



# AUSTRALIAN BUSHFIRE CONSULTING SERVICES



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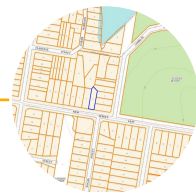
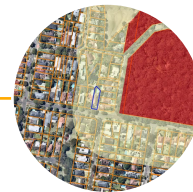
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**BRONZE  
MEMBER**  
Fire Protection  
Association Australia

ABN 23 622 676 493  
PO Box 212 Berowra Heights 2082

## Bush Fire Assessment Report



Residential alterations and additions:

**2 New Street East,  
Balgowlah, NSW 2093.**

3<sup>rd</sup> December 2024  
Reference 22-155

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## Abbreviations:

ABCS	Australian Bushfire Consulting Services Pty Ltd
APZ	Asset Protection Zone
AS2419.1 2021	Fire hydrant installations System design, installation and commissioning
AS3959 - 2018	Australian Standard 3959 – 2018 Construction of buildings in bushfire prone areas
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Northern Beaches Council
DA	Development Application
EP&A Act	Environmental Planning and Assessment Act - 1979
ESD	Ecologically Sustainable Development
FR NSW	Fire & Rescue NSW
IPA	Inner Protection Area
LGA	Local Government Area
NCC	National Construction Codes
NP	National Park
NSP	Neighbourhood Safer Place
OPA	Outer Protection Area
PBP 2019	Planning for Bush Fire Protection – 2019
ROW	Right of Way
RF Act	Rural Fires Act - 1997
RFS	NSW Rural Fire Service
SEARs	Planning Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SWS	Static Water Supply
URA	Urban Release Area

## 1.0 Introduction.

The development seeks approval for the alterations and additions to an existing residential dwelling located within an existing allotment at 2 New Street East, Balgowlah, NSW. The works include ground floor renovation and extension (with internal and external modifications) and a new second story addition.

The subject site is mapped as bushfire prone land and therefore the application of *Planning for Bush Fire Protection 2019* (PBP 2019) is relevant to the development proposal.

The aims of PBP 2019 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*. This is achieved by determining and where applicable applying the required asset protection zones, applying the relevant construction requirements, ensuring satisfactory access and egress has been incorporated into the design and providing safe service supply and adequate water provisions for occupants and attending emergency services.

## 2.0 Property details.

Address: 2 New Street East, Balgowlah, NSW, 2093.  
Lot/Sec/DP: 12/-/DP12383  
Zoned: R2 Low Density Residential  
LGA: Northern Beaches Council

The site has street frontage to New Street East to the south and abuts R2 zoned private residential allotments to all remaining aspects.

The vegetation identified as the bushfire threat to the development is located to the east within Wellings Reserve which is located beyond private residential allotments and Gourlay Avenue road reserve.

## 3.0 Legislative context.

The development is classified as infill development and assessed under section 4.14 of the Environmental Planning and Assessment Act 1979 (EP&A Act). Under Section 4.14 of the EP&A Act, Council can determine a development application on bushfire prone land providing;

*Council is satisfied that the development conforms to the specifications and requirements of Planning for Bush Fire Protection that are relevant to the development or*

*Council has been provided with a certificate by a person who is recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment stating that the development conforms to the relevant specifications and requirements Planning for Bush Fire Protection.*

*If the Council is satisfied that the development does not conform to the relevant specifications and requirements of Planning for Bush Fire Protection Council may grant consent but only if it has consulted with the Commissioner of the NSW Rural Fire Service concerning measures to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bush fire.*

The highest bushfire attack level (BAL) to the proposed development has been determined to be BAL 12.5. Suitable recommendations have been made herein to enable Council to issue development consent inclusive of conditions required to ensure compliance with both AS3959 – 2018 and PBP 2019.

The proposal meets the aims and objectives of PBP 2019 by means of compliance with the deemed to satisfy provisions and performance requirements of that document.

## 4.0 Referenced documents and people.

The following documents have been referenced in the preparation of this report;

- AS3959 – 2018 Construction of buildings in bushfire prone areas,
- Planning for Bush Fire Protection 2019,
- Northern Beaches Councils Bushfire Prone Land Map,
- Rural Fires Act 1997,
- Rural Fires Regulation 2013,
- 10/50 Vegetation Clearing Code of Practice,
- NSW RFS Guide for bush fire prone land mapping V5b Nov 2015,
- Ocean Shores to Desert Dunes – David Andrew Keith 2004.

The site plan, floor plan, demolition plan and elevations by Hargroves Design Consultants for M & N DeGaris Sheets SK-100 – SK-105, SK-110 – SK-113, SK-115 – SK-119, SK-200, SK-201 and SK-210 inclusive have been reviewed and relied upon in the preparation of this report. An inspection of the subject property and the surrounding area was undertaken in the course of preparing this review. At that time free access was available within the subject site and within Wellings Reserve to the east of the subject site.

## 5.0 Copyright, scope and disclaimer.

This assessment of possible bushfire impact (including smoke, ember, radiant heat and flame contact) and compliance with other matters such as access and service supply is pertinent to the subject site only. Where reference has been made to the surrounding lands, this report does not assess impact to those lands rather it is an assessment of possible bushfire progression and impact on or from those lands towards the subject site.

Apart from any use permitted under the Copyright Act 1968 no part of this document, including any wording, images, or graphics, can be modified, changed or altered in any way without written permission from Australian Bushfire Consulting Services Pty Ltd. This report may only be referenced, distributed or forwarded to other parties in its original format.

This report has been prepared as a submission document in support of a development application to Council and cannot be relied upon for commencement of works or construction until it has been included within the consent conditions issued by Council as part of the DA determination. **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.** I can review and cross reference these documents however the onus is on the applicant / client to provide them to me and request this review.

Where any difference between this document and the development consent (or the NSW Rural Fire Service requirements) is found, the conditions of consent always take precedence until an application to review, amend or vary those conditions is approved.

