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**DEVELOPMENT CONSULTANTS**

**SURVEYORS • PLANNERS • ECOLOGISTS • BUSHFIRE CONSULTANTS**

# **BUSH FIRE ASSESSMENT REPORT**



**For the Proposed Development  
at**

**17 DRUMCLIFF AVENUE,  
KILLARNEY HEIGHTS, NSW  
(LOT 9 SEC 74 IN DP 758566)**

**June 2021**

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## DOCUMENT TRACKING

<b>Project Location</b>	17 Drumcliff Avenue, Killarney Heights
<b>Date</b>	29/06/2021
<b>Prepared by</b>	Ashley Dowdle
Reviewed by	Kristan Dowdle
Approved by	Kristan Dowdle
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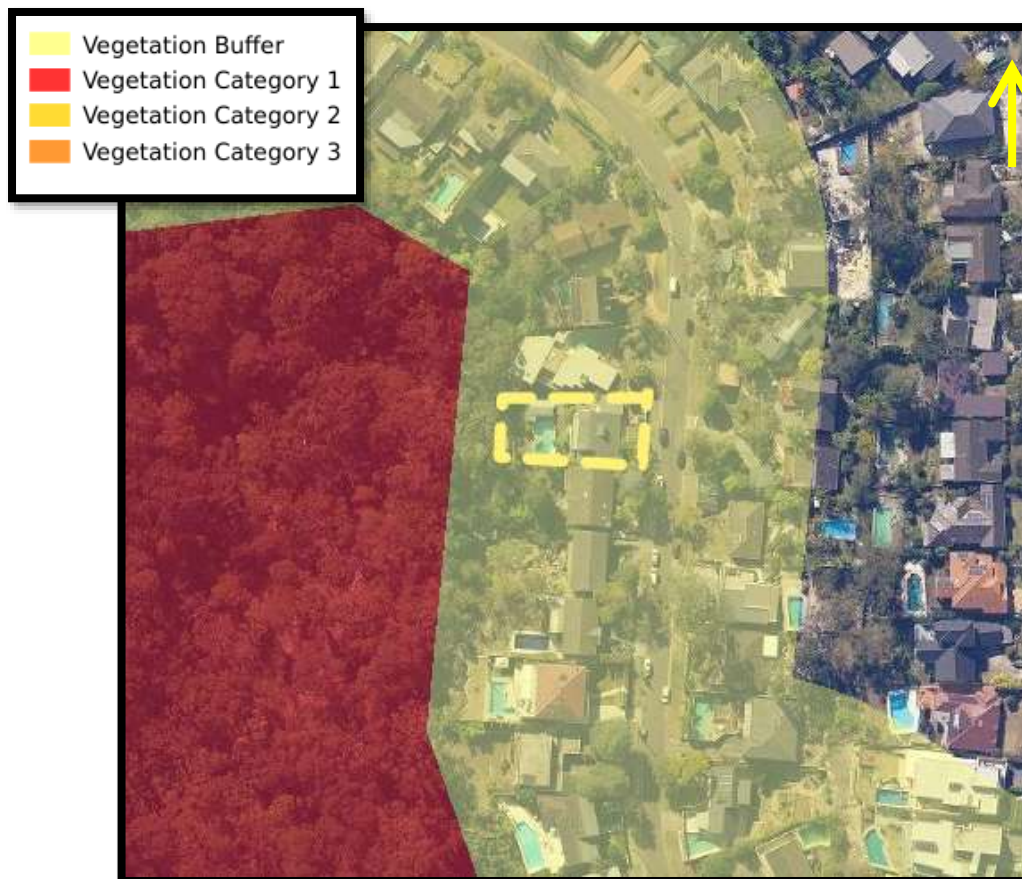


## 1.0 INTRODUCTION

We have attended the above-described property for the purpose of undertaking a Bush Fire Assessment Report (BFAR) in accordance with the guidelines outlined in Planning for Bushfire Protection, 2019 (PBP), to determine the level of bushfire threat to the site. Northern Beaches Council has provided mapping of Bushfire Prone Areas that identifies areas of bushfire threat. This mapping identifies properties that are in the buffer zone of 100m metres from Category 1 mapped vegetation or 30m from Category 2 & 3 mapped vegetation. All developments occurring on land mapped as bushfire prone are subject to the conditions detailed in the planning document PBP.

