

Planning For Bushfire Protection



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Bushfire Risk Assessment

In relation to proposed development at

No 76 Herbert Avenue, Newport

*This Assessment has been prepared and Certified by: Ronald Coffey
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FPAA Cert. No: BPD-PA 09328*

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Introduction

The purpose of this report is to provide a bushfire risk assessment for the proposed development of a one into two lot subdivision and the construction of a new Class 1A dwelling on each of the two lots at No 76 Herbert Avenue, Newport.

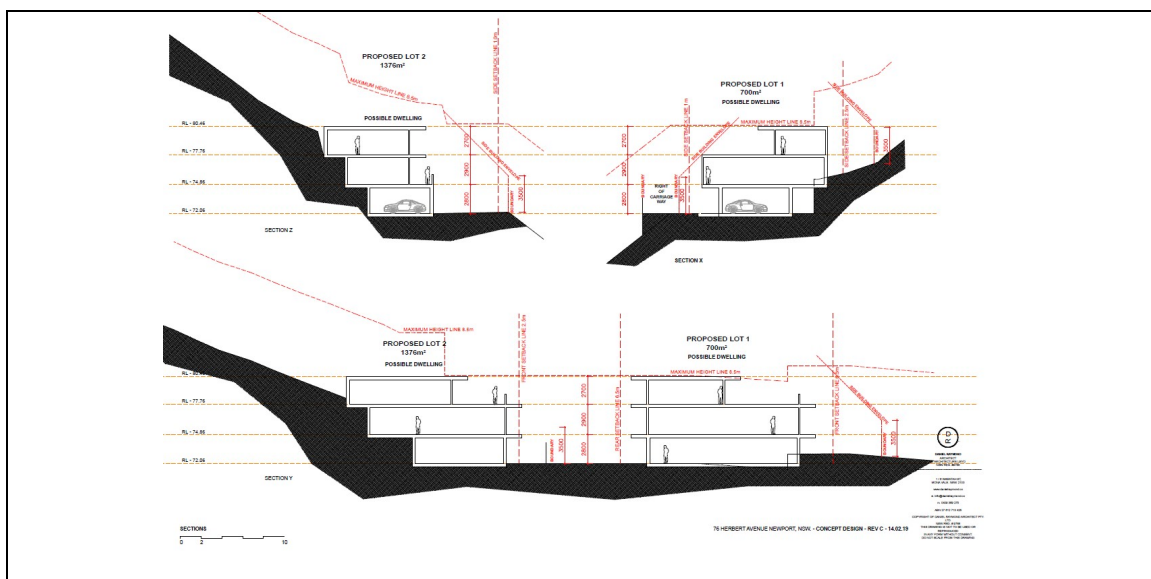
In accordance with section 146 of the Environmental Assessment Legislation Amendment Act 2007 [EP&A Act] the subject site has been identified as bush fire prone land and the legislative requirements for building and development on bushfire prone lands are applicable.

This assessment will address each of the heads of consideration listed under Clause 44 of the Rural Fires Regulation 2008 to provide the necessary information to allow for the issue of a Bushfire Safety Authority pursuant to the provisions of Section 100B of the *Rural Fires Act 1997*.

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

This report will demonstrate that the proposed development can comply with the Specific Objectives for Subdivision in accordance with the requirements of PBP and therefore qualifies for a Bushfire Safety Authority.

Construction Layout Concept



1) Description of the Subject Property

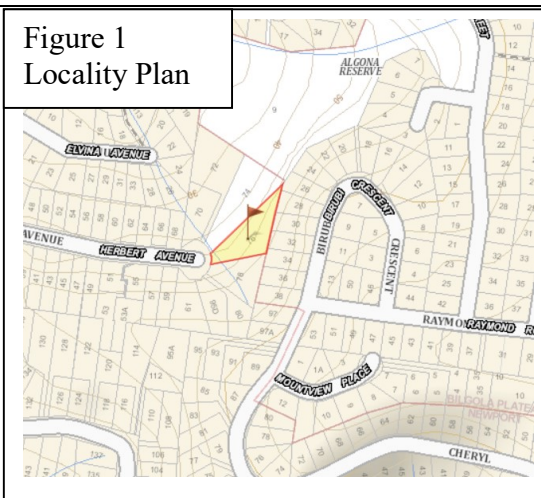
a) Description

The development site is a 2,076m² residential site facing lot facing west onto Herbert Avenue. There is an existing Class 1A building on the site which shall be demolished. The following sections describe in detail the vegetation, slope, access and egress, availability of water supplies and environmental considerations for the site.

