

Building Construction in Bush Fire Prone Areas

Bushfire Hazard Assessment Report

REF No. 20.03.095

Address Lot 2316 DP 752038
4 Southern Cross Way
Allambie Heights NSW 2100

For Mr Jaczak

The site was inspected on 12th April 2020

Report Preparation

Craig Burley

Grad Dip Design for Bushfire Prone Areas
FPAA Certified BPAD – Level 3 Practitioner



Bushfire Risk Assessment Certificate

As required by legislation under section 4.14 of the *Environmental Planning and Assessment Act 1979*

Property Address:	Lot 2316 DP 752038 4 Southern Cross Way Allambie Heights NSW 2100
Description of Proposal	New Class 1a dwelling, a new Class 1a secondary dwelling and a home office
Plan Reference: [Relied upon in report preparation]	This assessment is based on plans prepared by: Sabton and Son Dated: 10.02.20 Issue 1 Drawing No: PR020.03
Bushfire Hazard Assessment Report Ref. No.	20.03.095
Report Date:	18.06.20
BAL Rating:	BAL 29 – Primary Dwelling BAL 19 – Secondary dwelling & office
Does the proposal comply with the requirements of <i>Planning for Bush Fire Protection 2006</i> ?	YES with incorporation of the recommendations included contained in the attached Bushfire Hazard Assessment Report
Does the proposal require referral to the NSW Rural Fire Service?	NO
Does the proposal rely on Alternate Solutions?	NO

I Craig Burley of Control Line Consulting have carried out a bushfire risk assessment on the above-mentioned proposal and property.

A detailed Bushfire Hazard Assessment Report has been prepared in accordance to the submission requirements as set out in *Planning for Bush Fire Protection 2019* together with recommendations as to how the relevant specifications and requirements are to be achieved.

I hereby certify, in accordance with section 4.14 of the *Environmental Planning and Assessment Act 1979*:

1. That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in bushfire risk assessment; and
2. That subject to the recommendations contained in the attached Bushfire Hazard Assessment Report the proposed development conforms to the relevant specifications and requirements.

I am aware that the Bushfire Hazard 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 Northern Beaches Council as the basis for ensuring that the bushfire risk management aspects of the proposed development have been addressed in accordance with *Planning for Bushfire Protection 2019*.

Yours faithfully



Craig Burley
Grad Dip Design in Bushfire Prone Areas
FPA Australia BPAD – Level 3 Certified Practitioner



Executive Summary

We have been engaged by Mr Jaczak, the owner of the subject land to prepare a bush fire hazard assessment report to be a supplement for inclusion in a development application to Northern Beaches, for the proposed construction of a new Class 1a dwelling, a new Class 1a secondary dwelling and a home office upon the subject land.

The site has been identified as being bushfire prone land and therefore the legislative requirements for the proposed development are applicable.

The proposed development is an infill development as defined within *Planning for Bush Fire Protection* 2019 and this report has been prepared in accordance with the requirements of *Section 4.14 of the Environmental Planning and Assessment Act 1979*.

The objectives and performance requirements for the proposed development as required by the National Construction Code of Australia Volume 2 and the document *Planning for Bush Fire Protection* 2019 will be achieved by the incorporation of the recommendations contained within this report.

As this development is also considered to be a dual occupancy development the assessment process has conducted the evaluation on the basis of satisfying the requirements of *Planning for Bush Fire Protection* 2019 for a subdivision. This is a methodology requirement of the NSW Rural Fire Service.

The assessment process has found that these requirements are satisfied within the context of the proposal and recommendations arising within this report.

Bushfire Attack Summary

Lot 2316 DP 752038

4 Southern Cross Way Allambie Heights NSW 2100

	Primary Dwelling	Secondary Dwelling	Home office
Vegetation Formation	Tall Heath	Tall Heath	Tall Heath
Vegetation Slope	Downslope > 5 to 10 degrees	Downslope > 5 to 10 degrees	Downslope > 5 to 10 degrees
Building Separation Distance metres	20	42	40
Separation Slope	Level	Level	Level
Fire Danger Index	100	100	100
AS 3959 Construction Standard	BAL 29	BAL 19	BAL 19

The proposal and the recommendations contained within this report can provide for conformity to *Planning for Bush Fire Protection* 2019 and therefore will assist in providing a reasonable level of bushfire protection and improve but not guarantee the chances of building survival, or provision for the occupants with a safe refuge during the passage of a bushfire front and or the provision of a defensible space for fire fighters.

