

Date: 16/11/2023

Our Ref: BR-698823-A

## BUSHFIRE PLANNING & DESIGN

# BUSH FIRE ASSESSMENT

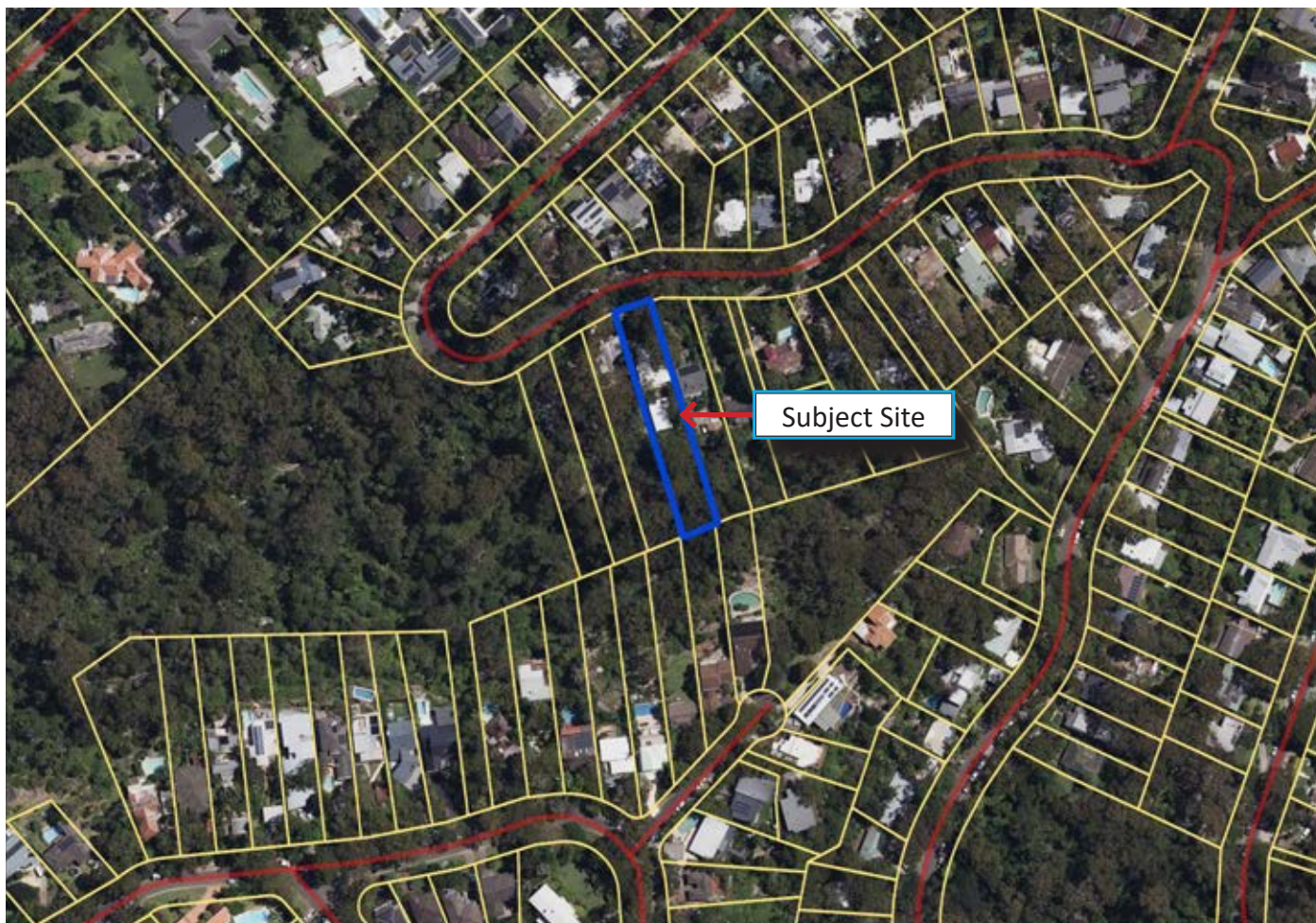
## 85 Palmgrove Road Avalon Beach 2107

Assessed as: Infill Development

Prepared by: Matthew Noone | BPAD Accreditation Number: BPAD-PD 25584

Site Address: 85 Palmgrove Road Avalon Beach 2107 | Lot / DP: (Lot 383/-/DP16902)

### Project Description: Proposed Alterations and Additions



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REPORT NUMBER  
BR-698823-A

Date: 16/11/2023

Our Ref: BR-698823-A

**BUSHFIRE PLANNING & DESIGN**

# BAL ASSESSMENT CERTIFICATION

Provided to support the Development Application

## 85 Palmgrove Road Avalon Beach 2107

Prepared by: Matthew Noone | BPAD Accreditation Number: BPAD-PD 25584




Site Address: 85 Palmgrove Road Avalon Beach 2107 | Lot / DP: (Lot 383/-/DP16902)

### Project Description: Alterations and Additions

PBP Development Type: Infill Development

I hereby certify that:

1	I (Matthew Noone) am 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), and:
2	Subject to the recommendations contained in the attached Bushfire Risk Assessment Report the proposed development conforms to the relevant specifications and requirements *.
*	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.
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-698823-A			FPAA Accreditation Number BPAD-PD 2558 
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85 Palmgrove Road Avalon Beach 2107

## DOCUMENT TRACKING

Issue Date	Issued to	Description	Version
01/11/2023	Tim Woods	Issued for DA.	A (draft 1)
16/11/2023	Tim Woods	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

## PART A - BACKGROUND AND BRIEFING NOTES

Prior to establishing the Bushfire Attack Level and compliance with Planning for Bushfire Protection and AS3959, it is necessary to discuss the following items.

A.01 BUSHFIRE PRONE LAND

A.02 DEVELOPMENT PROPOSAL

A.03 REGULATORY FRAME WORK

A.04 SITE LOCATION, DESCRIPTION AND POTENTIAL BUSHFIRE THREATS

A.05 LAND USE, ZONING AND PERMISSIBILITY

A.06 SIGNIFICANT ENVIRONMENTAL FEATURES

A.07 DETAILS OF ABORIGINAL HERITAGE

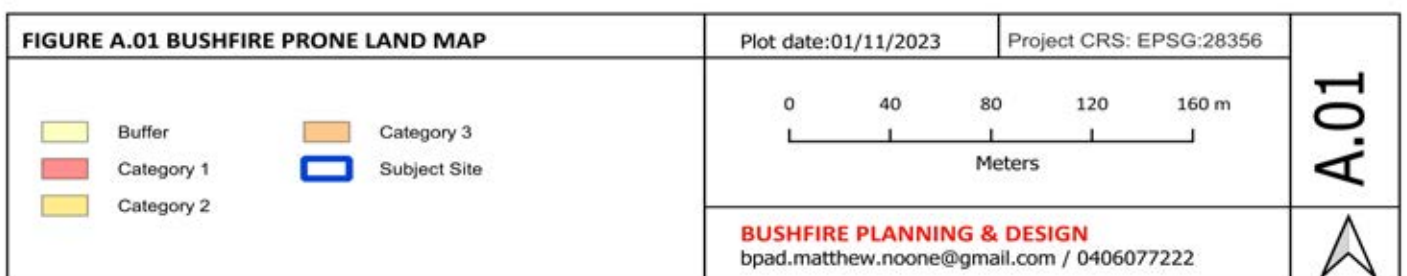
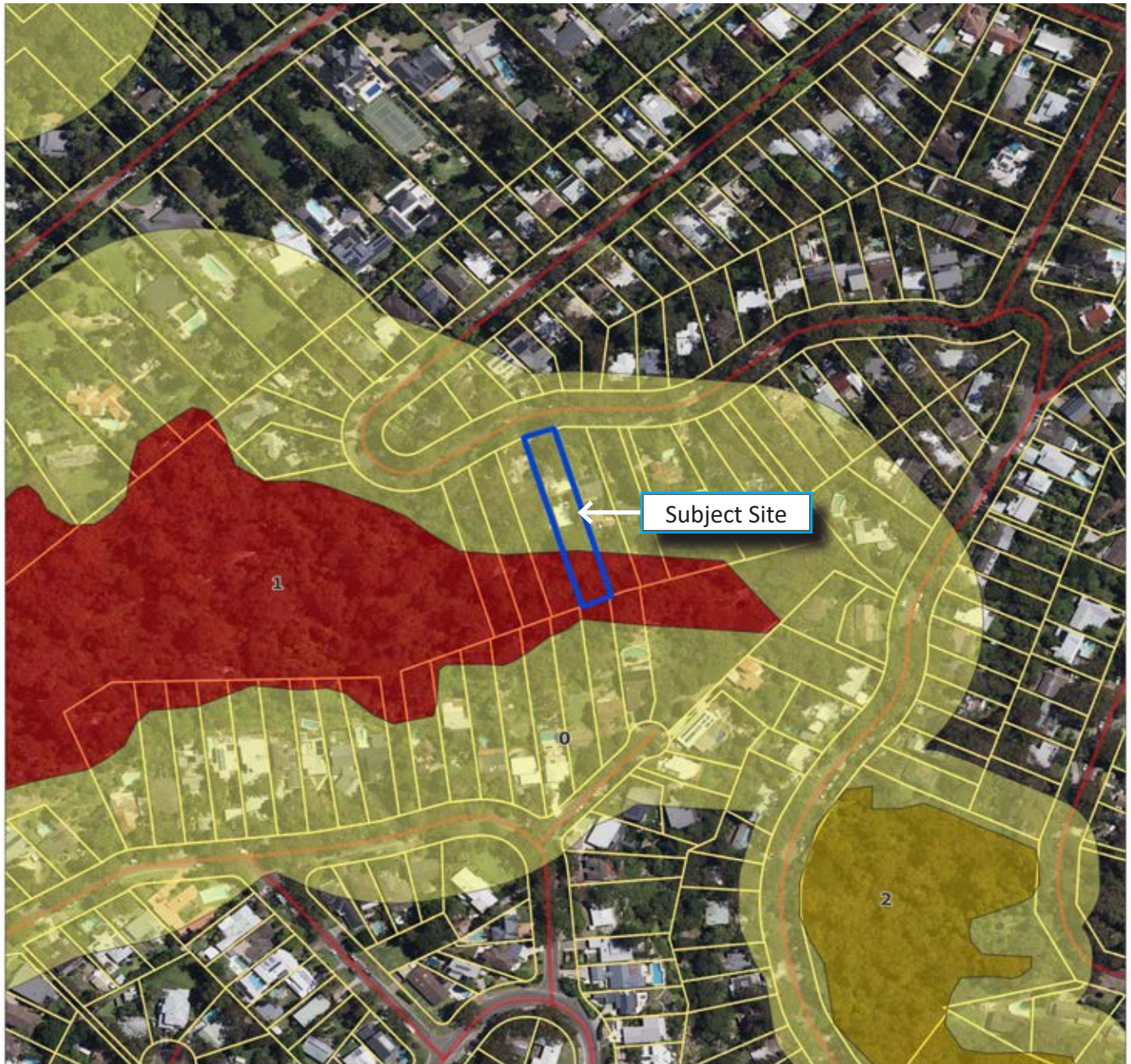
A.08 THREATENED SPECIES, COMMUNITIES AND CRITICAL HABITATS