b) Location

No 76 Herbert Avenue, Newport
Lot 150, DP 225 585
LGA – Northern Beaches Council

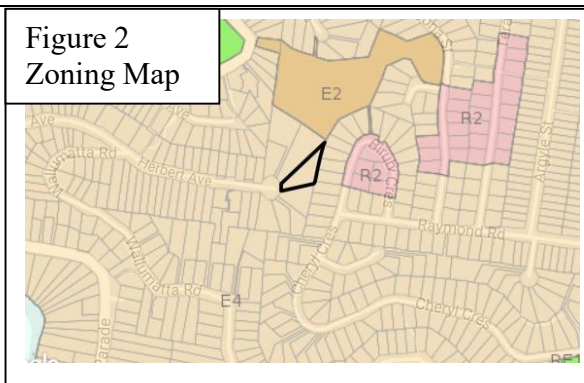
Figure 1
Locality Plan



b) Zoning of Proposed Development Site and Adjoining Properties

The site is zoned E4 Environmental Living.
Properties adjoining the south, east and west boundaries of the subject site are similarly zoned E4.
Adjoining the rear northern boundary is a council reserve zoned E2.

Figure 2
Zoning Map



c) Development Proposal and Building Classifications

The proposal is for a one into two lot subdivision and the construction of a new Class 1A dwelling on each of the two newly created lots. The image below shows the proposed lots with a building envelope highlighted on each lot.

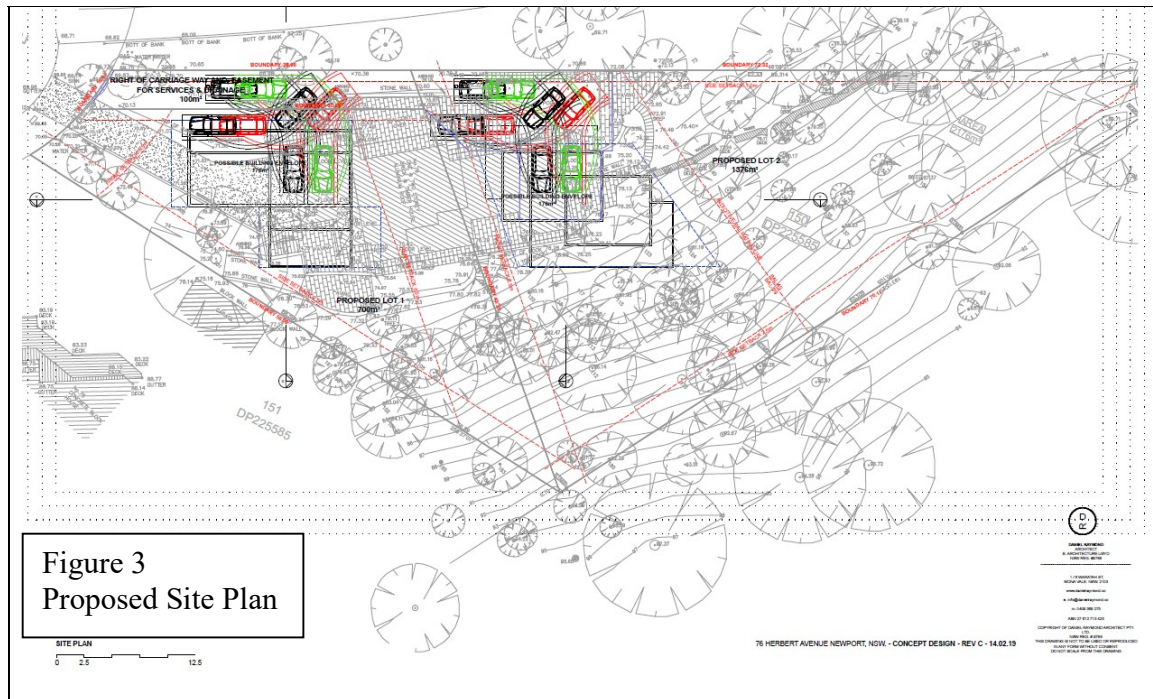
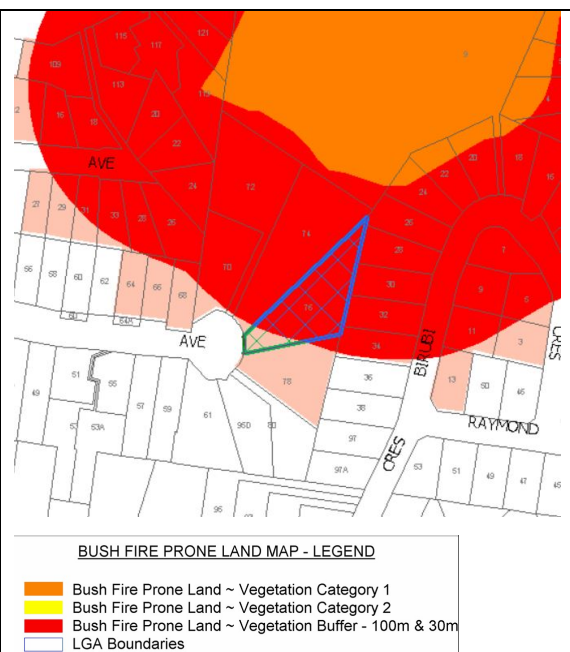


