

# Bushfire Assessment Report

***Proposed:***  
**New Sole Occupancy  
Dwelling**

***At:***  
**131 Thompson Street,  
Scotland Island**

*Reference Number:* 190065

*Prepared For:*  
Edmund Burke

**13<sup>th</sup> March 2019**



*Prepared By:*  
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**SILVER  
MEMBER**  
Fire Protection  
Association Australia



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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.

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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
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	<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 – 2006</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

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The development proposal relates to the construction of a sole occupancy dwelling within an existing residential allotment located at 131 Thompson Street, Scotland Island (Lot 166 DP 12749).

The subject property is a corner allotment with street frontage to Thompson Street to the northeast and Hilda Avenue to the southeast and abuts private residential allotments to the northwest and southwest. The vegetation identified as being the potential bushfire hazard is located to the northeast, east and southeast of the subject property within neighbouring private allotments and Elizabeth Park.

Northern Beaches Council's Bushfire Prone Land Map identifies the subject property as containing Category 1 Vegetation therefore *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.

## 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' and NASH Standard for steel framed housing in bushfire prone areas 2014 (NASH Std) as amended for building/structural provisions.

A company representative has made a site inspection of the subject property and the surrounding area. The Site Plan prepared by Ezy Homes Australia, Job No. 166Thompson, Sheet 1, Issue 18, Dated 12.03.2019 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*.

	Northeast	East	Southeast	Southwest
<b>Vegetation Structure</b>	Forest	Forest	Forest	Maintained curtilage
<b>Vegetation width</b>	Default	30 metres	30 metres	N/A
<b>Slope</b>	0 degrees and upslope	0 degrees and upslope	7 degrees down	N/A
<b>Existing Asset Protection Zone</b>	57 metres	34 metres	44 metres	N/A
<b>Radiant Heat (kW/m<sup>2</sup>)</b>	N/A	12.05	11.98	N/A
<b>Significant Environmental Features</b>	Thompson Street	Thompson Street / Hilda Avenue	Hilda Avenue	Neighbouring private allotments
<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>	BAL 12.5	BAL 12.5	BAL 12.5	N/A
<b>Required Bushfire Attack Level</b>	BAL 12.5	BAL 12.5	BAL 12.5	BAL 12.5

### Asset Protection Zones Compliance

The separation from the hazard interface includes maintained land within the subject property and land “*equivalent to an Asset Protection Zone*” being maintained land within neighbouring properties and maintained areas of Thompson Street and Hilda Avenue.

### Construction Level Compliance

The highest Bushfire Attack Level to the proposed dwelling was determined from Table 2.4.2 of AS3959 – 2009 and bushfire design modelling consistent with Method 2 of AS3959-2009 to be ‘BAL 12.5’. The proposed dwelling is required to comply with section 3 and BAL 12.5 section 5 under AS 3959 – 2009 and Appendix 3 under PBP 2006.

Alternatively new construction shall comply with Sections 1 – 5 & BAL 12.5 construction as detailed within the *NASH Standard for steel framed construction in bushfire areas 2014*.

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



## Access and Services

Guideline Ref.	Proposed Development Determinations
Property Access (Driveway)	The most distant external point of the proposed building footprint is greater than 70 metres from a public road supporting the operational use of fire fighting vehicles and therefore the Property Access requirements detailed in section 4.1.3 (2) of PBP would typically be applicable.
Water Supply	<p>There is no pressured reticulated mains water available on Scotland Island. There is a water main hose line around the island that is connected to the towns reticulated water supply that is used by the residents to “top-up” tanks as needed. The hose line has a storz fitting at intervals for the use by the local fire services.</p> <p>A 10,000L static water supply (water tank/s) fitted with a 65mm storz fitting is recommended within the subject site.</p>
Evacuation	<p>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 <a href="http://www.rfs.nsw.gov.au/">http://www.rfs.nsw.gov.au/</a> under publications / bushfire safety.</p>