A.09 BIODIVERSITY VALUES

A.10 REPORT LIMITATIONS

## 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.





## A.02 DEVELOPMENT PROPOSAL

The development relates to the undertaking of alterations and additions to the existing dwelling. The proposed works relate to a new carport, dwelling extension and pool.

[illegible]

The development includes but is not limited to the following;

- |   |                           |
|---|---------------------------|
| • | Infill Development        |
| • | Alterations and Additions |



## A.03 REGULATORY FRAME WORK

### The Environmental Planning and Assessment Act 1979 (EP&A Act)

#### 4.14 Consultation and development consent--certain bush fire prone land

- (1) Development consent cannot be granted for the carrying out of development for any purpose (other than a subdivision of land that could lawfully be used for residential or rural residential purposes or development for a special fire protection purpose) on bush fire prone land (being land for the time being recorded as bush fire prone land on a relevant map certified under section 10.3(2)) unless the consent authority--

(a)	is satisfied that the development conforms to the specifications and requirements of the version (as prescribed by the regulations) of the document entitled Planning for Bush Fire Protection prepared by the NSW Rural Fire Service in co-operation with the Department (or, if another document is prescribed by the regulations for the purposes of this paragraph, that document) that are relevant to the development “the relevant specifications and requirements” ), or
(b)	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.

- (1A) If the consent authority is satisfied that the development does not conform to the relevant specifications and requirements, the consent authority may, despite subsection (1), grant consent to the carrying out of the development 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.

- (1B) This section does not apply to State significant development.

- (1C) The regulations may exclude development from the application of this section subject to compliance with any requirements of the regulations. The regulations may (without limiting the requirements that may be made)--

(a)	require the issue of a certificate by the Commissioner of the NSW Rural Fire Service or other qualified person in relation to the bush fire risk of the land concerned, and
(b)	authorise the payment of a fee for the issue of any such certificate.

## NATIONAL CONSTRUCTION CODE (NCC)

### FUNCTIONAL STATEMENTS

#### F2.7.4 Bushfire prone areas

A Class 1 building or a Class 10a building or deck associated with a Class 1 building 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.

### PERFORMANCE REQUIREMENT

**P2.7.5** Performance Requirement means a requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.

Where an alternate bushfire protection design is proposed as a Performance Solution to that described in Part 3.10.5, that proposal must comply with—

(a) Performance Requirement P2.7.5; and

(b) The relevant Performance Requirements determined in accordance with A2.2(3) and A2.4(3) as applicable.

### CONSTRUCTION IN BUSHFIRE PRONE AREAS

#### 3.10.5.0 Performance Requirement P2.7.5 is satisfied, for—

(a) a Class 1 building; or

(b) a Class 10a building or deck associated with a Class 1 building,

located in a designated bushfire prone area if it is constructed in accordance with—

(c) AS 3959; or

(d) NASH Standard – Steel Framed Construction in Bushfire Areas.

## NATIONAL CONSTRUCTION CODE (NCC) CONTD...

### STATE AND TERRITORY VARIATIONS

#### 3.10.5.0 IS REPLACED WITH THE FOLLOWING CLAUSE IN NEW SOUTH WALES:

Performance Requirement P2.7.5 is satisfied, for—	
(a)	a Class 1 building; or
(b)	a Class 10a building or deck associated with a Class 1 building,

located in a designated bushfire prone area , if it is constructed in accordance with the following: AS 3959 except—

(1)	as amended by Planning for Bush Fire Protection; and
(2)	for Section 9 for Bushfire Attack Level FZ (BAL-FZ).

NASH Standard – Steel Framed Construction in Bushfire Areas except—

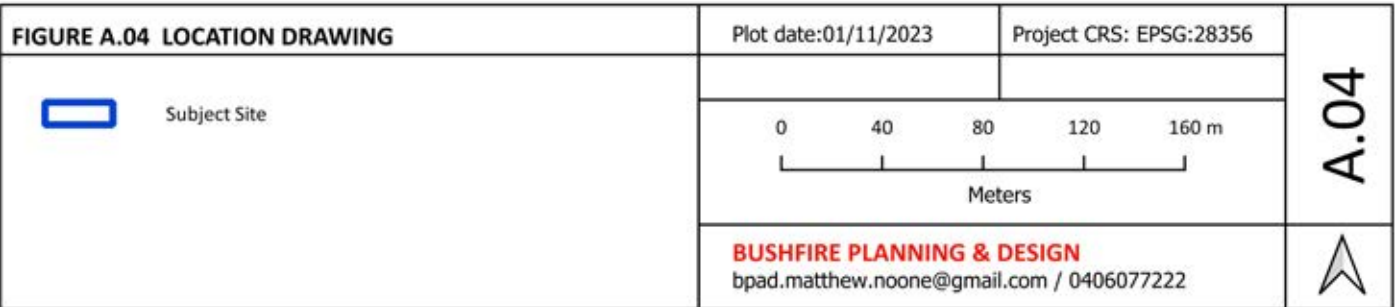
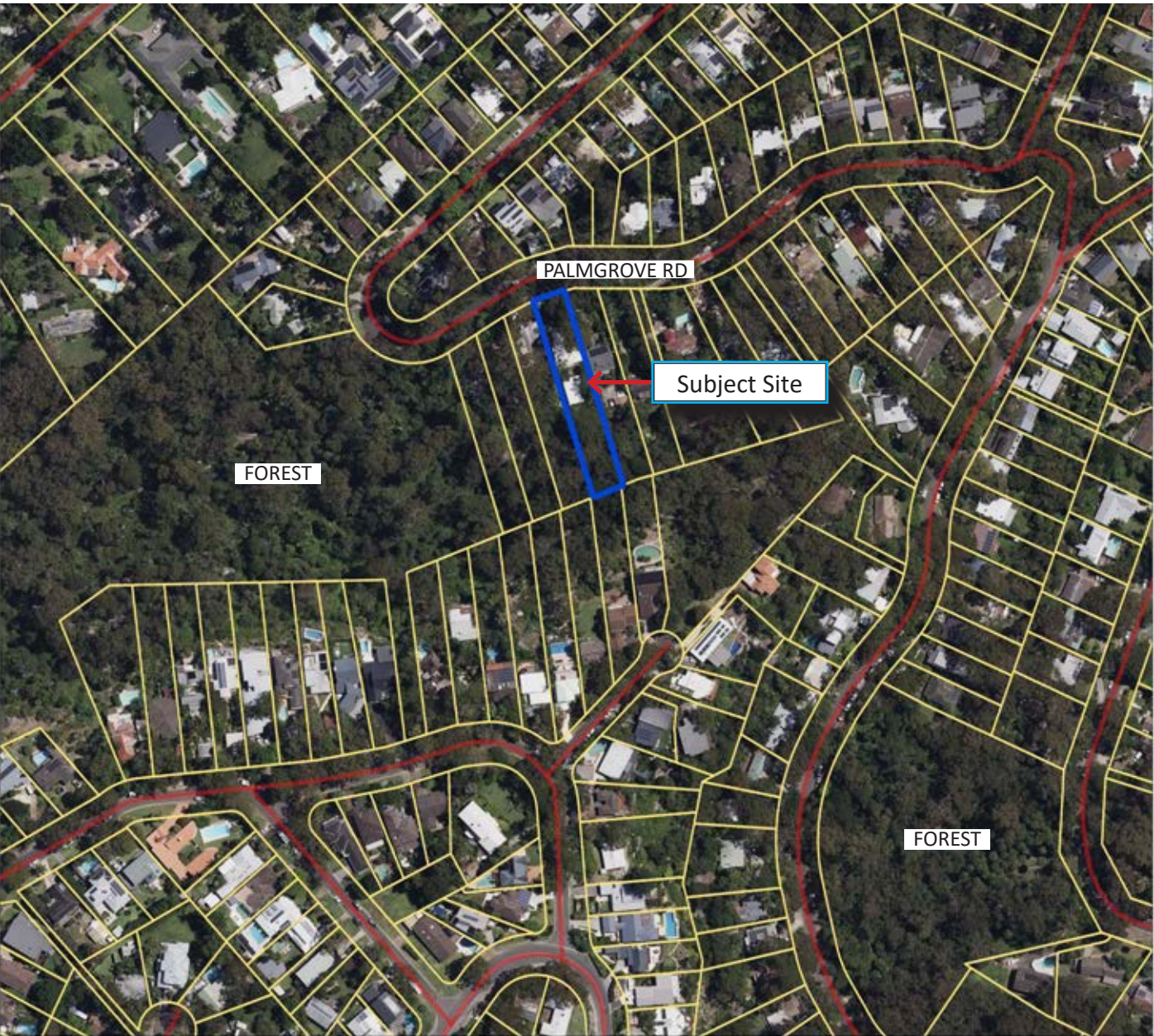
(1)	as amended by Planning for Bush Fire Protection; and
(2)	for Section 9 for Bushfire Attack Level FZ (BAL-FZ).