Figure 4
Bushfire Prone Land Map

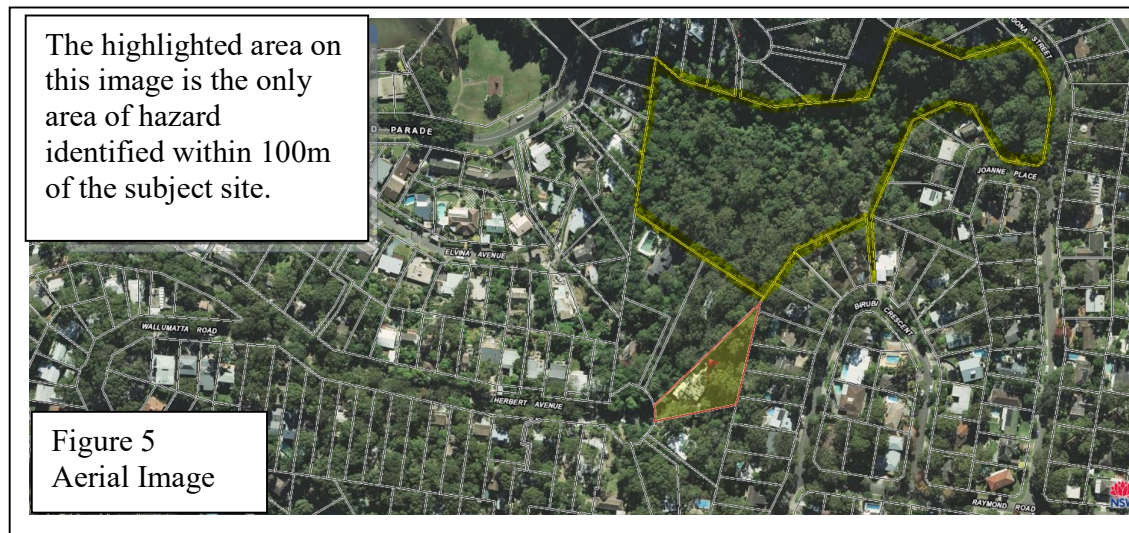
The adjacent image is the bushfire prone land map with the subject site cross hatched.

The map shows the only hazard within 100m of the subject site is to the north. The adjacent site [No 74 Herbert Avenue] has extensive canopy and appears as a possible hazard; however, a recently approved development application includes a consent condition that the entire site shall be managed as an APZ.



2) Classification of the Vegetation on and surrounding the Site

The site is developed and maintained. This report will include a recommendation that the entire site shall be managed as an APZ [Asset Protection Zone] in accordance with the requirements of PBP.



