

# BUSH FIRE ASSESSMENT

## 237 McCarrs Creek Road Church Point 2105

Assessed as: Infill Development

Prepared by: Matthew Noone | BPAD Accreditation Number: BPAD-25584 (Level 3)

Site Address: 237 McCarrs Creek Road Church Point 2105 | Lot / DP: (Lot 32/-/DP20097)

### Project Description: Proposed Sole Occupancy Dwelling



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REPORT NUMBER  
BR-841524-A

Date: 03/09/2024

Our Ref: BR-841524-A

# BUSHFIRE PLANNING & DESIGN

## BAL ASSESSMENT CERTIFICATION

Provided to support the Development Application

### 237 McCarrs Creek Road Church Point 2105

Prepared by: Matthew Noone | BPAD Accreditation Number: BPAD-25584 (Level 3)



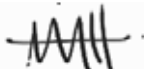
Site Address: 237 McCarrs Creek Road Church Point 2105 | Lot / DP: (Lot 32/-/DP20097)

#### Project Description: Sole Occupancy Dwelling

PBP Development Type: Infill Development

I hereby certify that:

1	I (Matthew Noone) am a person recognised by the NSW Rural Fire Service as a qualified consultant in bushfire risk assessment holding accreditation with the Fire Protection Association (BPAD-PD 25584).
2	The proposed development does not conform to the relevant specifications and requirements (due to being BAL-FZ)*.
*	The relevant specifications and requirements being; specifications and requirements of the document entitled Planning for Bush Fire Protection prepared by the NSW Rural Fire Service in co-operation with the Department of Planning and any other document as prescribed by s.4.14 of the Environmental Planning and Assessment Act 1979.
*	RFS referral is required.
3	I am aware that the Bushfire Assessment Report, prepared for the above mentioned site is to be submitted in support of a development application for this site and will be relied upon by Council as the basis for ensuring that the bushfire risk management aspects of the proposed development have been addressed in accordance with Planning for Bushfire Protection (2019).

CERTIFICATE NUMBER BR-841524-A			FPAA Accreditation Number BPAD-25584 
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## DOCUMENT TRACKING

Issue Date	Issued to	Description	Version
03/09/2024	Drafting Help	Issued for DA.	A

## **DISCLAIMER and TERMS OF USE**

*"It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature of behaviour of fire, and extreme weather conditions." (AS3959 2018).*

Bushfire Planning & Design cannot be held liable for the loss of life or property caused by a bushfire event. This report has considered the relevant planning instruments, bushfire constructions codes and practices applicable at the time of writing. Should additional information be provided after this report has been issued, we reserve the right to review and if necessary modify our report. Bushfire Planning and Design has no control over workmanship, buildings degrade over time and vegetation if not managed will regrow. In addition legislation and construction standards are subject to change. Due to significant variance of bushfire behaviour, we do not guarantee that the dwelling will withstand the passage of bushfire even if this development is constructed to the prescribed standards.

This report has been based on our interpretation of Planning for Bushfire Protection (2019), AS3959 (2018) and the methodology for site specific bushfire assessment. As a consultant, our view can be subjective. Our opinions may differ from the opinions provided by you the Client (or Client Representative), the Council, the RFS or another bushfire consultant. The Rural Fire Service (RFS) has a higher authority and can upon their review, increase a nominated BAL-rating or entirely reject a development proposal. Any such recommendations made by the RFS take precedence. Our role is intermediary between our Client (or Client Representative) and the consenting authority. We apply our knowledge of the relevant bushfire protection standards to provide the best possible outcome for our Client (or Client Representative), both from a bushfire safety and financial perspective. Should the RFS modify our recommendations or reject the proposal to which this report relates to we will not be held liable for any financial losses as a result. By using this document, you the Client (or Client Representative) agree to and acknowledge the above statements

Bushfire Planning and Design accepts no liability or responsibility for any use or reliance upon this report and its supporting material by any unauthorized third party. The validity of this report is nullified if used for any other purpose than for which it was commissioned. Unauthorized use of this report in any form is deemed an infringement of our intellectual property. By using this document to support your development you the Client (or Client representative) agree to these terms.

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## GLOSSARY

The abbreviations that are commonly used are explained below. Not all are present in this report.

APZ	Asset Protection Zone
AS3959	Australian Standard for the Construction of a Building in a Bushfire Prone Area
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BFPL	Bush Fire Prone Land
BFPLM	Map Bush Fire Prone Land Map
BFDB	Bush Fire Design Brief
BPM	Bush Fire Protection Measure
DA	Development Application
DCP	Development Control Plan
DPIE	Department Of Planning, Industry And Environment
DTS	Deemed to Satisfy
EPA ACT	Environmental Planning And Assessment Act 1979
FDI	Fire Danger Index
FFDI	Forest Fire Danger Index
GFDI	Grassland Fire Danger Index
IPA	Inner Protection Area
LEP	Local Environmental Plan
NASH	National Association of Steel Framed Housing
NCC	National Construction Code
OPA	Outer Protection Area
PBP	Planning for Bush Fire Protection
RF ACT	Rural Fires Act
RF REG	Rural Fires Regulation
NSW RFS	New South Wales Rural Fire Service
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SFR	Short Fire Run
SSD	State Significant Development

