

# BUSH FIRE ASSESSMENT

## 51 Suttor Avenue Caerleon 2850

Lot / DP: 515/-/DP1272615

**Project Description: Proposed Construction of Two Dwellings (Detached Dual Occupancy) and Residential Subdivision (1 Lot into 2 Lots)**



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REPORT NUMBER

## DOCUMENT TRACKING

Issue Date	Issued to	Description	Version
27/03/2025	JAAC BUILD	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

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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
SHALL	Mandatory requirement.
SHOULD	Not a mandatory requirement.
SSD	State Significant Development



**ASSESSMENT DETAILS**

Client		JAAC BUILD	
Location		51 Suttor Avenue Caerleon 2850	
Title reference		515/-/DP1272615	
LGA		Mid-Western Regional	
Zoning		R1: General Residential	
Development		Residential Subdivision (1 Lot into 2 Lots) and Construction of Two Dwellings.	
PBP (2019) Assessment Type		Subdivision (Chapter 5)	
Bushfire Consultancy		Bushfire Planning and Design - Director Matthew Noone - Accreditation number BPAD-25584 (Level 3)	
Report no.	Date of Issue		27/03/2025

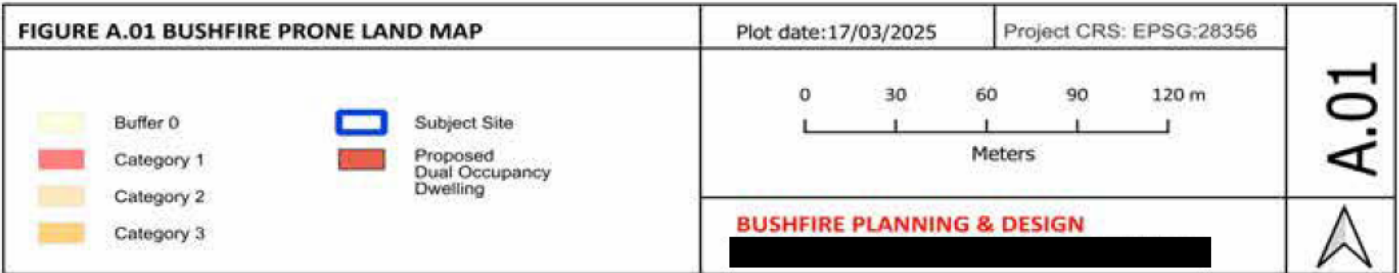
**SCOPE**

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 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 (2018) Construction of Buildings in Bushfire Prone Areas and the New South Wales Rural Fire Service document Planning for Bushfire Protection (PBP 2019).

