and Assessment Act 1979.

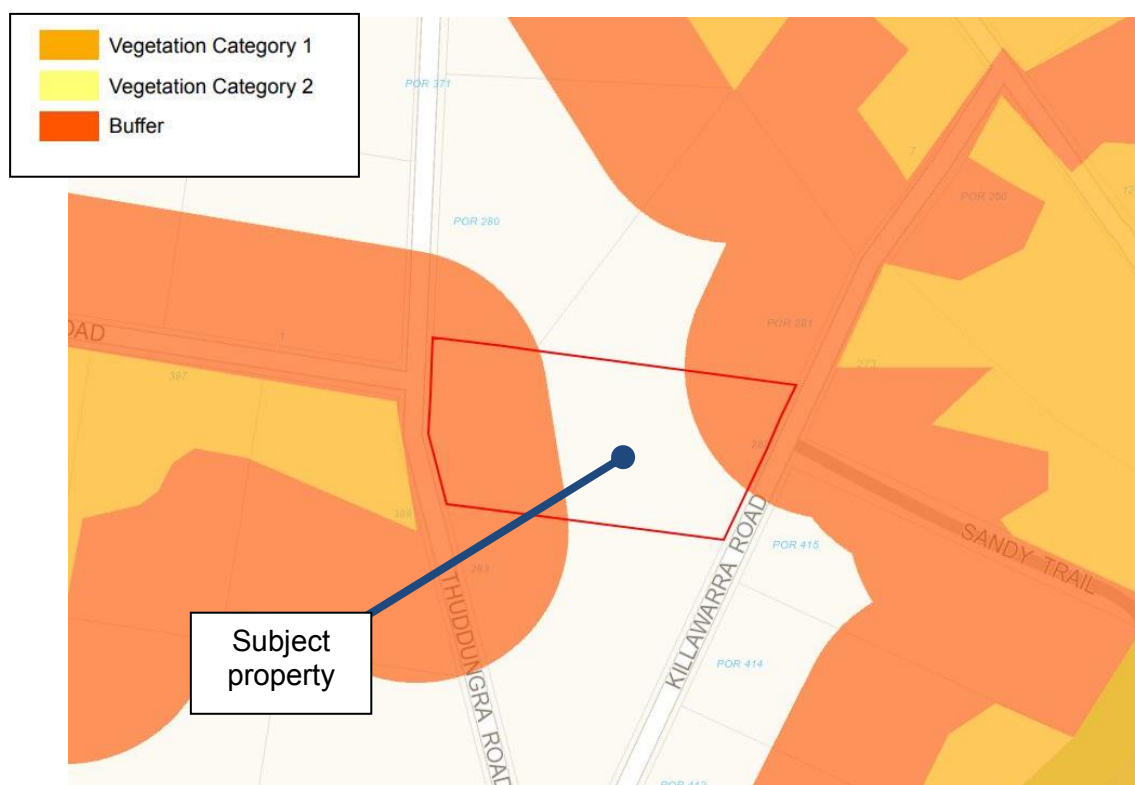


Image 02: Extract from the Northern Beaches Council's Bushfire Prone Land Map

7.02 Location

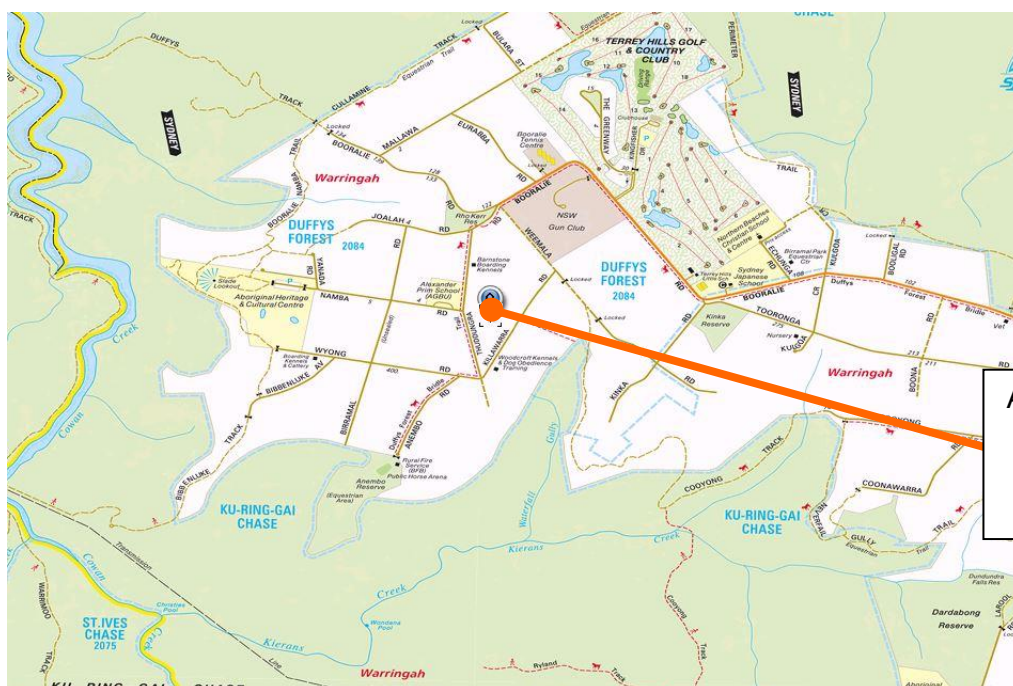
The subject property is known as 282 Thuddungra Road, Duffys Forest (Lot 282 DP 752017) and is a residential allotment located within Northern Beaches Council's Local Government Area. The subject property has a street frontage to Thuddungra Road to the west, Killawarra Road to the east and abuts private allotments to the north and south.