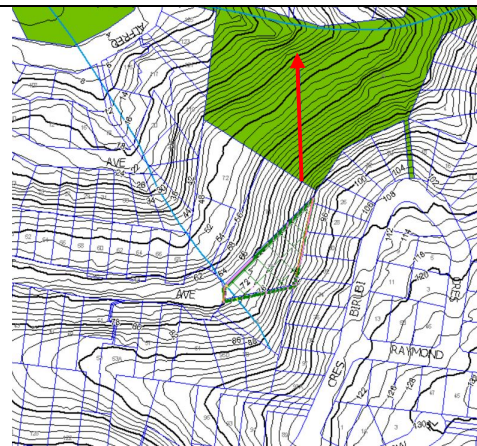
Properties south, east and west are developed and maintained and there is no threat from bushfire attack in these directions for >140m.

5m north of the subject site 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 is forest.

3) Assessment of Slope on and surrounding the Site

The site slopes downslope from the north to south and downslope from east to west. Slope away from the development site:

- North: 10-15 degrees downslope
- South: 5-10 degrees upslope
- East: 10-15 degrees upslope
- West: 10-15 degrees downslope



4) Identification of Significant Environment Features

There have been no significant environmental features identified on the site. A Statement of Environmental Effects will be submitted with the development application.

5) Threatened Species Identification

There have been no threatened species identified. A Statement of Environmental Effects will be submitted with the development application.

6) Aboriginal Relic or Place Detail and Location known to exist on the property

There are no known or apparent items/relics of Aboriginal heritage significance known to exist on the site.

7) Bushfire Risk Assessment

7a) the extent to which the development is to provide for setbacks, including Asset Protection Zones

This Bushfire Assessment includes Table 1, 2 and 3 which summarize the extent to which the development is to provide for setbacks, including asset protection zones and minimum construction standards.

Table 1: Reference to 'Planning for Bushfire Protection 2006' Table A2.4

Minimum Specifications for Asset Protection Zones for residential developments in bushfire prone areas

Direction	Distance of asset protection zone	Vegetation classification	Effective slope away from the development	Required asset protection zone with reference to Table A2.4
North	58m	Forest	10-15 ⁰ downslope	50m
South	>140m	Developed sites	5-10 ⁰ upslope	20m
East	>140m	Developed sites	10-15 ⁰ downslope	50m
West	>140m	Developed sites	10-15 ⁰ downslope	50m
Summary: Asset protection zones can be provided in excess of the requirements of Table A2.4 Planning for Bushfire Protection 2006				

Table 2: Reference AS3959, 2009 Table 2.4.2

Determination of category of bushfire attack for the site and subsequent required building standards for proposed Lot 1

Direction	Distance of APZ	Vegetation Classification	Assessment of Effective Slope	Anticipated Radiant heat	Bushfire Attack Level (BAL)
North	83m	Forest	10-15 degrees downslope	<12.5kw/m2	BAL 12.5
South	>140m	Developed sites	Across slope	n/a	
East	>140m	Developed sites	Across slope	n/a	
West	>140m	Developed sites	Across slope	n/a	
Summary: Based upon the relevant provisions of PBP the category of bushfire attack for proposed lot 1 is <12.5kw/m2 and the subsequent minimum construction standard is BAL 12.5					

Table 3: Reference AS3959, 2009 Table 2.4.2

Determination of category of bushfire attack for the site and subsequent required building standards for proposed lot 2

Direction	Distance of APZ	Vegetation Classification	Assessment of Effective Slope	Anticipated Radiant heat	Bushfire Attack Level (BAL)
North	58m	Forest	10-15 degrees downslope	<29kw/m2	BAL 29
South	>140m	Developed sites	Across slope	n/a	
East	>140m	Developed sites	Across slope	n/a	
West	>140m	Developed sites	Across slope	n/a	
Summary: Based upon the relevant provisions of PBP the category of bushfire attack for proposed lot 2 is <29kw/m2 and the subsequent minimum construction standard is BAL 29					

7b) Siting and adequacy of water supplies for fire fighting

The area has reticulated water supply and hydrants are spaced at regular intervals along Herbert Avenue. The nearest street hydrants are 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.