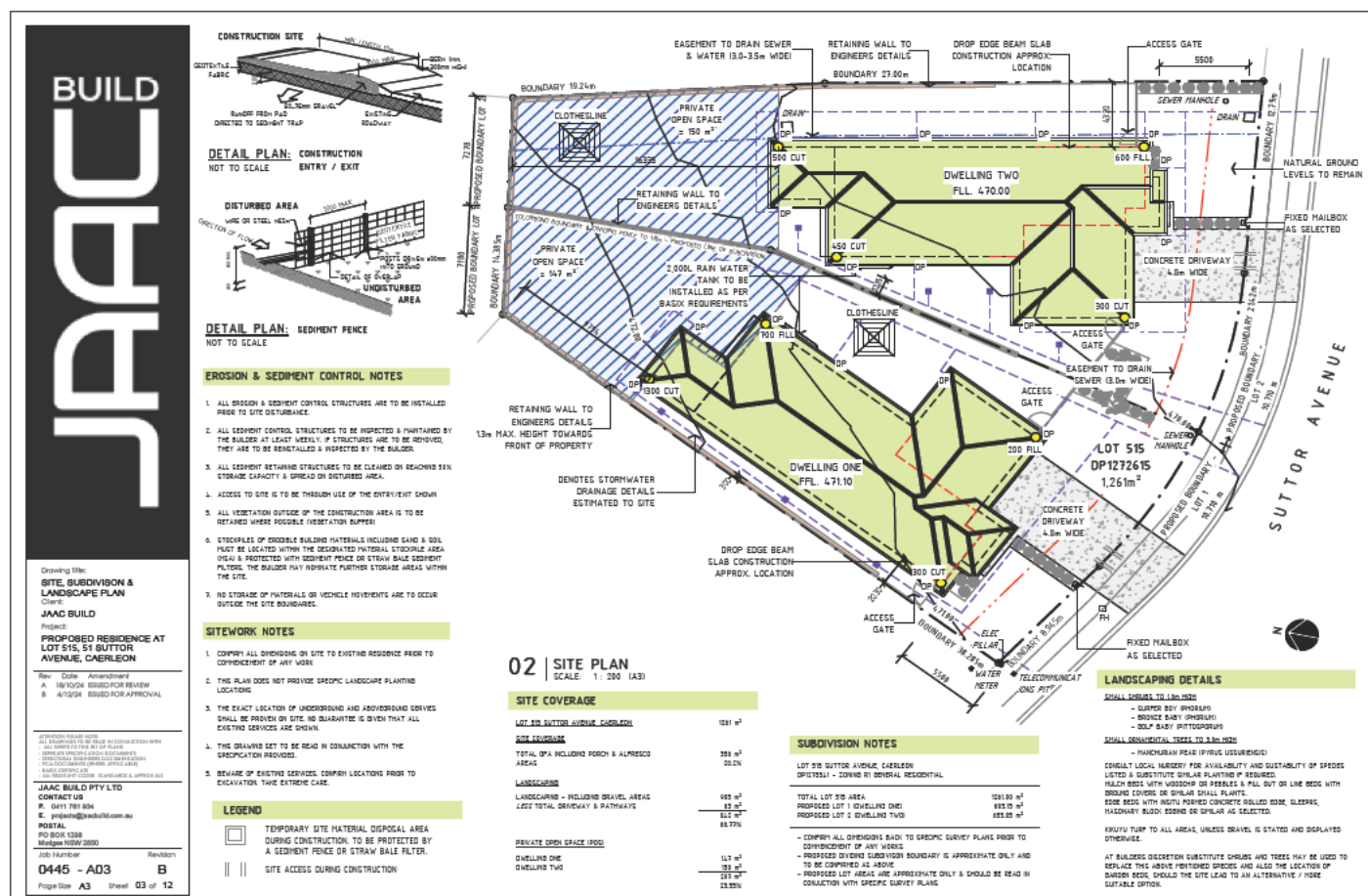
A.01 BUSHFIRE PRONE LAND

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 to Figure A.01).



## A.02 DEVELOPMENT PROPOSAL

The development relates to the construction of two dwellings (detached dual occupancy). Allotment 515/-/DP1272615 will then be subdivided into two via a torrens title subdivision.



### 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.
- 100B Rural Fire Act 1997
- Cl.45 Rural Fire Regulation 2022
- Planning for Bush Fire Protection (2019).

