

**Bush Fire Assessment Report**  
in relation to the proposed  
dwelling  
at:



**Lot 338 DP 1231225**  
**188 Forestwood Drive Glenmore Park**  
**(subject site)**

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## Document Tracking

Item	Detail
Project Name	Bush Fire Assessment Report, proposed dwelling
Project Address	Lot 338 DP 1231225, 188 Forestwood Drive Glenmore Park
Client Name	Meghan Campbell
Project Number	J21-0894
Plan Reference	Plans by A & N Design Group Sydney Job number 0025560, Dwg No. AND-33821, Issue D dated 17/05/2021
Prepared by	Adrian Armitstead
Approved by	Nicole van Dorst
BAL under AS3959-2018	BAL 19 (eastern, southern and western façade) and BAL 12.5 (northern façade) and the relevant additional construction requirements of PBP section 7.5

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## Document Control

Version	Primary Author	Description	Date Completed
1	Adrian Armitstead	Draft	20/08/2021
2	Nicole van Dorst	Final	24/08/2021

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*It should be borne in mind that the measures recommended in this report cannot guarantee that a building will survive a bushfire event on every occasion. This is due to the degree of vegetation management, the unpredictable behaviour of bushfires and extreme weather conditions. As such, the author is not liable to any person for any damage or loss whatsoever which has occurred or may occur in relation to the person taking action or not taking action based on the recommendations of this report.*

*NOTE: This bush fire assessment shall remain valid for 12 months from the date of issue.*

## Executive Summary


Bushfire Consulting Services was commissioned by Meghan Campbell to provide a bush fire assessment for a dwelling at Lot 338 DP 1231225, 188 Forestwood Drive Glenmore Park. The subject site is mapped as designated bush fire prone land by Penrith Council and is located within 23 metres of bush fire prone (hazardous) vegetation. The bush fire attack level (BAL) associated with the development of the subject building has been assessed as BAL 19 (southern, eastern and western façade) and BAL 12.5 (northern façade).

The proposal is a form of infill development and, as such, this report makes recommendations in accordance with the aim, objectives, and performance criteria of Chapter 7 of the NSW RFS document '*Planning for Bush Fire Protection*' (PBP) (NSWRFS 2019). The recommendations address the required bush fire protection measures, including:

- establishment and maintenance of asset protection zones (APZs)
- siting and design of the development
- construction requirements under AS3959-2018 (Standards Australia 2018)
- adequate access for emergency personnel,
- adequate water supply, and utility requirements to reduce the risk of ignition by electrical or gas supplies
- landscaping to reduce the risk of ignition by embers, and to minimise flame contact and radiant heat on the proposed development.

Where all recommendations are implemented, the report concludes that the proposal can comply with the aim, objectives and performance criteria of PBP.

## Compliance Summary

<p>This Assessment has been Certified by:</p> <p>Nicole van Dorst</p> <p>BPAD-Level 3 Accredited Practitioner</p> <p>FPAA Cert No: BPAD23610</p>	
<p>What is the recommended level of compliance with AS3959-2018?</p>	<p><b>BAL 19 to the eastern, southern, and western façade and BAL 12.5 to the northern façade</b></p>
<p>Can this proposal comply with AS 3959-2018?</p>	<p><b>Yes</b></p>
<p>Does this development comply with the aim and objectives of PBP?</p>	<p><b>Yes</b></p>
<p>Is referral to the NSW Rural Fire Service (RFS) required?</p>	<p><b>No</b></p>

## List of Abbreviations

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2018, <i>Construction of Buildings in Bushfire Prone Areas</i>
BAL	Bushfire Attack Level
BPAD	Bushfire Planning and Design (Accreditation Scheme)
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Penrith Council
CDC	Complying Development Certificate
DA	Development Application
DEM	Digital Elevation Model
EP&A Act	<i>Environmental Planning and Assessment Act – 1979</i>
FDI	Fire Danger Index
FPAA	Fire Protection Association of Australia
IPA	Inner Protection Area
kW/m <sup>2</sup>	Kilowatts per metre squared
LiDAR	Light Detection and Ranging
LPMA	Land & Property Management Authority
NCC	National Construction Code
PBP	<i>Planning for Bush Fire Protection 2019</i>
RF Act	<i>Rural Fires Act – 1997</i>
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SIX	Spatial Information Exchange



## 1. Introduction

This report has been commissioned by Meghan Campbell to provide a bush fire assessment for a new dwelling at Lot 338 DP 1231225, 188 Forestwood Drive Glenmore Park.

The subject property is “bushfire prone land” as per the local Council bushfire prone land map as defined by section 10.3 (s10.3) of the *Environmental Planning & Assessment Act (EP&A) 1979* and therefore the requirements stipulated by legislation apply to any new development on the site.

*Planning for Bush Fire Protection 2019* (Chapter 7) describes this type of development as “infill development” and therefore the requirements of section 4.14 (s4.14) of the *EP&A Act* are applicable.

The bush fire assessment and recommendations are derived from the *NSW EP&A Act*, the Rural Fire Service document *Planning for Bush Fire Protection 2019* and Australian Standard 3959-2018 ‘*Construction of Buildings in Bushfire Prone Areas*’.

## 2. Purpose of this Report

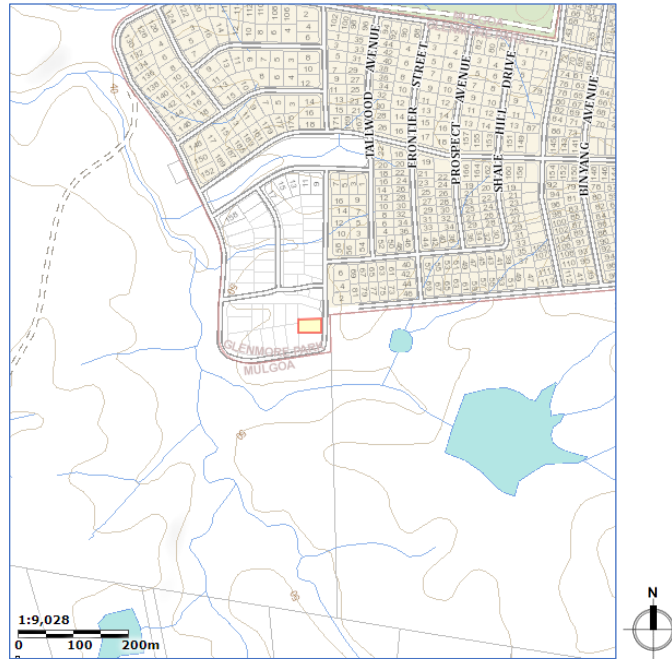
The purpose of this report is to provide the owners, the Consent Authority and the Certifier with a description of the proposed development as well as the vegetation type, slope and any other factors influencing the likely bushfire behaviour, sufficient to show that the development will be protected from the likely bushfire threat as outlined in current legislation.