**ASSESSMENT DETAILS**

Client	Drafting Help		
Location	237 McCarrs Creek Road Church Point 2105		
Title reference	(Lot 32/-/DP20097)		
LGA	Northern Beaches		
Zoning	C4 - Environmental Living		
Development Type	Sole Occupancy Dwelling		
PBP (2019) Assessment Type	Infill (Chapter 7)		
Bushfire Consultancy	Bushfire Planning and Design - Director Matthew Noone - Accreditation number BPAD-25584 (Level 3)		
Report no.	Date of Issue	BR-841524-A	03/09/2024

**SCOPE**

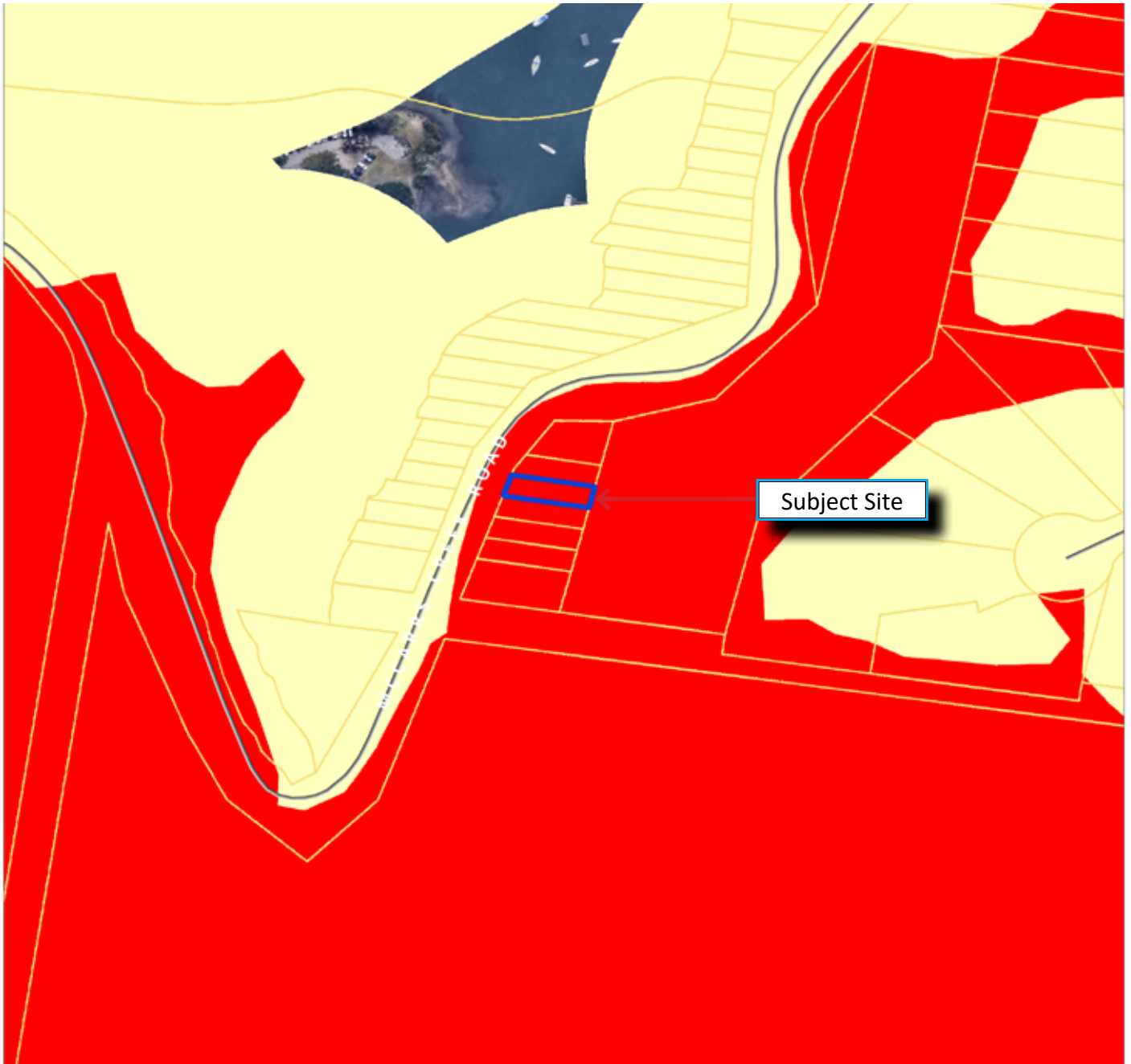
The first intended audience for our report is our Client and the design team. The recommendations in this report should be adopted integral to design development and prior to the DA being lodged. Additionally our recommendations are to be included in the DA consent and should be confirmed prior to the release of the Construction Certificate. Whereas our report will be used to support the development application to which this report relates, our report is not necessarily written for RFS or Council and the information within is to be considered in the same context as a set of specifications that if employed will achieve compliance with PBP.

Our report provides an assessment of the Bushfire Attack Level (BAL) and outlines the Bushfire Protection Measures (BPM's) that must be incorporated into the development design to ensure compliance with AS3959 (2009) Construction of Buildings in Bushfire Prone Areas and the New South Wales Rural Fire Service document Planning for Bushfire Protection (2019).