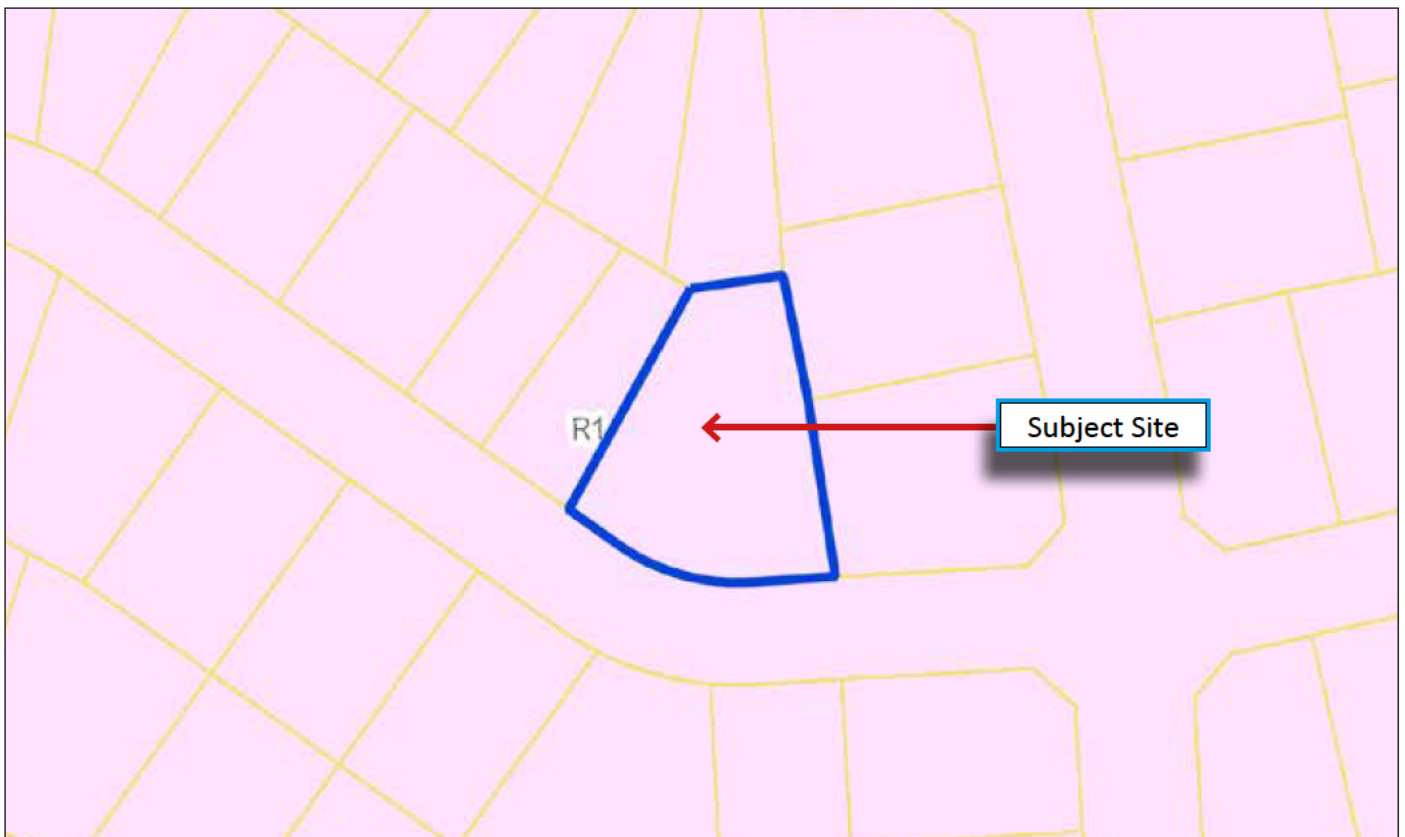


## A.04 SITE LOCATION, DESCRIPTION AND POTENTIAL BUSHFIRE THREATS


The subject site is located in Caerleon which is within the Mid-Western Regional Local Government Area (LGA). Access to the site is via Suttor Avenue to the south. The site is located in a recent subdivision and will be surrounded by managed residential curtilage in the near future. Woodland vegetation is located to the west of the subdivision greater than 150m from the subject site boundary.

## A.05 LAND USE, ZONING AND PERMISSIBILITY

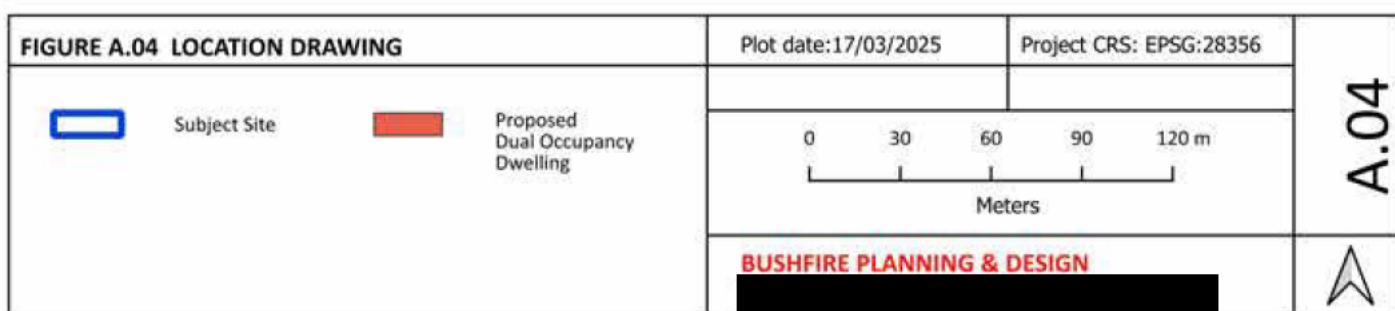
The subject site is zoned R1: General Residential.