the requirements of (c), or (d) above as modified by the development consent following consultation with the NSW Rural Fire Service under section 4.14 of the Environmental Planning and Assessment Act 1979 if required; or the requirements of (c), or (d) above as modified by development consent with a bushfire safety authority issued under section 100B of the Rural Fires Act 1997 for the purposes of integrated development.



A.04 SITE LOCATION, DESCRIPTION AND POTENTIAL BUSHFIRE THREATS

The subject site is located in Avalon Beach which is within the Northern Beaches Local Government Area (LGA). The site is accessed via Palmgrove Road to the north. An existing dwelling is located on the site. Residential dwellings are located within the blocks to the north, east and west. Forest vegetation is located to the south of the existing dwelling and within the southern portions of the adjoining allotments to the east and west.





## A.05 LAND USE, ZONING AND PERMISSIBILITY

The subject site is zoned C4 Environmental Living.



### LAND ZONING LEGEND

 B1 Neighbourhood Centre	 IN1 General Industrial	 RU1 Primary Production
 B2 Local Centre	 IN2 Light Industrial	 RU2 Rural Landscape
 B3 Commercial Core	 IN3 Heavy Industrial	 RU3 Forestry
 B4 Mixed Use	 IN4 Working Waterfront	 RU4 Primary Production Small Lots
 B5 Business Development	 R1 General Residential	 RU5 Village
 B6 Enterprise Corridor	 R2 Low Density Residential	 RU6 Transition
 B7 Business Park	 R3 Medium Density Residential	 SP1 Special Activities
 B8 Metropolitan Centre	 R4 High Density Residential	 SP2 Infrastructure
 C1 National Parks & Nature Reserves	 R5 Large Lot Residential	 SP3 Tourist
 C2 Environmental Conservation	 RE1 Public Recreation	 UR Urban
 C3 Environmental Management	 RE2 Private Recreation	 DM Deferred Matter
 C4 Environmental Living	 RO Regional Open Space	
 CA Complex Area	 RP Regional Park	

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

There are no significant environmental features within the subject site.

## **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 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). Figure A.09 identifies the areas within the site that are mapped. Our Asset Protection Zone study on page 24 details what if any modification is required within the BV mapped land to satisfy our APZ recommendations.



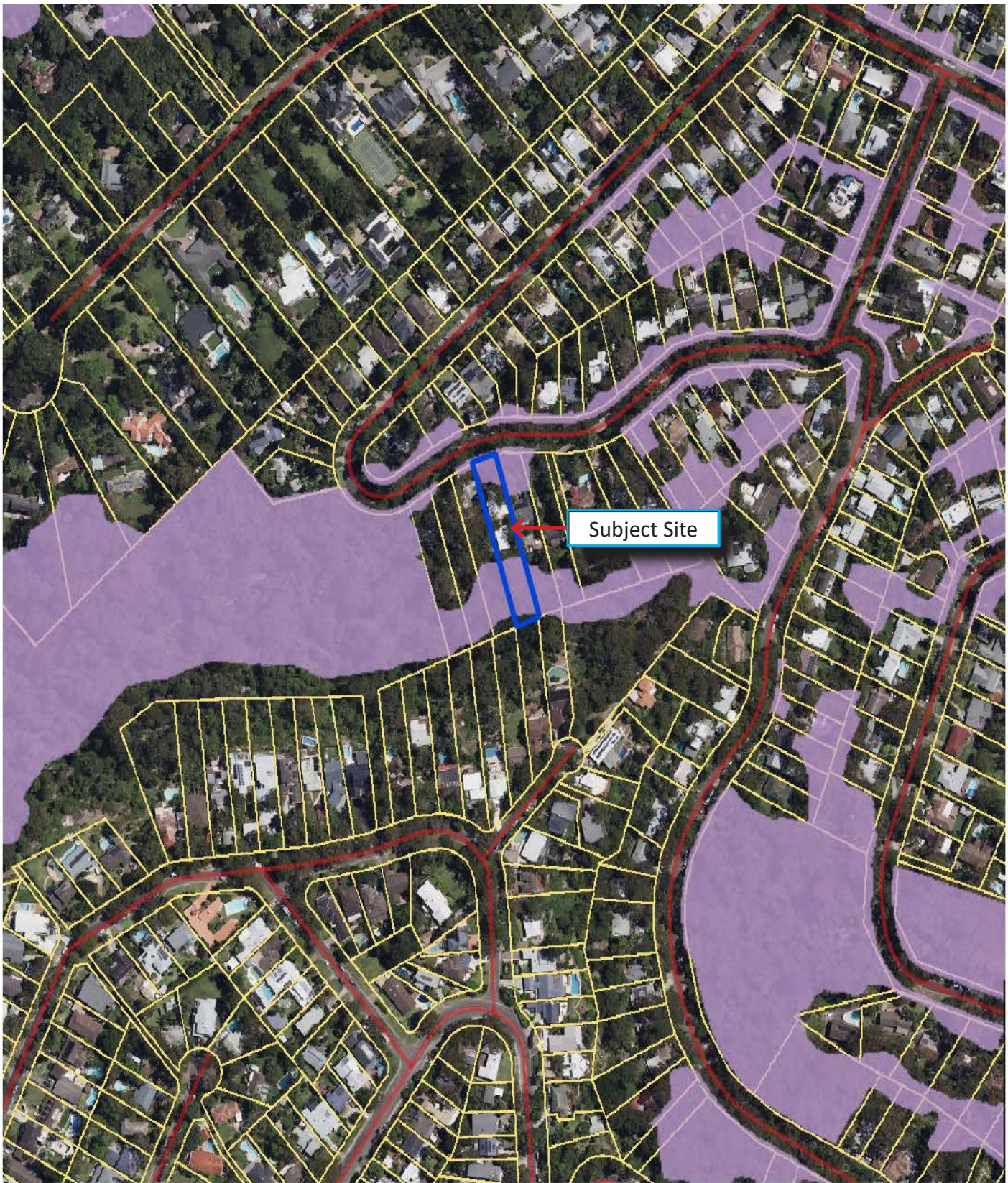


FIGURE A.09 BIODIVERSITY		Plot date:01/11/2023	CRS: EPSG:28356	A.09
<div><div>BIODIVERSITY VALUES</div><div><div><div></div><div>Biodiversity Values</div></div><div><div></div><div>Biodiversity Values added in the last 90 days</div></div></div><div><div></div>Subject Site</div><p>The BV Map has been prepared by the Department of Planning, Industry and Environment (DPIE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act).</p></div>		<div><div>0150 m</div><div>Meters</div></div>		
		<div><div>BUSHFIRE PLANNING &amp; DESIGN</div><div>bpad.matthew.noone@gmail.com / 0406077222</div></div>		<div></div>



## **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. The calculated slope as shown in Figure A has not been manipulated or modified in any way.