This assessment includes an analysis of the hazard, threat and subsequent risk to the development and provides recommendations that satisfy the aim and objectives of *Planning for Bush Fire Protection*.

### 3. Location

The site is located and known as Lot 338 DP 1231225, 188 Forestwood Drive Glenmore Park  
The property is part of the Penrith local government area.

**Figure 1. Location Map. Source: LPMA SIX Viewer (NSW Government 2021a)**



*Site location outlined in red*

**Figure 2. Aerial Map. Source: Nearmap (2021)**



*Site location outlined in red*

**Figure 3. Bushfire Prone Land Map. Source: NSW Government Planning Portal (NSW Government 2021b)**



*Site location outlined in yellow*

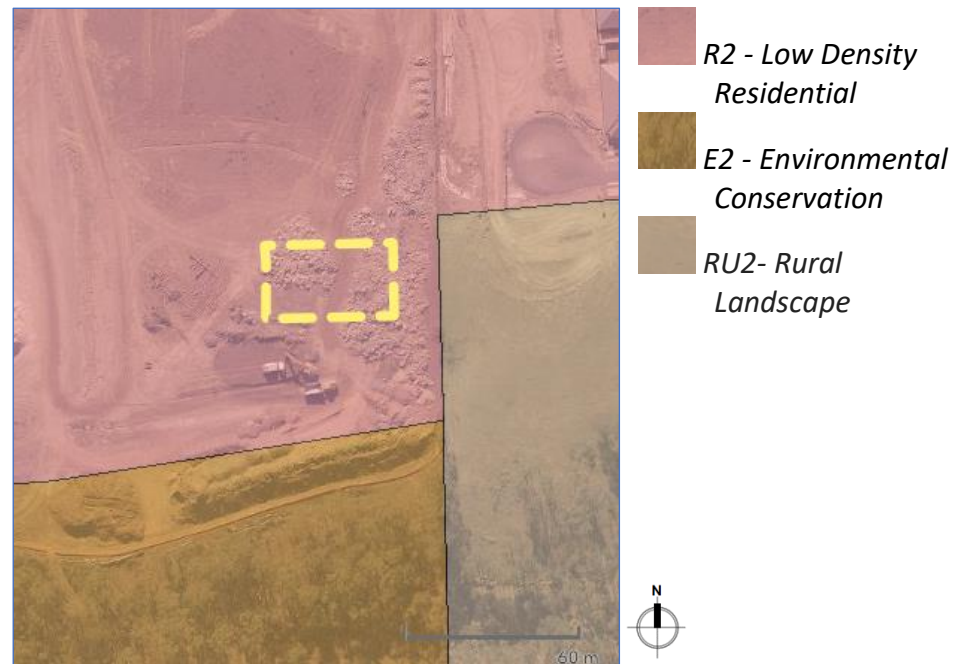
## 4. Property Description

The property is comprised of Lot 338 DP 1231225, 188 Forestwood Drive Glenmore Park, covering approximately 1017m<sup>2</sup> in area (Figure 2). It is bounded by private allotments to the approximate north, south and west, and Forestwood Drive to the east. It is currently vacant land.

### 4.1 Zoning

The land is zoned R2: Low Density Residential under Penrith Local Environmental Plan 2010. Adjacent lands are similarly zoned. (Figure 4).

**Figure 4. Zoning Map. Source: NSW Government Planning Viewer  
(NSW Government 2021b)**



*Site location outlined in yellow*

## 4.2 Biodiversity Values

A search of the NSW Office of Heritage and Environment and Heritage's Biodiversity Values Map (NSW Government 2021c) has been carried out and has not revealed any high biodiversity values on the land.

## 4.3 The Proposal

The proposal is for a two storey dwelling, triple garage, porch, alfresco and rainwater tank. In terms of the NCC, the classification of the building is Class 1a, 10a and 10b.

## 5. Site Assessment

Bushfire Consulting Services Pty Ltd attended the site on 5 August 2021. The assessment relates to the new development shown in the site plans (reference Appendix 1 below). The NSW Spatial Services mapping website has also been used as a reference (NSW Government 2021a), and 'Ocean Shores to Desert Dunes' by David Keith (Keith 2004), in determining the vegetation type.

