



BUSHFIRE
CONSULTING
SERVICES PTY LTD

Designing Bushfire Protection Measures

Reference: 21/0149

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Bush Fire Assessment Report

in relation to the proposed dwelling

at:



Lot 123 DP 32140

14-20 Mount Vernon Road Mount Vernon

to be registered as Lot 1 DP 1221353

14 Mount Vernon Road Mount Vernon

(subject site)

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Document Tracking

Item	Detail
Project Name	Bush Fire Assessment Report, proposed dwelling
Project Address	Lot 1 DP 1221353, 14 Mount Vernon Road Mount Vernon
Client Name	ATJ Architects
Project Number	21/0149
Plan Reference	Plans by ATJ Architects numbered 2025 A01 and A02, issue A dated 21/01/2021 and Survey Plan for Lot 1 in Unregistered DP 1221353 (Plan of Subdivision of Lot 123 in DP 32140) by Chadwick Cheng numbered 40132 / D-MGA, Sheet 1, dated 12/01/2021
Prepared by	Adrian Armitstead
Approved by	Catherine Gorrie
BAL under AS3959-2018	BAL Low and the relevant additional construction requirements of PBP section 7.5

Bushfire Consulting Services Pty Ltd Contact Details

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Document Control

Version	Primary Author	Description	Date Completed
1	Adrian Armitstead	Draft	3/3/2021
2	Catherine Gorrie	Final	4/03/2021

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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 ATJ Architects to provide a bush fire assessment for a dwelling at Lot 123 DP 32140 at 14-20 Mount Vernon Road which has been approved for a 2 Stage Torrens Title Subdivision of 3 Lots by DA06/1626.03, issued by Penrith City Council, dated 06/07/2017. The as yet unregistered lot is to be known as Lot 1 DP 1221353, 14 Mount Vernon Road Mount Vernon.

This report focuses on the proposed works within the unregistered Lot 1 DP 1221353 only. The subject site is mapped as designated bush fire prone land by Penrith Council and the new dwelling on proposed Lot 1 is located approximately 164 metres from bush fire prone (hazardous) vegetation. The bush fire attack level (BAL) associated with the development of the new dwelling has been assessed as BAL Low.

The proposal is a form of infill development and, as such, this report makes an assessment 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 BAL Low assessment addresses the required bush fire protection measures, including:

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

The report concludes that the proposal can comply with the aim, objectives and performance criteria of PBP.

Compliance Summary

This Assessment has been Certified by: Catherine Gorrie BPAD-Level 3 Accredited Practitioner FPAA Cert No: BPAD20751	
What is the recommended level of compliance with AS3959-2018?	BAL Low
Can this proposal comply with AS 3959-2018?	Yes
Does this development comply with the aim and objectives of PBP?	Yes
Is referral to the NSW Rural Fire Service (RFS) required?	No

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
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 ²	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 ATJ Architects to provide a bush fire assessment for a new dwelling at unregistered Lot 1 DP 1221353, 14 Mount Vernon Road Mount Vernon, a result of a subdivision of land at Lot 123 DP 32140 at 14-20 Mount Vernon Road.

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 is 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

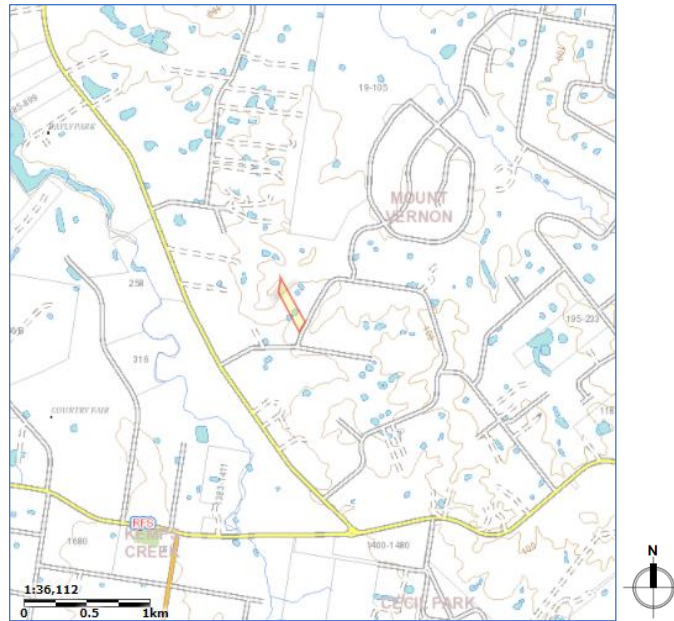
The purpose of this report is to provide the owners, the Consent Authority and the Certifier with a description of the proposed development as well as the vegetation type, slope and any other factors influencing the likely bushfire behaviour, sufficient to show that the development will be protected 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 demonstrates that the proposal satisfies the aim and objectives of *Planning for Bush Fire Protection*.