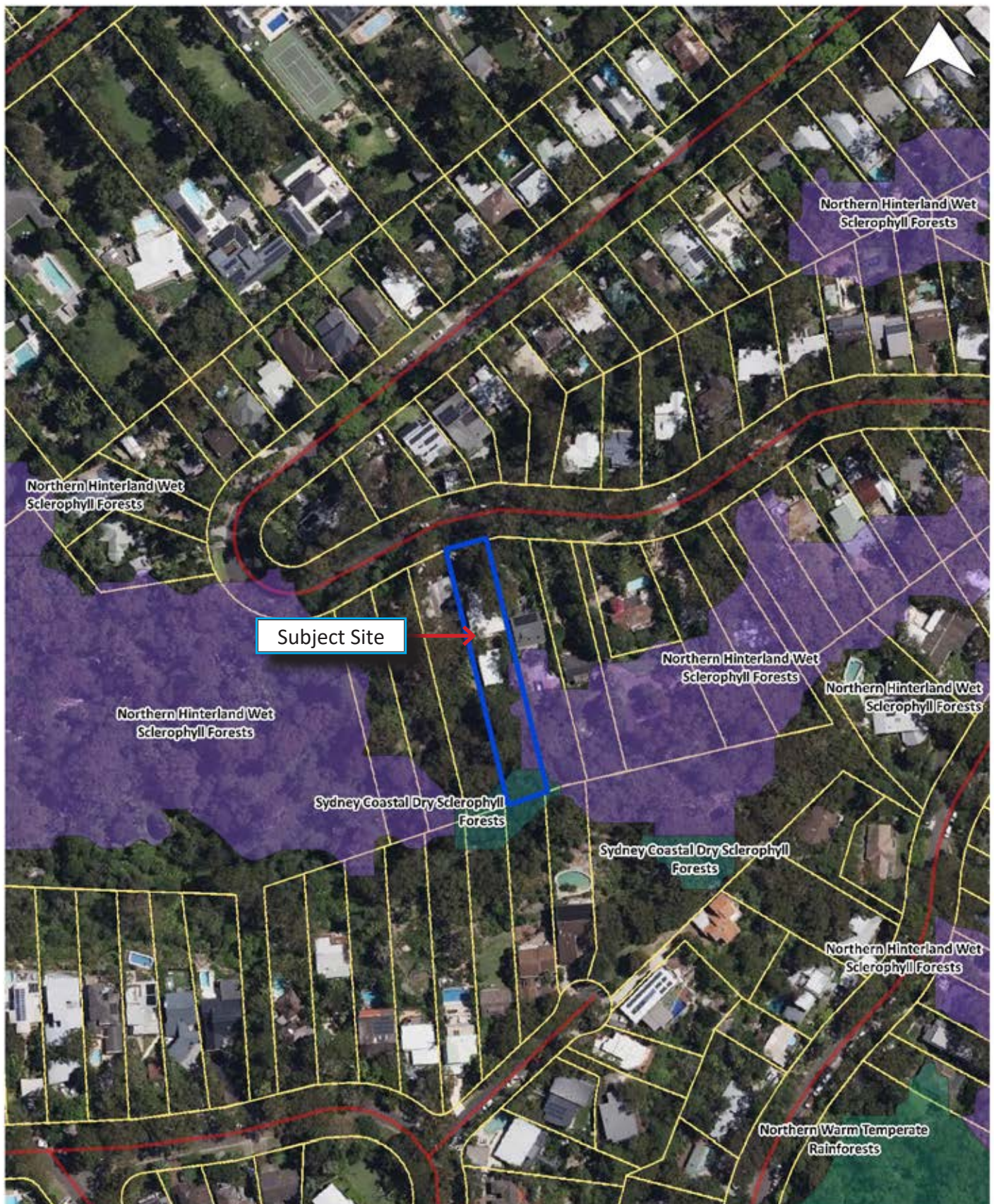
### B.03 HOW THE VEGETATION COVER IS MEASURED

The author has visited the site to view the vegetation. 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 CLASS**

 Subject Site

 Dry Sclerophyll Forests (Shrubby sub-formation)

 Rainforests

 Wet Sclerophyll Forests (Grassy sub-formation)

CRS: EPSG:28356

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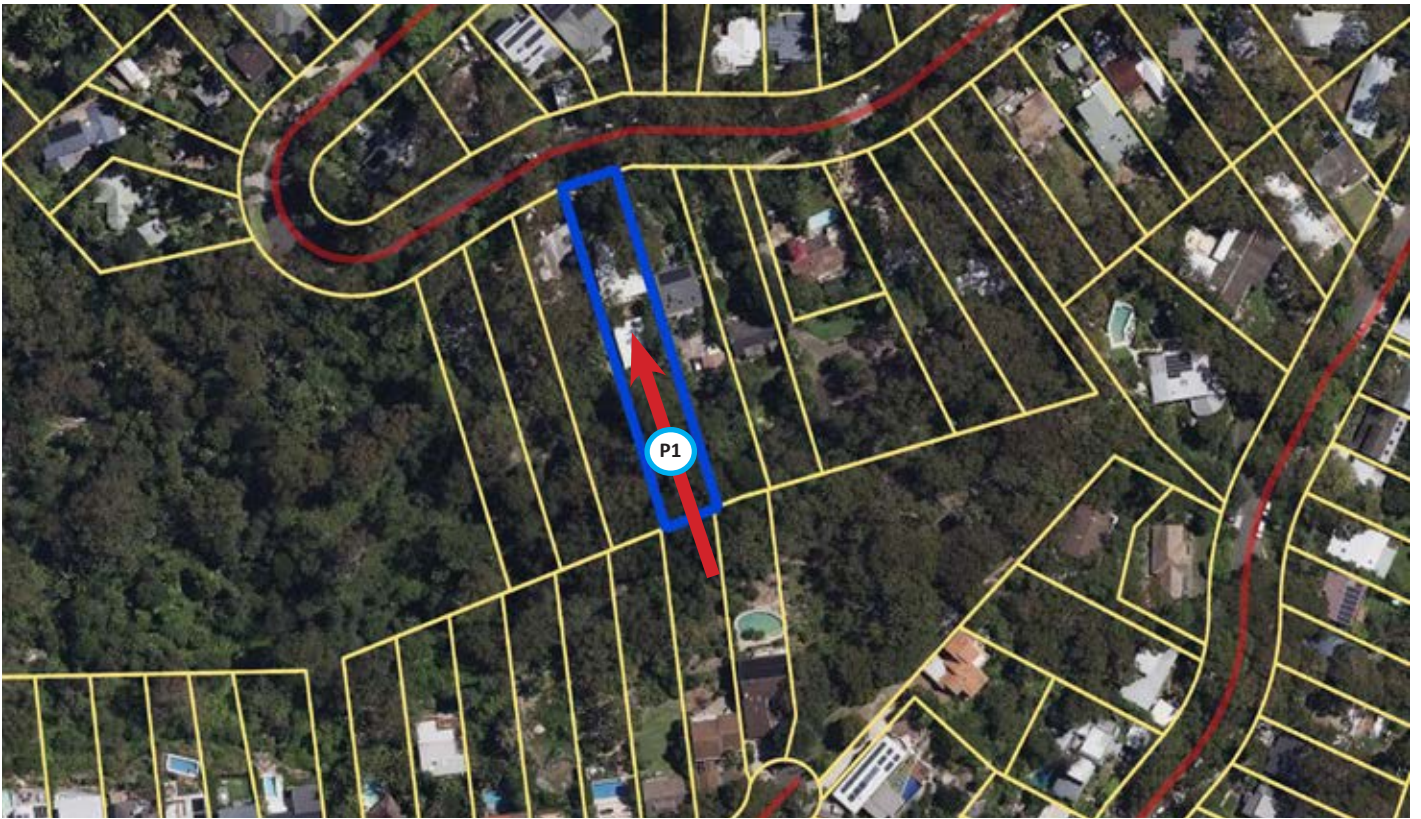
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P1: Rear yard managed for approximately 37m from the rear of the existing dwelling.





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

To clarify the findings below, Forest vegetation is located to the south east of the proposed works. The immediate adjoining allotments to the east and west are managed residential blocks. Forest is also located to west, beyond the managed residential land.

Based on the parameters identified in Table 1 below, the proposed dwelling alterations and pool are assessed as BAL-29. The proposed carport is assessed as BAL-19.

<b>TABLE 1 (Dwelling Alterations and Pool)</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>	Required APZ <sup>4</sup>	Proposed APZ / EML <sup>5</sup>	BAL-Rating
SE	Forest	U-S	N/A	24-33m	24m	BAL-29
W	Forest	0-5° D-S	N/A	29-40m	33m	BAL-29







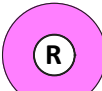
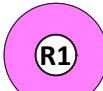
Abbreviations		
AOD All other directions	EML Extent of managed land	NVC Narrow vegetation corridor

<sup>1</sup>	Cardinal direction from each proposed building facade based on grid north.
<sup>2</sup>	Vegetation Classifications are as described in PBP (2019) A1.2.
<sup>3</sup>	Site slope is calculated from 1m LiDAR contours.
<sup>4</sup>	Minimum APZ required stated as Acceptable Solutions within Table 1.12.2 and A1.12.5. PBP (2019).
<sup>5</sup>	Actual dimensional setback from the face of the building to the assessed vegetation. Achieved Asset Protection Zone (APZ) or extent of managed land (EML).
<sup>6</sup>	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 (PBP 2019, s. A1.8).
<sup>7</sup>	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).
<sup>8</sup>	Deeming provisions for grassland s.7.9 PBP (2019).