## A.01 BUSHFIRE PRONE LAND

The subject site whether in whole or part is recorded as bushfire affected on a relevant map certified under Section 10.3 (2) of the Environmental Planning and Assessment Act 1979 (Refer figure A.01). All developments on certified bushfire prone are required to address bushfire as per 4.14 Environmental Planning and Assessment Act 1979.



<b>FIGURE A.01 BUSHFIRE PRONE LAND MAP</b>		Plot date:03/09/2024	Project CRS: EPSG:28356
<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ffffcc; border: 1px solid black; margin-right: 5px;"></span> Buffer 0</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> Category 1</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ff9900; border: 1px solid black; margin-right: 5px;"></span> Category 2</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #ff6600; border: 1px solid black; margin-right: 5px;"></span> Category 3</li> </ul>	<span style="display: inline-block; width: 15px; height: 10px; border: 2px solid blue; margin-right: 5px;"></span> Subject Site	<p>Meters</p>	
<p><b>BUSHFIRE PLANNING &amp; DESIGN</b>            bpad.matthew.noone@gmail.com / 0406077222</p>			<b>A.01</b> 

# A.02 DEVELOPMENT PROPOSAL

The development relates to the construction of a sole occupancy dwelling on a vacant allotment.



Concept Drawing



## **A.03 REGULATORY FRAME WORK**

The relevant legislative instruments applicable to the subject development are outlined below.

### **PRE-DEVELOPMENT CONSENT**

- 10.3 (2) of the Environmental Planning and Assessment Act 1979.
- 4.14 Environmental Planning and Assessment Act 1979
- Planning for Bush Fire Protection (2019).

### **POST-DEVELOPMENT CONSENT**

- National Construction Code (2022).
- AS3959 (2018) Construction of Buildings in Bush Fire Prone Areas.

## A.04 SITE LOCATION, DESCRIPTION AND POTENTIAL BUSHFIRE THREATS








The subject site is located in Church Point which is within the Northern Beaches Local Government Area (LGA). The site adjoins residential allotments to the north and south, a forested reserve to the east and McCarrs Road to the west. Further to the west is a corridor of residential allotments adjoining McCarrs Creek. The residential allotments to the north currently contain forest vegetation, however, they will likely be cleared and developed in the future. Access to the site is via McCarrs Creek Road.

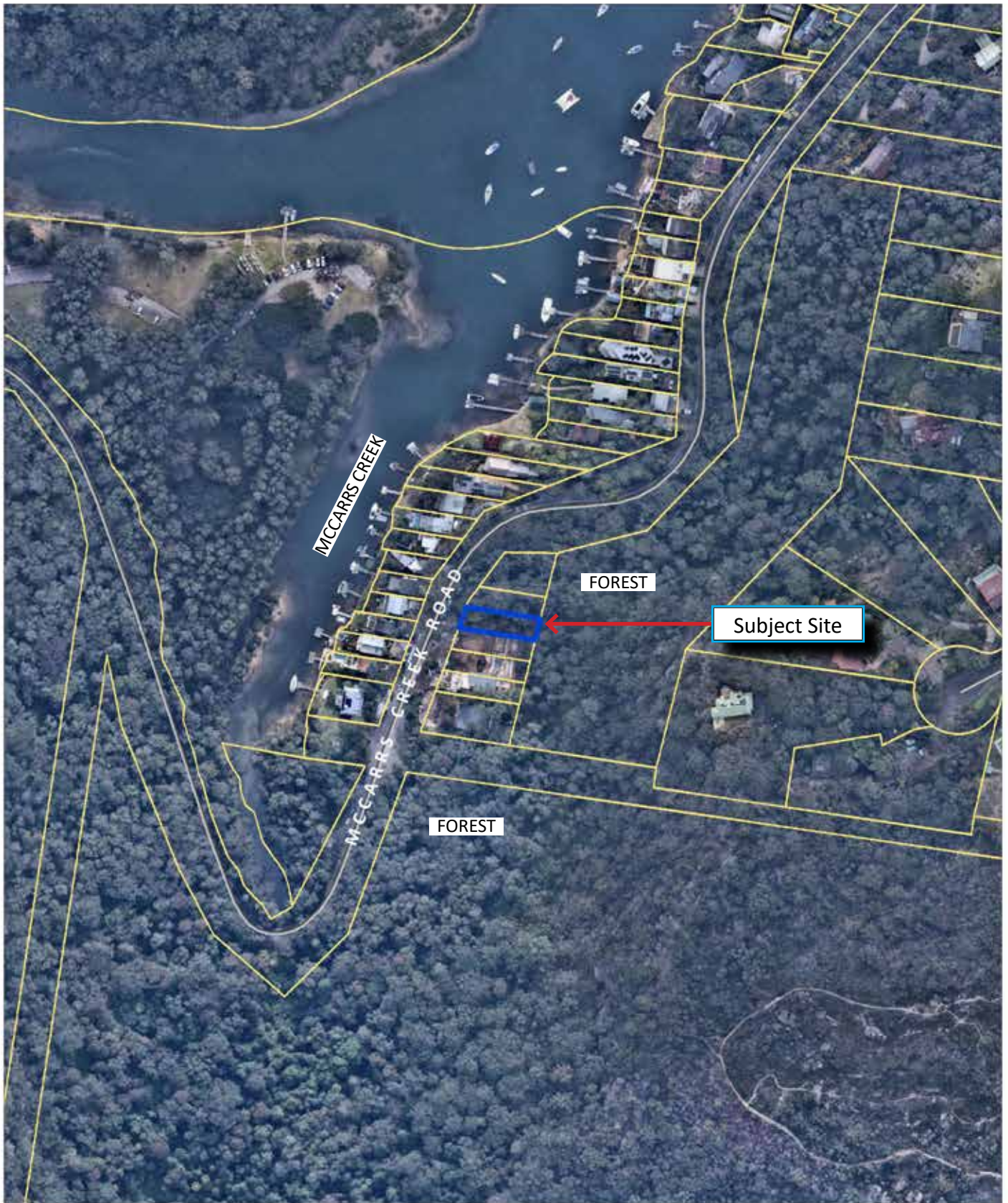
## A.05 LAND USE, ZONING AND PERMISSIBILITY