## 6.0 Aerial view of the subject allotment

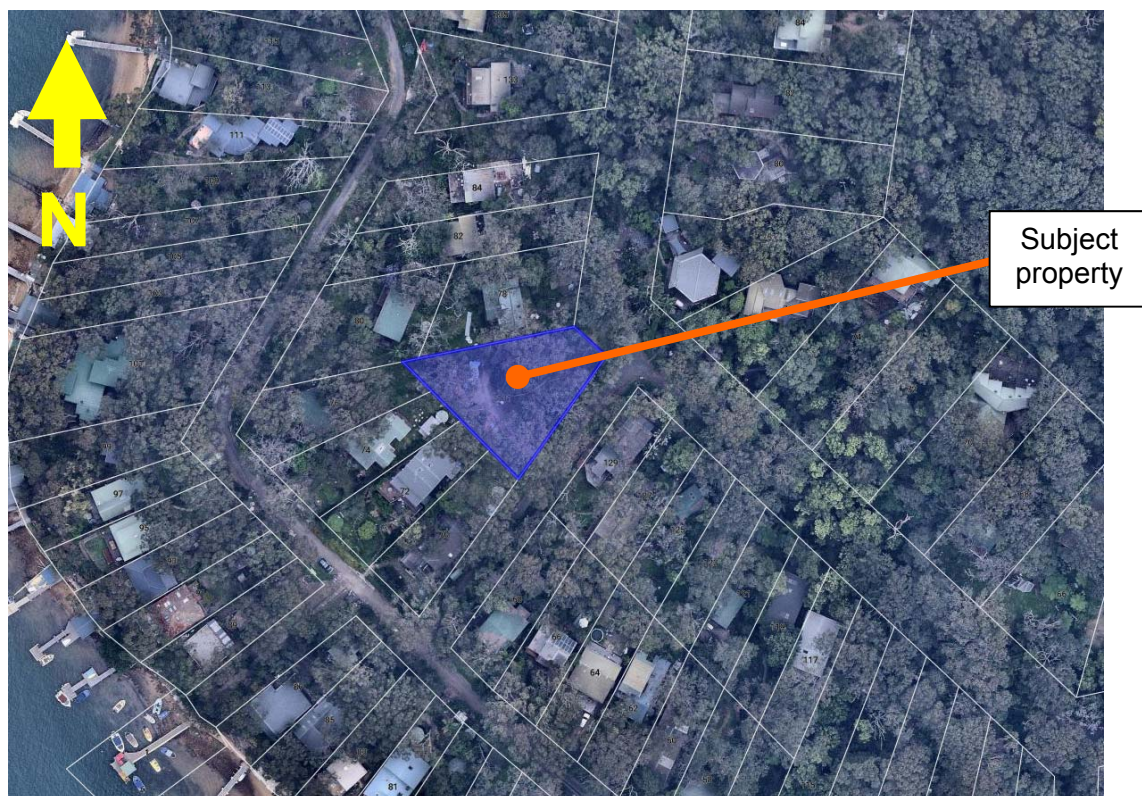


Image 01: Aerial view of the subject property. Courtesy of Sixmaps

## 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' or the NASH Standard for steel framed housing in bushfire prone areas 2014.

*Planning for Bush Fire Protection 2006*, (PBP) formally adopted on the 1<sup>st</sup> March 2007 and amended 3<sup>rd</sup> 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 construction of a 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.