Table of Contents

1.0	Introduction.....	1
1.1	Purpose of Report	1
1.2	Scope of Report	1
1.3	Regulatory Controls.....	1
1.4	Methodology	2
1.5	The Proposal.....	2
2.0	Site and Adjacent Developments	3
2.1	Site Description	3
2.2	Description of Adjoining Lands.....	5
3.0	Environmental Considerations	6
4.0	Bushfire Hazard Assessment	7
4.1	Classification of Vegetation and Separation Distance from Proposed Development	7
4.2	Slope Assessment.....	8
4.3	Category of Bushfire Attack.....	8
5.0	Assessment of the extent to which the development conforms or deviates from Chapter 4 of <i>Planning for Bush Fire Protection 2006</i>	9
5.1	Asset Protection Zones.....	10
5.2	Siting and Design of Proposed Development	10
5.3	Construction Level.....	11
5.4	Access / Egress	12
5.5	Utility Supplies.....	13
5.6	Landscaping.....	14
6.0	Bushfire Hazard Assessment Recommendations.....	15
7.0	Conclusion	17
	References.....	18

Appendix 1 – Proposed development plans ex Sabton and Son

1.0 Introduction

We have been engaged by Mr Jaczak, the owner of the subject land to prepare a bush fire hazard assessment report to be a supplement for inclusion in a development application to Northern Beaches Council for the proposed construction of a new Class 1a dwelling, a new Class 1a secondary dwelling and a home office upon the subject land.

The site has been identified as being bushfire prone land and therefore the legislative requirements for the proposed development are applicable.

The proposed development is an infill development as defined within *Planning for Bush Fire Protection* 2019 and this report has been prepared in accordance with the requirements of *Section 4.14 of the Environmental Planning and Assessment Act 1979*.

1.1 Purpose of Report

- To determine the vegetation type, the expected fire behaviour and the threat to the proposal; and
- To assess the proposal with reference to *Planning for Bush Fire Protection* 2019; and
- To assess the proposed construction with reference to the National Construction Code of Australia Volume 2; and
- To determine the level of construction with reference to AS 3959-2018 *Construction of buildings in bushfire prone areas*; and
- To identify any other such measures as to improve the chances of building survival during a bushfire event; and
- To assist the consent authority Northern Beaches Council in the determination of the development application subject to this proposal.

1.2 Scope of Report

The scope of this report is limited to the Bushfire Hazard Assessment for the proposed development and only contains recommendations for the subject property. Where reference is made to adjacent or adjoining lands, this report does not purport to assess those lands; rather it may discuss bushfire progression on and through those lands with the possible bushfire impact to the subject property and the proposed development.

1.3 Regulatory Controls

The preparation of this report has given consideration to the various legislative and regulatory requirements including the *Environmental Planning and Assessment Act 1979*, the National Construction Code of Australia, *Planning for Bush Fire Protection* 2019 and AS 3959-2018 *Construction of buildings in bushfire prone areas*.

1.4 Methodology

A site inspection for the purpose of assessing bushfire related matters affecting this site was conducted on the 12th April 2020 and a review of the proposed construction plans as supplied by the owner and prepared by Sabton and Son has taken place.

An assessment of slope was conducted out to a distance of 100 metres and assessment of vegetation to a distance of 140 metres from the proposed development.

The findings were related and assessed with reference to *Planning for Bush Fire Protection* 2019 and AS 3959-2018 *Construction of buildings in bushfire prone areas* for the formulation of the Bushfire Hazard Assessment.

1.5 The Proposal

The proposal as indicated by consultation with the engaged architects and perusal of plans supplied, shows for the construction of a new two storey Class 1a dwelling, a new Class 1a secondary dwelling and a home office.

This creates a dual occupancy.

At present there is an existing older style residential dwelling which shall be demolished and removed as part of the scope of works.

The building footprint for the primary dwelling has been positioned upon the plans supplied detail on such plans shows the new primary dwelling shall be located approximately 7 metres from the western (road frontage) boundary, 4.5 metres from the northern boundary and 2.5 metres from the southern boundary.

The building footprint for the secondary dwelling is shown to be 6.625 metres from the eastern elevation of the primary dwelling and 2.425 metres from the northern boundary.

The building footprint for the home office is shown to be 6.625 metres from the eastern elevation of the primary dwelling and 1.5 metres from the southern boundary.

The external finishes for the dwelling have not been shown upon the plans supplied although it is anticipated that these will be further developed subject to the findings of this report.

Further details of construction are shown upon plans included within appendix 1 of this report.

However, it must be noted that the plans supplied may not fully satisfy the recommendations included within this report and subject to actual consent conditions issued by the consent authority some modifications or changes may need to occur to achieve the required compliance.

2.0 Site and Adjacent Developments

The following seeks to describe the site, the adjoining lands and land uses effective upon the development proposal.

2.1 Site Description

The site is identified as Lot 2316 DP 752038
 4 Southern Cross Way
 Allambie Heights NSW 2100
 LGA Northern Beaches



Figure 1: Address validation ex NSW Planning Portal

The subject allotment was created prior to the current subdivisional requirements contained within *Planning for Bush Fire Protection* 2019.