## 6. Bush Fire Attack Assessment

### 6.1 Determine Vegetation Formations

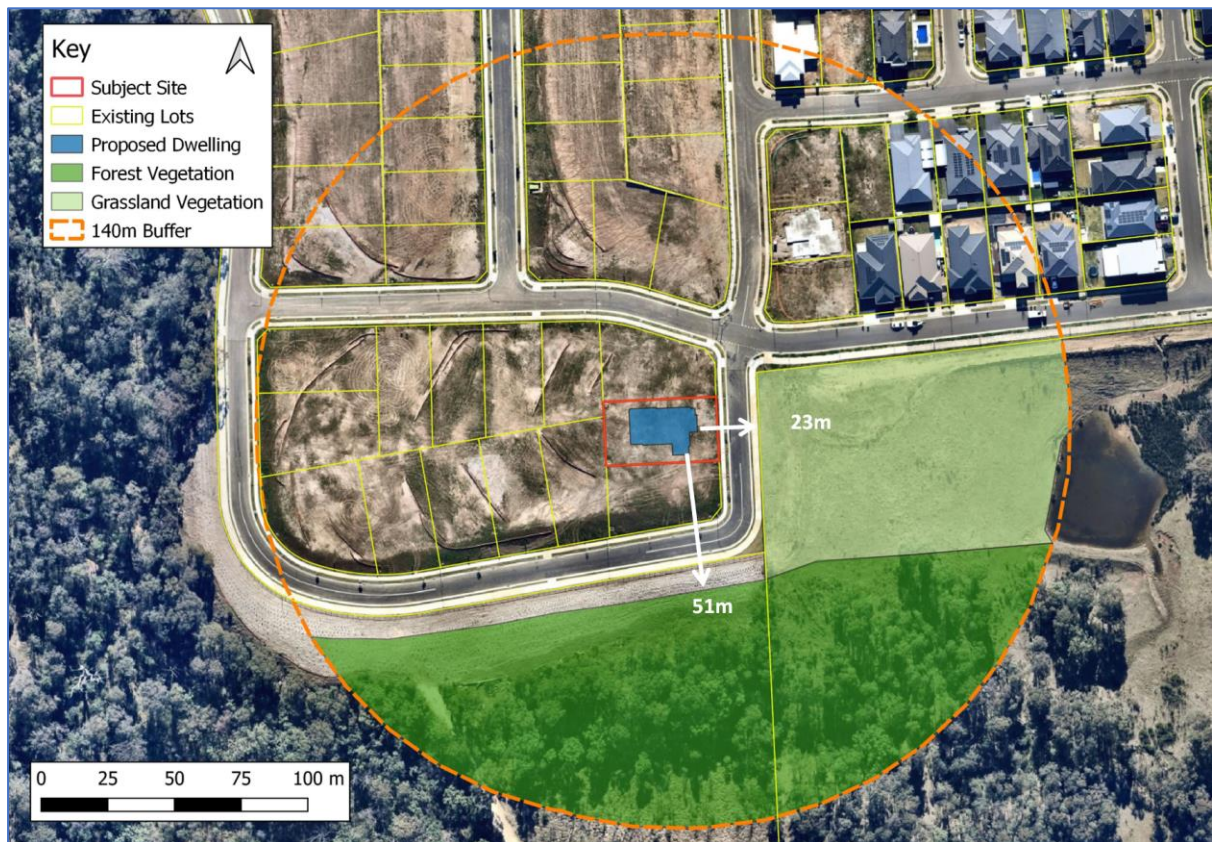
The hazardous vegetation formations for each aspect of the development within 140m of the asset have been identified according to Keith (2004). The bushfire threat emanates from The grassland and bushland located to the east and south of the subject building. This vegetation is external to the subject site boundaries.

Within the 140m study area, lots to the north, northeast, south and west comprise bare earth, vacant lots or lots with dwellings under construction, managed gardens comprising short cut grass, pavements and shrubs with occasional trees.

Based on a site visit and determination of vegetation formation using the Keith (2004) Identification Key, the primary bushland vegetation having the potential to affect the subject building is most representative of Forest to the south and Grassland to the east.



**Figure 5. Hazardous vegetation affecting the subject building. Source: NearMap (2021)  
with overlays by BFCS P/L. Aerial Photography date: 5/07/2021**



*Subject site outlined in red. Vegetation was assessed to a distance of 140m from the subject building*

## 6.2 The effective slope

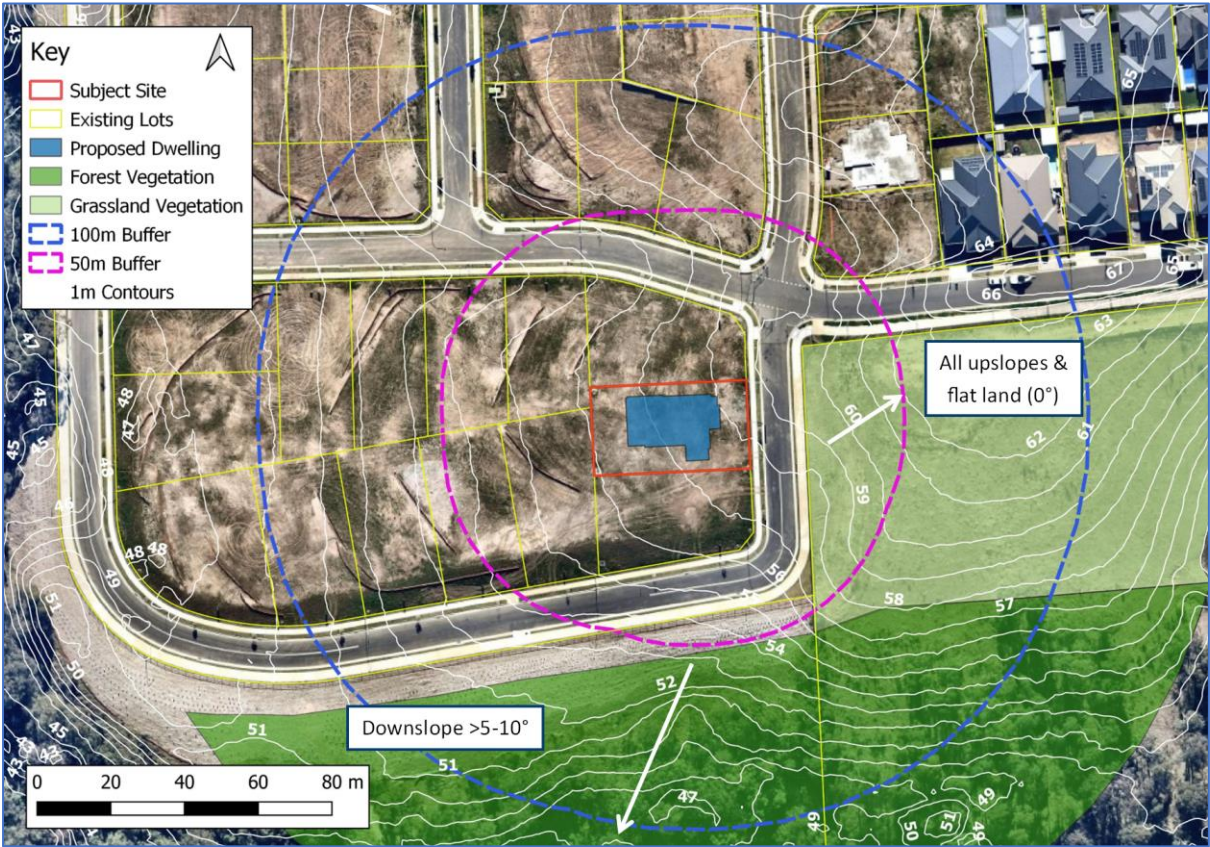
The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the level of radiant heat flux. The effective slope of the land from the new building for a distance of 100m is derived from a site assessment combined with the most detailed contour data available. The slope is then categorised into one of following classes, relative to the location of the hazard:

- all upslope vegetation (considered 0 degrees)
- >0 to 5 degrees downslope vegetation
- >5 degrees to 10 degrees downslope vegetation
- >10 degrees to 15 degrees downslope vegetation, and
- >15 degrees to 20 degrees downslope vegetation.