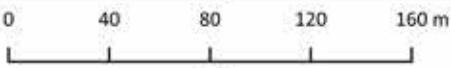

The subject site is zoned C4 - Environmental Living



### LAND ZONING LEGEND

 R2 Low Density Residential	 C2 Environmental Conservation/Management	 RE1 Public Recreation	 R5 Large Lot Residential
 SP2 Infrastructure	 C4 Environmental Living	 C1 National Parks and Nature Reserves	



<b>FIGURE A.04 LOCATION DRAWING</b>	Plot date:03/09/2024	Project CRS: EPSG:28356	<b>A.04</b>
 Subject Site	 <p style="text-align: center;">Meters</p>		
<p style="color: red; margin: 0;"><b>BUSHFIRE PLANNING &amp; DESIGN</b></p> <p style="margin: 0;">bpad.matthew.noone@gmail.com / 0406077222</p>			



## **A.06 SIGNIFICANT ENVIRONMENTAL FEATURES**

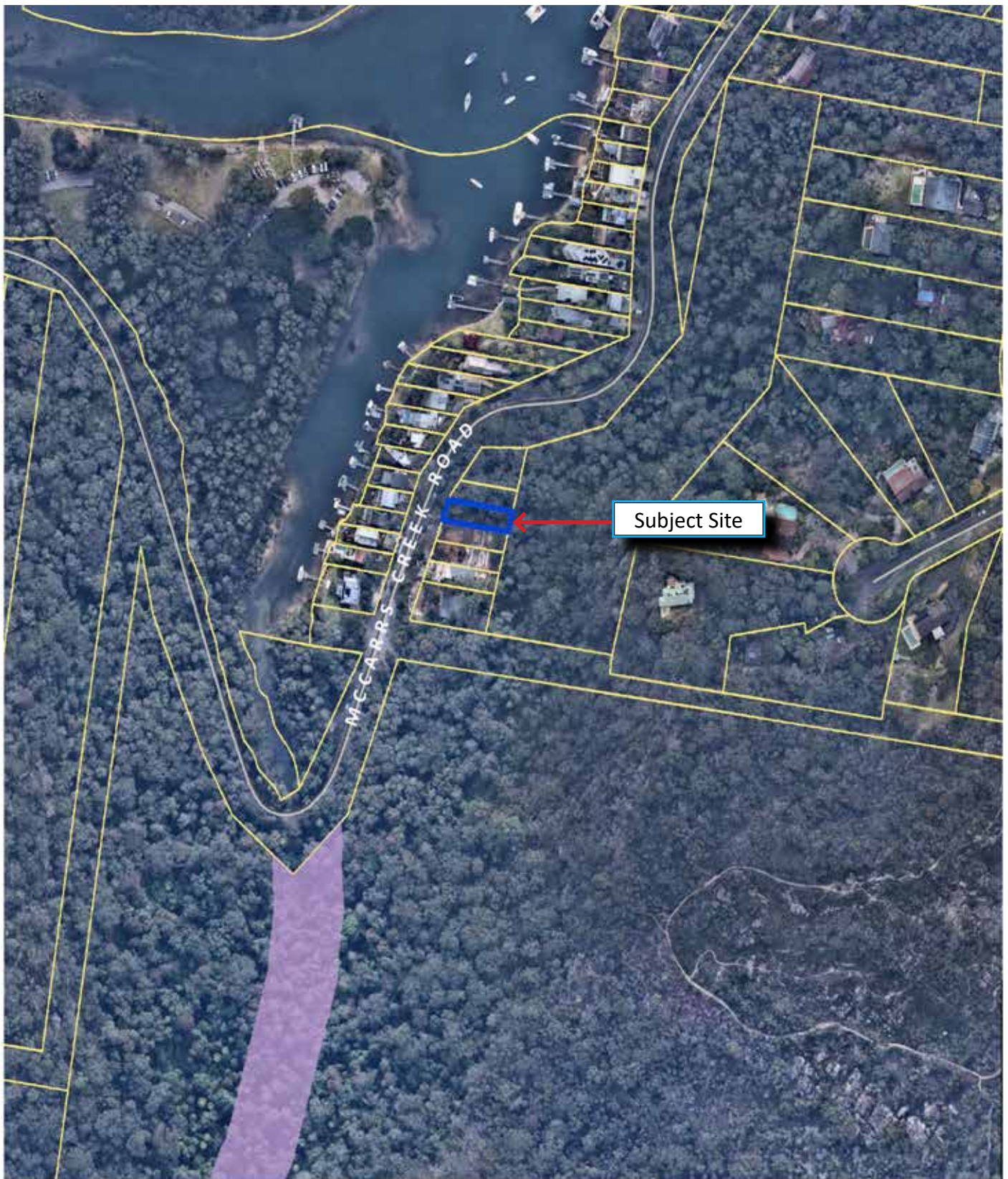
Our BAL-assessment in Part-B of this report has considered the environmental features that are relevant to our assessment. There are no additional significant environmental features within the 140m study area that would influence our opinion of the assessed Bushfire Attack Level.