### LAND ZONING LEGEND

 R1: General Residential





## **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.

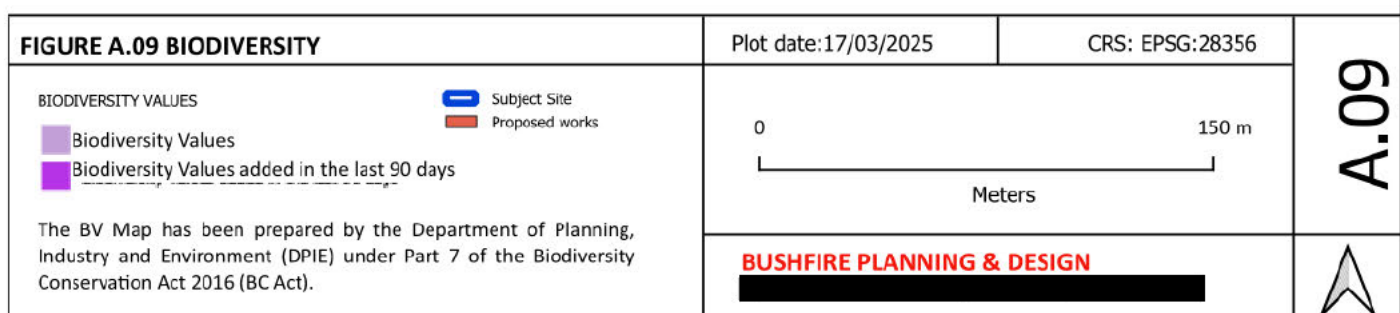
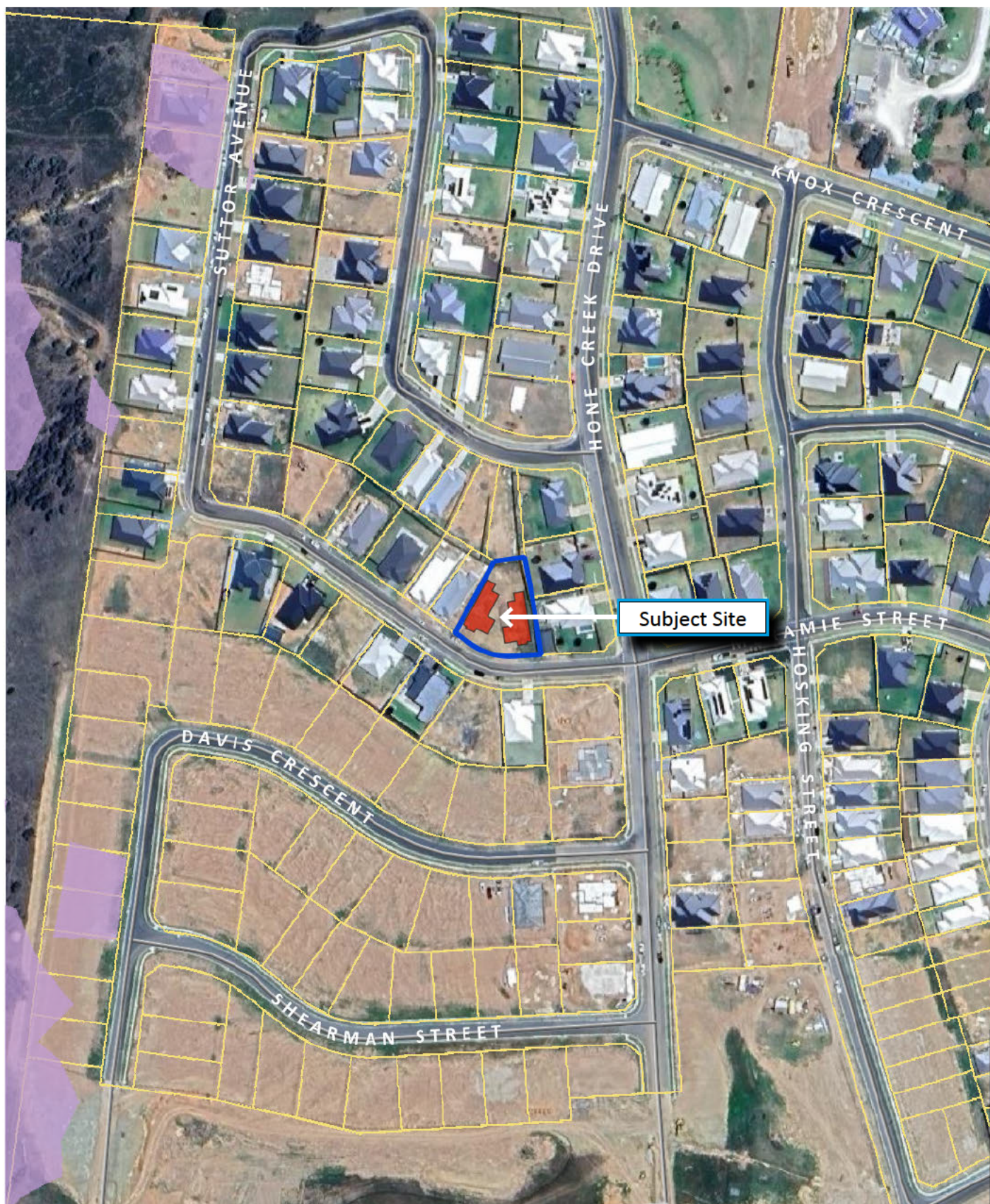
## **A.07 DETAILS OF ABORIGINAL HERITAGE**