1m DEM data is sourced from NSW Spatial Services which is captured using LiDAR and has a horizontal accuracy of 0.3m and vertical accuracy of 0.8m at 95%.

The effective slope has been measured manually on site over a distance of 100m from the proposed development where accessible, under the classified vegetation community constituting the hazard. The slope was found to be consistent with the topographical information from NSW Spatial Services LiDAR data.

**Figure 6. Slope Diagram. Source: NearMap (2021) and LiDAR (NSW Government 2021a) with overlays by BFCs P/L: Aerial Photography Date: 5/07/2021**



Site location outlined in red, 1m contours  
 East slope is All upslopes & flat land (0°)  
 South slope is ((53-47)/54) x 1/tan = Downslope 6.3°

Direction from Building Footprint	Slope Description
North	N/A
East	All upslopes & flat land (0°)
South	Downslope >5- 10°
West	N/A



## 6.3 Fire Weather

The development is located in the Penrith Council area, a part of the Greater Sydney Region, which has a Fire Danger Index of 100.

## 6.4 Determination of APZs

An Asset Protection Zone (APZ) is a fuel-reduced area surrounding a built asset or structure. An APZ provides a buffer zone between a bush fire hazard and an asset and an area of reduced bush fire fuel that allows suppression of fire. It also provides an area from which backburning or hazard reduction can be conducted, and allows emergency services access as well as providing a relatively safe area for firefighters and home owners to defend their property.

Potential bush fire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy. PBP has minimum specifications for APZs to be established around a dwelling to be managed as an Inner Protection Area (IPA)

An IPA should provide a tree canopy cover of less than 15% and have minimal fine fuel at ground level, the grass mowed on a frequent basis, trees and shrubs retained as clumps or islands and do not take up more than 20% of the area, trees and shrubs located far enough from buildings so that they will not ignite the building, garden beds with flammable shrubs not located under trees or within 10 metres of any windows or doors, minimal plant species that keep dead material or drop large quantities of ground fuel, tree canopies not located within 2 metres of the building, trees separated by 2-5 metres and do not provide a continuous canopy from the hazard to the building, and lower limbs of trees removed up to a height of 2 metres above the ground.



**Table A1.12.2 of PBP - Minimum distances for APZs – residential development, FFDI 100 areas ( $\leq 29\text{kW/m}^2$ , 1090K)**

Aspect	Vegetation Classification	Slope Under Classified Vegetation	Minimum APZ required	APZ available/ achievable
North	N/A	N/A	N/A	N/A
East	Grassland	All upslopes & flat land ( $0^\circ$ )	10m	23m
South	Forest	Downslope $>5-10^\circ$	36m	51m
West	N/A	N/A	N/A	N/A

In this instance the minimum APZ is established to be 23m to the east and 36m to the south. The entire lot is to be managed as an IPA. The site currently contains no classified vegetation and vegetation modification is not required. The APZ can be achieved when including adjacent managed land and roadway/s (including managed road verge) as permitted by PBP 3.2.

## 6.5 Identify Construction Requirements

The appropriate construction requirements for the development are determined by matching the relevant FFDI, vegetation type, the distance measured from the edge of the unmanaged vegetation to the closest external wall to identify the BAL using the relevant tables from PBP. These construction requirements are located in section 3 of AS3959-2018. These requirements are varied by the applicable additional construction requirements of PBP section 7.5.

**PBP Table A1.12.5 Determination of BAL, FFDI 100 – residential developments**

Aspect	Distance from hazard	Vegetation Classification	Effective Slope Under Classified Vegetation	Bushfire Attack Level (BAL) required
North	$>100\text{m}$	N/A	N/A	*BAL 12.5
East	23m	Grassland	All upslopes & flat land ( $0^\circ$ )	BAL 19
South	51m	Forest	Downslope $>5-10^\circ$	BAL 19
West	$>100\text{m}$	N/A	N/A	BAL 19

*\*Due to Shielding, section 6.6*

The assessment indicates that the subject building would experience radiant heat levels of  $<12.5\text{kW/m}^2$  as a result of foreseeable local bushfires under conditions of an FDI of 100. FDI 100 represents catastrophic fire conditions and is therefore a worst-case scenario. The expected radiant heat levels translate to a Bushfire Attack Level (BAL) on the building of BAL 12.5. Construction of any new development to BAL 12.5 specifications is 'primarily concerned with protection from ember attack and radiant heat up to and including  $12.5\text{kW/m}^2$ '.