The statements and opinions contained in this report are given in good faith and in the belief that such statements and opinions are correct and not misleading. AS3959 – 2018 states that “...*there can be no guarantee that a building will survive a bushfire event of every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions*”. The NSW RFS state “*Homes are not designed to withstand fires in catastrophic conditions*”. Correspondingly any representation, statement of opinion, or advice expressed or implied in this document is made on the basis that Australian Bushfire Consulting Services Pty Ltd is not liable to any person 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 made by Australian Bushfire Consulting Services Pty Ltd.

## 6.0 Assessment summary table.

Aspect	North	South	West	East
Vegetation Structure	n/a	n/a	n/a	Forest
Vegetation Class	n/a	n/a	n/a	Sydney Coastal Dry Sclerophyll Forests
NSW RFS Comprehensive fuel loads	n/a	n/a	n/a	21.3/27.3 t/ha Surface/total
Hazard slope	n/a	n/a	n/a	6° upslope
Site slope	n/a	n/a	n/a	4° upslope
Elevation of receiver Default or measured	n/a	n/a	n/a	Default for worst case scenario
Available Asset Protection Zone	n/a	n/a	n/a	≥ 43 metres
Fire front width	n/a	n/a	n/a	100 m
FDI	100			
Radiant heat kW/m <sup>2</sup> design fire model	n/a	n/a	n/a	8.73 kW/m <sup>2</sup>
Features that may mitigate the impact of bush fire on the development.	<p>The separation from the hazard interface includes maintained land within the subject site and land considered equivalent to an asset protection zone being existing managed land within developed neighbouring allotments and Gourlay Avenue road reserve.</p> <p>The APZ is existing, and no tree removal or other vegetation modification is necessary to establish it, as such there is no impact on the environment of the bushfire protection measured relied upon in this assessment.</p>			
Noteworthy landform & environmental features.	Maintained curtilages	New Street East	Maintained curtilages	Maintained curtilages / Gourlay Avenue
Bushfire Attack Level	BAL 12.5			



### Required construction level

The highest Bushfire Attack Level to the proposed new works was determined to be 'BAL 12.5' from the eastern aspect. The proposed new works are required to comply with section 3 and 5 BAL 12.5 of AS 3959 – 2018 *Construction of buildings in bushfire prone areas* or the NASH Standard National Standard Steel Framed Construction in Bushfire Areas 2021 as appropriate for BAL 12.5 construction.

The additional construction requirements detailed within section 7.5.2 of PBP 2019 are also applicable.

Note: Certain provisions of AS 3959 are varied in NSW based on the findings of the Victorian Bush Fires Royal Commission and bush fire industry research. PBP 2019 section 7.5.2 provides a NSW State Variation that BAL 12.5 decks and subfloor areas are constructed to section 7.7 BAL 29 requirements except that any wall enclosing the subfloor space need only comply with the wall requirements for BAL 12.5.

### Property Access

The most disadvantaged point of the existing dwelling and proposed new works will be within 70 metres of a road that supports the operational use of fire appliances (hydrants) and free pedestrian access is available around the building footprint.

Access to the hazard interface for fire suppression or hazard reduction activities is available without the need to enter the subject site.

The access requirements of Table 7.4a within PBP 2019 are not applicable.

### Water Supply

The subject site is connected to reticulated water mains for domestic needs. Hydrants are located along New Street East and other surrounding streets and are available for the replenishment of firefighting appliances. The nearest hydrant is located on New Street East within the road side verge to the west of the property.

The most disadvantaged point of the existing dwelling and proposed new works is less than 70 metres from a public road that supports the operational use of fire appliances (hydrants), and a static water supply is not required.

### Electrical & Gas Supply

Existing above ground electrical supply is available to the subject site and reticulated gas mains is not available in this area. There are no new electrical service connections or gas installations proposed as part of this development.

### Evacuation

Occupants are encouraged to 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](#).