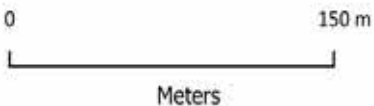
## **A.07 DETAILS OF ABORIGINAL HERITAGE**

To our knowledge the site is not associated with any items of Aboriginal heritage.

## **A.08 THREATENED SPECIES, COMMUNITIES AND CRITICAL HABITATS**

The subject site is not mapped by the Department of Planning, Industry and Environment (DPIE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act) as having Biodiversity Values (BV).



<b>FIGURE A.09 BIODIVERSITY</b>	Plot date:03/09/2024	CRS: EPSG:28356	<b>A.09</b> 
<p> <b>BIODIVERSITY VALUES</b>  Subject Site         </p> <p>  Biodiversity Values   Biodiversity Values added in the last 90 days         </p> <p>           The BV Map has been prepared by the Department of Planning, Industry and Environment (DPIE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act).         </p>	 <p style="text-align: center;">Meters</p>		
	<p> <b>BUSHFIRE PLANNING &amp; DESIGN</b>            bpad.matthew.noone@gmail.com / 0406077222         </p>		

## **A.09 REPORT LIMITATIONS**

This bushfire assessment is developed based on the current accepted standards. The severity of bushfire attack is reliant on many variables. Due to these variables the bushfire attack on any given day could be higher due to the limitations outline below. The bushfire protection measures contained in this document does not guarantee that loss of life, injury or property damage will not occur during a bush fire event.

### **Fire Danger Index**

It may be possible that days of higher Fire Danger Index (FDI) may be experienced than the FDI levels used for assessment. This may result in fire situations where conditions challenge survivability of buildings and their occupants.

### **Fuel Load**

The fuel loads and vegetation classes used in our assessment are based on the State Vegetation Mapping and Comprehensive Fuel Loads based on The University of Wollongong's (UoW) Fuels Modelling Project. Fuel loads in some areas may be higher than those used in this document. This can influence bush fire behaviour and the potential impact on property. The DTS APZs in PBP (2019) are based on the UoW fuel loads and are therefore suitable for design purposes.

### **Climate change**

Climate change has led to longer, more intense fire seasons and an increase in the average number of elevated fire weather days, as measured by the Forest Fire Danger Index (FFDI). Last year saw the highest annual accumulated FFDI on record. Australia was the first country in the world to report the impact of climate change on bushfires through CSIRO's work to model the increase in high fire danger days.

### **Legislative Standards**

Recommendations relating to development of bushfire prone land are a directive through the legislative standards applicable at the time of writing. Legislative standards change over time. All recommendations made are based on the current standards. We cannot guarantee that the current standards will be suitable in comparison to future standards.

### **Maintenance**

After the issuance of an Occupancy Certificate (OC) it is imperative that the bushfire protection recommendations are carried out for the life of the development. Failure to maintain a property in accordance with the RFS standards for Asset Protection Zones could lead to the failure of the building, property and life. We have no control over the extent of how well a property will be maintained post OC.



### B.01 INTRODUCTION

For the purpose of this bushfire assessment, the vegetation is required to be described to a distance of 140m from the boundary and the slope to 100m from boundary. Vegetation type and slope under vegetation are the factors that will significantly affect bushfire behaviour.

‘Research has shown that 85% of houses are lost in the first 100m from bushland and that ember attack is a significant form of attack on properties’ (RFS 2006).