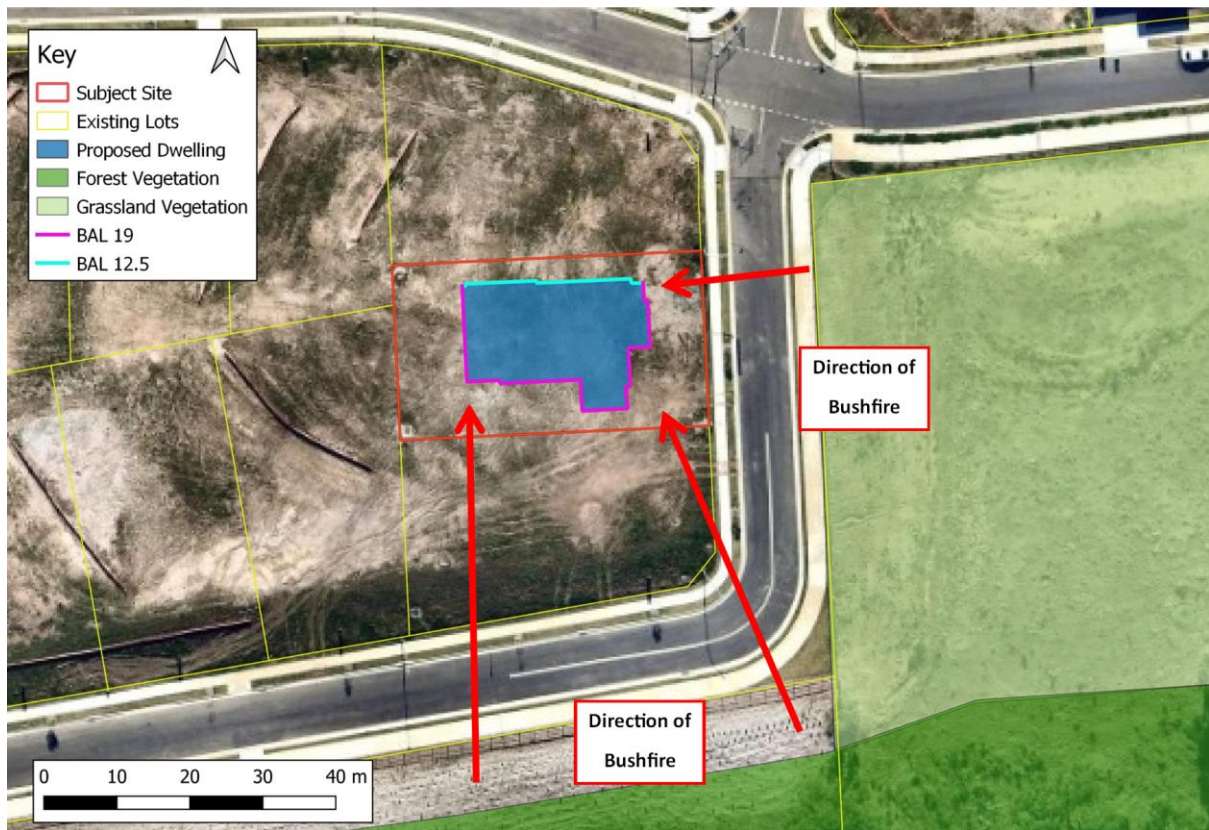
## 6.6 Reduction in BAL due to Shielding (s3.5 AS3959-2018)

Where an elevation is shielded from direct radiant heat arising from bush fire attack, then the construction requirements for that elevation can be reduced to the next lower BAL. An elevation is considered to not be exposed to the source of bush fire attack if the line of sight between that elevation and the source of bush fire attack are obstructed by another part of the building.

The shielding of an elevation shall apply to all the elements of the wall but shall not apply to subfloors or roofs.

In this instance, the north aspect of the dwelling will be fully shielded from exposure to the source of the greatest bushfire attack by the building itself. Therefore the BAL for the northern elevation can be reduced by one level to BAL 12.5.

**Figure 7. Shielding Diagram for the Subject Building. Source: NearMap with overlays by  
BFCS P/L: Aerial Photography Date: 5/07/2021**



## 7. Bush Fire Protection Measures

The BPMs for residential infill development include provisions relating to APZs, access, water supply, electricity and gas services, construction standards, landscaping and emergency evacuation. In order to create appropriate separation between a dwelling and the bush fire hazard, APZs commensurate with those specified for new subdivision must be provided.

## 7.1 Asset Protection Zones

**PBP Table 7.4a Performance criteria and acceptable solutions for residential infill development**

Performance Criteria	Acceptable Solutions/Comment
APZs are provided commensurate with the construction of the building	Achieved as a the minimum APZ of 10m is provided to the east and 36m to the south. In this case, the available separation distance between the building and the hazard is 23m to the east and 51m to the south, which exceeds the requirements of PBP
A defendable space is provided	Achieved as adequate defendable space is available to the front of the subject building and pedestrian firefighter access is available to the rear
APZs are managed and maintained to prevent the spread of a fire to the building	Achieved as the APZs are to be managed in accordance with the requirements of Appendix 4 of PBP
The APZ is provided in perpetuity	Achieved as APZs requirements will be specified in the Development Consent conditions
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised	Achieved as the APZ is located on lands with a slope less than 18 degrees. The slope under the site APZ is 3.2°

## 7.2 Access

Performance Criteria	Acceptable Solutions/Comment
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation	Achieved as property access roads are two-wheel drive, all-weather roads

Performance Criteria	Acceptable Solutions/Comment
The capacity of access roads is adequate for firefighting vehicles	Achieved as it is assumed that the capacity of road surfaces is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes)
There is appropriate access to water supply	Achieved as a hydrant is located approximately 17m from the development to the northeast, assumed to be in accordance with the relevant clauses of AS 2419.1:2005
Firefighting vehicles can access the dwelling and exit the property safely	Achieved as the development is located within 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

### 7.3 Water Supplies

Performance Criteria	Acceptable Solutions/Comment
An adequate water supply is provided for fire-fighting purposes	Achieved as reticulated water is provided to the development
The integrity of the water supply is maintained	Achieved as any new above-ground water service pipes external to the building are to be metal, including and up to any taps

### 7.4 Electricity Services

Performance Criteria	Acceptable Solutions/Comment
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings	Where practicable, electrical transmission lines are to be provided underground

## 7.5 Gas Services

Performance Criteria	Acceptable Solutions/Comment
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	<p>Where applicable, 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 used</p> <p>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 metal</p> <p>Polymer-sheathed flexible gas supply lines are not used, and above-ground gas service pipes are metal, including and up to any outlets</p>

## 7.6 Construction Standards

Performance Criteria	Acceptable Solutions/Comment
The proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact	<p>BAL 19 (southern, eastern and western façade) and BAL 12.5 (northern façade) has been determined in accordance with PBP Table A1.12.5</p> <p>The additional construction requirements of section 7.5 of PBP are to be incorporated into the development and are provided as an Appendix</p>
Proposed fences and gates are designed to minimise the spread of bush fire	Any new fences and gates are constructed of either hardwood or non-combustible material, however, if located within 6m of a building, they are to be constructed from non-combustible material only
Proposed Class 10a buildings are designed to minimise the spread of bush fire	There are no bush fire protection requirements for Class 10a buildings located more than 6m from a dwelling in bush fire prone areas. Where a Class 10a building is located within 6m of a dwelling it must be constructed in accordance with the NCC

## 7.7 Landscaping

Performance Criteria	Acceptable Solutions/Comment
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions	<p>Achieved as any landscaping within the APZ is to comply with the NSW RFS 'Asset protection zone standards' (PBP Appendix 4)</p> <p>A clear area of low-cut lawn or pavement is maintained adjacent to the house, and</p> <p>Trees and shrubs are located so that:</p> <ul style="list-style-type: none"> <li>▪ The branches will not overhang the roof;</li> <li>▪ The tree canopy is not continuous; and</li> <li>▪ Any proposed windbreak is located on the elevation from which fires are likely to approach</li> </ul>

## 8. Likely Impact of any BPMs

The proposed bushfire protection measures will not adversely impact on the environment. It should be noted that this report has not focused on environmental issues and as the land has been cleared for subdivision, such features are unlikely to exist on the site.