## 7.0 Images and maps.

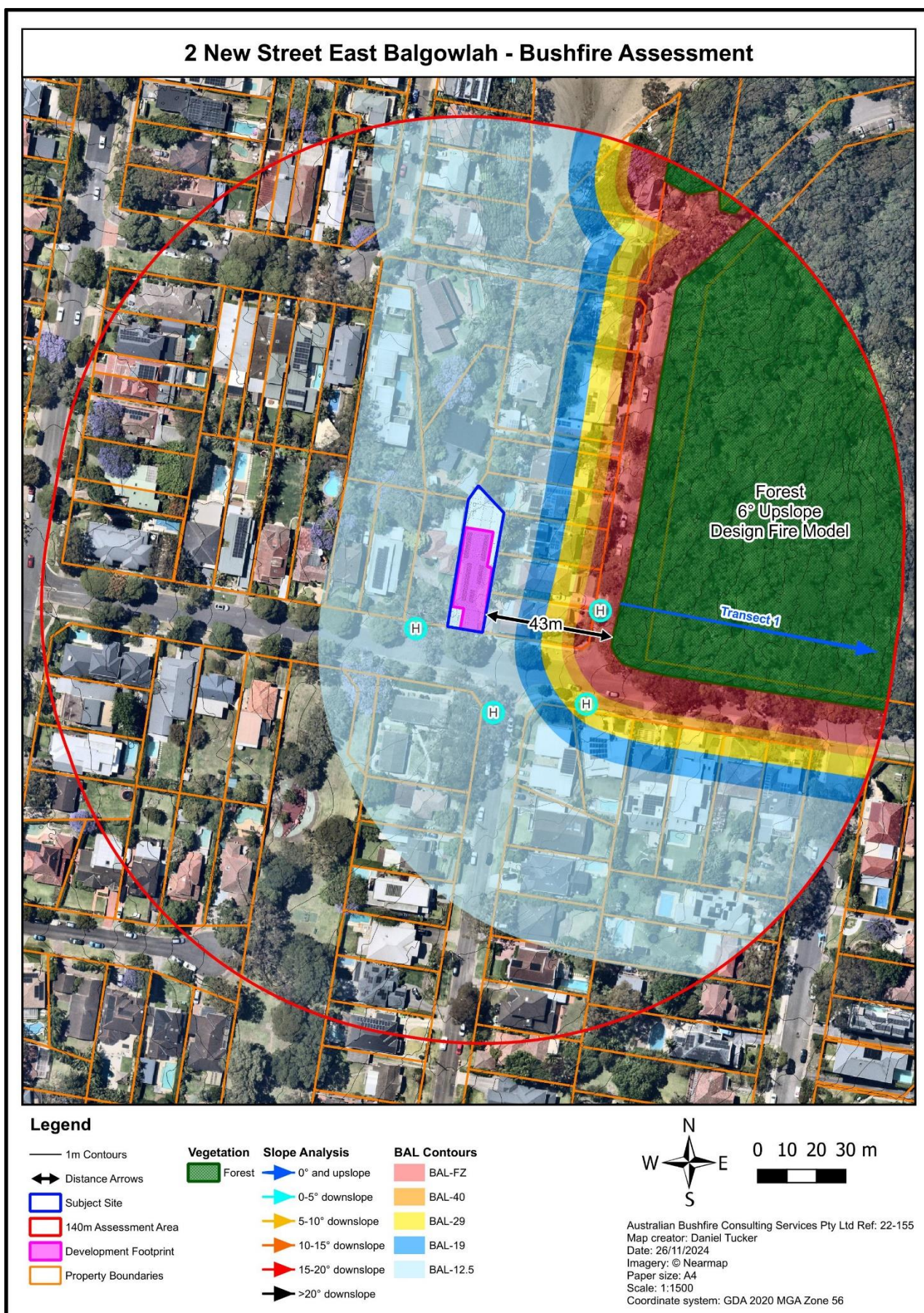


Image 01: Assessment summary and BAL contour overlay across the subject area



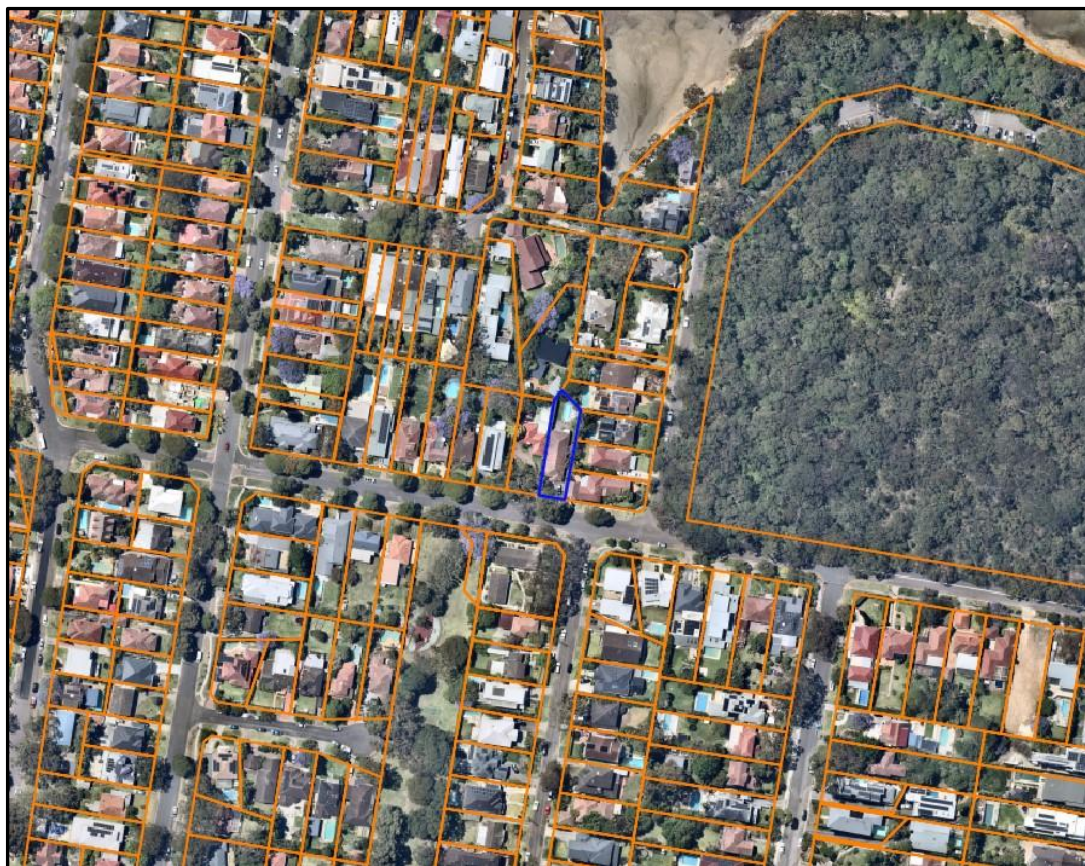


Image 02: Aerial image from NSW Government Planning Portal Property Information



Image 03: Bushfire Prone Land Map from NSW Government Planning Portal Property Information



