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Bush Fire Assessment Report

In relation to a proposed development at:

40 Wellman Road, Forestville, NSW


This assessment has been prepared and certified by: Matthew Toghil. BPAD certified practitioner FPAA Accreditation No: BPAD31642 Report No: 40Wel-01 Date: 20/11/2018	
Architectural plans provided by:	Metricon Homes Job No: 697983 Dated: 7/11/2018

Table of Contents

Executive Summary	3
1. Description of the subject property.....	4
2. Development Proposal and Building Classification	5
3. Classification of the Vegetation on and surrounding the site	6
4. Assessment of effective slope	7
5. Access and Egress	7
6. Adequacy of water supply	7
7. Features that may mitigate the impact of a high intensity bushfire.....	7
8. Environmental impact of any proposed bushfire protection measures.	8
9. Bushfire Risk Assessment	8
10. The extent to which the construction conforms or deviates from Chapter 4 of ‘Planning for Bushfire Protection 2006’	9
11. Recommendations.....	10
12. Summary	11
13. References.....	12
Appendix 1: NSW RFS fact sheet 2/17	13

Executive Summary

The purpose of the report is to determine the category of bushfire attack and subsequent construction standard for the proposed new class 1a dwelling at No 40 Wellman Road, Forestville, NSW.

The site had been identified as 'bush fire prone land' for the purpose of Section 146 of the *Environmental Planning and Assessment Act 1979* and the Legislative requirements for building on bush fire prone lands are applicable.

The proposed development is in infill development as defined within Chapter 4.3.5 of *Planning for Bushfire Protection 2006* and this report has been prepared in accordance with the requirements of Section 4.14 of the Environment Planning and Assessment Act.

This assessment includes an analysis of the hazard, threat and subsequent risk of the development proposal and provides recommendations that satisfy the Objective and Performance requirements of the Building Code of Australia, Planning for Bushfire Protection 2006 [PBP] and Australian Standard AS3959, 2009.

Following a site assessment, it was determined the distance of the development from the closest hazard would keep the Bushfire Attack Level (BAL) to BAL-FZ, in accordance with the methodology described in PBP.

1. Description of the subject property

Property address: Lot 2 DP29792, No 40 Wellman Rd, Forestville

Local Government Area: Northern Beaches

The development site is a residential block on the northern side of Wellman Road. The following sections 4-8 describe in detail the vegetation, slope, access and egress, availability of water supplies and environmental considerations for the site.

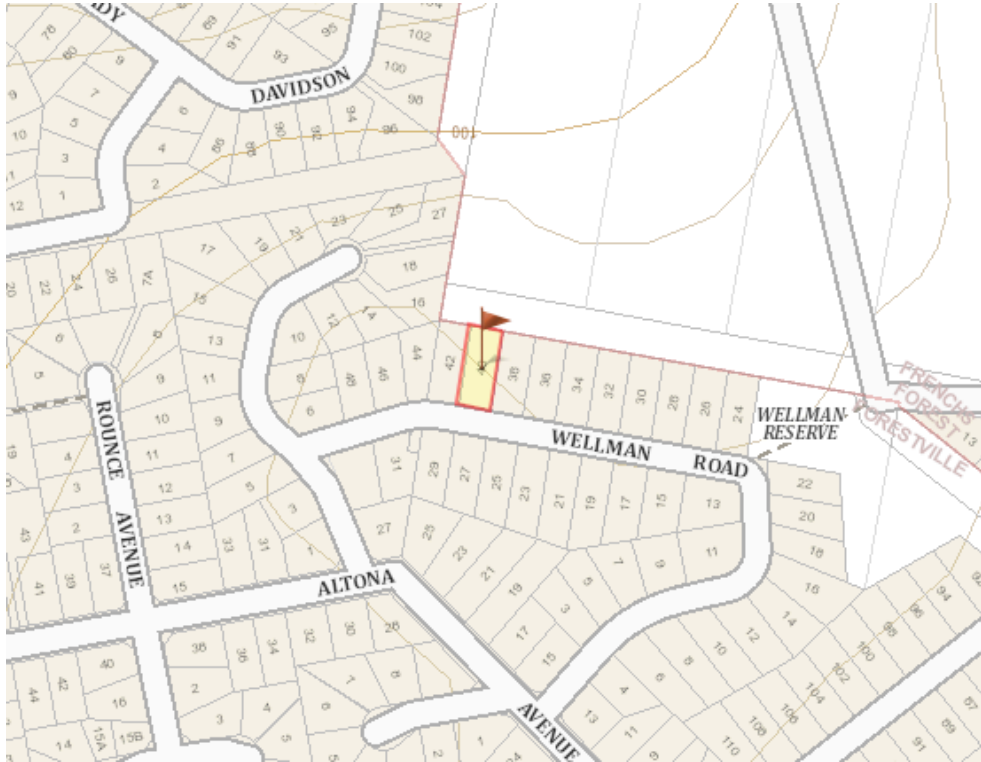


Figure 1: Location of the subject site

3. Classification of the Vegetation on and surrounding the site

The site is located within an existing residential subdivision. The site has been cleared and there is no threat from bushfire attack on the site. For the purpose of assessing the bushfire hazard to the subject site, there is vegetation to the north, which is of significance.