## 9. "The SEPP Code", Part 1, Division 2 clause 1.19A

### Land on which complying development may not be carried out— bush fire prone land

Criteria	Compliance
(1) To be complying development specified for any complying development code (except the Housing Alterations Code)—	
(a) the development must not be carried out on land in bush fire attack level-40 (BAL-40) or the flame zone (BAL-FZ), and	Yes, the BAL is 19 and BAL 12.5

Criteria	Compliance
<p>(b) in the case of development specified for the Rural Housing Code—any associated access way to the development must be on land that is—</p> <ul style="list-style-type: none"> <li>(i) not in bush fire attack level-40 (BAL-40) or the flame zone (BAL-FZ), or</li> <li>(ii) grasslands.</li> </ul>	
<p>(2) This clause does not apply to the following development—</p> <ul style="list-style-type: none"> <li>(a) non-habitable detached development that is more than 6m from any dwelling house,</li> <li>(b) landscaped areas,</li> <li>(c) non-combustible fences,</li> <li>(d) swimming pools.</li> </ul>	
<p>(3) For the purposes of this clause, land is not in bush fire attack level-40 (BAL-40) or the flame zone (BAL-FZ) if—</p>	
<p>a) A person who is recognised by the NSW Rural Fire Service as a suitably qualified consultant in bush fire risk assessment determines, in accordance with the methodology specified in Planning for Bush Fire Protection, that the land is not in bush fire attack level-40 (BAL-40) or the flame zone (BAL-FZ), or</p>	<p>Yes, the author of this report is recognised by the NSW Rural Fire Service as a suitably qualified consultant in bush fire risk assessment</p>
<p>(b) in the case of development carried out on grasslands—the development conforms to the specifications and requirements of Table 7.9a of Planning for Bush Fire Protection that are relevant to the development</p>	<p>N/A</p>



## 10. Part 3 Housing Code

### Assessment of Compliance with SEPP (Exempt and Complying Development Codes) 2008, Part 3 Housing Code, Division 2 Clause 3.4

(1) This clause does not apply to the following complying development under this code—

- (a) non-habitable detached development that is more than 6m from any dwelling house,
- (b) landscaped areas,
- (c) non-combustible fences,
- (d) swimming pools.

Note. See clause 1.19A for additional provisions relating to bush fire prone land.

(2) If complying development under this code is carried out on bush fire prone land, the following development standards also apply in addition to any other development standards:

Criteria	Compliance
a) Repealed	N/A
b) The lot on which the development is to be carried out must have direct access to a public road or a road vested in or maintained by the council	Yes
c) The dwelling house must be able to be connected to mains electricity	Yes
d) If reticulated or bottled gas is installed and maintained on the lot <ul style="list-style-type: none"><li>i) it must be installed and maintained in accordance with AS/NZS 1596:2014, The storage and handling of LP Gas and the requirements of relevant authorities (metal piping must be used), and</li><li>ii) the storage and handling of any LP gas on the lot must comply with the requirements of the</li></ul>	These requirements will be provided by the owner or builder to any gas installer for compliance, if applicable

Criteria	Compliance
relevant authorities (including the use of metal piping)	
e) any gas cylinders stored on the lot within 10m of any dwelling house must: (i) have its release valves directed away from the dwelling house, and ii) be enclosed on the hazard side of the installation (iii) have metal connections to and from the cylinder	These requirements will be provided by the owner or builder to any gas installer for compliance, if applicable
f) there must not be any polymer sheathed flexible gas supply lines to gas meters adjacent to the dwelling house	These requirements will be provided by the owner or builder to any gas installer for compliance, if applicable
g) if the development is carried out on a lot in Zone RU5, there must be— (i) a reticulated water supply connection to the lot and a fire hydrant within 70m of any part of the development, or (ii) a 10,000 L capacity water tank on the lot,	N/A as the zone is R2
h) if the development is carried out on a lot in any zone other than Zone RU5, there must be— (i) a reticulated water supply connection to the lot, and (ii) a fire hydrant within 70m of any part of the development,	Yes, the zone is R2: Low Density Residential and there is a reticulated water supply connection to the lot, and a fire hydrant is located approximately 17m from the lot to the northeast which is within 70m of any part of the development
i) The development must conform to the specifications and requirements of Planning for Bush Fire Protection that are relevant to the development	Yes, see above

## 11. Recommendations

The following recommendations are made for the bushfire measures for the proposed residential development of a dwelling at Lot 338 DP 1231225, 188 Forestwood Drive Glenmore Park, and are based upon the relevant provisions of the NSW Rural Fire Service Guideline entitled *Planning for Bush Fire Protection 2019*.

### 1. Asset Protection Zones

At the commencement of the development, and in perpetuity, the entire site shall be managed as an Inner Protection Area (IPA) Asset Protection Zone, as outlined in PBP 2019 Appendix 4.

### 2. Construction Standards

New construction shall comply with Sections 3 and 6 (BAL 19) for the southern, eastern and western building facades and Sections 3 and 5 (BAL 12.5) for the northern building façade as outlined within AS3959-2018 '*Construction of buildings in bush fire-prone areas*', and as varied by the applicable additional construction requirements of PBP section 7.5 (shown as Appendix 4 below).

### 3. Electricity Services

Where practicable, electrical transmission lines are underground

### 4. Gas Services

Where applicable, reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 *The storage and handling of LP Gas* and the requirements of relevant authorities, and metal piping is 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 metal.

Polymer-sheathed flexible gas supply lines are not used, and above-ground gas service pipes are metal, including and up to any outlets.