3. Location

The site is located and known as Lot 1 DP 1221353, 14 Mount Vernon Road Mount Vernon. The property is part of the Penrith local government area.

Figure 1. Location Map. Source: LPMA SIX Viewer (NSW Government 2020a)



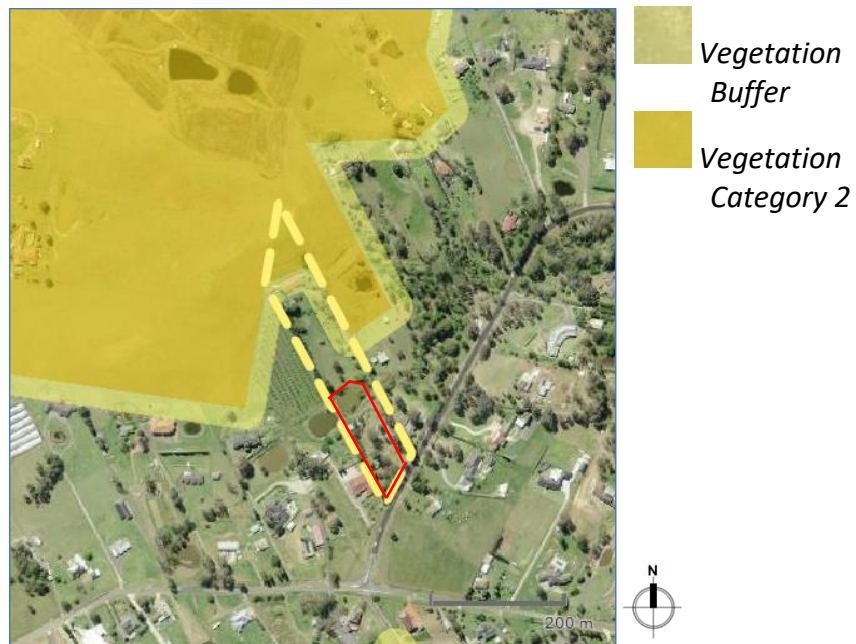
Parent lot location outlined in red

Figure 2. Aerial Map. Source: LPMA SIX Viewer (NSW Government 2020a)



Parent Lot 3 site location outlined in red

**Figure 3. Bushfire Prone Land Map. Source: NSW Government Planning Portal
(NSW Government 2020b)**



Approximate site location (proposed Lot 1) outlined in red within the parent Lot outlined in yellow