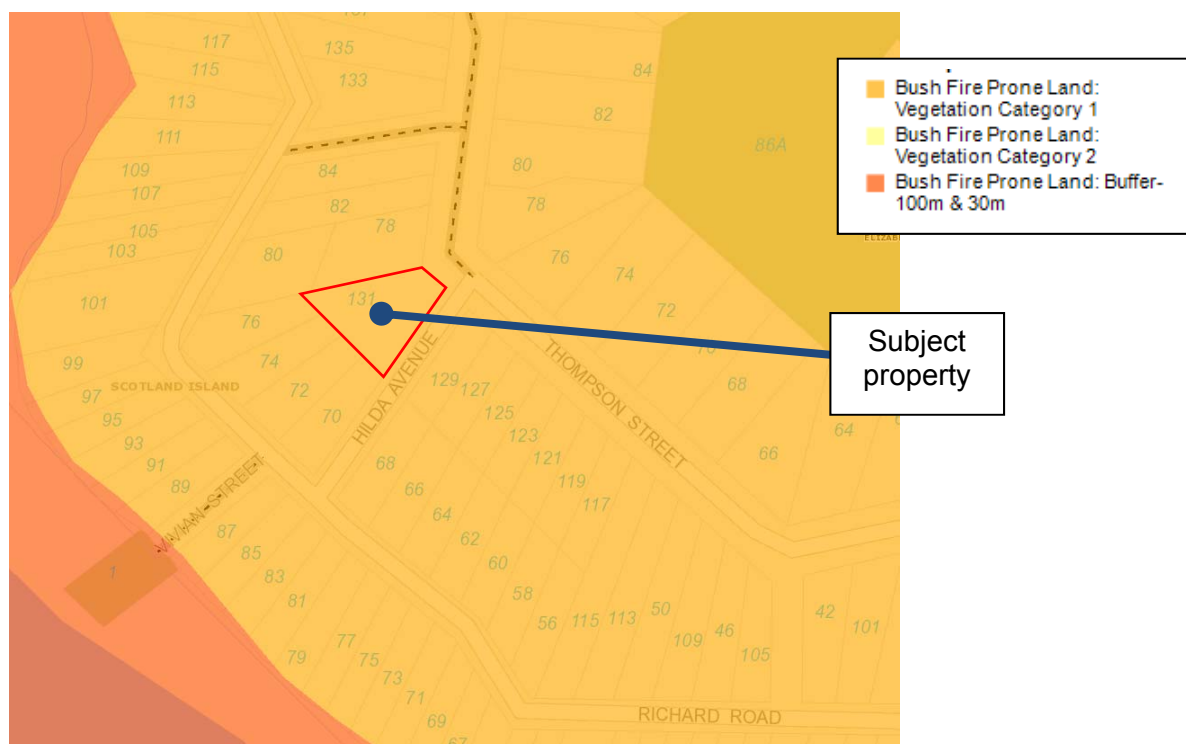


Image 02: Extract from Northern Beaches Council's Bushfire Prone Land Map



## 7.02 Location

The subject property is known as 131 Thompson Street, Scotland Island (Lot 166 DP 12749) and is a residential allotment located within Northern Beaches Council's Local Government Area.

The subject property is a corner allotment which has street frontage to Thompson Street to the northeast and Hilda Avenue to the southeast and abuts private residential allotments to the northwest and southwest.

The vegetation identified as being the hazard is located to the northeast, east and southeast within Elizabeth park and neighbouring private allotments.



Subject property

Photograph 01: View southeast from Thompson Street toward the subject property



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

### 7.03 Vegetation

The predominant vegetation within the subject property and neighbouring residential allotments surrounding the existing developments was found to consist of maintained gardens.

The vegetation that is posing a threat to the proposed dwelling is located to the northeast, east and southeast of the subject property within Elizabeth Park and neighbouring private allotments.

The vegetation to the northeast was found to consist of trees 10-20 metres in height with a canopy cover of 50-70% and an understory of small trees, exotic species of plants and ferns.

The vegetation to the east and southeast was found to consist of trees 10-20 metres in height with a canopy coverage of 30-50% and an understory of exotic species, shrubs and ferns. It was noted at the time of inspection that the vegetation to the east and southeast consisted of exotic species and weeds providing a dense understory of known hard to burn species. While the vegetation has merit of being assessed under the Exotic Vegetation Fast Fact the mid story and canopy present as a Forest and as such as a conservative measure the vegetation to the east and southeast has been determined under Planning for Bush Fire Protection as Forest.