The subject site has been mapped as bushfire prone land (See Figure 1); therefore, the purpose of this BFAR is to provide information to Northern Beaches Council to ascertain compliance or otherwise with PBP.

This report will provide an independent assessment of the bushfire risk to the proposal, based upon the surrounding site conditions with reference to Section 4.14 of the *Environmental Planning and Assessment Act 1979*, PBP and AS3959-2018.



**Figure 1: Bushfire Mapping (site boundary in yellow)**  
Source: Department of Planning, 2021

### 1.1 Proposed Development

The site contains an existing dwelling and the proposed development will involve the construction of a decking/stairs/paved areas surrounding a pool along with and pool cabana on the western aspects of the property. Figure 1 provides a site plan of the proposal.

The final building plans outlining the size and dimension of the proposed development will accompany the Development Application.



Figure 2: Proposed Development Site Plan



## 2.0 SITE IDENTIFICATION

The site is located at 17 Drumcliff Avenue, Killarney Heights (Lot 9 Sec 74 DP 758566). The site is in the Local Government Area (LGA) of Northern Beaches Council (Fire Danger Index-100). The site is provided access via Drumcliff Avenue to the east.

The site is a residential parcel of land that contains an existing dwelling on the eastern portions of the site. Land conditions within the site consist of managed lands and landscaped gardens.

The site is connected to the town-reticulated supply of water and to the mains electrical grid.



Figure 3: Aerial Photograph of the site (site boundary bordered in blue)  
Source: Nearmap, 2021

## 3.0 BUSH FIRE HAZARD ASSESSMENT

### 3.1 Surrounding Vegetation

The surrounding land and vegetation found within 140m of the site are detailed below (See Figures 5 & 6).

#### North, South & East

The surrounding land on these aspects are occupied by developed residential allotments containing managed curtilage throughout. Whilst some trees do exist on these aspects managed lands exist beneath and therefore these aspects are deemed not to contain a bushfire hazard.

#### West

To the west and directly adjoining the site is vegetation that has been mapped containing a mixture of *Coastal Sandstone Gully Forest* and *Coastal Enriched Sandstone Moist Forest* (OEH, 2013). Upon inspection, the vegetation meets with the Keith (2004) description of a 'wet sclerophyll forest'. Therefore, in accordance with Appendix 1 in PBP, this vegetation will be assessed as **Forest** as per PBP.

### 3.2 Effective Slope

Figure 4 provides the topographic and vegetation mapping surrounding the proposal as sourced by NSW Spatial Services (1m contours). This data has a stated accuracy of 0.3m (95% Confidence Interval) vertical and 0.8m (95% Confidence Interval) horizontal.

PBP states in A1.5 that the effective slope is;

*'The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the ultimate level of radiant heat flux. The effective slope is the slope of the ground under the hazard (vegetation). It is not the slope between the vegetation and the building (slope located between the asset and vegetation is the site slope).'*

The effective slope measured 100m from the proposed development for the hazard facing aspects are (See Figure 4);

**West: 10-15° Down Slope**



## VEGETATION SITE PLAN



Figure 5: Vegetation Mapping

## 4.0 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

The bushfire risk to property depends on the vegetation type, slope and proximity of vegetation to the proposed development, and can be classified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL FZ as outlined in AS3959-2018 and PBP. The categories of bushfire attack were determined for the vegetation conditions currently existing on the site and adjacent areas. Following the identification of the bushfire attack category for each aspect, the site will be assessed according to vegetation that presents the highest level of bushfire attack risk. AS3959-2018 provides two methods to determine complying Bushfire Attack Levels, these are; the **Simplified Procedure-Method 1** (deemed-to-satisfy) and **Detailed Method for Determining the Bushfire Attack Level-Method 2** (alternate solution).