The site is a residential allotment of approximately 927.8 m² located on the eastern side of Southern Cross Way. The area in which the proposal is located is generally urban residential development that has been established for many years.

The subject allotment is located within an area that should be considered as having a direct interface to bushfire hazardous vegetation.

The subject allotment is positioned upon the westerly aspect slopes of a north to south ridgeline. The allotment is to the west of an unnamed naturally occurring topographical drainage feature that descends in a southerly direction into Manly Reservoir.

The parcel of land is slightly rectangular in shape and the western boundary is the road frontage boundary for the subject site.

At present the site has structural improvements that includes an old style residential dwelling that shall be demolished and removed as a component of the scope of works.

In terms of vegetation the site contains no areas of bushfire or grassfire hazardous vegetation.

The site is shown upon the Northern Beaches Bushfire Prone Land Map (Figure 2) to be wholly within category 1 vegetation buffer zone (shown yellow). The site inspection and interpretation of aerial photography for the site confirms that the subject allotment is accurately described upon this image.

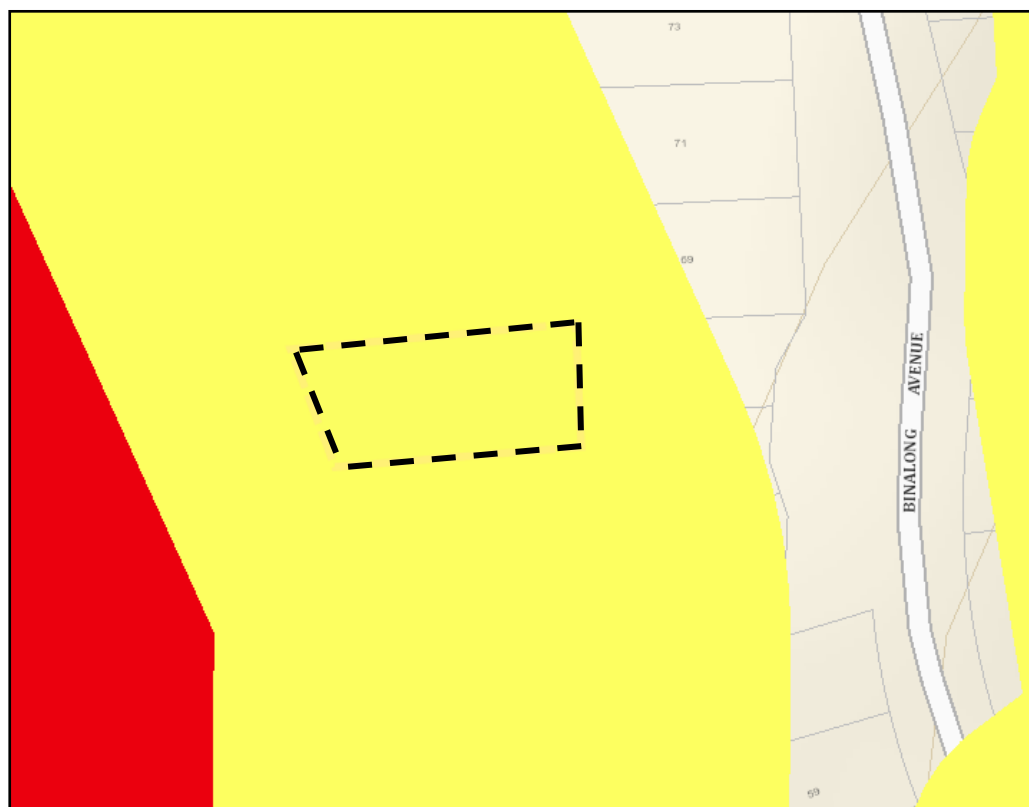


Figure 2; Section Northern Beaches LGA Bushfire Prone Land Map ex NSW Planning Portal

Provision of mains reticulated water supply, electricity and phone is available to the proposal by existing infrastructure.

2.2 Description of Adjoining Lands

To the north, east and south of the subject allotment is existing residential development with no significant sections of bushfire hazardous vegetation.

To the west of the subject allotment is the carriageway of Southern Cross Way and beyond this is the area of identified bushfire hazardous vegetation being a significant section of naturally occurring vegetation within the Warringah War Memorial Park.



Figure 3: Aerial photo depicting localised terrain and adjoining allotments ex NSW Planning Portal

3.0 Environmental Considerations

The scope of this report has not been to provide an environmental survey although this report will be a supplement to a Statement of Environmental Effects as part of the development application process.

The proposed scope of works does not necessitate the removal of any native vegetation to satisfy the recommendations for asset protection zones. It is also our opinion that the bushfire protection measures as recommended within this report will have little or no adverse environmental effects.

4.0 Bushfire Hazard Assessment

The bushfire hazard assessment was conducted for the proposed development, using the procedures as outlined in *Planning for Bush Fire Protection* 2019 to determine the bushfire attack level (BAL) likely upon the development.