Forest  
(Weed infested)



Photograph 02: view south from Thompson Street into the southeastern hazard

Forest  
(Weed infested)



Photograph 03: View northeast from Thompson Street into the hazard to the east



## 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 to the proposed dwelling from the south and east is expected to be a bushfire travelling down slope towards the subject property.

The slope that would **most significantly** influence bushfire impact to was determined to be:

- 0 degrees and up slope within the hazard to the northeast and east
- 7 degrees down slope within the hazard to the southeast



Image 03: Topographic image showing 1m contours Courtesy of Geoscience Australia

## 7.05 Asset Protection Zones

The proposed dwelling will be located 57 metres from the hazard to the northeast, 34 metres from the hazard to the east and 44 metres from the hazard to the southeast. The separation from the hazard interface includes maintained land within the subject property and land “*equivalent to an Asset Protection Zone*” being maintained land within the neighbouring residential properties, Thompson Street and Hilda Avenue. It is noted that 76 and 72 Thompson Street have been conditioned for the entirety of their allotments to be maintained in perpetuity to the standard of an Asset Protection Zone. At the time of inspection it was noted that these properties are not currently maintained to the standard of an Asset Protection Zone.

All grounds within the subject property not built upon will be maintained as an Asset Protection Zone as detailed in the NSW Rural Fire Service’s document ‘Standards for Asset Protection Zones’.

## 7.06 Property Access – Fire Services & Evacuation

The subject property has street access to Thompson Street to the northeast and Hilda Avenue to the southeast. Persons seeking to egress the proposed dwelling will be able to do so via the proposed access drives and along Thompson Street.

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

The most distant external point of the proposed footprint is greater than 70 metres from a public road supporting the operational use of fire fighting vehicles and usually the Property Access requirements detailed in section 4.1.3 (2) of PBP would be applicable.

In this instance the public road system on Scotland Island is not frequently used, the most distant external point of the proposed dwelling will be located less than 70 metres from the existing public roads and a 10,000 litre static water supply will be provided.

The existing access provisions are considered adequate in this instance.

## 7.07 Fire Fighting Water Supply

There is no pressured reticulated mains water available on Scotland Island. There is a water main hose line around the island that is connected to the towns reticulated water supply, this is used by the residents to “top-up” tanks as needed. This hose line has storz fittings at intervals for the use by the local fire services.

A 10,000L static water supply (water tank/s) fitted with a 65mm storz fitting is recommended within the subject site.

## 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:

#### Northeastern aspect:

- a) Vegetation Structure Forest
- b) Slope 0 degrees and up
- c) A 57 metre APZ is available
- d) The Bushfire Attack Level was determined to be 'BAL 12.5'

#### Eastern aspect:

- a) Vegetation Structure Forest
- b) Slope 0 degrees and across
- c) A 34 metre APZ is available
- d) The Bushfire Attack Level was determined to be 'BAL 12.5'

#### Southeastern aspect:

- a) Vegetation Structure Forest
- b) Slope 7 degrees downslope
- c) A 44 metre APZ is available
- d) 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' & NASH Standard for steel framed housing in bushfire prone areas 2014 (NASH Std)

The NASH Std and 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 standards 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 both standards.



### 8.03 Correlation between bushfire impact and BAL Rating

Bushfire Attack Level	Maximum radiant heat impact (kW/m <sup>2</sup> )	Level of construction
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 131 Thompson Street, Scotland Island was assessed against the requirements of *Planning for Bush Fire Protection* 2006 noting the following:

- Access to the subject property is available from Thompson Street.
- Access to the hazard is available without the need to enter the subject site.
- 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 dwelling was determined from Table 2.4.2 of AS3959 – 2009 and bushfire design modelling consistent with Method 2 of AS3959-2009 to be 'BAL 12.5'. The proposed dwelling is required to comply with BAL 12.5 section 5 under AS 3959 – 2009 and Appendix 3 under PBP 2006.

Alternatively new construction shall comply with Sections 1 – 5 & BAL 12.5 construction as detailed within the *NASH Standard for steel framed construction in bushfire areas 2014*.