The level of bushfire attack then determines the construction standards necessary for the proposed development. These protective construction measures are outlined in Australian Standard AS3959-2018. The BAL required for each of the aspects/facades for the proposed development are summarised in Table 1.

**Table 1: Bushfire Attack Assessment**

	ASPECT	
	Northern, Southern & Eastern	Western
<b>Vegetation<sup>1</sup> within 100m of development</b>	Managed Lands	Forest
<b>Effective Slope of Land</b>	-	10-15° Down Slope
<b>APZ Required/Setback Provided<sup>2</sup></b>	>100m	~7m
<b>Bushfire Attack Level (BAL)<sup>3</sup></b>	BAL FZ	BAL FZ

**Notes for Table 1:**

- (1) Refer to Keith (2004), AS 3959-2018 and PBP
- (2) Distance to vegetation
- (3) BAL's are in accordance with Table A1.12.5 in PBP
- (4) PBP states where an elevation is shielded from direct radiant heat arising from bush fire attack, then the construction requirements for that elevation can be reduced to the next lower BAL except when BAL 12.5 where all aspects shall comply with BAL 12.5. The shielding of an elevation shall apply to all the elements of the wall but shall not apply to subfloors or roofs.
- Table 1 **does not display applicable BAL Ratings** for each aspect (**See recommendations of this report**)

### **Proposed Development**

As detailed in Table 1 and Table A1.12.5 in PBP, based upon the current and surrounding conditions the proposed development will be subject to BAL FZ as per AS3959-2018 from the western aspects.

It is noted that developments located within BAL FZ are outside the scope of the NSW variation of the National Construction Code (NCC) deemed-to-satisfy provisions of AS3959-2018. As a result referral to the NSW RFS Section 4.14 of the *Environmental Planning and Assessment Act 1979* is required