### VEGETATION KEY (Not all used in this drawing)

			
Forest	Managed Land	Woodland	Low Threat Vegetation PBP (2019) A1.10
			
Grassland	Under Development	Rainforest	Remnant / Narrow Vegetation Corridor (NVC) PBP (2019) A1.11

### DRAWING LEGEND

Site Boundary		Existing APZ		Proposed works		Hydrant	
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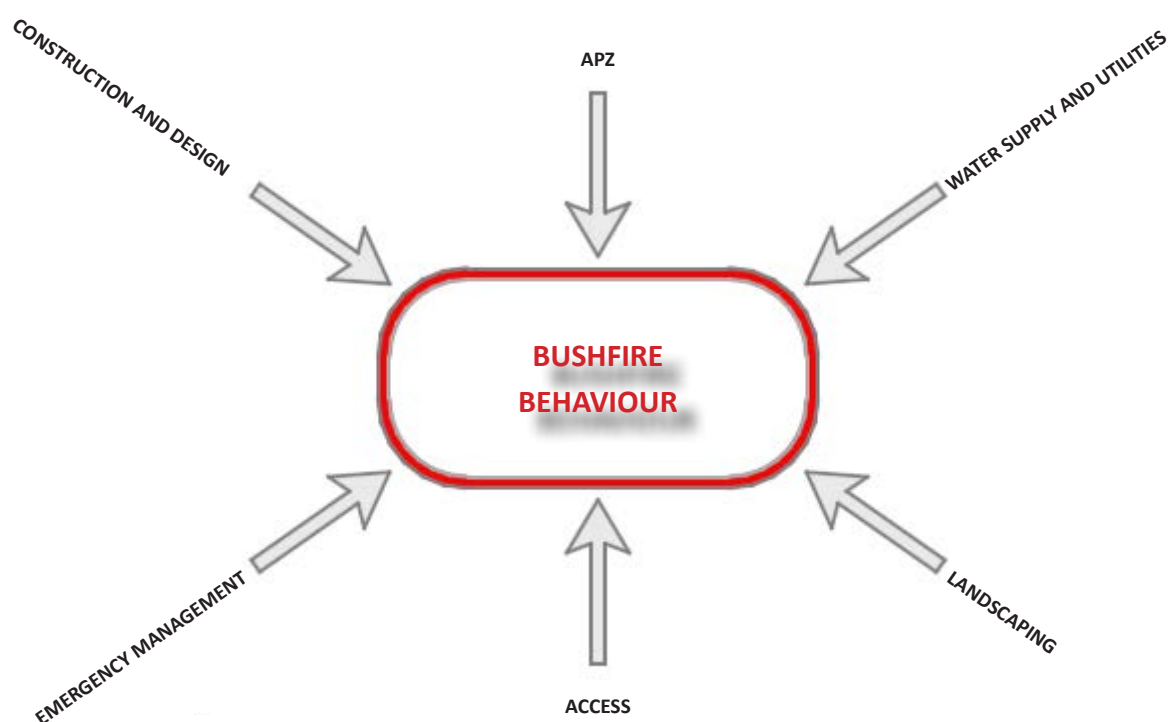
Figure:

**A**



## PART C BUSHFIRE PROTECTION MEASURES

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)

### C.03 CONSTRUCTION

### C.04 ACCESS

### C.05 WATER

### C.06 ELECTRICITY & GAS

## C.01 ASSET PROTECTION ZONES (APZs)

APZ Intent of measures: to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting fire fighting activities.

The asset protection zones (APZ) recommendations in this report have been derived from the methodology of A1.12.2 or A1.12.3 in Appendix 1 of PBP (2019). Asset protection zones and in particular the Inner Asset Protection Zones are critical for providing defensible space and reducing flame length and rate of spread (PBP 2019). APZs are designed to provide sufficient open space for emergency workers to operate and for occupants to egress the site safely. They are divided into Inner and Outer Asset Protection Zones (IPAs and OPAs) and are required to be maintained for the life of the development. The IPA provides for defensible space and a reduction of radiant heat levels at the building line and the OPA provides for the reduction of the rate of spread and filtering of embers.

### PERFORMANCE CRITERIA (PBP 2019)

- APZs are to be provided commensurate with the construction of the building.
- A defensible space is to be provided.
- APZs are to be managed and maintained to prevent the spread of a fire to the building.
- The APZ is to be provided in perpetuity.
- APZ maintenance is to be practical, soil stability is not compromised and the potential for crown fires is minimised.

Refer to our APZ discussion and recommendations on page 24.

## C.02 ASSET PROTECTION ZONES (APZs) RECOMMENDATIONS

A 24m APZ is required to achieve the nominated BAL ratings and defensible space. There is at least a 34m APZ within the subject site to the south east (measured from the rear of the existing dwelling). The adjoining blocks are managed for at least 24m from the proposed works. The site is to be managed as an inner asset protection zone in perpetuity. We recommend the existing APZ as shown in Figure A continue to be maintained in perpetuity.

### 3.1 - INNER APZ (IPA) GUIDELINES

The Inner APZ (IPA) is the managed area closest to the asset (eg. dwelling). The IPA is managed to minimal fuel conditions and aims to mitigate the impact of direct flame contact and radiant heat on the development. The IPA also aims to provide defensible space.	
<b>TREES</b>	
•	Canopy cover should be less than 15% (at maturity) within the Inner APZ.
•	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 (horizontal and or vertical displacement). .
•	Preference should be given to smooth barked and evergreen trees.
<b>SHRUBS</b>	
•	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.
<b>GRASS</b>	
•	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.

### 3.2 - OUTER APZ (OPA) GUIDELINES

The Outer APZ (OPA) is the part of the APZ that is located between the IPA and the bushfire vegetation threat. The reduction in the available fuels and canopy connections in the OPA aims to mitigate the intensity of an approaching fire and restricts the pathways to crown fuels thus reducing the level of direct flame, radiant heat and ember attack on the IPA and asset (dwelling).	
<b>TREES</b>	
•	Canopy cover should be less than 30% (at maturity) within the Outer APZ.
•	Trees should have canopy separation canopies should be separated by 2 to 5m.
<b>SHRUBS</b>	
•	Shrubs should not form a continuous canopy.
•	Shrubs should form no more than 20% of ground cover.



## C.03 CONSTRUCTION

### PERFORMANCE CRITERIA (PBP 2019)

The proposed dwelling and pool alterations are assessed as having a Bushfire Attack Level of BAL-29. The proposed building is to be constructed to BAL-29 as indicated in Figure A and 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). The proposed carport is to be constructed to BAL-19.

## 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.

### PERFORMANCE CRITERIA (PBP 2019)

- |   |  |
|---|--|
| • | Fire-fighting vehicles are provided with safe, all-weather access to structures and hazard vegetation. |
| • | The capacity of access roads is adequate for fire-fighting vehicles.                                   |
| • | There is appropriate access to water supply.   |
| • | Fire-fighting vehicles can access the dwelling and exit the property safely.                           |

### PUBLIC ROADS

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

### 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

## C.05 WATER

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.

### PERFORMANCE CRITERIA (PBP 2019)

- An adequate water supply is to be provided for fire-fighting purposes.
- Water supplies are to be located at regular intervals.
- The water supply is to be accessible and reliable for fire-fighting operations.
- Flows and pressure are to be appropriate
- The integrity of the water supply is to be maintained.
- A static water supply is to be provided for fire-fighting purposes in areas where reticulated water is not available.

### COMMENTS IN RELATION TO THE PROVISION OF WATER.

### ACCEPTABLE SOLUTION

An existing hydrant is located on Palmgrove Road within 70m to the most distal part of the dwelling. No new water services are being provided or required. Any water pipes or fittings are to comply with PBP (2019) table 7.4a.

## C.06 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.

### PERFORMANCE CRITERIA (PBP 2019)

- Location of electricity services is to limit the possibility of ignition of surrounding bush land or the fabric of buildings.
- Location and design of gas services is not to lead to the ignition of surrounding bushland or the fabric of buildings.

### COMMENTS IN RELATION TO THE PROVISION OF ELECTRICITY AND GAS.

### ACCEPTABLE SOLUTION

Any new electrical or gas services are to comply with PBP (2019) table 7.4a.



## C.07 RECOMMENDATIONS

In the event that Council or the NSW Rural Fire Service modifies our recommendations, this report becomes obsolete and should no longer be referred to. The bushfire requirements as stated in the DA Consent conditions will take precedence. We strongly recommend the Applicant cross references the bushfire conditions within the DA consent and the recommendations within Part C of our report and alert us to any discrepancies prior to any works starting on site.

Should Council wish to include our recommendations in the DA consent please insert the following into the consent conditions.

### **Bushfire (Bushfire Protection Measures)**

All Bushfire Protection Measures (BPMs) eg. Asset Protection Zones, Access, Water and Utilities noted in Part C of the bushfire report prepared by Bushfire Planning and Design (BR-698823 Revision A) are to be complied with.

### **Asset Protection Zones (APZs)**

An 18m APZ to the south of the proposed works is to be maintained as an Inner APZ in accordance with PBP (2019) Appendix 4.

### **Design and Construction**

The proposed dwelling alterations and pool are to be constructed to BAL-29 as indicated in Figure A and 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). The proposed carport is to be constructed to BAL-19.

### **Access**

None.

### **Water, Electricity and Gas**

Electricity and gas are to be provided in accordance with PBP (2019) Table 7.4a. All above ground pipes, fittings and connections are to be constructed from metal. Water is provided in accordance with PBP (2019) Table 7.4a.