The assessment was conducted on the assumption of the building footprint being positioned as described in section 1.5 The Proposal of this report and the site plan.

4.1 Classification of Vegetation and Separation Distance from Proposed Development

The vegetation was assessed for a distance of 140 metres from the proposed development building footprint in each of the following directions. To the north, east, south and west being the general direction adjacent and away from the proposed building elevations within such building footprint.

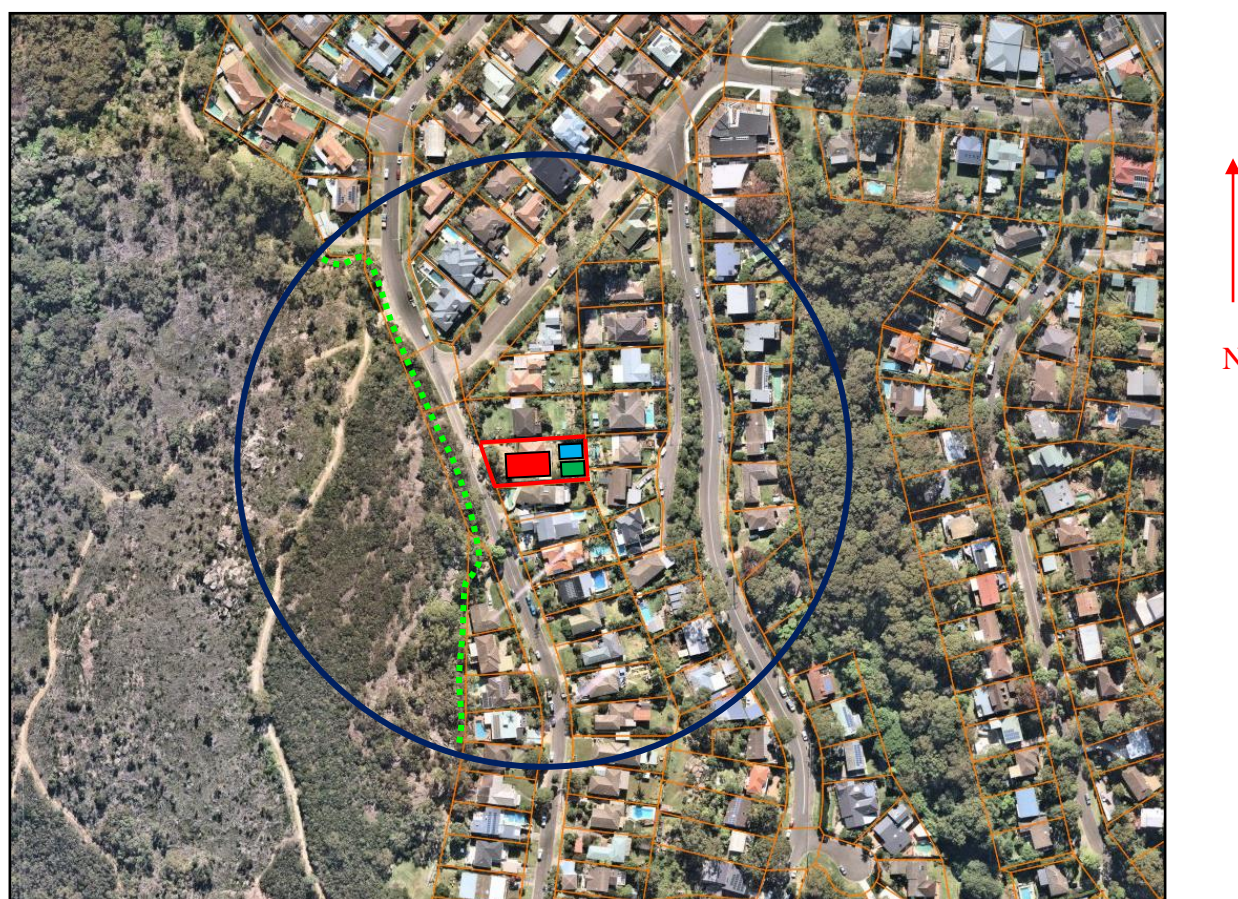







Figure 4: Vegetation study area  140 metre radius approx. Image ex Dept Lands

 Primary dwelling  Secondary dwelling  Office  Tall Heath

To the west of the subject allotment is the effective bushfire hazardous vegetation and this area should be classified as being a vegetation formation of **Tall Heath**.

The closest section of Tall heath vegetation will be located approximately 20 metres from the primary dwelling, 42 metres from the secondary dwelling and 40 metres from the home office.

4.2 Slope Assessment

The slope was assessed for a distance of 100 meters within the bushfire hazardous vegetation and reference to slope classifications has been undertaken considering the procedure specified within *Planning for Bush Fire Protection* 2019.