The vegetation identified as being the hazard is within neighbouring rural residential allotments to the northeast and west of the proposed works.



Subject property

Photograph 01: View west from Killawarra Road toward the subject property



Approximate location of the subject property

Image 03: Extract from Street-directory.com

7.03 Vegetation

The vegetation identified as being the hazard is to within neighbouring allotments to the northeast and west.

This vegetation was found to consist of trees 10 - 30 metres in height with a foliage cover of 30 – 70% and an understorey of shrubs and grasses.

For the purpose of assessment under Planning for Bush Fire Protection 2006 the vegetation posing a hazard to the northeast and west has been determined to be Forest.



Photograph 02: View into the northeast hazard within the neighbouring property



Photograph 03: View into the northeast hazard within the neighbouring property

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 impact from the northeast is expected to be a bushfire upslope towards the subject dwelling.

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

- 0 - 5 degrees down within the hazard to the northeast

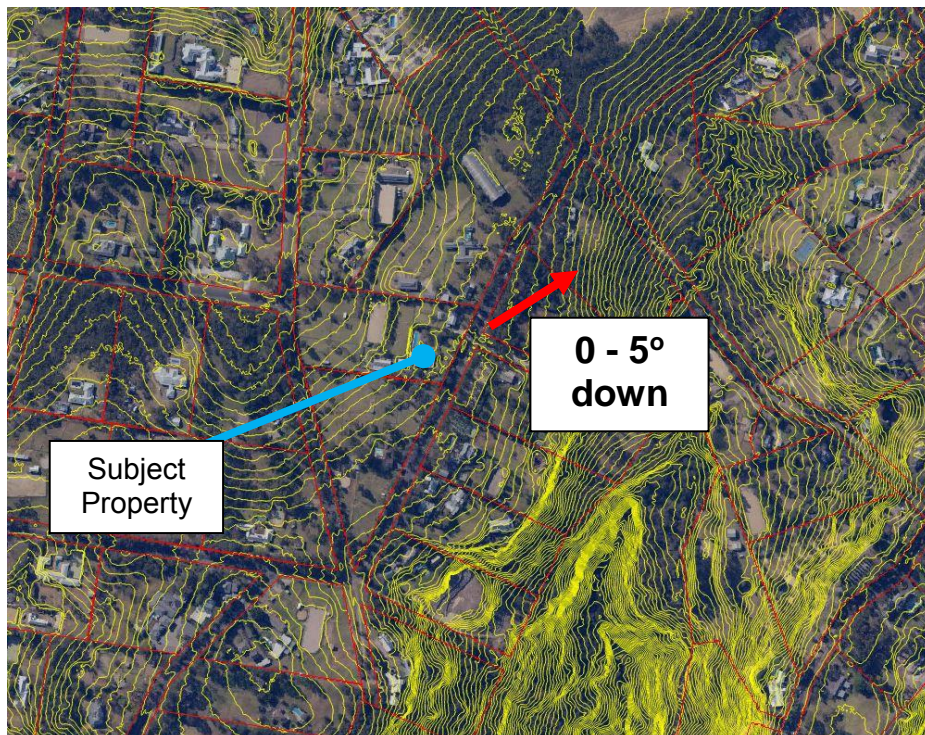


Image 04: Extract from ELVIS – Geoscience Australia showing 1 metre contours

7.05 Asset Protection Zones

The available APZs were measured onsite and aerial imagery provided to be >69 metres to the northeast of the proposed works and >100 metres to the west of the proposed works. The separation from the hazard interfaces include maintained land within the subject property and land equivalent to an APZ being Thuddungra Road, Killawarra Road and maintained land within neighbouring allotments.