## 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. Additional recommendations are provided to supplement these minimum requirements where considered necessary.

### Asset Protection Zones

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

### Construction

2. That construction complies with the National Construction Code of Australia 2015 by means of;
  - a) **AS3959 – 2009**
    - That all new construction shall comply with BAL 12.5 under section 5 of AS3959 – 2009.
    - That all new construction shall comply with the 'Additional Construction Requirements' detailed in A3.7 of the Addendum to Appendix 3 of Planning for Bush Fire Protection 2006 and NSW Rural Fire Service Fast Facts, Development Control Notes and Practice Notes.

Or

- b) **NASH Standard for steel framed housing in bushfire prone areas 2014 (NASH Std)**
    - That all new construction shall comply with Section 1 – 5 and BAL 12.5 of the NASH Std.
    - Note Please refer to the NSW RFS Community resilience Fact Sheet 2/15 for further information

### Gas (where applicable)

4. 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.

## Water

5. That a 10,000 litre Static Water Supply be provided within the subject site.

- ❖ A suitable connection for firefighting purposes is made available and located within the IPA and away from the structure. A 65mm Storz outlet with a gate or ball valve is provided.
- ❖ Gate or Ball valve and pipes are adequate for water flow and are metal rather than plastic.
- ❖ Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole.
- ❖ Above ground tanks are manufactured of concrete or metal and raised tanks have their stands protected. Plastic tanks are not used. Tanks on the hazard side of a building are provided with adequate shielding for the protection of fire fighters.
- ❖ All above ground water pipes external to the building are metal including and up to any taps. Pumps are shielded.

Note: This water supply can be a swimming pool, one or multiple water tank / s and does not have to be dedicated for fire-fighting purposes. The overall capacity of the water supply must achieve the minimum 10,000 litre requirement and the onus will be on the property owner to ensure that this supply is available in the event of a bushfire. A hardened ground surface for truck access is supplied within 4 metres of the supply.

## Landscaping

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

## 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. 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 located at 131 Thompson Street, Scotland Island (Lot 166 DP 12749). The vegetation identified as being the potential bushfire hazard is located to the northeast, east and southeast of the subject property within Elizabeth Park and neighbouring private allotments.

It was noted at the time of inspection that there was a high predominance of weed and exotic species within the hazard to the east and southeast. Although the understory was consistent with the NSW Rural Fire Service Exotic Vegetation Fast Fact the mid story and canopy presented the traits of a Forest and as a conservative assessment the vegetation to all aspects has been determined to be Forest.

The proposed dwelling will be located 57 metres from the hazard interface to the northeast, 34 metres from the hazard interface to the east and 44 metres from the hazard interface to the southeast. The separation from the hazard interface includes maintained land within the subject property and land "*equivalent to an Asset Protection Zone*" being maintained land within the neighbouring residential properties, Thompson Street and Hilda Avenue.

The highest Bushfire Attack Level to the proposed dwellings was determined from Table 2.4.2 of AS3959 – 2009 and bushfire design modelling consistent with method 2 of AS3959-2009 to be 'BAL 12.5. The proposed dwelling is required to comply with BAL 12.5 section 5 under AS 3959 – 2009 and Appendix 3 under PBP 2006.

The proposed water supply and existing 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 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



**Glyn Bickford**

Bushfire Consultant  
Planning for Bushfire Prone Areas – UTS Sydney

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

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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) Site Plan prepared by Ezy Homes Australia, Job No. 166Thompson, Sheet 1, Issue 18, Dated 12.03.2019.
- f) Acknowledgements to:
  - NSW Department of Lands – SixMaps
  - Street-directory.com.au
  - Nearmap.com
  - Geoscience Australia

### Attachments

- Attachment 1: Section 4.14 Compliance Certificate
- Attachment 2: Bushfire Attack Report