# BUSH FIRE ASSESSMENT SITE PLAN

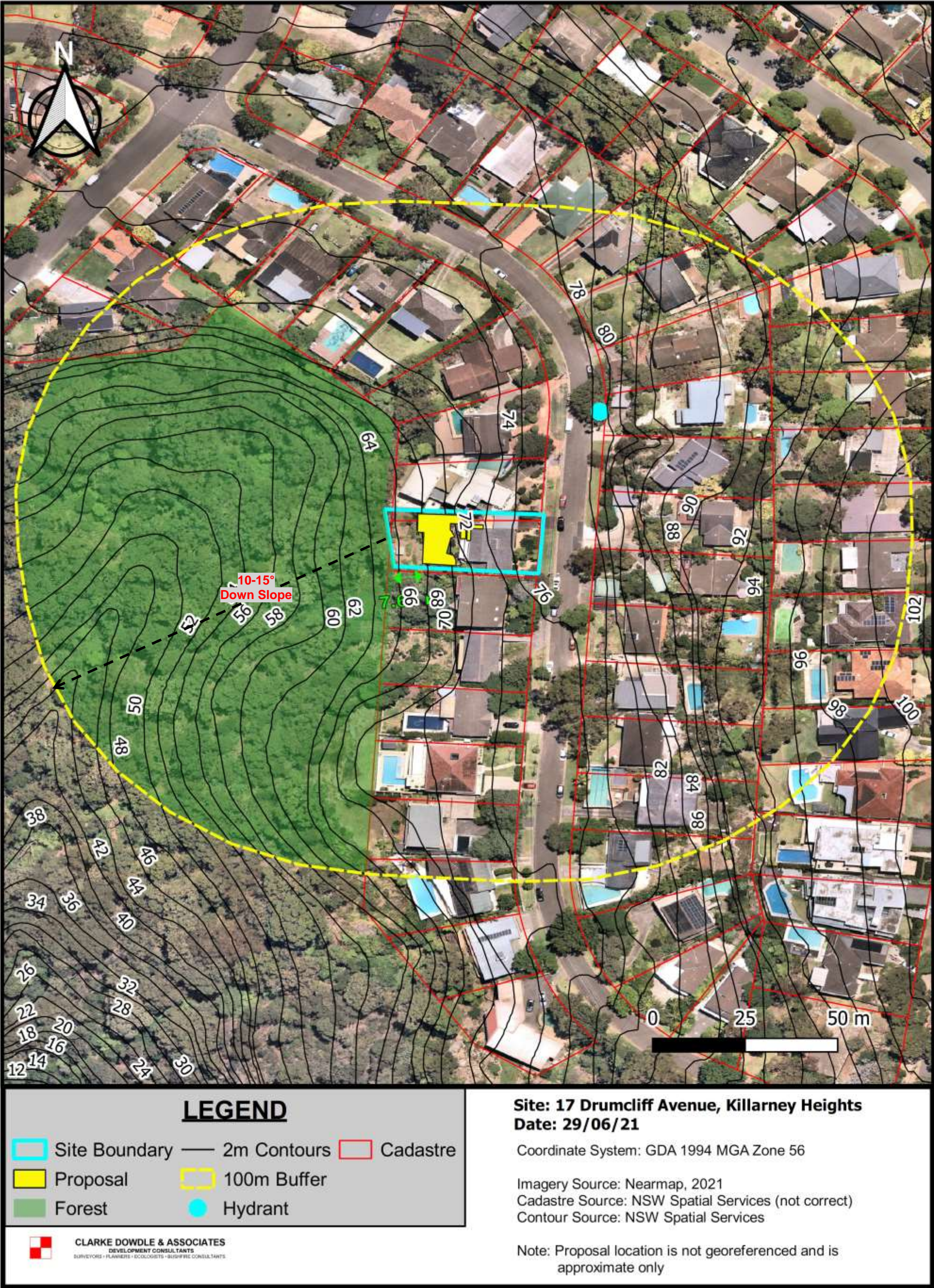


Figure 6: Bushfire Site Plan



## 5.0 RECOMMENDATIONS

This Bush Fire Assessment Report concluded that the proposed development may comply with the performance criteria for PBP if the proposed acceptable solutions and recommendations are implemented. These items are outlined below.

### 5.1 Asset Protection Zones

- **The entire site shall be maintained as an APZ for the lifetime of the development.**
- The APZ shall be maintained to meet with the requirements of an Inner Protection Area (IPA) as outlined within Appendix 4 in PBP.

#### 5.1.1 *Environmental Considerations*

No tree clearing is required for bushfire protection

### 5.2 Construction Standards

#### Proposed Development

- The **proposed development** shall be constructed to comply with **Sections 3 & 9 (BAL FZ)** as per AS3959- 2018 and **Section 7.5 in PBP 2019.**
- **Service Pipes**  
All exposed piping should be of metal. Pipes of other materials should be buried to a depth of at least 300mm below the finished ground level.

### 5.3 Property Access and Evacuation Safety

- Safe access is provided to the subject property by Drumcliff Avenue. This road will serve both as an access point for firefighters and an egress point for residents during a bushfire event.
- It is recommended that the building occupants prepare a bushfire survival plan which addresses the option to leave early before bushfire impacting the site. Details on how to prepare this plan are provided by the NSW RFS website ([http://www.rfs.nsw.gov.au/file\\_system/attachments/Attachment\\_BushFireSurvivalPlan.pdf](http://www.rfs.nsw.gov.au/file_system/attachments/Attachment_BushFireSurvivalPlan.pdf))

### 5.4 Water and Utility Services Supply

#### 5.4.1 *Water*

The site is connected to the reticulated supply of water. In recognition of these, the following recommendations are made;

- Taps and fittings should be constructed of metal; and
- The number of taps and/or length of hose should be adequate in number and/or length to supply water to the dwelling;

#### 5.4.2 *Gas (if applicable)*

- Any gas cylinders or gas connections should be installed and maintained under Australian Standard AS1596 - *The Storage and Handling of LP Gas* and the requirements of relevant authorities.
- If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion.