7c) the capacity of public roads in the vicinity to handle increased volume of traffic in an emergency

The public roads in the vicinity of the subject site are all two way, with no restrictions to impede the flow of traffic and appear to be adequate to handle increased traffic in an emergency.

7d) Whether or not public roads in the vicinity that link with the fire trail network have two-way access

There are no known fire trails in the immediate vicinity; however, this is not an issue as the subject site has direct access to public roads.

7e) the adequacy of arrangements for access to and egress from the development site for the purpose of an emergency response

The subject site has direct access to adjoining public roads and access and egress for emergency vehicles and evacuation appears adequate.

No specific access requirements apply in a urban area where a 70m unobstructed path can be demonstrated between the most distant 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 [i.e. a hydrant or water supply].

The access and egress to the site is in accordance with the acceptable solutions of Chapter 4.1.2 of PBP.

7f) the adequacy of bushfire maintenance plans and fire emergency procedures for the development site

Bushfire maintenance plans: The entire of the subject site shall be landscaped and maintained in accordance with asset protection zone requirements of PBP.

Fire emergency procedures for the site: The need to formulate an emergency evacuation plan has been discussed and it is advised that the residents should complete a *Bush Fire Survival Plan* as formulated by the NSW Rural Fire Service and the NSW Fire Brigades.

An emergency evacuation plan is not recommended as a condition of consent.

7g) the construction standards to be used for building elements in the development

Section 7a, tables 1 and 2 of this assessment provide an evaluation of the required construction standards for both proposed new dwellings:

- Proposed new dwelling on lot 1: AS3959, 2009, Section 5, BAL 12.5
- Proposed new dwelling lot 2: AS3959, 2009, Section 7, BAL 29

7h) the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development

Sprinkler systems are neither recommended nor required.

The fire protection measures that have been addressed consist of robust, passive fire protection measures and include:

- Asset protection zones that satisfy the requirements of chapter 4 of PBP and provide appropriate defensible space for firefighting authorities.
- Construction standards that do not deviate from the requirements of PBP.
- Access and egress paths designed, established and maintained that are adequate to provide safe and effective evacuation from the site.
- Water supplies that comply with the requirements of 4.1.3 of PBP.
- Emergency risk management.

8) Assessment of the extent to which the development proposal conforms or deviates from the specifications set out in Chapter 4 of Planning for Bushfire Protection 2006

Performance Criteria	Acceptable Solutions	Meets Performance Criteria
The intent may be achieved where:		
<u>In relation to APZ's:</u> - Defensible space is provided - An APZ is provided and maintained for the life of the building. - The separation provided by the APZ is such that radiant heat levels at any	Defensible space is provided on all sides of the buildings Asset protection zones are provided partially on site and by adjoining development and public roads. The separation between the hazard and proposed development is in excess of the	Yes

point on a proposed building will not exceed 29kw/m2	requirements of Table 2.4 of PBP	
<u>In relation to siting and design:</u> Buildings are sited and designed to minimise the risk of bushfire attack	The siting of the buildings have been determined in accordance with local council requirements and no advantage could be gained by recommending a re-siting of the buildings.	Yes
<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 PBP and do not exceed BAL 29 for each of the two proposed new dwellings.	Yes
<u>In relation to access requirements:</u> Safe operational access is provided [and maintained] for emergency services personnel in suppressing a bushfire while residents are seeking to relocate, in advance of a bushfire.	The access and egress requirements have been designed to provide safe and effective evacuation from the subject site and appear to be adequate for fire brigade personnel and firefighting equipment.	Yes
<u>In relation to water and utility services:</u> - Adequate water and electricity services are provided for fire-fighting operations - gas and electricity services are located so as to not contribute to the risk to a 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.	Yes
<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 ignitions	The development application shall include recommendations that the site is managed in accordance with Inner Protection Area requirements of PBP. This will ensure the landscaping on the site complies with the principles of Appendix 5 of PBP.	Yes
<u>In relation to Emergency and Evacuation Planning:</u> The intent of emergency and evacuation planning is to ensure occupants are aware of the need to prepare adequately for any bushfire emergency.	The need to formulate an emergency evacuation plan has been discussed; however, an emergency evacuation plan is not recommended as a condition of consent.	Yes

9) Recommendations

The following recommendations are made for the bushfire protection measures for the Proposed Residential Development of a one into two lot subdivision and the construction of a new Class 1A dwelling on each of the two lots at No 76 Herbert Avenue, Newport and are based upon the relevant provisions of the NSW Rural Fire Service guideline entitled *Planning for Bushfire Protection 2006*.