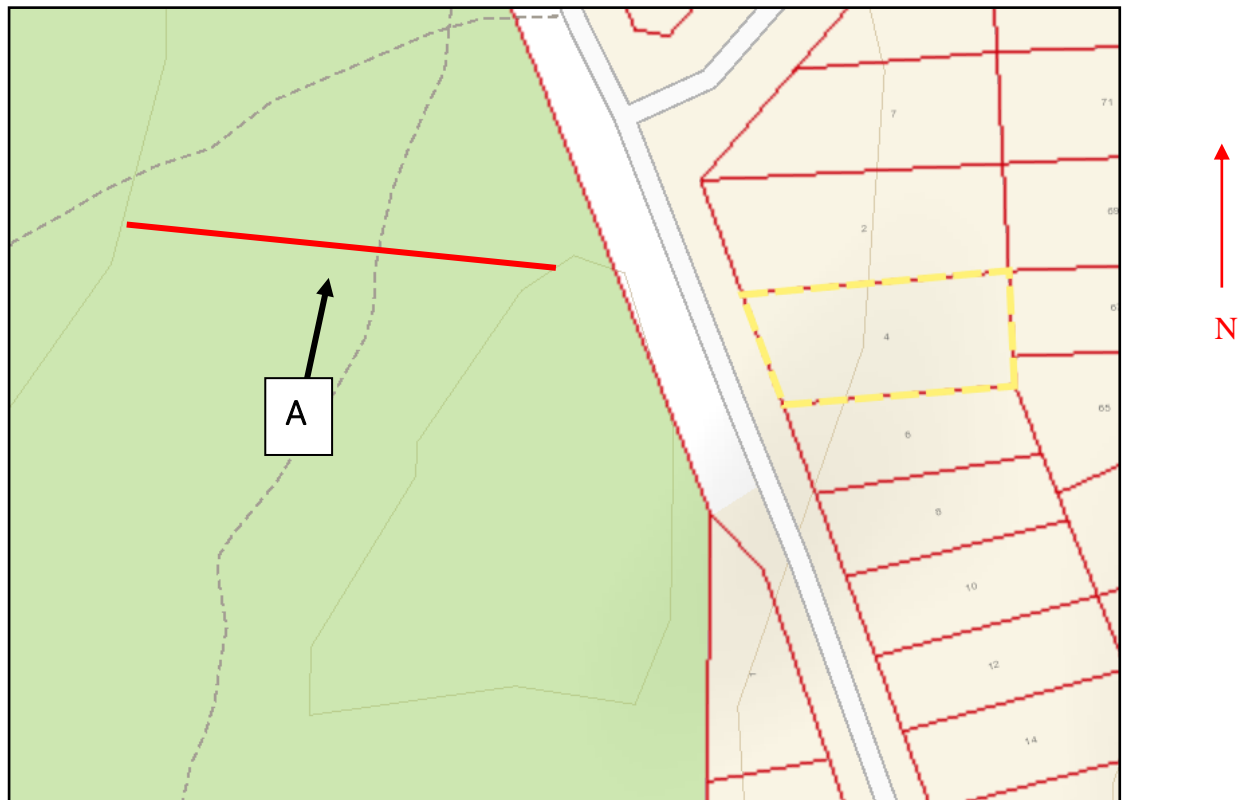


Figure 5; Slope assessment study area Image ex NSW Planning Portal

The **effective slope** of the land, out to a distance of 100 metres from the proposed scope of works (that is, the slope of the land most likely to influence bushfire behaviour for the purposes of calculating the Category of Bushfire Attack and Asset Protection Zones, has been assessed (using a clinometer) and desktop analysis as being;

- Downslope > 5 to 10 degrees to the west – A

4.3 Category of Bushfire Attack

The bushfire attack level (BAL) for the proposed development was determined by using the information gathered with respect to the classification of the vegetation, the effective slope and provision of asset protection zones specified in this report with reference given to *Planning for Bush Fire Protection* 2019.

It is the determination of the site inspection, the assessment procedure with incorporation of the recommendations in this report that the proposed development could experience a variation of category of bushfire attack. The proposed development is most likely to be subject to the greatest bushfire attack from any area to the **west** from the proposed development location.

Bushfire Attack Summary

	Primary Dwelling	Secondary Dwelling	Home office
Vegetation Formation	Tall Heath	Tall Heath	Tall Heath
Vegetation Slope	Downslope > 50 to 10 degrees	Downslope > 5 to 10 degrees	Downslope > 5 to 10 degrees
Building Separation Distance metres	20	42	40
Separation Slope	Upslope	Upslope	Upslope
Fire Danger Index	100	100	100
AS 3959 Construction Standard	BAL 29	BAL 19	BAL 19

5.0 Assessment of the extent to which the development conforms or deviates from *Planning for Bush Fire Protection 2019*

The proposed development being the construction of a new Class 1a dwelling, a new Class 1a secondary dwelling and a new home office will conform to the requirements of *Planning for Bush Fire Protection 2019* when considered in conjunction with both the proposal supplied for this assessment and the recommendations arising from this bushfire hazard assessment report.

