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Bush Fire Assessment Report

In relation to a proposed development at:

24 Karina Crescent, Belrose , NSW


This assessment has been prepared and certified by: Matthew Toghil. BPAD certified practitioner FPAA Accreditation No: BPAD31642 Report No: 24Kar-01 Date: 12/02/2020	
Architectural plans provided by:	Blue Sky Building Designs Project No: 2019059 Dated: 23.01.2020

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.....	8
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 7 of ‘Planning for Bushfire Protection 2018’	9
11. Recommendations	10
12. Summary	11
13. References.....	12

Executive Summary

The purpose of the report is to determine the category of bushfire attack and subsequent construction standard for the proposed alterations and additions to the existing dwelling at No 24 Karina Crescent, Belrose, 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 7 of *Planning for Bushfire Protection 2018* 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 2018 [PBP] and Australian Standard AS3959, 2018.

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-40, in accordance with the methodology described in PBP. The development also meets performance criteria as set out in chapter 7 of PBP in relation to APZ's, siting and design, construction standards, access and egress requirements, water and utility services and landscaping.

1. Description of the subject property

Property address: Lot 21 DP 221112, 24 Karina Crescent, Belrose.

Local Government Area: Northern Beaches

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

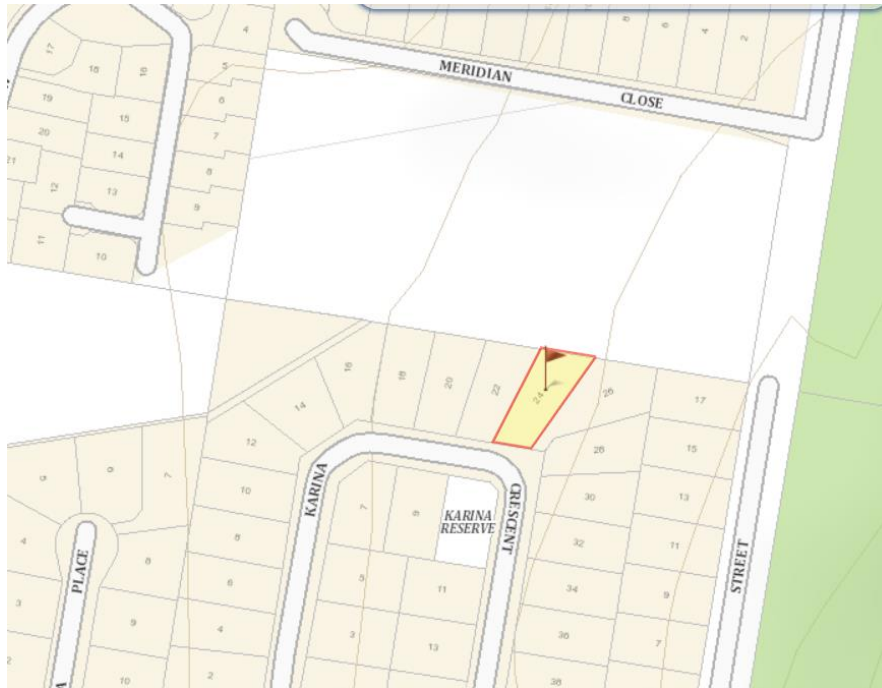


Figure 1: Location of the subject site

2. Development Proposal and Building Classification

The development proposal is for the alterations and additions to the existing dwelling.