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).







## **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**



Subject Site



Proposed Dual Occupancy Dwelling



Grassy Woodlands

CRS: EPSG:28356

Plot date: 17/03/2025

0 Meters 100 m

**BUSHFIRE PLANNING & DESIGN**  
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## B.05 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

Woodland vegetation is located greater than 150m to the west of the proposed site. The land in all other directions is managed land for at least 100m from the site boundary.

To comply with PBP (2019), new lots must be able to provide building envelopes that achieve a BAL rating of BAL-29 or lower. Based on PBP (2019) Table A1.12.2 and the parameters shown in Table 1 below, proposed lots 1 and 2 can achieve this outcome.

<b>TABLE 1</b> - To be read in conjunction with Figure A.				
LGA = Mid-Western Regional Council			Forest Fire Danger Index = 80	
ASPECT <sup>1</sup>	Vegetation Class <sup>2</sup>	Max Effective Slope <sup>3</sup>	APZ required to achieve BAL-29	Achieved Separation distance
W	Grassy Woodland	U-S	12m	> 150m
N, S, E, W	Managed Land - No bushfire threat within 100m.			

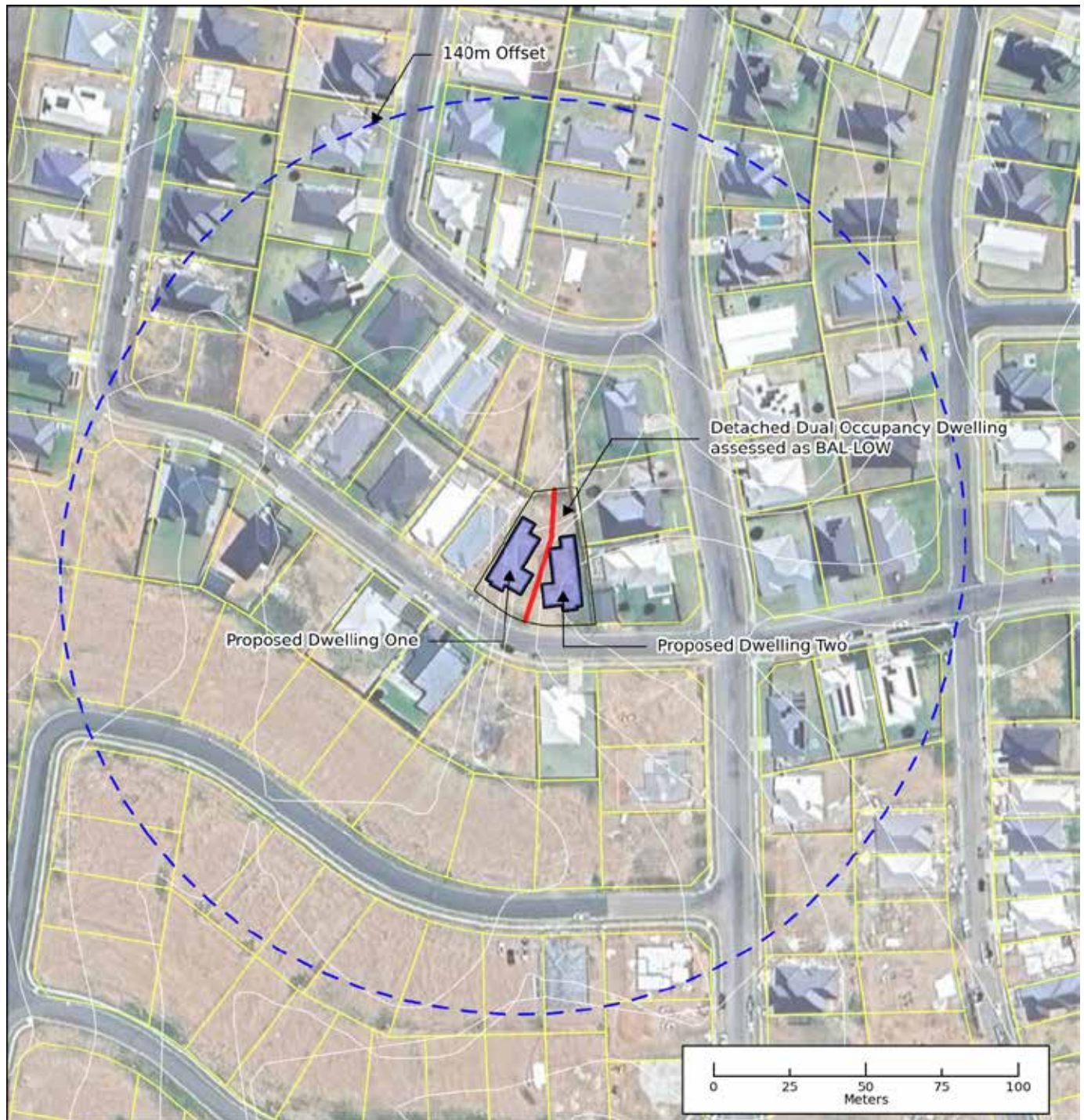
Footnotes:

<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>	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).
<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).



# Bushfire Attack Level Assessment

**Figure A - Site Diagram**

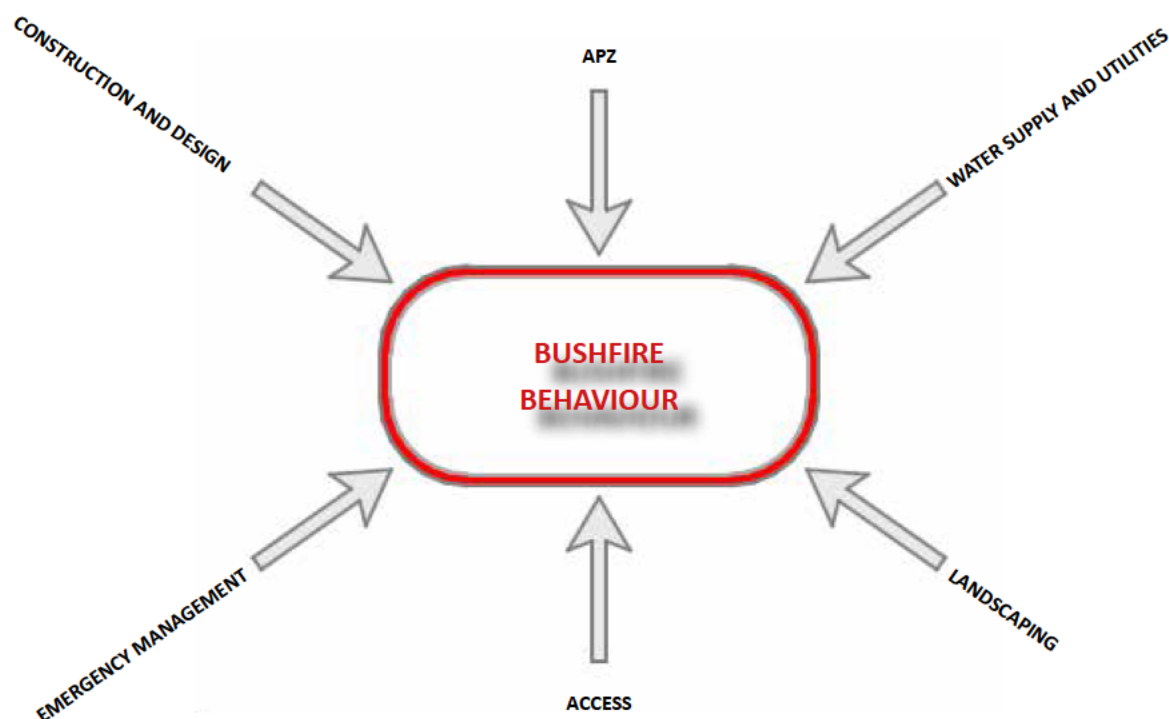


Read in conjunction with Table 1.1

This site diagram has been produced for the express intent of supporting the development application described in this report. Use of this drawing for any other purpose, or by any persons other than those for whom this document was prepared is prohibited. This drawing is representative only and should not be used to scale. Unless otherwise specified, all height data is derived from the NSW Government Spatial Services Digital Elevation Model.