5.1 Asset Protection Zones

The provision of asset protection zones for the proposed building footprint cannot be fully provided for onsite to satisfy the requirements of *Planning for Bush Fire Protection 2019* but is improved by the utilization of the adjoining developments.

The maintenance of the majority of area upon the subject allotment currently would satisfy the requirements of an inner protection area of an asset protection zone as contained in *Planning for Bush Fire Protection 2019*.

This report will recommend that the entire site where not built upon is maintained to the requirements of an inner protection area of an asset protection zone and managed to these provisions for the lifetime of the development.

The following is a summary of the requirements for an asset protection zone inner protection area as described within the documents *Planning for Bush Fire Protection 2019* and *NSW RFS Standards for Asset Protection Zones*.

Inner Protection Area

An IPA should provide a tree canopy cover of less than 15% and the tree canopy should be located greater than 2.0 metres from any part of the roof line of a dwelling. Garden beds of flammable shrubs should not be located under trees and should be located not closer than 10 metres from an exposed window or door. Trees should have lower limbs removed up to a height of 2.0 metres above the ground.

Ground fuels such as fallen leaves, twigs (less than 6mm in diameter) and branches should be removed on a regular basis, and grass needs to be kept closely mown and where possible green.

The creation and continued maintenance of the full asset protection zone is one of the primary factors in bushfire protection measures for developments in bushfire prone areas.

5.2 Position and Design of Proposed Development

The design and siting of the proposed dwelling must take into consideration the actual bushfire risk and this report contains recommendations to assist in mitigating the mechanisms of bushfire attack.

5.3 Construction Level

The National Construction Code contains both the performance requirements and the 'deemed to satisfy' provisions relating to construction of class 1, 2 & 3 buildings that are proposed for *construction in bushfire prone areas*. To satisfy the performance provision P2.3.4 of the National Construction Code of Australia Vol. 2, a Class 1a building that is constructed in a designated bushfire prone area must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes.

Australian Standard 3959-2018 *Construction of buildings in bushfire prone areas* is referenced by the NCC as the deemed to satisfy construction standard for residential dwellings in designated bushfire prone areas with the exception that in NSW the requirements shall be varied to comply with section 7.5.2 Additional construction requirements of *Planning for Bushfire Protection* 2019.

Given that the proposed primary dwelling could experience a Bushfire Attack Level (BAL) 29 from vegetative fuels to the west this proposed dwellings roof and eaves section; and the northern, western and southern elevations should therefore be designed and constructed to the requirements of AS 3959-2018 and must be constructed to comply with section 3 Construction General and section 7 BAL 29 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.

Due to the effects of shielding and with reference to AS 3959-2018 section 3.5 *Reduction in Construction Requirements Due To Shielding*, this report recommends that it is appropriate to construct the eastern external elevation of the proposed primary dwelling to satisfy section 3 Construction General and section 6 BAL 19 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.

Given that the proposed secondary dwelling could experience a Bushfire Attack Level (BAL) 19 from vegetative fuels to the west this proposed dwellings roof and eaves section; and the northern, western and southern elevations should therefore be designed and constructed to the requirements of AS 3959-2018 and must be constructed to comply with section 3 Construction General and section 6 BAL 19 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.

Due to the effects of shielding and with reference to AS 3959-2018 section 3.5 *Reduction in Construction Requirements Due To Shielding*, this report recommends that it is appropriate to construct the eastern external elevation of the proposed secondary dwelling to satisfy section 3 Construction General and section 5 BAL 12.5 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.

Given that the proposed home office could experience a Bushfire Attack Level (BAL) 19 from vegetative fuels to the west this proposed home office roof and eaves section; and the northern, western and southern elevations should therefore be

designed and constructed to the requirements of AS 3959-2018 and must be constructed to comply with section 3 Construction General and section 6 BAL 19 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.

Due to the effects of shielding and with reference to AS 3959-2018 section 3.5 *Reduction in Construction Requirements Due To Shielding*, this report recommends that it is appropriate to construct the eastern external elevation of the proposed home office to satisfy section 3 Construction General and section 5 BAL 12.5 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.

5.4 Access / Egress

5.4.1 To the Proposed Development

The access to the subject site is from Southern Cross Way which is a sealed two lane road in a well maintained condition and under most conditions should provide adequate access and egress for both residents and emergency service vehicles.

Southern Cross Way links to other through roads at each end which would afford the residents the ability to evacuate the area to a location not being directly implicated by the mechanisms of bushfire attack, although under most bushfire conditions this would generally not be required.

5.4.2 Within the Site

The site plan for the proposal does show that vehicle access will not be possible to all elevations of the development, although a fire tanker will be able to park in close proximity to the western building elevation upon the Southern Cross Way carriageway and foot access will be available to each of the other building elevations.