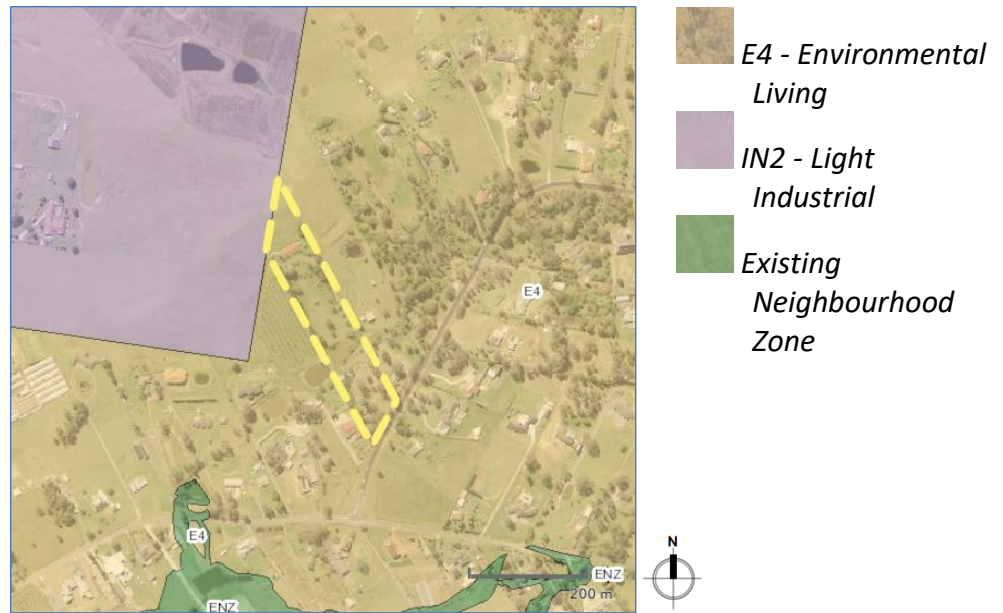
4. Property Description

The property is comprised of Lot 123 DP 32140 at 14-20 Mount Vernon Road, with a subdivision of land as yet unregistered resulting in proposed Lot 1 DP 1221353, 14 Mount Vernon Road Mount Vernon, covering approximately 9569m² in area (Figure 2). It is bounded by private allotments to the approximate northwest, northeast and southwest, and Mount Vernon Road to the approximate southeast. It currently contains a single occupancy development, comprising a single storey dwelling and two smaller sheds to be demolished, and a large detached metal shed at the rear to be retained.

4.1 Zoning

The land is zoned E4: Environmental Living under State Environmental Planning Policy (Western Sydney Aerotropolis) 2020. Adjacent lands to the northeast, southeast and southwest are similarly zoned. Adjacent lands to the northwest are zoned IN2 - Light Industrial (Figure 4).

**Figure 4. Zoning Map. Source: NSW Government Planning Viewer
(NSW Government 2020b)**



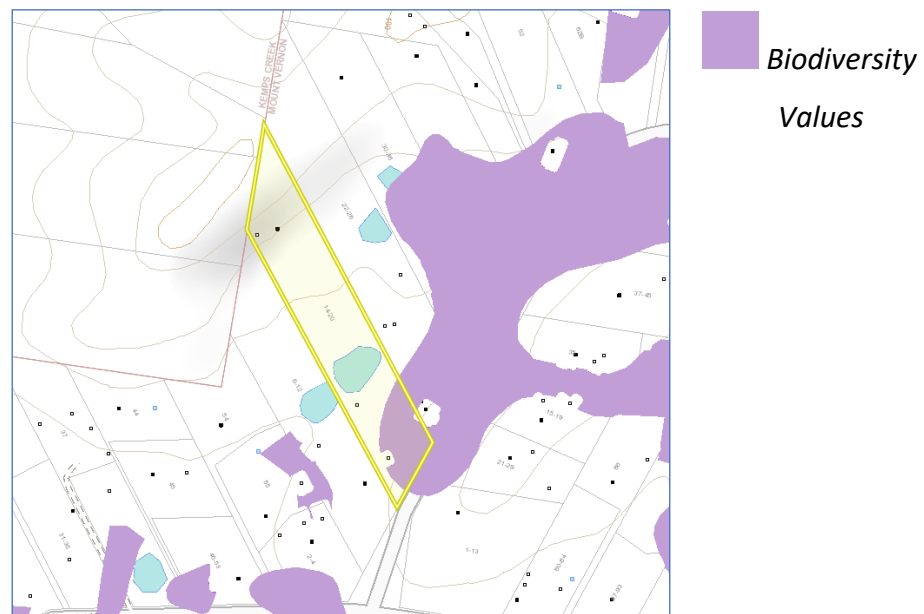
Parent site location outlined in yellow

4.2 Biodiversity Values

A search of the NSW Office of Environment and Heritage's Biodiversity Values Map (NSW Government 2020c) has been carried out which indicates land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017*. It may be necessary to engage an accredited assessor to apply the Biodiversity Assessment Method (the BAM) to assess the impacts of the proposed development.

Figure 5: Biodiversity Values Map: NSW Office of Environment and Heritage

(NSW Government 2020c)



Site location outlined in yellow

4.3 The Proposal

The proposal is for a single storey dwelling, with lower level garage and storage, a porch and patio. 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 23 February 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 2020a), and 'Ocean Shores to Desert Dunes' by David Keith (Keith 2004), in determining the vegetation type.