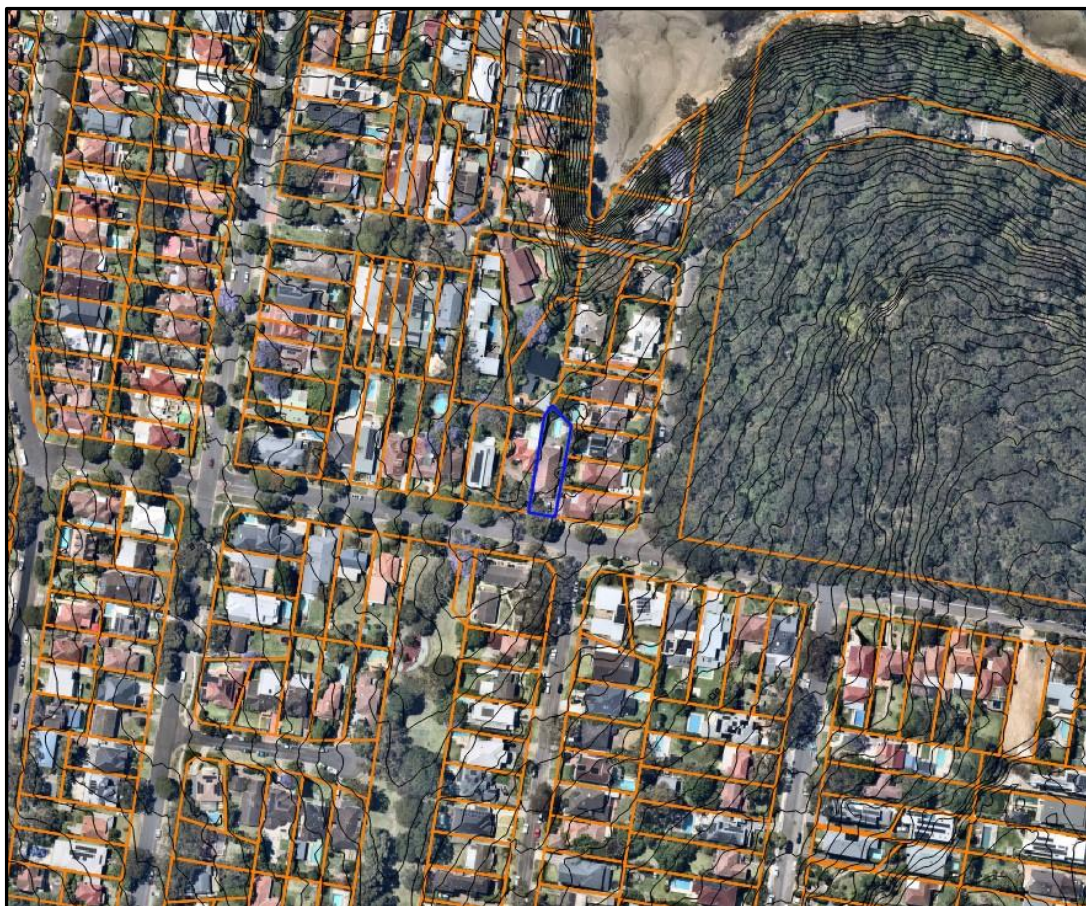


Image 04: 1 m contour topographic image from NSW Government Elevation Foundation Data

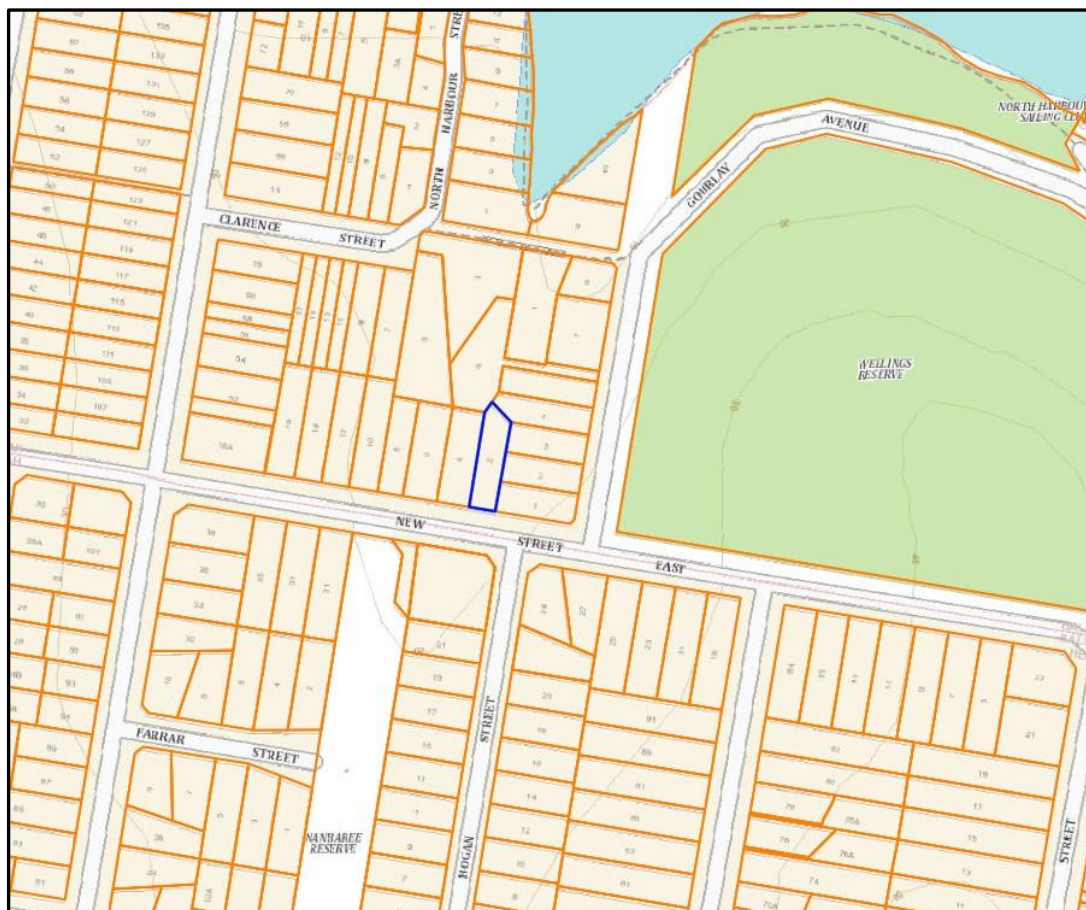


Image 05: Topographic image from NSW Government Planning Portal Property Information



