Planning For Bushfire Protection

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18/09/2016

Bushfire Risk Assessment

In relation to proposed development at:

No 12 Ingleside Road, Ingleside

This Assessment has been prepared and Certified by: Ronald Coffey *BPAD – A Certified Practitioner* *FPAA Cert. No: BPD-PA 09328*	
Can this proposal comply with AS3959, 2009 + addendum to Appendix 3 of PBP?	**YES**
What is the recommended level of compliance AS3959, 2009?	**BAL 29 & 19**
Does this development comply with the requirements of Planning for Bushfire Protection 2006[PBP]?	**YES**
Does this development comply with the Aims and objectives of PBP?	**YES**
Is referral to the NSW RFS required?	**NO**

Contents

Introduction

Introduction

The purpose of this report is to determine the category of bushfire attack and subsequent construction standard for the proposed development of a new Class 1a dwelling at No 12 Ingleside Road, Ingleside.

The site is identified as 'bush fire prone land' for the purposes of Section 146 of the *Environmental Planning and Assessment Act 1979* and the legislative requirements for building on bushfire prone lands are applicable.

The proposed development is an 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 79BA of the Environment Planning and Assessment Act.

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.

The site was inspected: 18/09/2016

Summary of Assessment

- Building construction and design – AS3959, 2009 BAL 29 & 19
- Asset Protection zones - Conforms to the requirements of PBP
- Landscaping - Conforms to the requirements of PBP
- Access and egress arrangements – Conforms to the requirements of PBP
- Water supply and utilities - Conforms to the requirements of PBP
- Defendable space - Conforms to the requirements of PBP

1) Location

No 12 Ingleside Road, Ingleside

Lot 80, DP 11784

LGA – Northern Beaches Council

2) Development Proposal and Building Classifications

The proposal is for the construction of a new class 1a dwelling. The proposal includes an inground pool, pool fencing and landscaping.

For the purpose of PBP the pool is considered a class 10b building/structure.

The Building Code of Australia [BCA] does not provide for any bushfire specific performance requirements for the proposed pool and as such AS3959, 2009 does not apply as a deemed to satisfy provision.

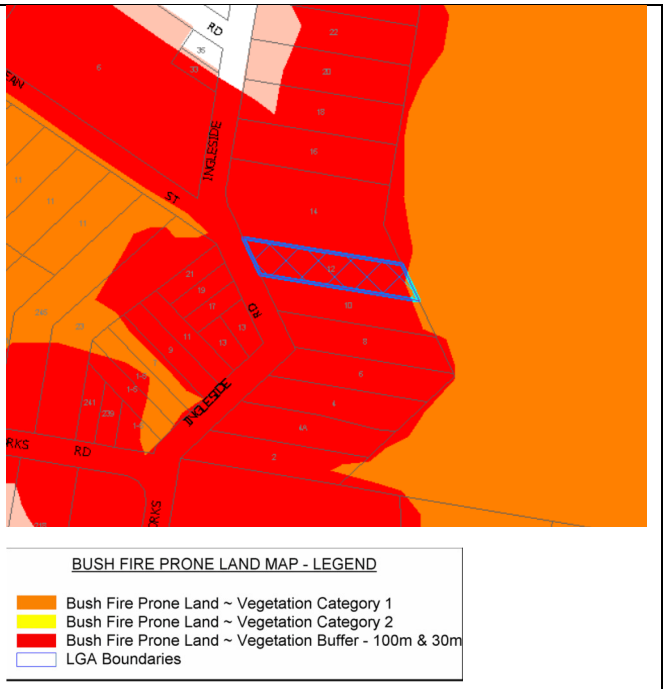
The NSW Rural Fire Service provide advice that fuel free areas, such as swimming pools are a desirable feature and should be encouraged.

3) Description of the Subject Property

The development site is a residential lot facing west onto Ingleside 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.

The adjacent image is the bushfire prone land map for the area.



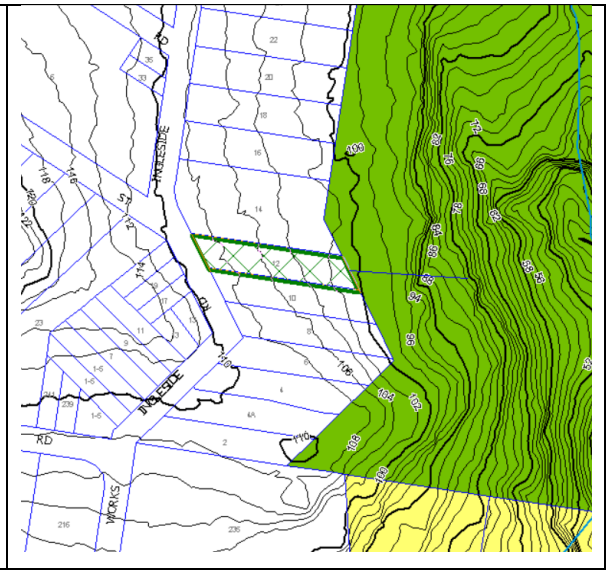
4) Classification of the Vegetation on and surrounding the Site

The site is developed and maintained and there is no threat from bushfire attack on the site.

Properties *north and south* of the subject site are developed and maintained and there is no threat of bushfire attack from these directions for more than 100m.

East & West: Adjoining the eastern boundary and 75m west of the proposed development 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.

5) Assessment of Effective Slope

Effective slope away from the development site: *North*: No hazard for >100m *South*: No hazard for >100m *East*: 20m fall over 100m 20/100*Inv. Tan=14^0 Downslope *West*: No Hazard for >100m	

6) Access and Egress

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

7) Adequacy of water supply

The area has reticulated water supply and hydrants are spaced at regular distances along Ingleside Road.