6. Bush Fire Attack Assessment

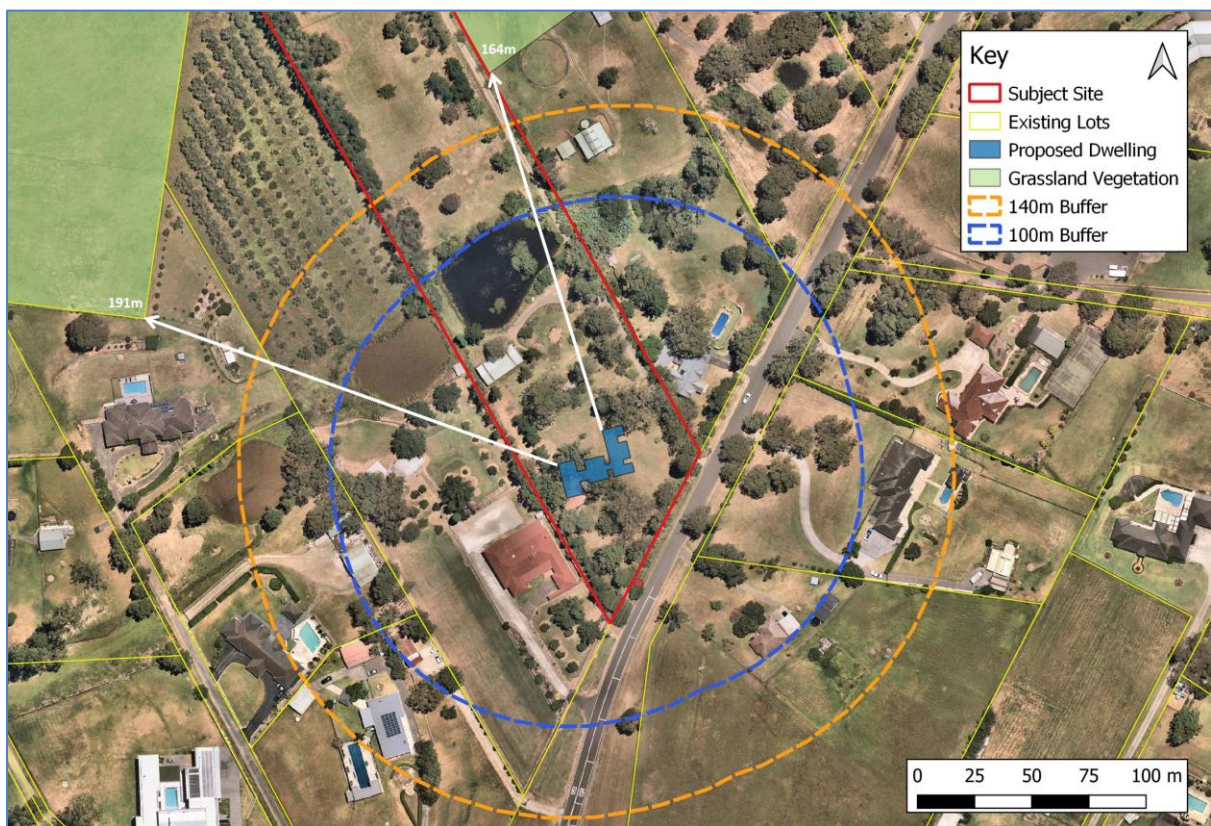
6.1 Determine Vegetation Formations

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 grassland located to the northeast and northwest of the subject building at a distance greater than 140m from the proposal.

Within 140m of the site, lots contain existing large lot residential developments with curtilages comprising lawns, shrubs and occasional trees, which do not constitute a hazard.

Based on a determination of vegetation formation using the Keith 2004 Identification Key and a site visit, there is no classified vegetation in any direction for over 100m (Figure 5).

Figure 6. Hazardous vegetation affecting the subject building. Source: NearMap (2020) with overlays by BFCS P/L. Aerial Photography date: 27/12/2020



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 any 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.

In this instance, the slope is of no consequence as there is no classified vegetation within 100m of the lot.

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.

The APZ can include roads or properties managed to be consistent with APZ standards as permitted by PBP 3.2, set out in Appendix 4 and the NSW RFS document Standards for Asset Protection Zones. In this instance, it is identified that roads and properties that comprise managed curtilages exist for at least 100m in all directions. Therefore it is not necessary to stipulate a minimum APZ.

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.

In this instance, as there is no classified vegetation within 100m of the lot, the determination of the bushfire attack level is BAL Low. AS3959-2018 does not provide construction requirements for buildings assessed as being BAL Low.