# 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:	131 Thompson Street, Scotland Island
DESCRIPTION OF PROPOSAL:	New Sole Occupancy Dwelling
PLAN REFERENCE: (relied upon in report preparation)	Plans by Ezy Homes Australia, Job No. 166Thompson, Sheet 1, Issue 18, Dated 12.03.2019
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:	<div><div>YES</div><div>NO</div></div> <small>(If YES the application is to be referred to NSW RFS for assessment)</small> <small>(Circle the relevant response)</small>
BUSHFIRE ASSESSMENT REPORT REFERENCE:	190065
REPORT DATE:	13th March 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: 13th March 2019





# NBC Bushfire Attack Assessment Report V2.1

AS3959 (2009) Appendix B - Detailed Method 2

Print Date: 7/03/2019

Assessment Date: 6/03/2019

Site Street Address: 131 Thompson Street, Scotland Island

Assessor: Stuart McMonnies; Building Code & Bushfire Hazard Solutions Pty Ltd

Local Government Area: Pittwater

Alpine Area: No

## Equations Used

Transmissivity: Fuss and Hammins, 2002

Flame Length: RFS PBP, 2001

Rate of Fire Spread: Noble et al., 1980

Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005

Peak Elevation of Receiver: Tan et al., 2005

Peak Flame Angle: Tan et al., 2005

Run Description: East

## Vegetation Information

Vegetation Type: Forest

Vegetation Group: Forest and Woodland

Vegetation Slope: 0 Degrees

Vegetation Slope Type: Level

Surface Fuel Load(t/ha): 25

Overall Fuel Load(t/ha): 35

## Site Information

Site Slope: 0 Degrees

Site Slope Type: Level

Elevation of Receiver(m): Default

APZ/Separation(m): 34

## Fire Inputs

Veg./Flame Width(m): 30

Flame Temp(K): 1090

## Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg): 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

## Program Outputs

Category of Attack: LOW

Peak Elevation of Receiver(m): 9.94

Level of Construction: BAL 12.5

Fire Intensity(kW/m): 54250

Radiant Heat(kW/m2): 12.06

Flame Angle (degrees): 57

Flame Length(m): 23.7

Maximum View Factor: 0.196

Rate Of Spread (km/h): 3

Inner Protection Area(m): 25

Transmissivity: 0.811

Outer Protection Area(m): 9

<b>Run Description:</b> Southeast	
<b><u>Vegetation Information</u></b>	
<b>Vegetation Type:</b>	Forest
<b>Vegetation Slope:</b>	7 Degrees
<b>Surface Fuel Load(t/ha):</b>	25
<b>Vegetation Group:</b>	Forest and Woodland
<b>Vegetation Slope Type:</b>	Downslope
<b>Overall Fuel Load(t/ha):</b>	35
<b><u>Site Information</u></b>	
<b>Site Slope</b>	0 Degrees
<b>Elevation of Receiver(m)</b>	Default
<b>Site Slope Type:</b>	Level
<b>APZ/Separation(m):</b>	44
<b><u>Fire Inputs</u></b>	
<b>Veg./Flame Width(m):</b>	30
<b>Flame Temp(K)</b>	1090
<b><u>Calculation Parameters</u></b>	
<b>Flame Emissivity:</b>	95
<b>Heat of Combustion(kJ/kg)</b>	18600
<b>Moisture Factor:</b>	5
<b>Relative Humidity(%):</b>	25
<b>Ambient Temp(K):</b>	308
<b>FDI:</b>	100
<b><u>Program Outputs</u></b>	
<b>Category of Attack:</b>	LOW
<b>Level of Construction:</b>	BAL 12.5
<b>Radiant Heat(kW/m2):</b>	11.98
<b>Flame Length(m):</b>	35.81
<b>Rate Of Spread (km/h):</b>	4.86
<b>Transmissivity:</b>	0.799
<b>Peak Elevation of Receiver(m):</b>	13.72
<b>Fire Intensity(kW/m):</b>	87935
<b>Flame Angle (degrees):</b>	50
<b>Maximum View Factor:</b>	0.197
<b>Inner Protection Area(m):</b>	33
<b>Outer Protection Area(m):</b>	11