Figure 4: Aerial photo showing the location of the site and surrounding vegetation.

North: Adjoining the northern boundary, 19.164m from the proposed new dwelling there is an area of bushland that is considered a threat from bushfire attack to the site. With reference to PBP and the bushfire prone land map for the area the classification of vegetation for this hazard Category 1, Forest.

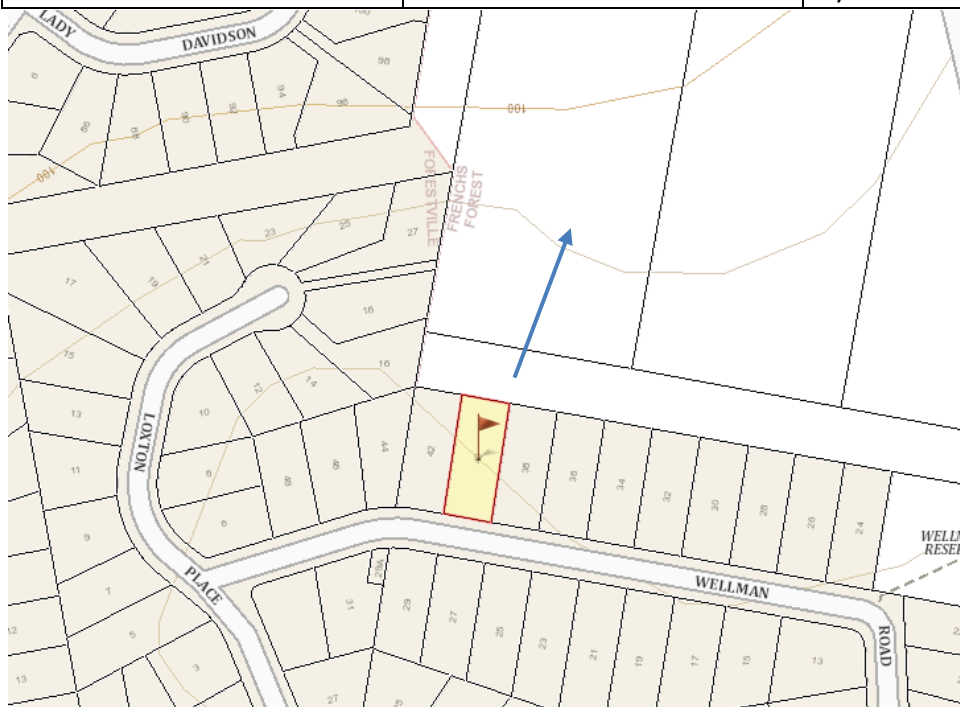
East: Properties to the east of the site are developed and maintained and there is no threat of bushfire attack from this direction for more than 100m.

South: Properties to the south of the site are developed and maintained and there is no threat of bushfire attack from this direction for more than 100m.

West: Properties to the west of the site are developed and maintained and there is no threat of bushfire attack from this direction for more than 100m.

4. Assessment of effective slope

Direction	Hazard type	Effective Slope
North	Forest	>5-10 degrees downslope
East	No hazard >100m	N/A
South	No hazard >100m	N/A
West	No hazard >100m	N/A



Legend:

 Direction of effective slope

Figure 5: Contour map.

5. Access and Egress

The site has direct access to Wellman Road, which is a public road, access and egress for emergency vehicles appears adequate.

6. Adequacy of water supply

The area has reticulated water supply and hydrants are spaced at a regular distance along Wellman Road.

7. Features that may mitigate the impact of a high intensity bushfire

There are no significant features on or adjoining the site that may mitigate the impact of a high intensity bushfire on the proposed development.

8. Environmental impact of any proposed bushfire protection measures.

The scope of this assessment has not been to provide an environmental assessment, however, the bushfire protection measures that are proposed will have no adverse environmental effects. All protection measures are either within the boundaries of the allotment or part of the constructed building.

9. Bushfire Risk Assessment

Table 1; reference AS 3959, 2009 table 2.4.2

Determination of the category of bushfire attack for the site, and subsequent required building standards.