## 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)

We have undertaken an assessment of the development against the acceptable solutions which requires an APZ to be provided to demonstrate that a future building will not be exposed to radiant heat levels greater than 29 kW/m<sup>2</sup> (calculated at 1090K). Our assessment identifies that a 12m APZ is required to comply with the acceptable solutions (PBP 2019 Table A1.12.2). A separation distance greater than 150m is achieved between the proposed building and assessed Woodland vegetation. The site is currently maintained to minimal fuel conditions. Proposed lots must continue to be maintained as an inner APZ in accordance with Appendix 4 of PBP (2019) in perpetuity.

**Vegetation management guidelines are provided below.**

### 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.

## **C.02 WATER**

The subdivision is serviced by reticulated water. Due to the BAL-LOW rating there is insufficient threat to warrant any additional water for fire fighting.

## **C.03 ACCESS**

### **ACCESS - PUBLIC ROADS**

The public road system consists of two-lane roads, with a nominal carriage width of 8 meters kerb to kerb, providing sufficient capacity for emergency vehicles and evacuations. The surrounding road networks, are not identified as bushfire-affected (the bushfire prone land map is out dated). This ensures safe reliable access and egress during a bush fire emergency.

### **ACCESS - FIRE TRAILS**

The development site is situated in an urban area with a bushland interface. There are no registered fire trails on or near the site, nor are there public roads connecting to a fire trail network. However, the existing road infrastructure provides two-way access, ensuring efficient vehicle movement during emergencies.

### **ACCESS - PROPERTY ACCESS**

Firefighting vehicles can access the site from Suttor Avenue to the south. 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 firefighting vehicles.

### **ACCESS - PERIMETER ROADS AND INTERNAL ROADS**

Perimeter access roads are designed to facilitate safe entry and exit for firefighting vehicles while residents evacuate, ensuring a secure operational environment for emergency personnel during firefighting and emergency response at the interface. The scale and location of the proposed subdivision does not allow for nor warrant perimeter roads or internal roads.



## **C.04 EMERGENCY MANAGEMENT**

To comply with PBP (2019) for residential subdivision, the preparation of an emergency management plan is not required. Should the applicant wish to do so, a Bush Fire Emergency Management and Evacuation Plan can be prepared. The NSW RFS template: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan can be used.

## **C.05 CONSTRUCTION**

Based on Table A1.12.5, the proposed dwellings are assessed as BAL-LOW. There is insufficient threat to warrant any specific level of construction with regards to AS3959 (2018).

## **C.06 SPRINKLER SYSTEMS**

To our knowledge, there are no existing or proposed sprinkler systems.

## **C.07 ELECTRICITY AND GAS**

There is insufficient threat to warrant any specific bushfire requirements for the provision of electrical and gas supply.

## PART D ASSESSMENT AGAINST PBP (2019) CHAPTER 5 s.5.2 OBJECTIVES

PBP Objectives for Residential and Rural Residential Subdivision.	BPAD Comments	Compliance
<p>minimise perimeters of the subdivision exposed to the bush fire hazard (hourglass shapes, which maximise perimeters and create bottlenecks should be avoided);</p> <p>minimise vegetated corridors that permit the passage of bush fire towards buildings;</p> <p>provide for the siting of future dwellings away from ridge-tops and steep slopes, within saddles and narrow ridge crests;</p> <p>ensure that APZs between a bush fire hazard and future dwellings are effectively designed to address the relevant bush fire attack mechanisms;</p>	Not Applicable - the site is located within a larger subdivision that has been designed, approved and constructed in accordance with PBP.	Yes
ensure the ongoing maintenance of APZs;	Site specified to be managed as an Inner APZ in perpetuity.	Yes
provide adequate access from all properties to the wider road network for residents and emergency services;	The established road network is suitable for emergency services. RFS do not require vehicular site access.	Yes
provide access to hazard vegetation to facilitate bush fire mitigation works and fire suppression; and	The site is located in an urban area. Access to the vegetation is provided by the perimeter road (Suttor Avenue to the west)	Yes
ensure the provision of an adequate supply of water and other services to facilitate effective firefighting.	There is insufficient threat to warrant the provision of additional water for fire fighting.	Yes