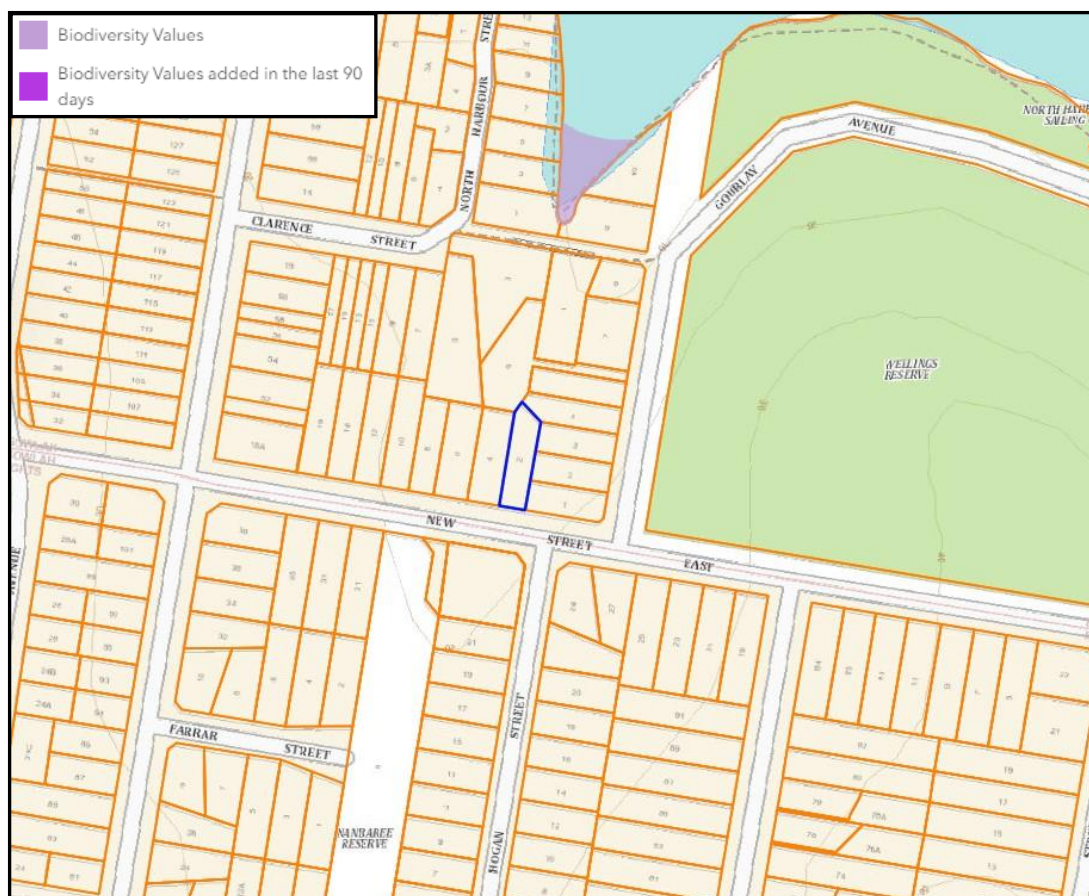


Image 06: Biodiversity Values Map from NSW Government Planning Portal Property Information

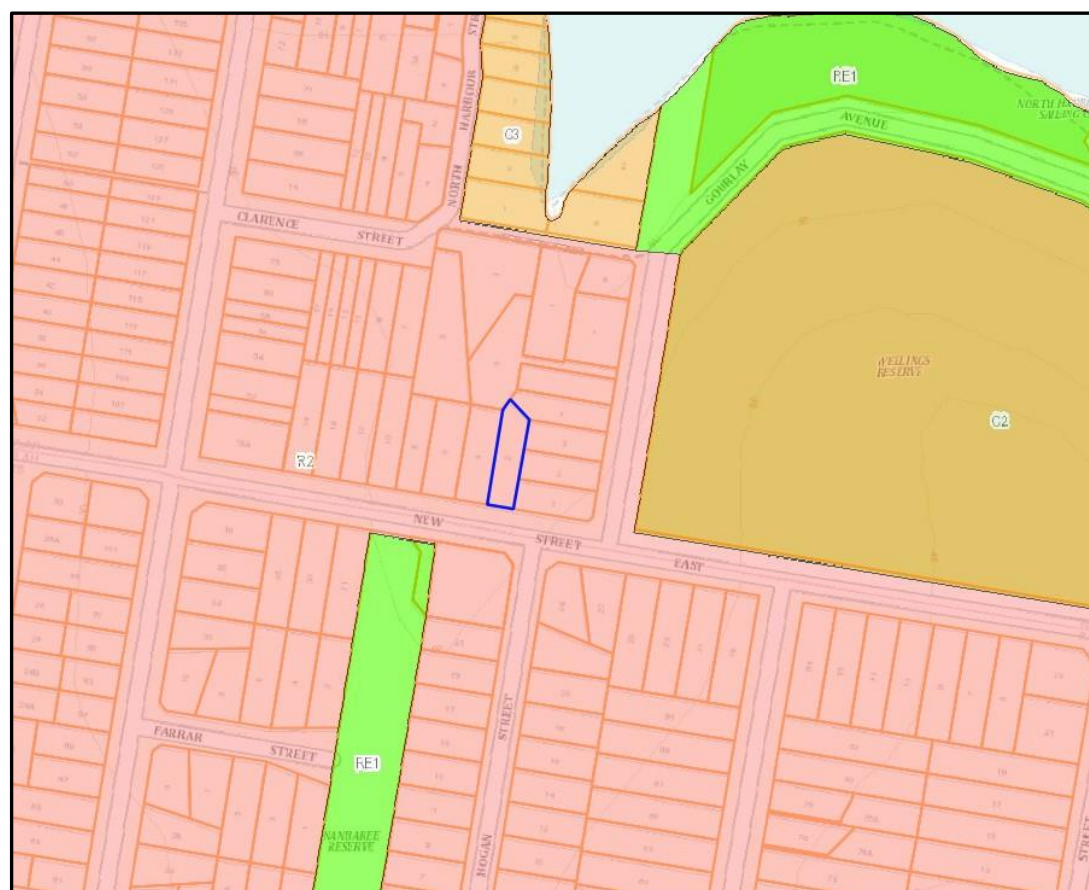


Image 07: Council LEP Zones from NSW Government Planning Portal Property Information