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

7.06 Fire Fighting Water Supply

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

The most distant external point of the building footprint is within 70 metres from a public road supporting the operational use of fire fighting vehicles and therefore a Static Water Supply is not required. Regardless the existing swimming pool provides a Static Water Supply on site.

The existing water supply is considered adequate.



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

7.07 Property Access – Fire Services & Evacuation

The subject property has a street frontage to Thuddungra Road to the west and Killawarra Road to the east. Persons seeking to egress the subject dwelling are able to do so via the existing access drive and existing public road infrastructure.

Planning for Bush Fire Protection 2006 addresses design considerations for access drives for properties determined to be bushfire prone. As the proposal relates to a rural allotment the Property Access requirements detailed in section 4.1.3 (2) of PBP must be considered.

The most distant external point of the proposed footprint is within 70 metres of a public road that supports the operational use of fire fighting vehicles.

Attending fire crews can access the hazard via Thuddungra Road, Killawarra Road or neighbouring allotments for hazard reduction or fire suppression activities.

The existing access is not being altered as part of this proposal and the existing access is considered adequate for occupant evacuation and fire service access.

7.08 Gas and Electrical Services

The existing dwelling is connected to the services in Thuddungra Road for their domestic needs.

There are no proposed changes to the existing services as part of application and are considered to be adequate.

8.0 Site & Bushfire Hazard Determination

8.01 Planning for Bush Fire Protection

Planning for Bush Fire Protection (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:

Northeastern Aspect:

- a) Vegetation Forest
- b) Slope 0 - 5 degrees down
- c) A >69 metre APZ is available
- d) The Bushfire Attack Level was determined to be 'BAL 12.5'

Western Aspect:

- a) Vegetation Forest
- b) Slope 0 - 5 degrees down
- c) A >100 metre APZ is available
- d) The Bushfire Attack Level was determined to be 'BAL Low'

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 282 Thuddungra Road, Duffys Forest was assessed against the requirements of Planning for Bush Fire Protection 2006 noting the following:

- a) The existing water supply for firefighting purposes is considered adequate for this development.
- b) Access to the subject property is available from Thuddungra Road or Killawarra Road.
- c) The highest Bushfire Attack Level to the proposed works was determined to be BAL 12.5.

8.05 Viable Construction Method

The objectives of Planning for Bush Fire Protection 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 are therefore required to comply with section 3 and BAL 12.5 section 5 under AS 3959 – 2009 and the Addendum to Appendix 3 under PBP.

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. All grounds 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'.

Construction

2. That all new construction shall comply with section 5 (BAL 12.5) Australian Standard AS3959-2009 "Construction of buildings in bush fire-prone areas" and the Addendum to Appendix 3 of Planning for Bush Fire Protection.

Gas (where applicable)

3. That reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities.
 - ❖ Metal piping is to be used.
 - ❖ All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation.
 - ❖ If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal.
 - ❖ Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.

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 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 rural residential allotment within an area of similar properties. The vegetation identified as being the hazard is within neighbouring properties to the northeast and west of the proposed works. The vegetation posing a hazard was determined to be Forest to the northeast and west.

The highest Bushfire Attack Level to the proposed works was determined 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 the Addendum to Appendix 3 of Planning for Bush Fire Protection.

The existing water supply and access provisions are considered adequate.

In accordance with the bushfire safety measures contained in this report, and consideration of the site specific bushfire risk assessment it is my opinion that when combined, they will provide a reasonable and satisfactory level of bushfire protection to the subject development.

I am 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 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



11.0 Annexure 01

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) Site Plan by Cadence & Co Design, Project No H18/109, Date 06/08/2019.
- f) Acknowledgements to:
 - NSW Department of Lands – SIXMaps
 - Street-directory.com.au
 - Geoscience Australia

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:	282 Thuddungra Road, Duffys Forest
DESCRIPTION OF PROPOSAL:	Alterations and Additions
PLAN REFERENCE: (relied upon in report preparation)	Plans by Cadence & CO Design, Project NO H18/109, Date 06/08/2019
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 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:	191293
REPORT DATE:	8 th 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: 8th August 2019