- 1) Bushfire Safety Authority: The proposed development can comply with the Specific Objectives for Rural and Residential Subdivision in accordance with the requirements of PBP for consideration of a Bushfire Safety Authority.
- 2) Lot 1, Building Construction Standard: The proposed development shall be constructed to a minimum standard of Section 3 [construction general] and Section 5 [BAL 12.5] of AS3959, 2009 '*Construction of Buildings in Bushfire Prone Areas*' and Section A3.7 of the NSW Rural Fire Service Addendum to Appendix 3 of '*Planning for Bushfire Protection 2006*'.
- 3) Lot 2, Building Construction Standard: The proposed development shall be constructed to a minimum standard of Section 3 [construction general] and Section 7 [BAL 29] of AS3959, 2009 '*Construction of Buildings in Bushfire Prone Areas*' and Section A3.7 of the NSW Rural Fire Service Addendum to Appendix 3 of '*Planning for Bushfire Protection 2006*'.
- 4) Gutter Guards: Roofing shall be gutterless or have leafless guttering and valleys to prevent the build-up of flammable material. Any materials used shall have a flammability index no greater than 5.
- 5) Electricity and Gas Supplies: 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 that '*where practical, electrical transmission lines should be underground*' and '*the location of gas services will not lead to ignition of surrounding bushland or the fabric of the building*'.
- 6) Construction Standard Class 10a Buildings: Class 10a buildings shall comply with the requirements of AS3959, 2009 Part 3.2. *Construction Requirements for Specific Structures*.

- 7) Construction Standard Class 10b: PBP 4.3.6 [f] At the planning stage, class 10b buildings in bushfire prone areas should be non-combustible. [Class 10b buildings include a retaining or free-standing wall, swimming pool or the like.]
- 8) Asset Protection Zones: At the commencement of building works and in 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.'
- 9) Access: An unobstructed access pathway should be provided to allow permanent clear access to the rear northern section of the site;
- 10) Fences and Gates: All new fencing and gates shall be constructed in accordance with the NSW Rural Fire Service guideline: Fast Fact – *Fences or Gates in Bushfire Prone Areas*.
- 11) Water Supplies: Reticulated water supply is located on the adjoining road at regular intervals and is easily accessible. No additional water supplies have been recommended.
- 12) Emergency and Evacuation Planning: The need to formulate an emergency evacuation plan has been discussed and it is advised that the residents should complete a *Bush Fire Survival Plan* as formulated by the NSW Rural Fire Service.

An emergency evacuation plan is not recommended as a condition of consent.

10) Summary

This report consists of a bushfire risk assessment for a one into two lot subdivision and the construction of a new Class 1A dwelling on each of the two lots at No 76 Herbert Avenue, Newport.

The report concludes that the development is on bushfire prone land and the legislative requirements for development in bushfire prone areas are applicable.


This report has considered all of the elements of bushfire attack and provided the proposed development is constructed in accordance with the recommendations included in section 9 of this report, the development is considered to satisfy the Objectives and

Performance requirements of the Building Code of Australia, Planning for Bushfire Protection 2006 and Australian Standard AS3959, 2009.

This report has demonstrated that the proposed development can comply with the Specific Objectives for Subdivision in accordance with the requirements of PBP and therefore qualifies for a Bushfire Safety Authority.

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.



<p>Ron Coffey – Bushfire Safety Engineer Grad I Fire E [Institute of Fire Engineers - 1973] Grad Cert Fire Safety Engineer [UWS - 2003] Grad Dip Building in Bushfire Prone Areas [UWS – 2005] Ass Prof Cert in Expert Evidence in the Land & Environment Court [UTS – 2005] Member - Institute of Fire Engineers Member - Fire Protection Association Australia</p>	 <p><i>Planning for Bushfire Protection Fire Protection Association of Australia BPAD-A Certified Practitioner/Certified Business Certification No BPD-PA09328 0408 220 443</i></p>
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