## PART E RURAL FIRE REGULATION CLAUSE 45 (G) REVIEW

CLAUSE 45 ASSESSMENT REQUIREMENTS / ITEMS TO BE ADDRESSED	REFER
2(a) <i>a description, including the address, of the property on which the development the subject of the application is proposed to be carried</i>	A.04
2(b) <i>a classification of the vegetation on and surrounding the property, out to a distance of 140 metres from the boundaries of the property, in accordance with the system for classification of vegetation contained in Planning for Bush Fire Protection,</i>	B.05
2(c) <i>an assessment of the slope of the land on and surrounding the property, out to a distance of 100 metres from the boundaries of the property,</i>	B.05
2(d) <i>identification of significant environmental features on the property,</i>	A.06
2(e) <i>the details of a threatened species or threatened ecological community under the Biodiversity Conservation Act 2016 that the applicant knows to exist on the property,</i>	A.08 A.09
2(f) <i>the details and location of an Aboriginal object or place, within the meaning of the National Parks and Wildlife Act 1974, that the applicant knows to be situated on the property,</i>	A.07
2(g) <i>a bush fire assessment for the proposed development, including the methodology used in the assessment, that addresses the following matters—</i>	
(i) <i>the extent to which the development is to provide for setbacks, including asset protection zones,</i>	B.05 C.01
(ii) <i>the siting and adequacy of water supplies for fire fighting,</i>	C.02
(iii) <i>the capacity of nearby public roads to handle increased volumes of traffic when a bush fire emergency occurs,</i>	C.03
(iv) <i>whether or not nearby public roads that link with the fire trail network have two-way access,</i>	C.03
(v) <i>the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response,</i>	C.03
(vi) <i>the adequacy of bush fire maintenance plans and fire emergency procedures for the development site,</i>	C.04
(vii) <i>the construction standards to be used for building elements in the development,</i>	C.05
(viii) <i>the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development,</i>	C.06
(ix) <i>registered fire trails on the property,</i>	C.03



## PART F SUMMARY

The development relates to the construction of two dwellings (detached dual occupancy). Allotment 515/-/DP1272615 will then be subdivided into two via a torrens title subdivision.

For the purpose of bushfire assessment and pursuant of clause 4.46 of the EP&A Act 1979 and 100B of the Rural Fire Act 1997, this project is considered to be an integrated development and is required to be referred to the RFS for their approval and issuance of a Bushfire Safety Authority (BFSA).

The subject site is located in Caerleon which is within the Mid-Western Regional Local Government Area (LGA). Access to the site is via Suttor Avenue to the south. The site is located in a recent subdivision and will be surrounded by managed residential curtilage in the near future. Woodland vegetation is located to the west of the subdivision greater than 150m from the subject site boundary.





We have undertaken an assessment of the development against the acceptable solutions which requires an APZ to be provided to demonstrate that a future building will not be exposed to radiant heat levels greater than 29 kW/m<sup>2</sup> (calculated at 1090K). Our assessment identifies that a 12m APZ is required to comply with the acceptable solutions (PBP 2019 Table A1.12.2). A separation distance greater than 150m is achieved between the proposed building and assessed Woodland vegetation. The site is currently maintained to minimal fuel conditions. Proposed lots must continue to be maintained as an inner APZ in accordance with Appendix 4 of PBP (2019) in perpetuity.

The proposed dwellings are assessed as having a Bushfire Attack Level of BAL-LOW. There is insufficient threat to warrant any specific bushfire construction measures.

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 firefighting vehicles. Regardless, suitable access to the site is provided from Showers Street to the north west and the broader road network that was approved in the parent subdivision.

There is insufficient threat to warrant the provision of additional water for fire fighting.

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

Report prepared by:	<b>Bushfire Planning and Design</b> Author: Tatsuya Ishii	Reviewed: Matthew Noone
	  Bushfire Consultant BSc (Environmental Science)	 

## 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 - Client Supplied Drawings.



# **APPENDIX A - CLIENT SUPPLIED DRAWINGS**