## 8.0 Bushfire hazard assessment

Properties considered to be bushfire prone land are identified on Councils Bushfire Prone Land Map as being:

- *within or within 100 m of Category 1 (high) hazards or,*
- *within or within 30 m of Category 2 (low) hazards or,*
- *within or within 30 m of Category 3 (medium) hazards.*

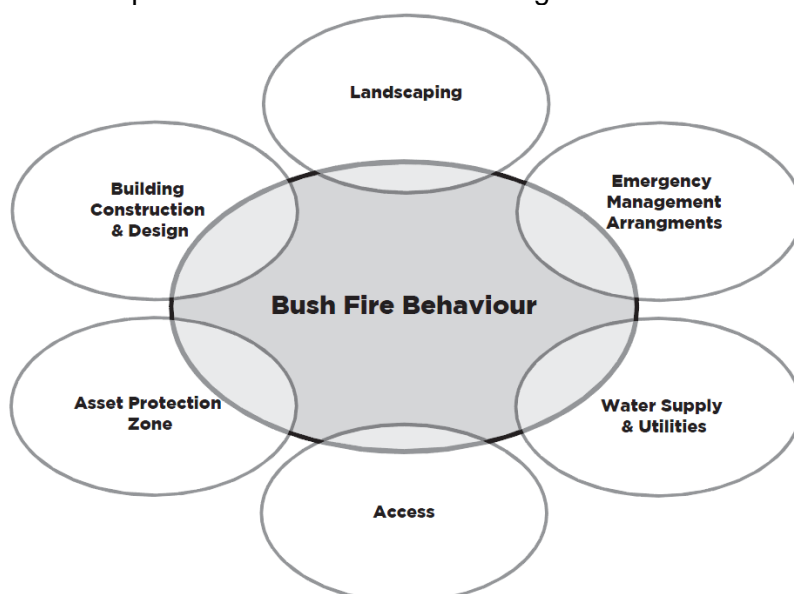
The NSW RFS document PBP – 2019 is applicable to all development on bushfire prone land, this includes an assessment of the proposals adequacy in providing an appropriate combination of bushfire protection measures in terms of asset protection zones, landscaping, access and service supply. This document also provides a means of determining the necessary level of building construction under AS3959 - 2018. Infill development proposals on BFPL must be accompanied by bush fire assessments and reports demonstrating compliance with PBP 2019.

In particular, the following must be addressed:

- a statement that the site is BFPL;
- the location, extent and vegetation formation of any bushland on or within 140 metres of the site;
- the slope and aspect of the site and of any BFPL within 100 metres of the site;
- any features on or adjoining the site that may mitigate the impact of a bush fire on the proposed development;
- a statement assessing the likely environmental impact of any proposed BPMs;
- a site plan showing access, water supplies, APZs, BAL requirements and building footprint in relation to the bush fire hazards; and
- calculated BAL construction levels.

By incorporating bush fire protection measures into a development, the six objectives of PBP 2019 are addressed:

1. afford buildings and their occupants protection from exposure to a bush fire;
2. provide for a defendable space to be located around buildings;
3. provide appropriate separation between a hazard and buildings which, in combination with other measures,
4. prevent the likely fire spread to buildings;
5. ensure that appropriate operational access and egress for emergency service personnel and occupants is available;
6. provide for ongoing management and maintenance of BPMs; and ensure that utility services are adequate to meet the needs of firefighters.





## 8.1 Site

The site has street frontage to New Street East to the south and abuts R2 zoned private residential allotments to all remaining aspects. Councils Bushfire Prone Land Map identifies this property as being within the 100 metre buffer zone from a Category 1 Vegetation to the east. Therefore, it is appropriate to apply PBP 2019 to the development proposal.

## 8.2 Vegetation

PBP 2019 requires a classification of the vegetation on and surrounding the property out to a distance of 140 metres from the property boundary (or building footprint). The subject site and surrounding neighbouring private allotments are managed as an asset protection zone around the built assets.

The vegetation identified as the bushfire threat to the development is located to the east within Wellings Reserve which is located beyond private residential allotments and Gourlay Avenue road reserve. The vegetation within Wellings Reserve is identified on NSW Gov SEED Sharing and Enabling Environmental Data mapping as:

*Vegetation Formation: Dry Sclerophyll Forests (Shrubby sub-formation)*

*Vegetation Class: Sydney Coastal Dry Sclerophyll Forests*

*PCT 3594 Name: Sydney Coastal Sandstone Foreshores Forest*

For the purposes of assessment under PBP 2019 the vegetation within Wellings Reserve to the east is assessed as a Forest hazard. Where design fire modelling has been used the fuel loads from NSW RFS Comprehensive Vegetation Fuels for Sydney Coastal DSF of 21.3/27.3 t/ha surface/total have been applied.

## 8.3 Topography

The slope must be assessed over a distance of 100m from the existing property boundary (or building footprint) towards the various vegetation communities constituting the hazard. In assessing the slope, it may be found that there are a variety of slopes covering different distances. The gradient within the hazard (vegetation) which will most significantly influence the fire behaviour must be determined.

The slope was assessed onsite with an inclinometer and verified by using 1 metre contour mapping to be:

- 6° upslope to the along to the east (hazard slope)
- 4° upslope within the asset protection zone to the east (site slope)

## 8.4 Asset Protection Zones

An Asset Protection Zone (APZ) is a buffer zone between a bush fire hazard and buildings, which is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack. A fuel-reduced, physical separation between buildings and bush fire hazards is the key element in the suite of bushfire protection measures.

The existing available asset protection zones were measured onsite and verified from plans and aerial imagery to be:

- ≥ 43 metres to the east

The separation from the hazard interface includes maintained land within the subject site and land considered equivalent to an asset protection zone being existing managed land within developed neighbouring allotments and Gourlay Avenue road reserve.

The APZ is existing, and no tree removal or other vegetation modification is necessary to establish it, as such there is no impact on the environment of the bushfire protection measured relied upon in this assessment.