5. Fences and gates

All new fences and gates are constructed of either hardwood or non-combustible material, however, if located within 6m of a building, they are to be constructed from non-combustible material only.

6. Landscaping

Any new landscaping within the APZ is to comply with the NSW RFS 'Asset protection zone standards' (PBP Appendix 4).

7. Emergency and Evacuation Planning

The need to formulate an emergency evacuation plan is suggested. To do so, occupants can complete a Bush Fire Safety Plan on the NSW RFS Website <http://www.rfs.nsw.gov.au/> under publications / bushfire safety.

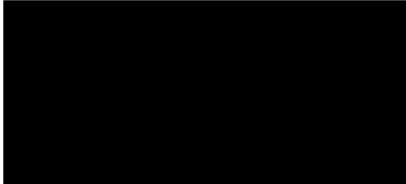
## 12. Summary

This report consists of a bush fire assessment for the proposed residential development of a dwelling at Lot 338 DP 1231225, 188 Forestwood Drive Glenmore Park. The report concludes that the proposed development is on designated bushfire prone land and the legislative requirements for development in bushfire prone areas are applicable.

This report has considered all the elements of bushfire attack and finds that the development has a Bushfire Attack Level of BAL 19 to the eastern, southern and western facades and BAL 12.5 to the northern facades. The development satisfies the Objectives and Performance requirements of 'Planning for Bush Fire Protection' 2019, subject to implementation of the recommendations made by this report.

*Notwithstanding the precautions adopted, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, always remains and although the standard is designed to improve the performance of such buildings, there can be no guarantee because of the variable nature of bushfires that any one building will withstand bushfire attack on every occasion.*

*This report is a bush fire assessment that provides the required information to assist local Council in determining compliance in accordance with Planning for Bush Fire Protection and AS3959-2018. The local Council is the final consenting authority and the construction of the building must comply with the recommendations included in the Council's conditions of consent.*



**Nicole van Dorst**



(a person who is recognised by the NSW Rural Fire Service as a suitably qualified consultant in bush fire risk assessment)

**Accredited Bushfire Planning and Design Practitioner**

Fire Protection Association Australia BPAD-Level 3 (BPAD 23610)

Grad Dip Bushfire Protection (UWS 2011)

Bachelor of Applied Science (Environmental Management) (SCU 1998)

Corporate Bronze Member Fire Protection Association Australia

Bushfire Consulting Services Pty Ltd

**Tel: 02 4744 5800 | Mob: 0477 962 288**

## 13. References

Keith D 2004, *Ocean Shores to Desert Dunes, the Native Vegetation of NSW and the ACT*, Department of Environment and Conservation, Sydney

NearMap 2021, *NearMap Photomap Aerial Imagery*, NearMap Australia, Barrangaroo, NSW

NSW Government 2021a, *NSW Spatial Services*, NSW Department of Finance, Services and Innovation.

NSW Government 2021b, *NSW Planning Portal*, NSW Department of Planning and Environment.

NSW Government 2021c, *Biodiversity Values Map*, NSW Department of Environment and Heritage.

NSW RFS 2019, *Planning for Bush Fire Protection*, NSW Rural Fire Service, Sydney.

Standards Australia 2018, *Australian Standard AS 3959-2018 'Construction of Buildings in Bushfire Prone Areas'*, SAI Global, Australia.