Direction	Distance to classified vegetation	Vegetation Classification	Assessment of effective slope	FDI	Bushfire Attack Level
North	19.164m	Forest	>5-10 degrees downslope	100	BAL-FZ
East	>100m	N/A	N/A	N/A	N/A
South	>100m	N/A	N/A	N/A	N/A
West	>100m	N/A	N/A	N/A	N/A

Summary: Based upon the relevant provisions of PBP the anticipated radiant heat attack for the site is >40kW/m² and the subsequent minimum construction standard is BAL-FZ AS 3959- 2009.

The principle of shielding allows for the next lower BAL level than that determined for the site to be applied to an elevation of the building where the elevation is not exposed to the source of bushfire attack. In this instance the north, east and west elevations must be BAL-FZ and the south elevation can be reduced by one level to BAL-40.

[There can only be a reduction of one BAL level and this can only apply to the elevation directly opposite the exposed side]

10. The extent to which the construction conforms or deviates from Chapter 4 of 'Planning for Bushfire Protection 2006'

Performance Criteria	How this development meets acceptable solutions
The intent may be achieved where:	
<u>In relation to APZ's:</u> -Defendable space is provided onsite. -An APZ is provided and maintained for the life of the building.	Defendable space is provided on all sides of the building. Asset protection zones are provided for on site and by adjoining development and public roads. An APZ cannot be provided on the northern side of the dwelling in accordance with the minimum requirements of PBP. Construction standards for development in the flame zone category of bushfire attack have been recommended.
<u>In relation to siting and design:</u> - Building are sited and designed to minimise the risk of bushfire attack.	The siting of the building has been previously determined in accordance with local council requirements, no advantage could be gained by recommending a re-siting of the building.
<u>In relation to construction standards:</u> It is demonstrated that the proposed building can withstand bushfire attack in the form of wind, smoke, embers, radiant heat and flame contact.	Construction standards have been recommended in accordance with the requirements of <i>Planning for Bushfire Protection 2006</i> and <i>AS 3959-2009 Construction of buildings in bushfire prone areas</i> .
<u>In relation to access requirements:</u> Safe operational access is provided [and maintained] for emergency service personnel in suppressing a bushfire while residents are seeking to relocate, in advance of a bushfire.	This site has direct access to public roads, and the access and egress for emergency vehicles and evacuation appears to be adequate.
<u>In relation to water and utility services:</u> -Adequate water and electrical services are provided for fire fighting operations. -Gas and electricity services are located so as to not contribute to the risk of the building.	The area has reticulated water supply and the nearest street hydrant is within the minimum required distance from the most distant point of the subject site in accordance with the requirements of PBP and AS2419.1 2005. This report shall recommend compliance with PBP 4.1.3 for services including electricity and gas.
<u>In relation to landscaping:</u> It is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignition.	The subject site, where not built on, is considered part of the Asset Protection Zone (APZ) for the dwelling. Appendix 5 of <i>Planning for Bushfire Protection 2006</i> outlines the requirements for landscaping and property maintenance.
<u>In relation to emergency and evacuation planning</u>	It is advised the residents should complete a <i>Bushfire Survival Plan</i> as formulated by the NSW Rural Fire Service and Fire and Rescue NSW.

11. Recommendations

The following recommendations are made for the bushfire protection measures for the proposed construction of a new class 1a dwelling at No 40 Wellman Road, Forestville, NSW and are based upon the relevant provisions of the NSW RFS guideline entitled *Planning for Bushfire Protection 2006*.

1) <u>Construction standard.</u> North, east and west elevations	New construction shall comply with a minimum standard of section 3 [construction general] and section 9 (BAL-FZ), AS3959-2009 and Addendum to Appendix 3 of <i>Planning for Bushfire Protection 2006</i> . Construction must also meet requirements of NSW RFS fact sheet 2/17 'Combustible construction in bushfire prone areas' (refer to Appendix 1 of this report).
2) <u>Construction standard.</u> South elevation	New construction shall comply with a minimum standard of section 3 [construction general] and section 8 (BAL-40), AS3959-2009 and Addendum to Appendix 3 of <i>Planning for Bushfire Protection 2006</i> .
3) <u>Electricity and gas supply</u>	As far as practical, new electricity and gas supplies shall be installed in accordance with the requirements of 4.1.3 of PBP. Note: 4.1.3 of PBP requires the ' <i>where practical, electrical transmission lines should be underground</i> ' and ' <i>the location of gas services will not lead to ignition of surrounding bushland of the fabric of the building</i> '.
4) <u>Asset Protection Zones</u>	At the commencement of building works and in the perpetuity, the entire property shall be managed as an Inner Protection Area as outlined within PBP and the NSW RFS document 'Standards for asset protection zones'.
5) <u>Emergency Risk Management</u>	It is advised the residents should complete a <i>Bushfire Survival Plan</i> as formulated by the NSW Rural Fire Service and Fire and Rescue NSW. An emergency evacuation is not recommended as a condition of consent.
6) <u>Adjacent Structures [class 10b]</u>	At the planning stage, class 10b buildings in bushfire prone areas should be non-combustible. [Class 10b buildings include a fence, retaining wall or free standing wall, swimming pool or the like].
7) <u>Water supplies</u>	Reticulated water supply is located on the adjoining road at regular intervals and is easily accessible. No additional water supplies have been recommended.