Recommendations will be included within this report that at the commencement of construction and in perpetuity all land not built upon within the subject site is continued to be maintained as an Asset Protection Zone / Inner Protection Area in accordance with the requirements detailed within Appendix 4 of *Planning for Bush Fire Protection 2019* and the NSW RFS document *Standards for an Asset Protection Zone*.

## **Inner Protection Areas (IPAs)**

### **Trees:**

- canopy cover should be less than 15% (at maturity)
- trees (at maturity) should not touch or overhang the building
- lower limbs should be removed up to a height of 2m above ground
- canopies should be separated by 2 to 5m
- preference should be given to smooth barked and evergreen trees.

### **Shrubs:**

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings
- shrubs should not be located under trees
- shrubs should not form more than 10% ground cover
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

### **Grass:**

- should be kept mown (as a guide grass should be kept to no more than 100mm in height)
- leaves and vegetation debris should be removed.

## **8.5 Access & egress**

The site has street frontage to New Street East to the south. Persons seeking to egress the subject site will be able to do so via the proposed access drive and the existing road infrastructure. It is encouraged that the occupants complete a Bush Fire Safety Plan addressing “Prepare, Act, Survive” as advocated by the NSW RFS <http://www.rfs.nsw.gov.au/> under publications / bushfire safety.

The most disadvantaged point of the existing dwelling and proposed new works will be within 70 metres of a road that supports the operational use of fire appliances (hydrants) and free pedestrian access is available around the building footprint.

Access to the hazard interface for fire suppression or hazard reduction activities is available without the need to enter the subject site.

The access requirements of Table 7.4a within PBP 2019 are not applicable.

## **8.6 Services**

The subject site is connected to reticulated water mains for domestic needs. Hydrants are located along New Street East and other surrounding streets and are available for the replenishment of firefighting appliances. The nearest hydrant is located on New Street East within the road side verge to the west of the property.

The most disadvantaged point of the existing dwelling and proposed new works is less than 70 metres from a public road that supports the operational use of fire appliances (hydrants), and a static water supply is not required.

Existing above ground electrical supply is available to the subject site and reticulated gas mains is not available in this area. There are no new electrical service connections or gas installations proposed as part of this development.

## 8.7 Construction

AS3959 – 2018	
<b>BAL Low</b>	It is predicated on low threat vegetation and non-vegetated areas. This Standard does not provide construction requirements for buildings assessed in bushfire-prone areas as being BAL-LOW.
<b>BAL-12.5</b>	BAL-12.5 is primarily concerned with protection from ember attack and radiant heat up to and including 12.5 kW/m <sup>2</sup> where the site is less than 100 m from the source of bushfire attack.
<b>BAL-19</b>	BAL-19 is primarily concerned with protection from ember attack and radiant heat greater than 12.5 kW/m <sup>2</sup> up to and including 19 kW/m <sup>2</sup> .
<b>BAL-29</b>	BAL-29 is primarily concerned with protection from ember attack and radiant heat greater than 19 kW/m <sup>2</sup> up to and including 29 kW/m <sup>2</sup> .
<b>BAL-40</b>	BAL-40 is primarily concerned with protection from ember attack, increased likelihood of flame contact and radiant heat greater than 29 kW/m <sup>2</sup> and up to and including 40 kW/m <sup>2</sup> .
<b>BAL-FZ</b>	BAL-FZ is primarily concerned with protection from flame contact together with ember attack and radiant heat of more than 40 kW/m <sup>2</sup> . Construction in the Flame Zone BAL-FZ may require reliance on measures other than construction. The requirements for construction of a building in the Flame Zone are regulated by the building authorities having jurisdiction in the States and Territories of Australia.



*Planning for Bush Fire Protection 2019* provides for six (6) levels of building construction these being BAL - Low, BAL - 12.5, BAL - 19, BAL - 29, BAL - 40 and BAL - FZ. A Bushfire Attack Level (BAL) is a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared, and is the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.

The highest Bushfire Attack Level to the proposed new works was determined to be 'BAL 12.5' from the eastern aspect. The proposed new works are required to comply with section 3 and 5 BAL 12.5 of AS 3959 – 2018 *Construction of buildings in bushfire prone areas* or the NASH Standard National Standard Steel Framed Construction in Bushfire Areas 2021 as appropriate for BAL 12.5 construction.

The additional construction requirements detailed within section 7.5.2 of PBP 2019 are also applicable.

Note: Certain provisions of AS 3959 are varied in NSW based on the findings of the Victorian Bush Fires Royal Commission and bush fire industry research. PBP 2019 section 7.5.2 provides a NSW State Variation that BAL 12.5 decks and subfloor areas are constructed to section 7.7 BAL 29 requirements except that any wall enclosing the subfloor space need only comply with the wall requirements for BAL 12.5.

### PBP 2019 Fences and gates

*Fences and gates in bush fire prone areas may play a significant role in the vulnerability of structures during bush fires. In this regard, all fences in bush fire prone areas should be made of either hardwood or non-combustible material. However, in circumstances where the fence is within 6m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.*

Any new fencing within the subject site should be made from hardwoods or non-combustible materials except where a fence or gate is within 6 metres of any dwelling it should be made from non-combustible materials only.

## 9.0 Recommendations

### 9.1 Asset Protection Zones / landscaping

1. That at the commencement of construction and in perpetuity all land not built upon within the subject site is continued to be maintained as an Asset Protection Zone / Inner Protection Area in accordance with the requirements detailed within Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW RFS document Standards for an Asset Protection Zone.

### 9.2 Construction

1. That the proposed new works are required to comply with section 3 and 5 BAL 12.5 of AS 3959 – 2018 *Construction of buildings in bushfire prone areas* or the NASH Standard *National Standard Steel Framed Construction in Bushfire Areas 2021* as appropriate for BAL 12.5 construction.
2. That the proposed new works are also constructed to that of the 'Additional Construction Requirements' detailed within section 7.5.2 of *Planning for Bush Fire Protection 2019*.
3. That any new fencing or gates within the subject site is made from non-combustible materials only.
4. That any new fencing or gates within the subject site is to be made from hardwoods or non-combustible materials except where a fence or gate is within 6 metres of any dwelling it should be made from non-combustible materials only.