In concurrence with the guidance given within *Planning for Bush Fire Protection* 2019 no specific vehicle access requirements are recommended by this report.

The proposed development is within an urban area where a distance of not greater than 70 metres of unobstructed path can be demonstrated between the most distant external part of the proposed development and the nearest part of the public access road (where the speed limit is not greater than 70kph) that supports the operational use of emergency fire fighting vehicles (ie a hydrant or water supply).

It should be considered by the residents that during a major bushfire event the following may occur;

- The suppression or defensive operations by fire authorities may not be possible in the general area of the development due to safety considerations for fire fighters; and
- That there may not be adequate fire authority resources to protect this development or others in the general area.

Whilst all fire authorities will endeavour to assist all occupants and protect all buildings during major bushfire events this is not always possible and cannot be guaranteed.

5.5 Utility Supplies

5.5.1 Water

This section of Allambie Heights is serviced by a mains reticulated water system and a search of the mains reticulated water supply layout plans (see figure 6 below) indicates that a hydrant is located approximately 2 metres to the south from the subject allotment on the footpath area of Southern Cross Way.

The site inspection confirmed the location of this hydrant.

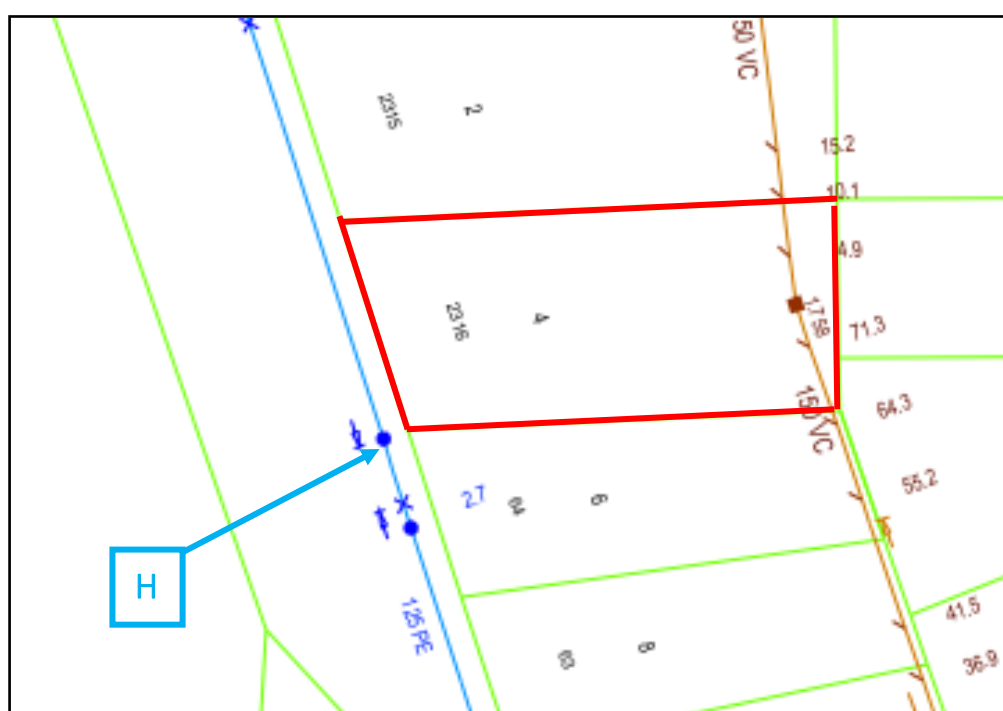


Figure 6: Section Sydney Water Reticulated Mains Water Supply Layout Plans

The location of this hydrant and the distance to the furthest point of the dwelling satisfies the requirements of *Planning for Bush Fire Protection* 2019 and the provisions of AS 2419.1-2005 *Fire hydrant installations*.

5.5.2 Electricity

The methodology for the connection of electricity shall be by overhead wire connection from the mains service supply to a pole that will be located just inside the road frontage boundary and from that point it shall travel underground to the metre box upon the external wall of the dwelling. This connection should not increase to a large extent the likelihood of bushfire ignition or be the cause of electrical failure to the subject site under most conditions due to the limited overhead distance to be spanned by the wiring.

5.5.3 Gas

At the time of report preparation it was not known if it is proposed to connect gas supply to the subject dwelling. However any future connection to either mains or portable gas supply should be undertaken and maintained to the provisions of AS 1596-2002 *Storage and handling of LP Gas*. All piping associated with the installation must be metal.

5.6 Landscaping

A formal landscaping plan was not supplied for perusal at the time of formulating this report however recommendations are made with respect to the maintenance of the area on the site.

It is highly probable that in the future landscaping and garden establishment may occur on the site. However no future planting of trees or shrubs, or combustible landscaping features should be undertaken or constructed in a manner which creates a path for bushfire progression towards the dwelling or allows for a potential compromise to the integrity of the asset protection zone.