#### 5.4.3 *Electricity*

- The site is connected via overhead lines



## 6.0 SPECIFIC OBJECTIVES FOR INFILL IN PBP

With a combination of bushfire protection measures, the proposal is seen to comply with the aim and objectives of PBP for infill development. The Specific Objectives for infill development and a comment as to how they are achieved by the proposed development is provided below:

**Objective 1: “provide a defensible space to enable unimpeded access for firefighting around the building”.**

A defensible space is provided. The proposal provides compliance with the objective.

**Objective 2: “provide better bush fire outcomes on a redevelopment site than currently exists, commensurate with the scale of works proposed;”.**

The proposed development is recommended to be constructed to BAL FZ and would provide an increased level of bushfire protection than the existing situation/dwelling. Therefore, the proposal provides compliance with the objective.

**Objective 3 “design and construct buildings commensurate with the bush fire risk”.**

The proposed development will be constructed to BAL FZ under AS3959. This level of construction will involve the usage of non-combustible external materials. The proposal provides compliance with the objective.

**Objective 4” provide access, services and landscaping to aid firefighting operations;”.**

The existing dwelling is provided access, services and landscaping that complies with PBP. The proposal provides compliance with the objective.

**Objective 5 “not impose an increased bush fire management and maintenance responsibility on adjoining landowners; and**

The maintenance of the APZ's within the site will not result in increased bushfire management and maintenance responsibility on adjoining landowners. The proposal provides compliance with the objective.

**Objective 6 ‘increase the level of bush fire protection to existing dwellings based on the scale of the proposed work and level of bush fire risk’;**

The proposed development will be constructed to BAL FZ under AS3959. This level of construction will involve the usage of non-combustible external materials. Due to the non-habitable nature of the proposal (pool area and pool cabana), no upgrading of the existing dwelling has been recommended.

## 7.0 CONCLUSION

Clarke Dowdle & Associates have been engaged to conduct a Bush Fire Assessment Report upon the property located at 17 Drumcliff Avenue, Killarney Heights NSW. This original assessment was performed in June 2021 and was conducted in accordance with the procedures and methods recommended in the NSW Rural Fire Service published document '*Planning for Bushfire Protection*' (PBP).

This report has detailed that the proposed works are subject to BAL FZ and therefore requires referral to the RFS in accordance with section 4.14 of the *Environmental Planning and Assessment Act, 1979*.

The determining authorities and Rural Fire Service may suggest additional measures to be implemented with any planning and construction upon the subject site.

We would be pleased to provide further information on any aspects of this report.

For and on behalf of

**Clarke Dowdle and Associates**



**Ashley Dowdle**

Bushfire Consultant

*B. Business*

*Planning for Bushfire Prone Areas - UTS Short Course*

### Disclaimer

*PBP States;*

*Due to a range of limitations, the measures contained in this document do not guarantee that loss of life, injury and/or property damage will not occur during a bush fire event*

*AS 3959-2018 states;*

*It should be borne in mind that the measures contained in this standard cannot guarantee that the building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behaviour of fire and extreme weather conditions.*

*This report provides the required information to assist Local Council and the Rural Fire Service in determining compliance in accordance with PBP and AS 3959-2018 and as stated above, this report does not guarantee that the proposal will withstand bushfire attack on every occasion.*



## REFERENCES

- Keith, D. (2004), *Ocean Shores to Desert Dunes*. Department of Environment and Conservation, Sydney
- National Construction Code (2019), Building Codes Australia, *Class 1 and Class 10 Building Housing Provisions Volume 2*
- NSW Rural Fire Service and Department of Planning (2019), *Planning for Bushfire Protection, A guide for Councils, Planners, Fire Authorities and Developers*. NSW Rural Fire Service.
- Schauble, J. (2004). *The Australian Bushfire Safety Guide*. Harper Collins Publishers, Sydney, Australia.
- OEH (2013) *The Native Vegetation of the Sydney Metropolitan Area*. Volume 1 & 2: Version 2.0. Office of Environment and Heritage, Department of Premier and Cabinet, Sydney.
- Standards Australia, (2018), *AS3959 Construction of Buildings in Bushfire-prone Areas*. Standards Australia International