Note: Certain provisions of AS 3959 are varied in NSW based on the findings of the Victorian Bush Fires Royal Commission and bush fire industry research. PBP 2019 section 7.5.2 provides a NSW State Variation that BAL 12.5 decks and subfloor areas are constructed to section 7.7 BAL 29 requirements except that any wall enclosing the subfloor space need only comply with the wall requirements for the respective BAL.



## 10.0 Conclusion

The National Construction Code 2022 (NCC) Volume 2 requires that a Class 1 building or a Class 10a building or deck associated with a Class 1 building that is constructed in a designated bushfire prone area is to provide resistance to bushfires in order to reduce the danger to life and reduce the risk of the loss of the building.

The subject property is determined to be bushfire prone land and the proposal must achieve compliance with the NCC by meeting the aims and objectives of PBP 2019. This is achieved by providing construction measures to mitigate against the impacts from bush fire including smoke, embers, radiant heat and flame contact and including suitable access, services supply and means of maintaining the bushfire protection measures for the life of the development.

This bushfire hazard and determination has been made on a site-specific basis which includes an assessment of the local bushland area and its possible impact to the subject property. The highest Bushfire Attack Level to the proposed new works was determined to be BAL 12.5. Suitable recommendations have been made herein to enable Council to issue development consent inclusive of conditions required to ensure compliance with all requirements of PBP 2019.

The proposal meets the aims and objectives of PBP 2019 by means of compliance with the deemed to satisfy provisions and performance requirements of that document.

In consideration of the bushfire risk posed to the proposed development in combination with the recommended bushfire protection measures contained within this report I am satisfied they will provide a reasonable and satisfactory level of bushfire protection to the proposed development.

I am therefore in support of the development application.

Australian Bushfire Consulting Services Pty Ltd



### **Wayne Tucker**

Managing Director  
G. D. Design in Bushfire Prone Areas.  
Certificate IV Fire Technology  
Ass Dip Applied Science  
FPA Australia BPAD Level 3 Accredited Practitioner  
BPAD Accreditation No. BPAD9399  
Graduate Member Institute of Fire Engineers

## 11.0 List of attachments

Attachment 01: s4.14 Certificate

Attachment 02: Radiant heat / design fire modelling report

# Bush Fire Certificate

Certificate issued unders4.14(1)(b) of the *Environmental Planning & Assessment Act, 1979* and *Planning for Bush Fire Protection 2019*

This Certificate has been issued by a person accredited by Fire Protection Association Australia (FPA Australia) under the Bush Fire Planning and Design (BPAD) Accreditation Scheme and who is recognised by the NSW Rural Fire Service as a qualified consultant in bushfire risk assessment within the meaning of section 4.14(1)(b) of the *Environmental Planning and Assessment Act 1979* (NSW).



## Property Details and Description of Works

<b>Address Details</b>	<b>Unit no</b>	<b>Street no</b>	<b>Street name</b>	<b>Lot/Sec/DP</b>
	<b>Suburb</b>			<b>State</b>
<b>Local Government Area</b>				
<b>BCA class of the building</b>				
<b>Description of the proposal</b>				
<b>Development Application Reference</b>				

## Bush Fire Assessment Report

A detailed Bush Fire Assessment Report is attached, which includes the relevant submission requirements set out in <i>Appendix 2 of Planning for Bush Fire Protection 2019</i> together with recommendations as to how the relevant specifications and requirements are to be achieved.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Report Reference and date	

## BPAD Certification

<b>Name</b>	I hereby certify, in accordance with Section 4.14(1)(b) of the <i>Environmental Planning and Assessment Act 1979</i> that:	
<b>Company Details &amp; ABN</b>	<ul style="list-style-type: none"> <li>I am a person recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment; and</li> <li>the development conforms to the relevant specifications and requirements of Planning for Bush Fire Protection 2019 in accordance with section 4.14(1)(b) of the <i>Environmental Planning and Assessment Act 1979</i> (NSW).</li> </ul>	
<b>BPAD Accreditation Number</b>	<b>Signature</b>	<b>Date</b>
		



# NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 26/11/2024

Assessment Date: 25/11/2024

Site Street Address: 2 New Street East, Balgowlah

Assessor: Wayne Tucker; Australian Bushfire Consulting Services

Local Government Area: Northern Beaches

Alpine Area: No

## Equations Used

Transmissivity: Fuss and Hammins, 2002

Flame Length: RFS PBP, 2001/Vesta/Catchpole

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: Sydney Coastal DSF

Vegetation Group: Dry Sclerophyll Forests (Shrubby)

Vegetation Slope: 6 Degrees

Vegetation Slope Type: Upslope

Surface Fuel Load(t/ha): 21.3

Overall Fuel Load(t/ha): 27.3

Vegetation Height(m): 1.4

Only Applicable to Shrub/Scrub and Vesta

## Site Information

Site Slope: 4 Degrees

Site Slope Type: Upslope

Elevation of Receiver(m): Default

APZ/Separation(m): 43

## Fire Inputs

Veg./Flame Width(m): 100

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

Level of Construction: BAL 12.5

Peak Elevation of Receiver(m): 9.86

Radiant Heat(kW/m2): 8.73

Flame Angle (degrees): 74

Flame Length(m): 14.26

Maximum View Factor: 0.147

Rate Of Spread (km/h): 1.69

Inner Protection Area(m): 27

Transmissivity: 0.782

Outer Protection Area(m): 16

Fire Intensity(kW/m): 23831

## BAL Thresholds

BAL-40: BAL-29: BAL-19: BAL-12.5: 10 kw/m2: Elevation of Receiver:

Asset Protection Zone(m): 13 17 24 33 51 6