8) Environmental Considerations

The scope of this assessment has not been to provide an environmental assessment; however, the subject site is a residential lot that has been cleared for many years and it appears that the proposed development will have no adverse environmental effect.

A Statement of Environmental Effects shall be submitted with the development application.

9) Bushfire Risk Assessment

Table 1; Reference AS3959, 2009 Table 2.4.2

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

Direction	Distance of APZ	Vegetation Classification	Assessment of Effective Slope	Anticipated Radiant heat	Bushfire Attack Level (BAL)
North	>140m	Developed sites	n/a	-	-
South	>140m	Developed sites	n/a	-	-
East	56m	Forest	14^0 downslope	<29kw/m2	BAL 29
West	75m	Forest	Upslope	<12.5kw/m2	BAL 12.5

Summary: Based upon the relevant provisions of PBP the anticipated radiant heat attack is for the site is <29kw/m2 and the subsequent minimum construction standard is BAL 29 AS3959, 2009.

Section 3.5 AS3959, 2009, Reduction in Construction Requirements Due to Shielding, is applicable.
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, south and east elevations are BAL 29 and the west elevation can be reduced by one level to BAL 19.
[There can only be a reduction of one BAL level and this can only apply to the elevation directly opposite the exposed side. This rule does not allow for a reduction below BAL 12.5]

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

Performance Criteria	Acceptable Solutions	Meets Performance Criteria
The intent may be achieved where:		
In relation to APZ's: - Defendable space is provided - 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 partially on site and by adjoining development and public roads.	Yes
In relation to siting and design: Buildings are sited and designed to minimise the risk of bushfire attack.	The siting of the building has been determined in accordance with local council requirements and no advantage could be gained by recommending a re-siting of the building.	Yes
In relation to construction standards: 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. Variations to the construction standard for those elevations of the building that do not directly face the hazard will be recommended in this assessment.	Yes
In relation to access requirements: 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 fire fighting equipment.	Yes
In relation to water and utility services: - 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
In relation to landscaping: 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 to minimise flame contact and radiant heat to the building.	Yes
In relation to 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.	Yes

11) Recommendations

The following recommendations are made for the bushfire protection measures for the proposed residential development of a new Class 1a dwelling at No 12 Ingleside Road, Ingleside and are based upon the relevant provisions of the NSW Rural Fire Service guideline entitled *Planning for Bushfire Protection 2006.*

1) Construction Standard:
   - North, south and east elevations: 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'*.
   - West elevation: The proposed development shall be constructed to a minimum standard of Section 3 [construction general] and Section 6 [BAL 19] 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'*.
2) Construction Standard Class 10a Buildings: Class 10a buildings shall comply with the requirements of AS3959, 2009 Part 3.2.*Construction Requirements for Specific Structures*.
3) 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.]
4) 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*. [Refer Section 14 of this report]
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) 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.

The following points are a guide to Inner Protection area requirements.

The Inner Protection Area should comprise of the following:

- Minimal fine fuel on the ground;
- Vegetation that does not provide a continuous path to the building for the transfer of fire;
- Shrubs and trees that do not form a continuous canopy and vegetation is planted in clumps rather than continuous rows;
- Species that retain dead material or deposit excessive quantities of ground fuel are avoided;
- Shrubs and trees are pruned so that they do not touch or overhang the building; and
- Vegetation is located far enough away from the building so that plants will not ignite the building by direct flame contact or radiant heat emission.

7) 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.
8) 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) Summary

This report consists of a bushfire risk assessment for the proposed residential development of a new Class 1a dwelling at No 12 Ingleside Road, Ingleside.

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.

The proposed development will be constructed to the minimum standards required in accordance with the guidelines of *Planning for Bushfire Protection 2006.*

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 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.*

Not withstanding 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 Hazard Assessment that provides the required information to assist Local Council and the Rural Fire Service in determining compliance in accordance with Planning for Bushfire Protection and AS 3959, 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.

Ron Coffey – Bushfire Safety Engineer
Grad I Fire E [Institute of Fire Engineers - 1973]
Grad Cert Fire Safety Eng [UWS - 2003]
Grad Dip Building in Bushfire Prone Areas [UWS – 2005]
Ass Prof Cert in Expert Evidence in the Land & Environment Court [UTS – 2005]
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13) References

Australian Building Codes Board
Building Code of Australia
Volumes 1&2
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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

14) Fences and Gates

BAL 12.5 & BAL 19

1. Where a timber fence does not connect to a dwelling and has a minimum of 1 metre separation from the dwelling then a fence may be constructed from hardwood, or non-combustible material.
2. Where a fence connects directly to or has less than 1 metre separation from a dwelling it should be constructed from non-combustible materials only.
3. In all cases where timber fences are proposed, care should be taken in the selection, location and maintenance of landscaping adjoining the fence. Unmanaged landscaping could promote fire activity due to ember, radiant heat and direct flame contact and then further impact timber fencing.

The above is based on the premise that construction for level 1 & 2 dwellings is sufficiently removed from the main fire front and won't be subjected to direct flame contact or extreme levels of radiant heat that may cause ignition of combustible materials. However, dwellings could still be exposed to significant levels of ember attack and relatively high levels of radiated heat that may cause fences to ignite.

BAL 29, BAL 40 &/or Flame Zone

Dwellings assessed as requiring these construction levels shall have fencing constructed from non-combustible materials e.g. Sheet metal or masonry. This is due to the increased likelihood of direct flame contact causing ignition of combustible materials which may provide a fire path to the dwelling.