## PART D SUMMARY

The development relates to the undertaking of alterations and additions to the existing dwelling. The proposed works relate to a new carport, dwelling extension and pool.

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 Avalon Beach which is within the Northern Beaches Local Government Area (LGA). The site is accessed via Palmgrove Road to the north. An existing dwelling is located on the site. Residential dwellings are located within the blocks to the north, east and west. Forest vegetation is located to the south of the existing dwelling and within the southern portions of the adjoining allotments to the east and west.

A 24m APZ is required to achieve the nominated BAL ratings and defensible space. There is at least a 34m APZ within the subject site to the south east (measured from the rear of the existing dwelling). The adjoining blocks are managed for at least 24m from the proposed works. The site is to be managed as an inner asset protection zone in perpetuity. We recommend the existing APZ as shown in Figure A continue to be maintained in perpetuity.

The proposed dwelling alterations and pool are assessed as BAL-29 as indicated in Figure A and as specified in AS3959 (2018) the Australian Standard for the Construction of Buildings in a Bushfire Prone Area. The proposed car port is assessed as BAL-19.

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 Palmgrove Road. No Additional water is required for fire fighting.

The project can comply with the construction requirements of AS3959 (2018) and the performance requirements of the BCA. The objectives and performance requirements of PBP (2019) are also achieved.

In the event that Council or the NSW Rural Fire Service has any questions in relation this report please get in contact to discuss.

Report peer reviewed by:



Matthew Noone

Senior Bushfire Consultant (Director)  
Grad.Dip. Design for Bushfire Prone Areas.  
BSc (Geology)  
0406077222  
T/A Bushfire Planning and Design PTY LTD

Report prepared by:

Olivia Pepper

Intermediate Bushfire Consultant  
BA (Criminology)

## D.01 REFERENCES

AS3959 (2018)	Australian Standard, Construction of buildings in bushfire-prone areas, AS 3959, Third edition 2018 Standards Australia International Ltd, Sydney.
BCA (2019)	Building Code of Australia 2019, Building Code of Australia, Australian Building Codes Board, Canberra 2019.
EPA Act (1979)	Environmental Planning and Assessment Act 1979, NSW Government, NSW, legislation found at <a href="http://www.legislation.nsw.gov.au">www.legislation.nsw.gov.au</a>
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 - Architectural Drawings.



# **APPENDIX A - ARCHITECTURAL DRAWINGS**

DEVELOPMENT PROPOSAL

DP: 16902  
LOT No. 383  
SITE AREA: 1551.10MSQ.  
EXIST. GFA: XXXMSQ.  
PROPOSED GFA: XXXMSQ  
MAX. BUILDING HEIGHT: 8.5M

NEW WORKS:  
NEW POOL  
NEW REAR EXTENSION TO CONNECT REAR OF PROPERTY TO STUDIO  
NEW DECK  
NEW CARPORT  
CHANGES TO INTERNAL FLOORPLAN  
NEW WINDOWS AND DOORS

LEGEND:  
EXISTING BUILDING OUTLINE  
SMOKE ALARMS TO COMPLY WITH AS 3786

**BASIX**Certificate

Building Sustainability Index score [www.basix.nsw.gov.au](http://www.basix.nsw.gov.au)

**Alterations and Additions**

Certificate number: A907365

This certificate confirms that the proposed development will meet the BASIX requirements for sustainability. It is valid in accordance with the conditions set out below. Terms used in this certificate or in the conditions, have the meaning given by the document entitled "BASIX Alterations and Additions Definition" issued 06/10/2017 published by the Department. This document is available at [www.basix.nsw.gov.au](http://www.basix.nsw.gov.au)

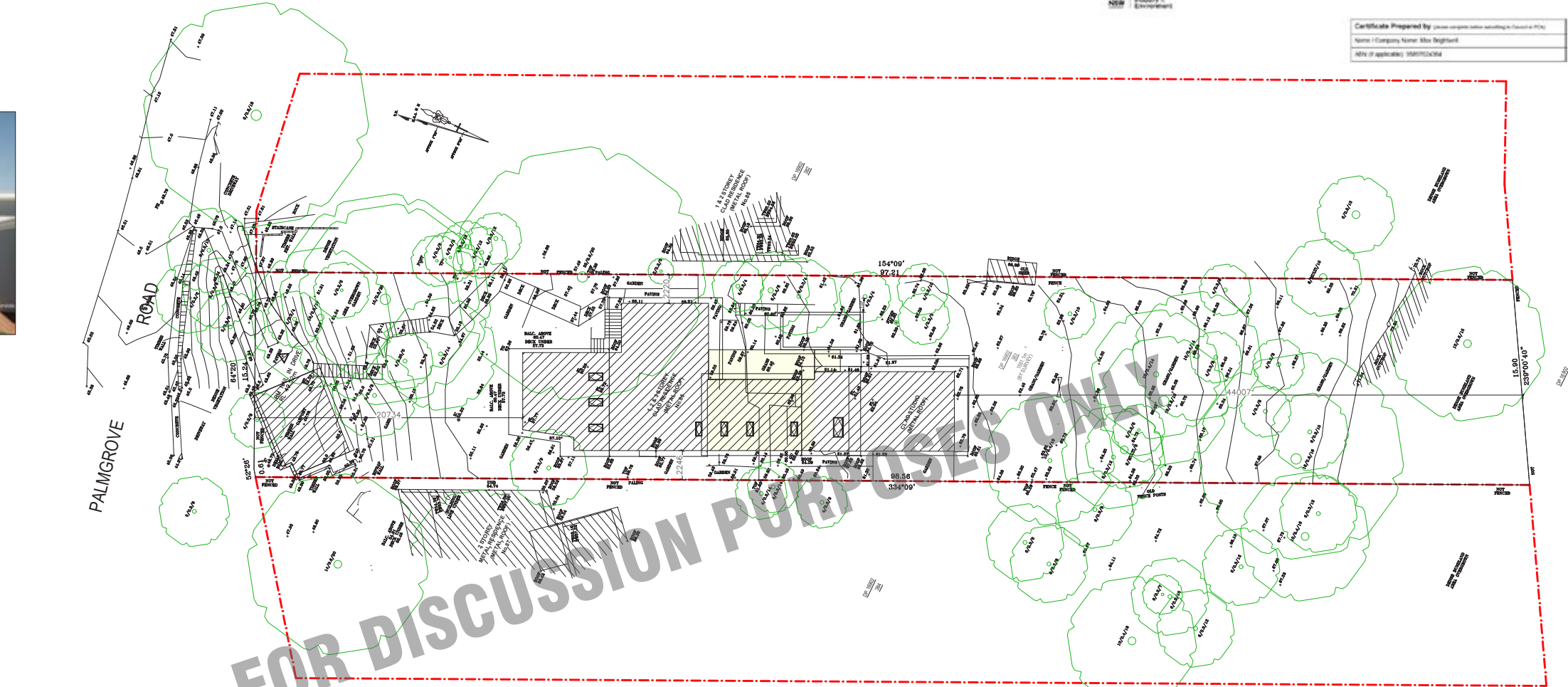
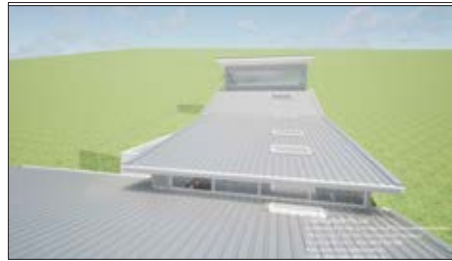
Secondary  
Date of issue: Wednesday, 15 September 2020  
To be valid, this certificate must be signed within 3 months of the date of issue.

Planning, Industry & Environment

Description of project

Project address	85/217 Avonlea Tree Creek
Project name	85/217 Avonlea Tree Creek
Local Government Area	Northern Beaches Council
Plan type and number	Development Plan 2020/21
Lot number	2
Section number	2
Project type	Alterations and Additions
Development	Separate dwelling house
Type of alteration and addition	Major renovation work in value at \$50,000 or more, and does not include a pool (under 10m)

Certificate Prepared By (please complete below including a Council or PCA)  
Name / Company Name: Alex England  
Date of application: 15/09/2020



SITE PLAN  
SCALE 1:200

ALL WORKS TO SWIMMING POOL BARRIER ARE TO COMPLY WITH NSW SWIMMING POOLS ACT, REGULATIONS, (NCC) BCA AND AUSTRALIAN STANDARDS AS-1926.1-2012, AS-1926.2 2007 & AS - 1298-2006, ELECTRICAL AS-3000-2018. BUILDER AND INSTALLERS TO CONFIRM ALL MEASUREMENTS AND LOCATIONS AT TIMES OF FINAL SITE MEASURE, AND THEY ARE FULLY RESPONSIBLE FOR INSTALLING A COMPLIANT SWIMMING POOL BARRIER.