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
Northeast	>100m	N/A	N/A	BAL LOW
Southeast	>100m	N/A	N/A	BAL LOW
Southwest	>100m	N/A	N/A	BAL LOW
Northwest	>100m	N/A	N/A	BAL LOW

The assessment indicates that the proposed development has a Bushfire Attack Level of BAL-LOW under PBP 2019. AS3959-2018 states the following with respect to construction of building classified as BAL-LOW:

“Minimal attack from radiant heat and flame due to the distance of the building from the vegetation, although some attack by burning debris is possible. *There is insufficient threat to warrant specific construction requirements.*”

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 there is no classified vegetation within 100m of the site
A defensible space is provided	Achieved as adequate defensible 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	N/A as there is no classified vegetation within 100m of the development
The APZ is provided in perpetuity	N/A as there is no classified vegetation within 100m of the development
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised	N/A as there is no classified vegetation within 100m of the development

7.2 Access

N/A as there is no classified vegetation within 100m of the development.

7.3 Water Supplies

N/A as there is no classified vegetation within 100m of the development.

7.4 Electricity Services

N/A as there is no classified vegetation within 100m of the development.

7.5 Gas Services

N/A as there is no classified vegetation within 100m of the development.

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	BAL Low has been determined in accordance with PBP Table A1.12.5.
Proposed fences and gates are designed to minimise the spread of bush fire	N/A as there is no classified vegetation within 100m of the development
Proposed Class 10a buildings are designed to minimise the spread of bush fire	N/A as there is no classified vegetation within 100m of the development

7.7 Landscaping

N/A as there is no classified vegetation within 100m of the development.

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 such they may require further specialist investigation.

9. Recommendations

The bushfire threat has been assessed as BAL Low, based on the Low Threat Vegetation – Exclusions of PBP A1.10, which applies the exclusions set out in AS3959. AS3959 does not provide construction requirements for buildings assessed in bushfire prone areas as being BAL Low according to AS3959-2018 clause 2.2.3.2 (a), where there is no classified vegetation within 100m of the site. The assessment has been carried out in accordance with the Site Assessment Methodology of PBP Appendix 1.

The Bushfire Attack Level BAL Low is based on insufficient risk to warrant specific bushfire construction requirements. It is predicated on low threat vegetation and non-vegetated areas. Therefore this report makes no specific recommendations.

10. Summary

This report consists of a bush fire assessment for the proposed residential development of a dwelling at Lot 1 DP 1221353, 14 Mount Vernon Road Mount Vernon. 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 Low. The development satisfies the Objectives and Performance requirements of 'Planning for Bush Fire Protection' 2019.

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.



Catherine Gorrie

(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 20751)

Grad Dip Bushfire Protection (UWS 2010)

Diploma Environmental Health & Building Surveying (TAFE 2005)

Corporate Bronze Member Fire Protection Association Australia

Bushfire Consulting Services Pty Ltd

Tel: 02 4744 5800 | Mob: 0425 833 893



11. References

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

NearMap 2020, *NearMap Photomap Aerial Imagery*, NearMap Australia, Barrangaroo, NSW

NSW Government 2020a, *NSW Spatial Services*, NSW Department of Finance, Services and Innovation.

NSW Government 2020b, *NSW Planning Portal*, NSW Department of Planning and Environment.

NSW Government 2020c, *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.