5.7 Emergency Procedures

Preparation of procedures and actions by individuals and occupants of lands within bushfire prone areas has clearly been shown to increase chances of personal safety and building survival should a bushfire event occur.

The NSW Rural Fire Service and the NSW Fire and Rescue have formulated a Bush Fire Survival Plan and this is readily available from either the NSW RFS website or the local district office.

This document should be completed by the residents in conjunction with all occupants of the household so as to better prepare all persons for a bushfire event.

After completion it should be regularly reviewed (at least once a year) and stored in a location as to be easily accessible for reference during a bushfire emergency.

6.0 Bushfire Hazard Assessment Recommendations

1. That the entire site where not built upon shall have the vegetation reduced where or if necessary to satisfy the requirements of *Planning for Bush Fire Protection* 2019 and the NSW Rural Fire Service document “Standards for Asset Protection Zones” for an inner protection area of an asset protection zone and this area shall be maintained at this vegetation level for the lifetime of the development.
2. That no future landscaping features, planting of shrubs, trees or other vegetation shall occur in such a manner as to compromise the integrity of the asset protection zone.
3. That the proposed primary dwellings roof and eaves section; and the northern, western and southern elevations should be designed and constructed to comply with section 3 Construction General and section 7 BAL 29 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.
4. That the proposed primary dwellings eastern elevation should be designed and constructed to comply with section 3 Construction General and section 6 BAL 19 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.
5. That the proposed secondary dwellings roof and eaves section; and the northern, western and southern elevations should be designed and constructed to comply with section 3 Construction General and section 6 BAL 19 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.
6. That the proposed secondary dwellings eastern elevation should be designed and constructed to comply with section 3 Construction General and section 5 BAL 12.5 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.
7. That proposed home office roof and eaves section; and the northern, western and southern elevations should be designed and constructed to to comply with section 3 Construction General and section 6 BAL 19 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.

8. That proposed home office eastern elevation should be designed and constructed to comply with section 3 Construction General and section 5 BAL 12.5 of such standard apart from as varied to comply with section 7.5.2 Additional Construction Requirements of *Planning for Bushfire Protection* 2019.
9. That if the supply of gas to the subject dwelling is undertaken it shall be installed and maintained in accordance with AS 1596-2002 and requirements of relevant authorities.
10. The residents should complete a *Bush Fire Survival Plan* as formulated by the NSW Rural Fire Service and the NSW Fire & Rescue.

These recommendations are the opinions of the author of this report and are compiled to assist the consent authority and the NSW Rural Fire Service in the assessment of this proposed development and that the final conditions as imposed by the consent authority must be adhered to at all stages and where required for the lifetime of the development.

7.0 Conclusion

The objectives and performance requirements for the proposed development as required by the National Construction Code Volume 2 and the document *Planning for Bush Fire Protection* 2019 will be achieved by the incorporation of the 10 recommendations contained within this report.

The recommendations contained within this report will assist in providing a reasonable level of bushfire protection and improve but not guarantee the chances of building survival, or provision for the occupants with a safe refuge during the passage of a bushfire front and or the provision of a defensible space for fire fighters.



Craig Burley
Grad.Dip. Building in Bushfire Prone Areas (UWS)
FPA Australia Certified BPAD – Level 3 Practitioner



Caveat

Quote from *Planning for Bush Fire Protection* 2006, '*notwithstanding the precautions adopted, it should always be remembered that bushfire burn under a wide range of conditions and an element of risk, no matter how small always remains.*'

Quote from Standards Australia, '*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.*'

References

Planning for Bush Fire Protection 2019 Planning NSW in conjunction with NSW Rural Fire Service

Building Code of Australia Volume 2 2013 Australian Building Codes Board

AS 3959 –2018 Construction of buildings in bushfire prone areas Standards Australia & Australian Building Codes Board

Landscape and building Design for Bushfire Areas Ramsay C. & Rudolph L. CSIRO 2003

Quantifying bushfire penetration into urban areas in Australia Keping Chan & McAneney J. Geophysical Research Letters, Volume 31, L12212, doi:10.1029/2004GL020244,2004

Bushfires in Australia Luke R.H. & McArthur CSIRO 1978

Performance of Building Elements in Bushfire Prone Areas Poon S.L. & England J.P. Warrington Fire Research Australia

Address Validation Search Department of Lands www.maps.nsw.gov.au

Standards for Asset Protection Zones NSW Rural Fire Service 2005

Ocean Shores to Dessert Dunes Keith D. Department of Environment and Conservation Sydney 2004

Appendix 1- Proposed development plans ex Sabton and Son

Appendix 2 – AS 359-2019 *Construction of buildings in bushfire prone areas* Detailed Method for Determining Bushfire Attack Level (BAL) - Method 2