AUSTRALIAN STANDARDS (INCLUDING BUT NOT LIMITED TO):  
SWIMMING POOLS ACT 1992;  
DA2021/0859 PAGE 12 OF 25  
SWIMMING POOLS AMENDMENT ACT 2009;  
SWIMMING POOLS REGULATION 2018  
AUSTRALIAN STANDARD AS1926 SWIMMING POOL SAFETY  
AUSTRALIAN STANDARD AS1926.1 PART 1: SAFETY BARRIERS FOR SWIMMING POOLS  
(W) AUSTRALIAN STANDARD AS1926.2 PART 2: LOCATION OF SAFETY BARRIERS FOR SWIMMING POOLS

SWIMMING POOL FENCING AND WARNING NOTICES (RESUSCITATION CHART) SHALL BE MANUFACTURED, DESIGNED, CONSTRUCTED, LOCATED AND MAINTAINED IN ACCORDANCE WITH THE SWIMMING POOLS ACT 1992 AND REGULATIONS. THE FENCING AND WARNING NOTICES (RESUSCITATION CHART) SHALL BE PERMANENT STRUCTURES

NOTE:  
THE EXTERNAL FINISH TO THE ROOF SHALL HAVE A MEDIUM TO DARK RANGE IN ORDER TO MINIMISE SOLAR REFLECTIONS TO NEIGHBOURING PROPERTIES. ANY ROOF WITH A METALLIC STEEL FINISH IS NOT PERMITTED.

NOTE:  
POOL GATES ARE TO OPEN AWAY FROM THE POOL AREA IN ACCORDANCE WITH AS1926.1-2012 AND SWIMMING POOL REGS 2018

NATIONAL CONSTRUCTION CODE, AUSTRALIAN STANDARDS, COUNCIL REQUIREMENTS & OTHERCODES:  
ALL BUILDING WORK TO BE IN ACCORDANCE WITHNCC, COUNCIL CODES AND ALL RELEVANT AUSTRALIAN STANDARDS INCLUDING,BUT NOT LIMITED TO :  
- AS 1684 - RESIDENTIAL TIMBER FRAMEDCONSTRUCTION  
- AS 2047:2014 - WINDOWS AND EXTERNAL GLAZEDDOORS IN BUILDINGS  
- AS 2870:2011 - RESIDENTIAL SLABS ANDFOOTINGS  
- AS/NZS 3000:2007 - WIRING RULES  
- AS/NZS 3500.5:2000 - NATIONAL PLUMBING ANDDRAINAGE  
- AS 3660.1:2014 - TERMITE MANAGEMENT  
- AS 3700-2011 - MASONRY STRUCTURES  
- AS 3740-2010 - WATERPROOFING OF DOMESTICWET AREAS  
- AS/NZS 2918-2018 DOMESTIC SOLID FUELBURNING APPLIANCES  
- AS 4100-1998 - STEEL STRUCTURES  
- NORTHERN BEACHES COUNCIL DRIVEWAYSPECIFICATIONS  
- SYDNEY WATER TECHNICAL GUIDELINES: BUILDING OVER AND ADJACENT TO PIPE ASSETS

2.8.1.2 Stairway construction

(a) A stairway must be designed to take loading forces in accordance with AS/NZS 1170.1 and must have:

(i) not more than 16 and not less than 2 treads in each flight; and

(ii) girths (G), down off and a rope retaining quality (RT - C) in accordance with Table 3.8.1.1, except as permitted by (b) and (c); and

Table 3.8.1.1 RISER AND LOADING CHARACTERISTICS

STAIR TYPE	RISER (R)		LOADING (L)		SLOPE REL. TO HORIZONTAL (°)
	Min	Max	Min	Max	
Stairs without deck support	150	175	150	240	30
Stairs with deck support	150	175	150	240	30

(b) For stairs with a deck support, the deck must be designed to take loading forces in accordance with AS/NZS 1170.1 and must have:

(i) not more than 16 and not less than 2 treads in each flight; and

(ii) girths (G), down off and a rope retaining quality (RT - C) in accordance with Table 3.8.1.1, except as permitted by (b) and (c); and

Table 3.8.1.1 RISER AND LOADING CHARACTERISTICS

STAIR TYPE	RISER (R)		LOADING (L)		SLOPE REL. TO HORIZONTAL (°)
	Min	Max	Min	Max	
Stairs without deck support	150	175	150	240	30
Stairs with deck support	150	175	150	240	30

(c) For stairs with a deck support, the deck must be designed to take loading forces in accordance with AS/NZS 1170.1 and must have:

(i) not more than 16 and not less than 2 treads in each flight; and

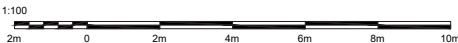
(ii) girths (G), down off and a rope retaining quality (RT - C) in accordance with Table 3.8.1.1, except as permitted by (b) and (c); and

Table 3.8.1.1 RISER AND LOADING CHARACTERISTICS

STAIR TYPE	RISER (R)		LOADING (L)		SLOPE REL. TO HORIZONTAL (°)
	Min	Max	Min	Max	
Stairs without deck support	150	175	150	240	30
Stairs with deck support	150	175	150	240	30

1. Brickwork shall comply with AS 3700. All brickwork shall be solidly bonded and laid on a full bed of 10mm mortar with all joints filled. Wall ties spaced at 450mm, vertically and 900mm, horizontally or vice-versa and within 300mm of articulation points, to comply with AS 2999.
2. Subfloor ventilation:
  - 150mm, min. baffle to ground clearance for strip flooring.
  - 250mm, min. baffle to ground clearance for sheet flooring.
  - Minimum 7500mm<sup>2</sup> of external masonry vent area.
  - Minimum 20000mm<sup>2</sup> of external masonry vent area.
  - Weep-holes at max. 100mm, centres to comply with AS 3700.
3. Damp-proof courses to be an approved waterproof cement mortar or bituminous paper placed 75mm, below floor level. A second course to be laid 1 or 2 brick courses higher.
4. Firebox inserts shall be installed in accordance with manufacturers specifications and in accordance with AS 2918.
5. Top soil and all organic matter to be removed from under where a concrete slab-on-ground is to be poured.
6. Structural steel and concrete to comply with the Structural Engineer's design and computations and shall take precedence over instructions on this plan.
7. Reinforced concrete to be min. 25MPa, complying with AS 2870 - 1996, (unless directed otherwise by Structural Engineer) and:
  - Trench depth for concrete footings to be lagged a min. 500mm, and have a top and/or bottom cover of min. 100mm, unless directed otherwise by Engineer.
  - Fabric mesh to be lagged a minimum of 225mm, and have a minimum top and/or bottom cover of 25mm, unless directed otherwise by Engineer.
8. Excavation of trenches for footings, drainage, sewerage, etc., to be in accordance with the requirements of the local Controlling Authorities.
9. Smoke detectors to comply with AS 3786 and must also comply with the BCA 3.7.2.
10. Safety switches to be installed to the requirements of the local Controlling Authority.
11. All piling to comply with AS 1289-2006.
12. From information provided, the design wind speed is ND (41m/s).
13. No part of any building to encroach Site or Title boundaries.
14. Provide such the preventative measures where required by local Council.
15. Stair design:
  - Risers: 150mm, Maximum 175mm, Minimum 150mm.
  - Treads: 350mm, Maximum 350mm, Minimum 250mm.
  - Risers and Treads to be constant in size throughout the flight.
  - Ensure gap between treads does not exceed 125mm, or provide offsets to block access if larger.
  - Min. 2000mm, vertical head clearance when measured from the nosing of the tread.
  - Stair to be min. 750mm, wide when measured clear of all obstructions.
  - Handrail to be a constant minimum 865mm high above the nosing of treads and minimum 1000mm, high above all landings, balconies and the like that exceed 1000mm, above the finished adjacent ground or floor level.
  - Balusters and rails, etc., to have max. spacing of 125mm.
  - Venee balustrading to comply with Table 3.8.2.1 of the BCA.
16. Fitted dimensions shall always take precedence over scale.
17. Termite prevention works must be in accordance with AS 3602.1 - 2009.
18. For buildings in close proximity to the sea, ensure that all steelwork, brick cavity ties, steel bracing, etc., that are embedded or fixed into masonry, be protected in accordance with AS 1926.1 or AS 3700-1998 Table 3.2, not dipped galvanneal steel, stainless steel or cadmium coated.
19. The Builder to take all measures necessary to ensure the stability of new and/or existing structures during construction and generally ensure the watertightness of all works during construction.
20. These plans have been prepared for the exclusive use of the customer and only for the purpose expressly notified to the author. Any other person who uses or relies on these plans without the written consent of Avalon Granny Flats does so at their own risk and no responsibility is accepted by Avalon Granny Flats for such use and/or reliance.
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GENERAL NOTES  
BUILDER TO CONFIRM ALL LEVELS AND DIMENSIONS ON SITE BEFORE WORK BEGINS  
ALL WORK TO BE IN ACCORDANCE WITH LOCAL AUTHORITIES REQUIREMENTS AND B.C.A. REQUIREMENTS.  
CONNECT OPS TO EXISTING STORMWATER SYSTEM  
ALL STRUCTURAL DETAILS TO ENGINEERS SPECIFICATIONS



NOTE:  
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85 PALMGROVE RD  
AVALON BEACH  
2107

ARCHITECTURAL DRAFTING  
3D VISUALISATION  
DEVELOPMENT APPLICATION  
ASSISTANCE  
COUNCIL COMPLIANT PLANS

LEGEND:  
EXISTING BUILDING OUTLINE  
PROPOSED WORK

General Notes



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Project Address and ALLOCATION  
Date: 27-Sep-22  
Scale: AS SHOWN