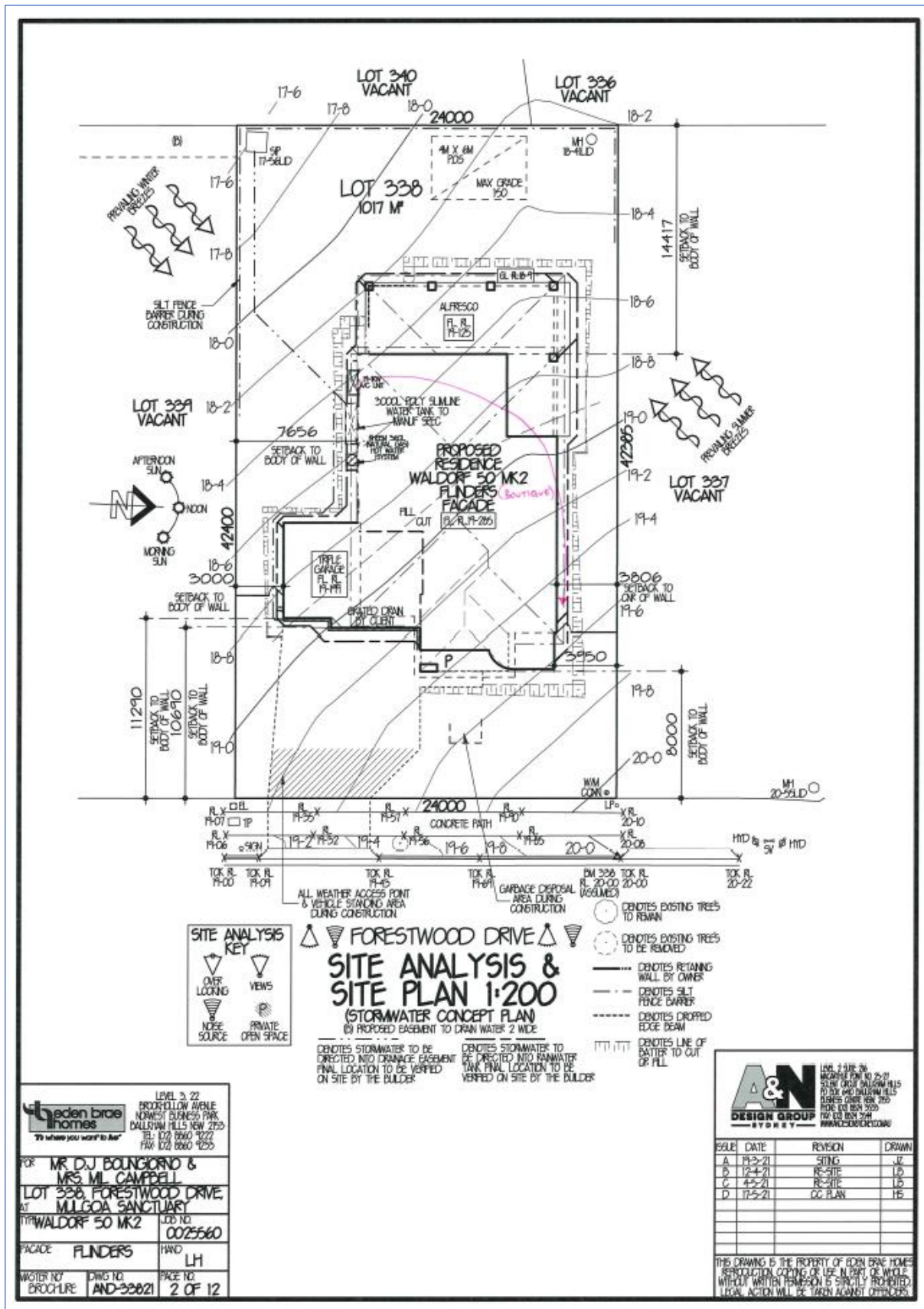
## 14. Legislation

*Environmental Planning & Assessment Act 1979*

*Rural Fires Act 1997*

*Rural Fires Regulation 2013*

## Appendix 1 - Site Plan





## Appendix 2 – Photos of Site and Surrounds

Source: BFCS P/L 5/08/2021



*Subject site*



*Vegetation to the east, approximately 23m from the proposal*



*Vegetation to the south, approximately 41m from the proposal*





*Close up of vegetation to the south, approximately 41m from the proposal*

## Appendix 3 – Bushfire Risk Assessment Certificate

This form is completed by a recognized consultant in bushfire risk assessment in accordance with section s4.14 of the *Environmental Planning and Assessment Act 1979 No 203*

PROPERTY ADDRESS:	Lot 338 DP 1231225 188 Forestwood Drive Glenmore Park
DESCRIPTION OF PROPOSAL:	Dwelling
PLAN REFERENCE: (relied upon in report preparation)	Plans by A & N Design Group Sydney Job number 0025560, Dwg No. AND-33821, Issue D dated 17/05/2021
BAL RATING	BAL 19 to the eastern, southern and western facades and BAL 12.5 to the northern facades (If the BAL rating is FZ the application is to be referred to NSW RFS for assessment)
DOES THE PROPOSAL RELY ON ALTERNATE SOLUTIONS:	YES <b>NO</b> (Circle the relevant response) (If YES the application is to be referred to NSW RFS for assessment)

I, Nicole van Dorst, of Bushfire Consulting Services Pty Ltd, have carried out a bushfire risk assessment on the above mentioned proposal and property. A detailed Bushfire Assessment Report is attached which includes the submission requirements set out in Appendix 2 of *Planning for Bushfire Protection 2019* together with recommendations as to how the relevant specifications and requirements are to be achieved.

REPORT REFERENCE:	J21-0894
REPORT DATE:	24/08/2021
CERTIFICATION NO/ACCREDITED SCHEME:	BPAD-Level 3 Accredited Practitioner FPAA Cert No: BPAD23610

Note: this certificate must be completed and signed by a person recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment in accordance with s4.14 of the *EP&A Act 1979 No 203*.

\*\*\*\*\*

I hereby certify, in accordance with Section 4.14 of the Environmental Planning and Assessment Act 1979 No 203:

That I am a person recognised by the NSW Rural Fire Service as a qualified consultant in bushfire risk assessment; and

That 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 Section s4.14 of the *Environmental Planning and Assessment Act 1979 No 203*.

I am aware that the bush fire 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 Bush Fire Protection 2019*.

Attachments:



Bush Fire Risk Assessment Certificate

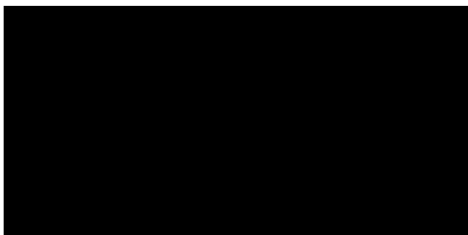


Recommendations



Statement of vegetation impact in relation to APZ

SIGNATURE:



DATE: 24/08/2021

## Appendix 4 - Modifications of section 7.5 of PBP

### 7.5 Additional construction requirements

To ensure the performance criteria for construction standards given in section 7.4 can be met, PBP adopts additional measures over and above AS 3959 and NASH Standard as follows:

- construction measures for ember protection at BAL-12.5 and BAL-19 provided by AS 3959
- construction measures for development in BAL-FZ; and
- requirements over and above the performance criteria contained within AS 1530.8.1 and AS 1530.8.2 apply in regards to flaming.

#### 7.5.1 Ember protection

Based on the findings from the 2009 Victorian Bush Fires Royal Commission, PBP aims to maintain the safety levels previously provided by AS 3959:1999 in relation to ember protection at lower Bush Fire Attack Levels.

In particular, the areas addressed are in relation to:

- sarking;
- subfloor screening;
- floors;
- verandas, decks, steps, ramps and landings;
- timber support posts and beams; and
- fascias and bargeboards.

#### 7.5.2 NSW State Variations under G5.2(a) (i) and 3.10.5.0(c)(i) of the NCC

Certain provisions of AS 3959 are varied in NSW based on the findings of the Victorian Bush Fires Royal Commission and bush fire industry research.

The following variations to AS 3959 apply in NSW for the purposes of NSW G5.2(a)(i) of Volume One and NSW 3.10.5.0(c)(i) of Volume Two of the NCC;

- clause 3.10 of AS 3959 is deleted and any sarking used for BAL-12.5, BAL-19, BAL-29 or BAL-40 shall:
  - be non-combustible; or

- comply with AS/NZS 4200.1, be installed on the outside of the frame and have a flammability index of not more than 5 as determined by AS 1530.2; and
- clause 5.2 and 6.2 of AS 3959 is replaced by clause 7.2 of AS 3959, except that any wall enclosing the subfloor space need only comply with the wall requirements for the respective BAL; and
- clause 5.7 and 6.7 of AS 3959 is replaced by clause 7.7 of AS 3959, except that any wall enclosing the subfloor space need only comply with the wall requirements for the respective BAL; and
  - fascias and bargeboards, in BAL-40, shall comply with:
  - clause 8.4.1(b) of AS 3959; or
  - clause 8.6.6 of AS 3959.