### B.02 SLOPE DETERMINATION

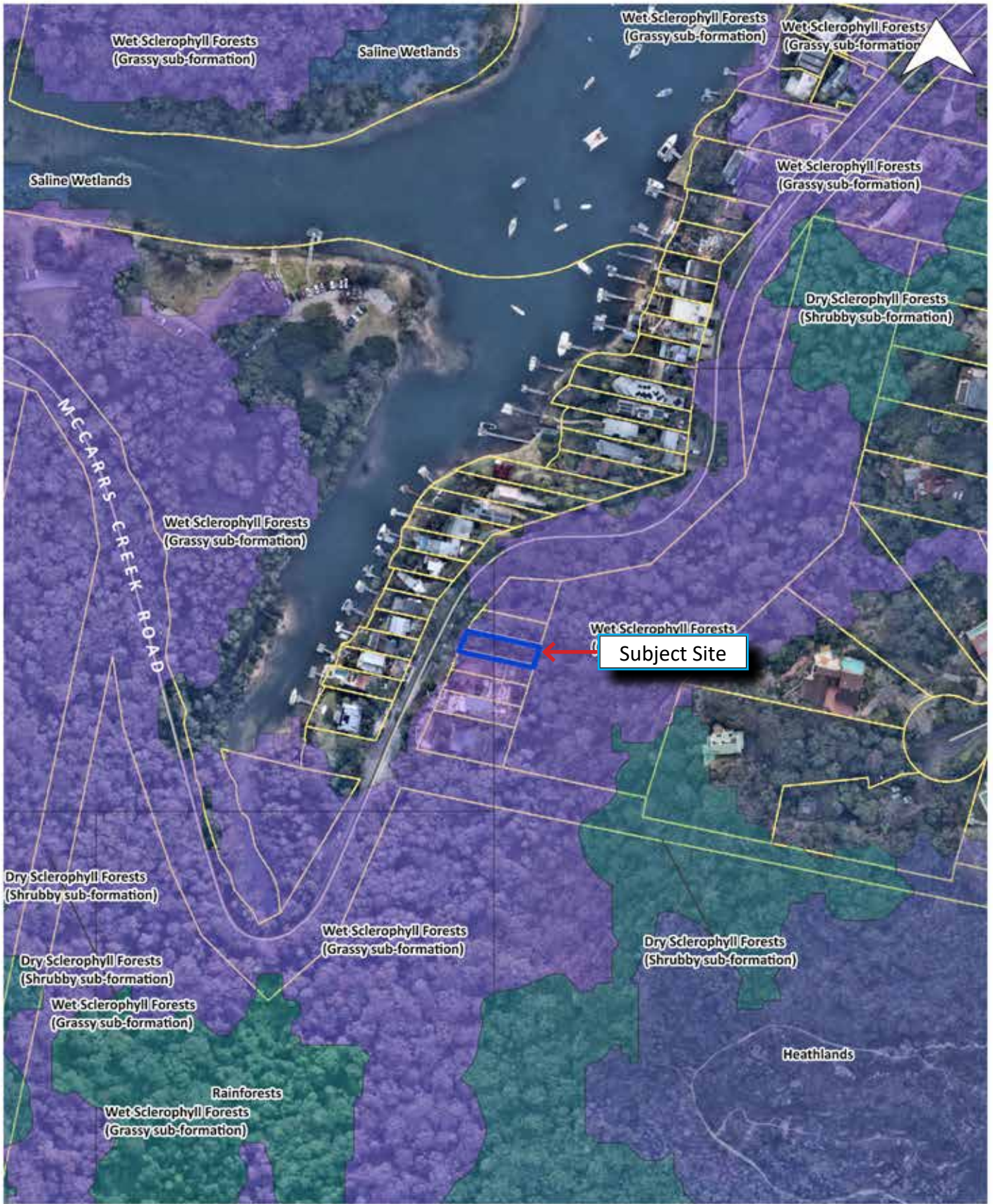
The effective slope has been assessed for a distance of at least 100m from the proposed development. The slope data has been calculated from a 1m LiDAR Digital Elevation Model (DEM). The source data sets have been captured to standards that are generally consistent with the Australian ICSM LiDAR Acquisition Specifications which require a fundamental vertical accuracy of at least 0.30m (95% confidence) and horizontal accuracy of at least 0.80m (95% confidence). The slope arrows indicated in figure A represent the slope calculated across the length of the arrow direct from the digital elevation model.

### B.03 HOW THE VEGETATION COVER IS MEASURED

The distance to vegetation is measured from the extent of vegetation cover interpolated from high resolution aerial imagery. For the areas beyond the line of sight we have defaulted to interpreting the extent of vegetation cover high resolution aerial image.

### B.04 PREDOMINANT VEGETATION FORMATIONS

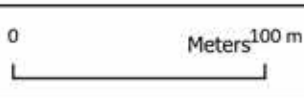
This assessment considers the vegetation within the site and if relevant, vegetation external to the site boundaries. Where mixes of vegetation formations are located together, the vegetation formation providing the greater hazard (highest radiant heat load) shall be used to determine the BAL and APZ. The combination of vegetation and slope that yields the worst case scenario shall be used (A1.2 PBP 2019). The vegetation mapping provides an overview of the types of vegetation proximal to the site. The vegetation mapping shown in Figure B.04 is not intended to be conclusive.



**FIGURE B.04 VEGETATION FORMATIONS**



CRS: EPSG:28356  
 Plot date: 03/09/2024



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## B.05 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT.

Forest vegetation occurs to the north, south, east and west of the proposed dwelling. The forest vegetation to the south and west is separated from the boundary of the site by a combination of residential development and McCarrs Creek. Forest vegetation adjoins the northern and eastern boundaries of the site and is separated from the proposed dwelling by 0.9m and 7.7m, respectively.

Based on the parameters identified in Table 1 below, the proposed dwelling is assessed as BAL-FZ.