Sheet  
1

DP No. 16902

LOT No. 383

A ISSUED FOR DA Sep-21-22

No. Revision/Issue Date

5470 Sydney Rd  
Balgownie 2003 NSW  
[www.draftinghelp.com.au](http://www.draftinghelp.com.au)  
02 87763474

Project Name and Address  
MICHAEL BALL  
85 PALMGROVE RD  
AVALON BEACH  
2107

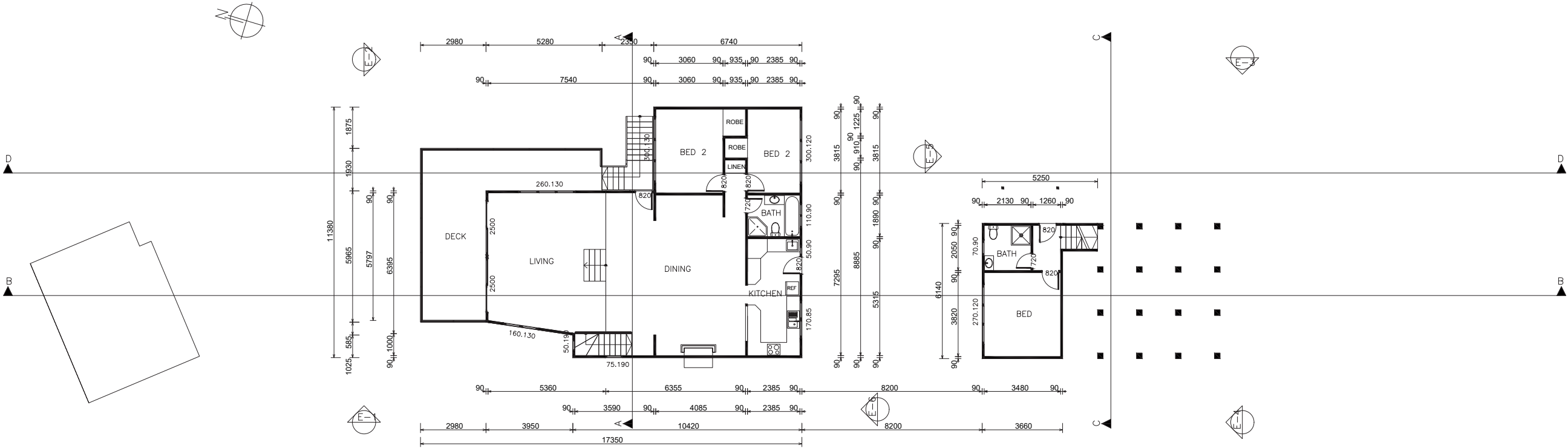
DEVELOPMENT PROPOSAL

DP: 16902  
LOT No. 383  
SITE AREA: 1551.10MSQ.  
EXIST. GFA: XXXMSQ.  
PROPOSED GFA: XXXMSQ  
MAX. BUILDING HEIGHT: 8.5M

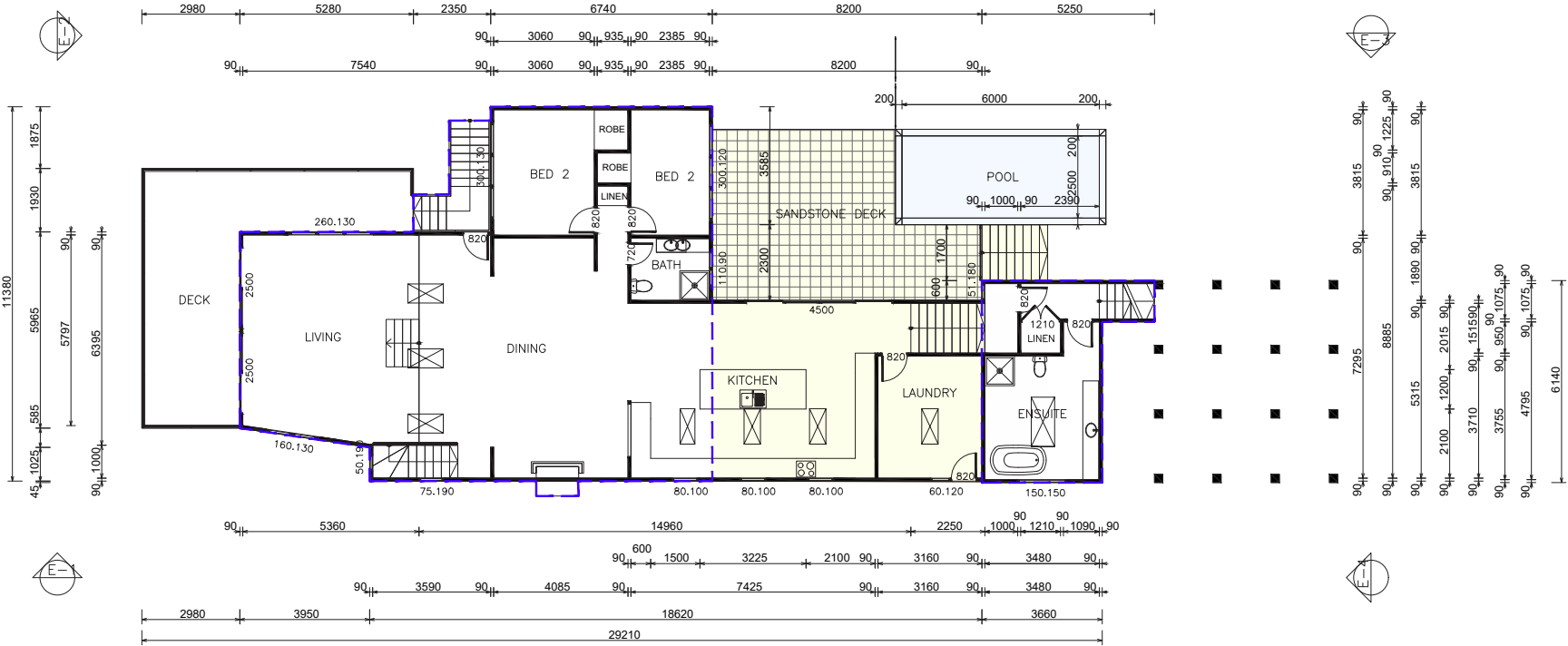
NEW WORKS:  
NEW POOL  
NEW REAR EXTENSION TO CONNECT REAR OF PROPERTY TO STUDIO  
NEW DECK  
NEW CARPORT  
CHANGES TO INTERNAL FLOORPLAN  
NEW WINDOWS AND DOORS

LEGEND:  
EXISTING BUILDING OUTLINE  

SMOKE ALARMS TO COMPLY WITH AS 3786



GROUND FLOOR PLAN - EXISTING  
SCALE 1:100



GROUND FLOOR PLAN - PROPOSED  
SCALE 1:100

GENERAL NOTES  
\*BUILDER TO CONFIRM ALL LEVELS AND DIMENSIONS ON SITE BEFORE WORK BEGINS  
\*ALL WORK TO BE IN ACCORDANCE WITH LOCAL AUTHORITIES REQUIREMENTS AND B.C.A. REQUIREMENTS.  
\*CONNECT DPS TO EXISTING STORMWATER SYSTEM.  
\*ALL STRUCTURAL DETAILS TO ENGINEERS SPECIFICATIONS

NOTE: THIS DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. IF USED FOR CONSTRUCTION, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR LOCAL CODE COMPLIANCE. ALL DRAWINGS, PLANS, SKETCHES ETC. ARE PROVIDED TO OUR CLIENTS BASED UPON INFORMATION PROVIDED BY THE CLIENT AND DRAWN IN ACCORDANCE WITH COMMON BUILDING PRACTICES AND LOCAL CODES. NONE OF THE EMPLOYEES OF DRAFTING HELP ARE REGISTERED ARCHITECTS, ENGINEERS OR LAND SURVEYORS. ALL DIMENSIONS AND SPECIFICATIONS SHOULD BE VERIFIED BY CLIENT AND/OR CONTRACTOR BEFORE ACTUAL CONSTRUCTION BEGINS. IF DIMENSIONS AND SPECIFICATIONS ARE NOT VERIFIED BY CLIENT AND/OR CONTRACTOR BEFORE ACTUAL CONSTRUCTION BEGINS DRAFTING HELP WILL BE HELD HARMLESS. DRAFTINGHELP ASSUMES NO LIABILITY FOR CHANGES AND/OR REVISIONS MADE TO PLANS BY CLIENT AND/OR CONTRACTOR.

85 PALMGROVE RD  
AVALON BEACH  
2107

ARCHITECTURAL DRAFTING  
3D VISUALISATION  
DEVELOPMENT APPLICATION  
ASSISTANCE  
COUNCIL COMPLIANT PLANS

LEGEND:  
EXISTING BUILDING OUTLINE  
PROPOSED WORK

General Notes

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Project: 16902  
Date: 27-Sep-22  
Scale: AS SHOWN  
Sheet: 3

DP No. 16902  
LOT No. 383

A ISSUED FOR DA Sep. 27, 22

Project Name and Address  
MICHAEL BALL  
85 PALMGROVE RD  
AVALON BEACH  
2107