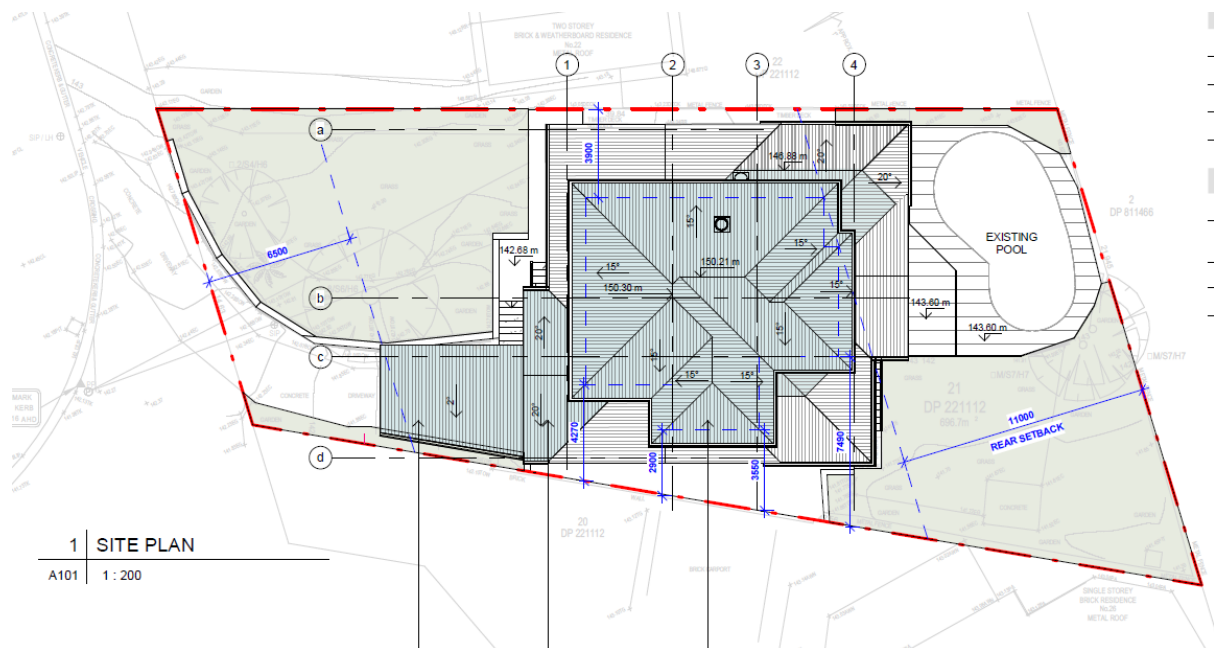


Figure 2: Site plan.



Figure 3: Bushfire prone land map showing the 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 adjoining the northern boundary which is of significance.



Figure 4: Aerial photo showing the location of the site and surrounding vegetation. This photo also shows distance to vegetation in the northeast direction.

North: 11m to the north of the new addition there is an area of vegetation that is considered a threat for 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, and for the purpose of this assessment will be classified as Tall Heath.

Northeast: 26m to the northeast of the new addition there is an area of vegetation that is considered a threat for 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, and for the purpose of this assessment will be classified as Tall Heath.

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	Tall Heath	Level
Northeast	Tall Heath	Downslope >0-5 degrees
South	No hazard >100m	N/A
West	No hazard >100m	N/A

Note: There is a sandstone escarpment that runs directly north from the site. The effective slope has been assessed on top of the escarpment as level, running north, then at a downslope of >0-5 degrees from the bottom of the escarpment running northeast.



Legend:

 Direction of effective slope

Figure 5: Contour map.

5. Access and Egress

The site has direct access to Karina Crescent, 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 Karina Crescent.

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 report 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 Table A1.12.5 *Planning for Bush Fire Protection 2018*

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	11m	Tall Heath	Level	100	BAL-40
East	26m	Tall Heath	Downslope >0-5 degrees	100	BAL-19
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 maximum anticipated radiant heat attack for the site is <40 kW/m² and the subsequent Bushfire Attack Level is BAL-40 AS 3959- 2018.

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-40 and the south elevation can be reduced by one level to BAL-29.

[There can only be a reduction of one BAL 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 7 of 'Planning for Bushfire Protection 2018'

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.
<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 2018</i> and AS 3959-2018 <i>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.
<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 4 of <i>Planning for Bushfire Protection 2018</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 alterations and additions to the existing dwelling at No 24 Karina Crescent, Belrose, NSW, and are based upon the relevant provisions of the NSW RFS guideline entitled *Planning for Bushfire Protection 2018*.

1) <u>Construction standard.</u> South elevation	All new construction shall comply with a minimum standard of section 3 [construction general] and section 7 (BAL-29), AS3959-2018 and Chapter 7 of <i>Planning for Bushfire Protection 2018</i> .
2) <u>Construction standard.</u> North, east and west elevations.	All new construction shall comply with a minimum standard of section 3 [construction general] and section 8 (BAL-40), AS3959-2018 and Chapter 7 of <i>Planning for Bushfire Protection 2018</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 Chapter 5 of PBP. Where practical, electrical transmission lines should be underground and the location of gas services will not lead to ignition of surrounding bushland of the fabric of the building.
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 10a & 10b]</u>	Where Class 10a & 10b structures are within 6m from a dwelling in bush fire prone areas it must be built in accordance with the NCC.
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.
8) <u>Fences and gates</u>	All fences in bush fire prone areas should be made from either hardwood or non-combustible material. However, in circumstances where the fence connects directly to the dwelling, or in areas of BAL-29 or greater, they should be made of non-combustible material.

12. Summary

This report consists of a bushfire risk assessment for proposed alterations and additions to the existing dwelling at No 24 Karina Crescent, Belrose, 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 2018* and *AS 3959-2018 Construction of buildings in bushfire prone areas*.

This report has considered all 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 2018* and *Australian Standard AS3959, 2018*.

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 2018 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.



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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

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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 for Bushfire Protection 2018

A guide for Councils, Planners, Fire Authorities and Developers

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 2006.

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 [2018]

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