<b>TABLE 1</b> (To be read in conjunction with Figure A).					
LGA = Northern Beaches Council				Forest Fire Danger Index = FDI 100	
ASPECT <sup>1</sup>	Vegetation Class <sup>2</sup>	Max Effective Slope <sup>3</sup>	Site slope <sup>3</sup>	DTV <sup>5</sup>	BAL-Rating <sup>6</sup>
N	Forest	5-10° D-S	N/A	0.9m	BAL-FZ
S	Forest	U-S	N/A	61.1m	BAL-FZ
SW	Forest	5-10° D-S	N/A	99.6m	BAL-FZ
E	Forest	U-S	N/A	>100m	BAL-FZ
W	Forest	U-S	N/A	7.7m	BAL-FZ

Abbreviations		
AOD All other directions	EML Extent of managed land	NVC Narrow vegetation corridor

<sup>1</sup>	<i>Cardinal direction from each proposed building facade based on grid north.</i>
<sup>2</sup>	<i>Vegetation Classifications are as described in PBP (2019) A1.2.</i>
<sup>3</sup>	<i>Site slope is calculated from 1m LiDAR contours.</i>
<sup>4</sup>	<i>Minimum APZ required stated as Acceptable Solutions within Table 1.12.2 and A1.12.5. PBP (2019).</i>
<sup>5</sup>	<i>Distance to Vegetation (DTV) Actual dimensional setback from the face of the building to the assessed vegetation. Achieved Asset Protection Zone (APZ) or extent of managed land (EML).</i>
<sup>6</sup>	<i>Where the direct line of sight between the proposed building and assessed vegetation is obstructed (by a wall or building) the assessed rating can be lowered by one BAL-rating. Reduced construction requirements do not apply where any elevation is BAL-FZ (PBP 2019, s. A1.8).</i>
<sup>7</sup>	<i>Remnant bushland and narrow vegetation corridors (NVC) as stated in PBP (2019) s.A1.11 can be assessed as rainforest as a simplified approach or be assessed as Short Fire Run using method 2 (AS3959).</i>
<sup>8</sup>	<i>Deeming provisions for grassland s.7.9 PBP (2019).</i>

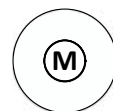




**VEGETATION KEY (solid)**



Forest



Managed Land

**DRAWING LEGEND**

Site Boundary ———

Proposed Building

Hydrant H

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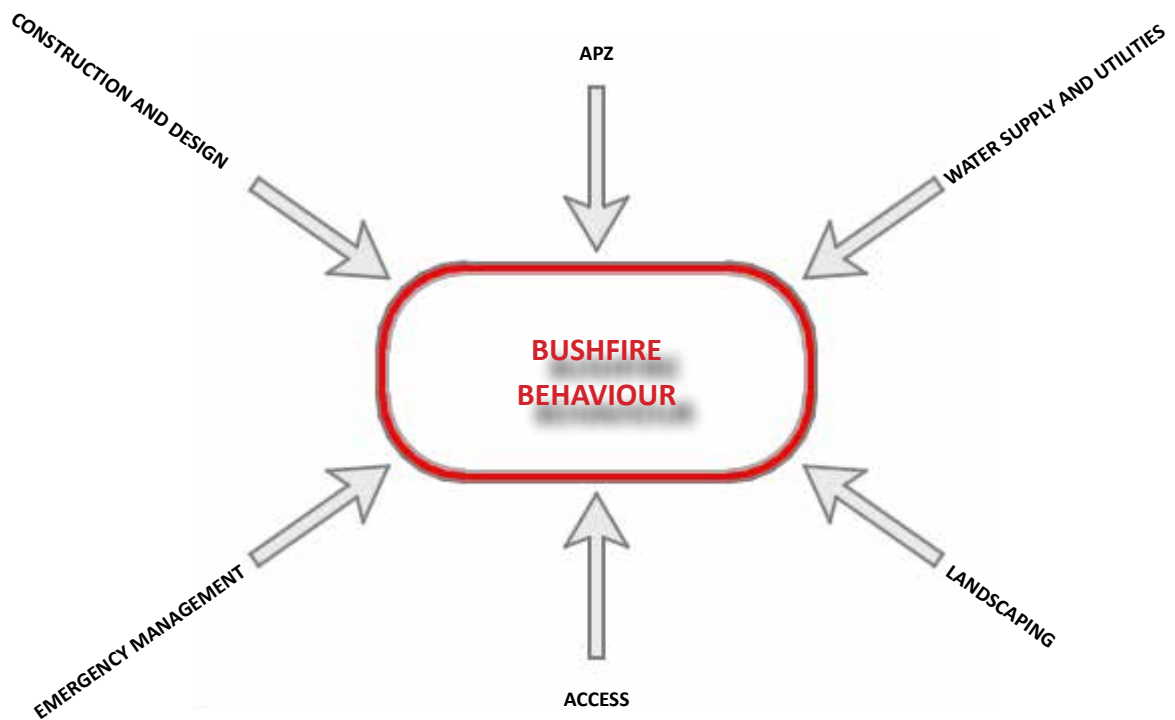
Figure:

**A**



## PART C BUSHFIRE PROTECTION MEASURES / RECOMMENDATIONS

BPMs can mitigate the impact of bush fire attack on people and assets. The types of protection measures include APZs, access, landscaping, water supply, building design and construction and emergency management arrangements. These measures assist building survival during a bush fire. They also contribute to the safety of firefighters and members of the community occupying buildings during the passage of a bush fire front. There are a range of different BPMs which should be applied in combination based upon the development type and the level of bush fire risk. All requirements for BPMs that relate to the development must be provided, as required by this document.