12. Summary

This report consists of a bushfire risk assessment for proposed construction of a new class 1a dwelling at No 40 Wellman Road, Forestville, NSW.

The report concludes that the proposed development is on designated bushfire prone land and the legislative requirements for development of bushfire prone areas are applicable. The proposed development will be constructed to the minimum standard required in accordance with the guidelines of *Planning for Bushfire Protection 2006* and *AS 3959-2009 Construction of buildings in bushfire prone areas*.

This report has considered all of the elements of bushfire attack and provided the proposed development is constructed in accordance with the recommendations of section 11 of this report, it is my considered opinion that the development satisfies the Objectives and Performance requirements of the *Building Code of Australia, Planning for bushfire Protection 2006* and *Australian Standard AS3959, 2009*.

Note: 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 a bushfire attack on every occasion. This report is a Bushfire Hazard Assessment that provides the required information to assist Local Councils and the Rural fire Service in determining compliance in accordance with Planning for Bushfire Protection 2006 and AS3959, 2009. 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.



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Grad Cert in Bushfire Protection, UWS 2012

Certificate IV Building and Construction

Certificate III in Public Safety (firefighting and emergency operations)



13. References

Australian Building Codes Board

Building Code of Australia

Volume 1 & 2

Canprint

Australian Building Codes Board [2001]

Fire Safety Engineering Guidelines

Edition 2001

ABCB Canberra

D. Drysdale D. [1998]

Introduction to Fire Dynamics 2nd Edition

John Wiley & Sons Ltd

NSW Government Environmental Planning and Assessment Act [1979]

Part 79BA-Consultation and development consent- Certain bushfire prone land

NSW Government Printer

Planning NSW [2006]

Planning for Bushfire Protection 2006

A guide for Councils, Planners, Fire Authorities, Developers and Home Owners

This document provides the necessary planning considerations when developing areas for residential use in residential, rural residential, rural and urban areas when development sites are in close proximity to areas likely to be affected by bushfire events and replaces Planning for Bushfire Protection 2001.

This document is essential reading. Download a copy from the RFS website or purchase a copy through the NSW Government online shop or phone 9228 6333.

Ramsay C & Rudolph L [2003]

Landscape and building design for bushfire prone areas

CSIRO Publishing

Standards Australia [2009]

Australian Standards 3959

Australian Building Code Board

Appendix 1: NSW RFS fact sheet 2/17



COMBUSTIBLE CONSTRUCTION IN BUSH FIRE-PRONE AREAS

COMMUNITY RESILIENCE

FACT SHEET 2/17
Version 1 – June 2017

This fact sheet clarifies the requirements of the NSW Rural Fire Service (NSW RFS) for combustible construction in Bush Fire Attack Level 40 and Flame Zone (BAL-40 and BAL-FZ) areas.

Background

Where building construction is combustible and located in BAL-40 or BAL-FZ areas, the proposed building solution fails the performance criteria of Planning for Bush Fire Protection 2006 (PBP), except for window inconsequential trim type elements.

Materials that allow flaming in these areas can be problematic and are not supported by the NSW RFS for the following reasons:

- Flaming materials increase the exposure of other elements of construction and adjoining structures to flame contact;
- Flaming materials will potentially increase the exposure of occupants of the building to radiant heat, direct flame contact, smoke and embers after a bush fire front has passed
- The increase in exposure can also contribute to the risk of loss of life and compromise the ability of residents to defend their property and egress from the building;

- It can reduce the capacity of occupants to make safe and effective decisions about their safety.

Section A3.4 (d) of PBP *Addendum Appendix 3* states that 'for building elements subject to a radiant heat flux of greater than 29kW/m², the use of exposed timber is generally not suitable without specific testing in accordance with suitable protocols'.

Combustible Construction

Except for window frames and inconsequential trim complying with AS3959 as below, combustible construction is not permitted in BAL-40 or BAL-FZ. This includes walls, doors, decking, roofing, exposed flooring and the like.

Flaming of Window Frames

Combustible window frames can be regarded as inconsequential trim in BAL-40 and BAL-FZ if the window assemblies comply with AS1530.8.1 and AS1530.8.2 respectively. Use of other inconsequential trim may be considered contingent on consultation and approval by the NSW RFS.

Applicants should be referred to the NSW RFS Bush Fire Survival Plan and should be engaged in the bush fire issues associated with their situation.

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