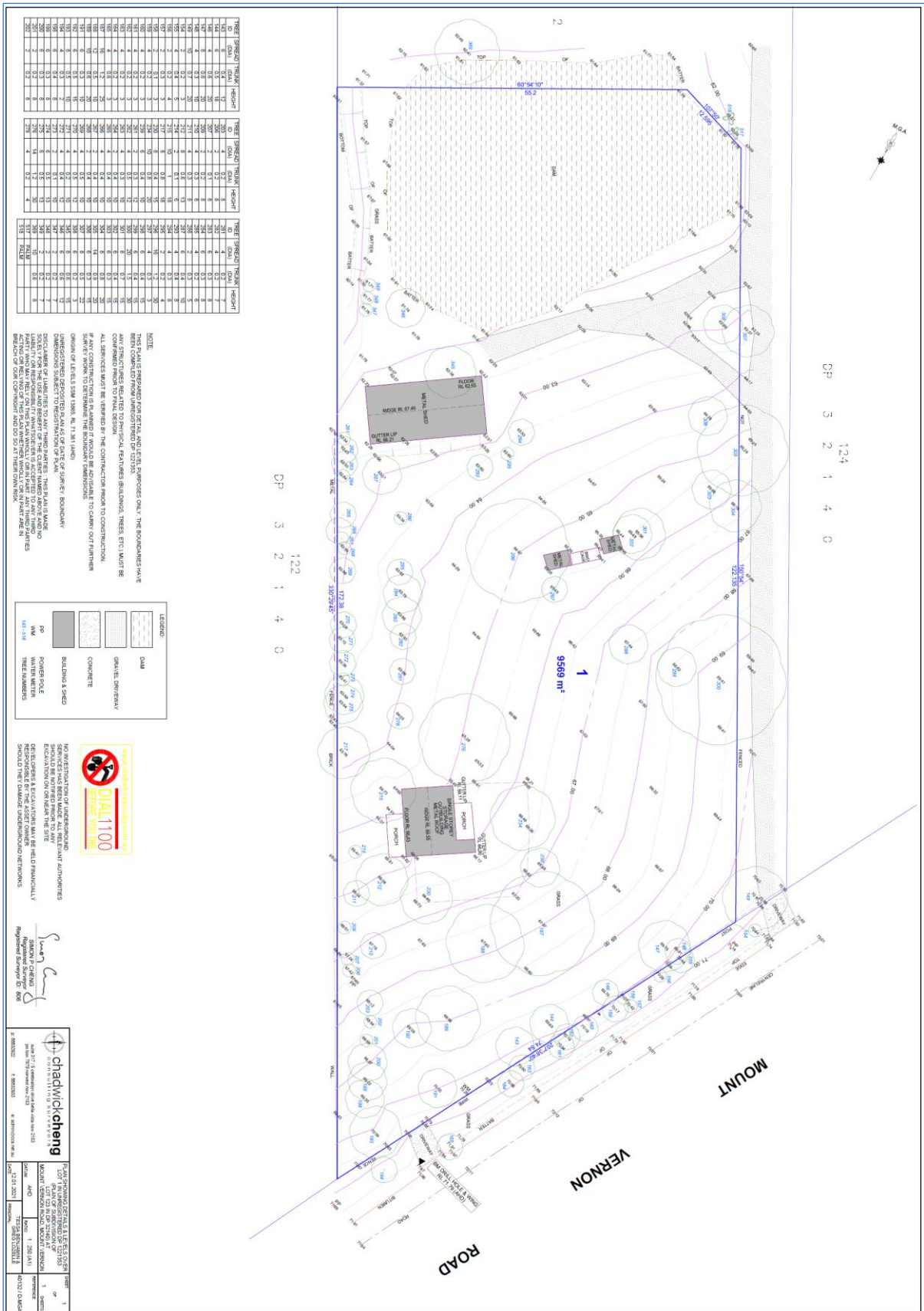
12. Legislation

Environmental Planning & Assessment Act 1979

Rural Fires Act 1997

Rural Fires Regulation 2013

Survey Plan



Appendix 2 – Photos of Site and Surrounds

Source: BFCS P/L 23/02/2021



View of the front elevation of the existing dwelling to be removed and location of the proposed dwelling



View of the east elevation of the existing dwelling and trees to be removed



View of the rear elevation of the existing dwelling and trees to be removed



View to the northwest of the existing detached sheds and bird cage to be removed



View to the northwest of the existing detached shed to be retained

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 1 DP 1221353 14 Mount Vernon Road Mount Vernon
DESCRIPTION OF PROPOSAL:	New dwelling
PLAN REFERENCE: (relied upon in report preparation)	Plans by ATJ Architects numbered 2025 A01 and A02, issue A dated 21/01/2021 and Survey Plan for Lot 1 in Unregistered DP 1221353 (Plan of Subdivision of Lot 123 in DP 32140) by Chadwick Cheng numbered 40132 / D-MGA, Sheet 1, dated 12/01/2021
BAL RATING	BAL Low (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 <input type="radio"/> NO <input checked="" type="radio"/> (Circle the relevant response) (If YES the application is to be referred to NSW RFS for assessment.)

I, Catherine Gorrie, 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:	21/0149
REPORT DATE:	4/03/2021
CERTIFICATION NO/ACCREDITED SCHEME:	BPAD-Level 3 Accredited Practitioner FPAA Cert No: BPAD20751

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: 4/03/2021