## C.01 ASSET PROTECTION ZONES (APZs)

The site is to be managed as an inner APZ in accordance with PBP (2019) Appendix 4. To do this the following guidelines are to be applied:

### TREE CANOPY TREATMENT

- Inner APZ tree canopy cover should be less than 15% at maturity;
- Inner APZ trees at maturity should not touch or overhang the building;
- Inner APZ lower limbs should be removed up to a height of 2m above the ground;
- Outer APZ tree canopy cover should be less than 30% at maturity;
- tree canopies should be separated by 2 to 5m; and
- 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 should be provided;
- shrubs should not be located under trees;
- shrubs in the Inner APZ should not form more than 10% groundcover; and
- shrubs in the Outer APZ should not form more than 20% groundcover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

### GRASS

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

## VEGETATION IMPACT STATEMENT

The site will be cleared of bushland vegetation to accommodate for the development and APZ. The site is not mapped as having biodiversity values.



## C.02 CONSTRUCTION

Our assessment of the Bushfire Attack Level indicates the proposed dwelling could experience flame contact if exposed to bushfire.

The proposed dwelling is to be constructed to comply with BAL-FZ as specified in AS3959 (2018). This includes the general requirements of Section 3 of AS3959 (2018) and the additional construction requirements stipulated in s.7.5 of the New South Wales Rural Fire Service (RFS) document Planning for Bushfire Protection (PBP 2019).

Where a Class 10a building is located within 6m of a dwelling it must be constructed in accordance with the NCC.

Any proposed fencing should be constructed from hardwood or non combustible materials. New fencing within 6m of any habitable building should be made of non-combustible material only

## C.03 WATER, ELECTRICITY AND GAS

Intent of measures: To provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

### WATER PROVISIONS

A hydrant is provided on McCarr Creek Road within 70m of the proposed development. No additional water is required for fire fighting. All above-ground water service pipes (including taps and connections) external to the building are to be metal.

### GAS PROVISIONS

Should the Applicant wish to install a gas supply to the dwelling or structure, the following criteria are to be complied with.

- Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is to be used.
- All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side.
- Connections to and from gas cylinders are to be metal.
- Polymer-sheathed flexible gas supply lines are not to be used.
- Above-ground gas service pipes are to be metal, including and up to any outlets.

### ELECTRICAL PROVISIONS

For infill development, the electrical frame work is an existing condition. Should there be a need to install new electrical connections the following should be considered;

- Where practicable place electrical transmission lines are underground or,
- If overhead electrical transmission lines are proposed:- lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002).
- No part of a tree is to be closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.

## C.04 ACCESS

Intent of measures: To provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area.

### **ACCESS - PUBLIC ROADS**

The subject site is accessed from McCarrs Creek Road. McCarrs Creek Road is a sealed public road. The public road system is deemed to be adequate for emergency services appliances.

### **ACCESS - PROPERTY ACCESS**

There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency fire fighting vehicles

## PART D SUMMARY

The development relates to the construction of a sole occupancy dwelling on a vacant allotment.

The development is captured under Section 4.14 of the Environmental Planning and Assessment Act 1979; Consultation and development consent – certain bush fire prone land. For the purpose of bushfire assessment the development is considered infill development as described in the New South Wales Rural Fire Service document Planning for Bushfire Protection (2019).

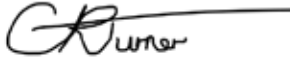


The subject site is located in Church Point which is within the Northern Beaches Local Government Area (LGA). The site adjoins residential allotments to the north and south, a forested reserve to the east and McCarrs Road to the west. Further to the west is a corridor of residential allotments adjoining McCarrs Creek. The residential allotments to the north currently contain forest vegetation, however, they will likely be cleared and developed in the future. Access to the site is via McCarrs Creek Road.

The site is to be managed as an inner APZ in accordance with PBP (2019) Appendix 4.

The proposed dwelling is assessed as BAL-FZ as indicated in Figure A and as specified in AS3959 (2018) the Australian Standard for the Construction of Buildings in a Bushfire Prone Area.

Access to the site via the public road system is suitable for emergency response vehicles. RFS do not require vehicular site access. Reticulated water is available on McCarrs Creek Road. No Additional water is required for fire fighting.

Should you have any questions in relation this report please get in contact.

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	 Bushfire Consultant BSc (Wildlife Conservation Biology) Hons	 

## D.01 REFERENCES

AS3959 (2018)	Australian Standard, Construction of buildings in bushfire-prone areas, AS 3959, Third edition 2018 Standards Australia International Ltd, Sydney.
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Keith (2004)	Keith, D.A. (2004), Ocean shores to desert dunes: The Native Vegetation of New South Wales and the ACT. NSW Department of Environment and Conservation (2004).
PBP (2019)	Planning for Bushfire Protection, a Guide for Councils,Planners, Fire Authorities, Developers and Home Owners. Rural Fire Service 2019, Australian Government Publishing Service, Canberra.
RFS (2015)	Rural Fire Service, Guide For Bush Fire Prone Land Mapping, Version 5b.

## D.02 APPENDICES

Appendix A - Client Supplied Drawings.

# APPENDIX A - CLIENT SUPPLIED DRAWINGS



