



CLARKE DOWDLE & ASSOCIATES

DEVELOPMENT CONSULTANTS

SURVEYORS • PLANNERS • ECOLOGISTS • BUSHFIRE CONSULTANTS

BUSH FIRE ASSESSMENT REPORT



For the Proposed Development
at

**100 OLD PITTWATER ROAD
BROOKVALE, NSW
(LOT 2 IN DP 656393)**

June 2020

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DOCUMENT TRACKING

Project Location	100 Old Pittwater Road, Brookvale
Date	17/06/2020
Prepared by	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 AS3959-2018 'Construction of Buildings in Bush Fire Prone Areas' and PBP.

As the development involves the construction of works to a commercial/industrial type building (Class 5 to 8 Building), the development is not legally subject to PBP or Section 4.14 of the *Environmental Planning and Assessment Act*. However, Section 8.3.1 of PBP states;

"The NCC does not provide for any bush fire specific performance requirements for these particular classes of buildings. As such AS 3959 and the NASH Standard are not considered as a set of Deemed to Satisfy provisions, however compliance with AS 3959 and the NASH Standard must be considered when meeting the aims and objectives of PBP"

The general fire safety construction provisions of the NCC are taken as acceptable solutions however construction requirements for bush fire protection will need to be considered on a case-by-case basis."

This report will form the basis for providing an assessment of the bushfire protection requirements for the development and will provide recommendations on the provision of defensible spaces, accessibility, water supplies and construction standards of developments within the site.



Figure 1: Bushfire Mapping (site boundary in yellow)
Source: Department of Planning, 2020

1.1 Proposed Development

Upon review of the development plans, the proposed works include the following;

- Internal modification of the existing layout; and
- The installation of several external exhaust ducts on/through the roof of the existing building.

Figure 2 provides a site plan of the proposal.

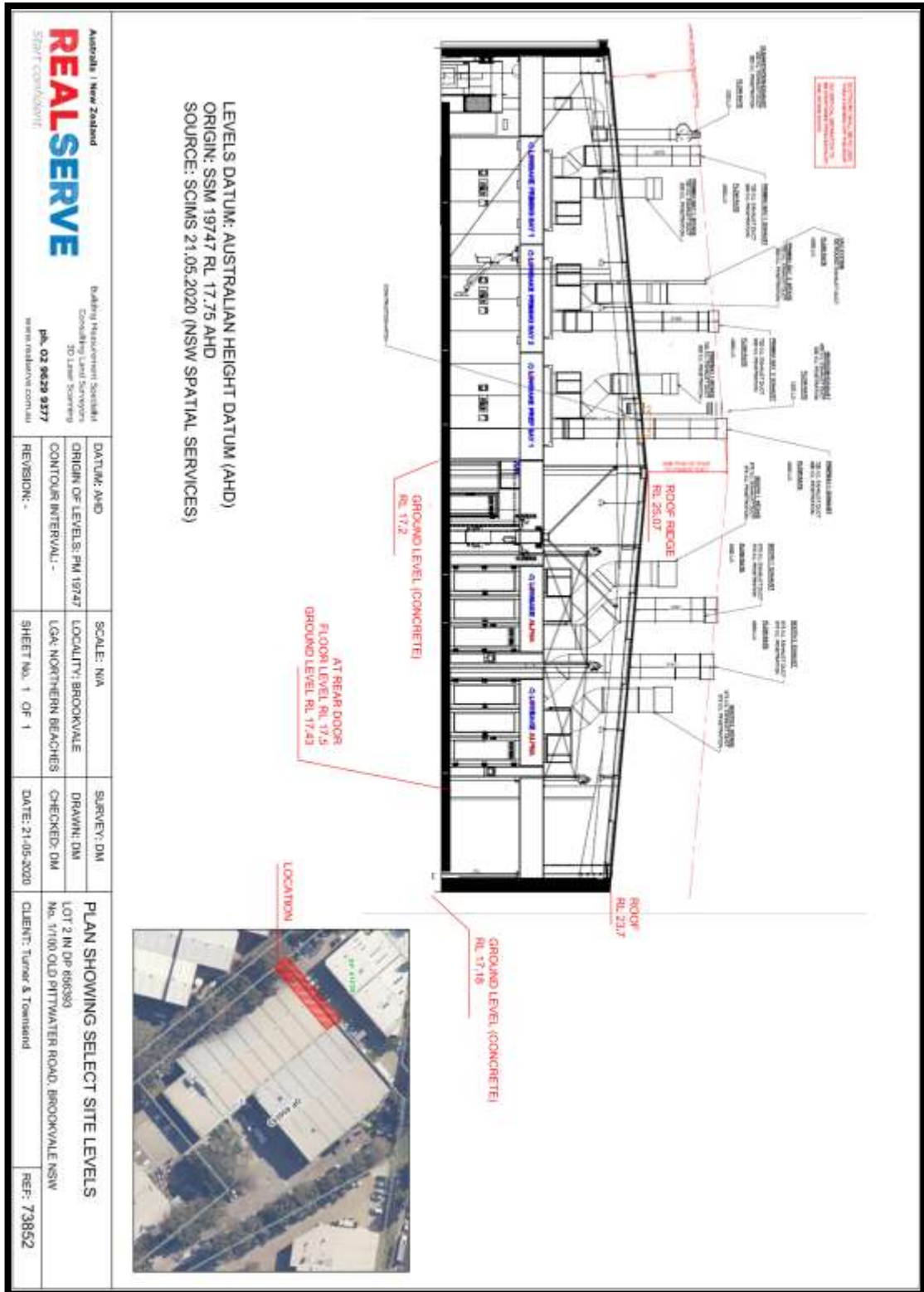


Figure 2: Proposed Development Site Plan

2.0 SITE IDENTIFICATION

The site is located at 100 Old Pittwater Road, Brookvale (Lot 2 DP 656393). The site is in the Local Government Area (LGA) of Northern Beaches Council (Fire Danger Index-100). The site is provided access via a large concrete driveway which extends from Old Pittwater Road to the south.

As stated, the site contains an industrial/commercial building of which is surrounded by hardstand areas.

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



Figure 3: Aerial Photograph of the site (proposal location highlighted in blue)
Source: Nearmap, 2020

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 Figure 4).

North, South & East

The surrounding land on these aspects is occupied by developed commercial/industrial allotments containing predominately buildings, hardstand areas and managed curtilage throughout. These aspects are deemed not to contain a bushfire hazard.

West/North-West

To the west/north-west beyond developed commercial/industrial allotments and cleared lands, is a narrow strip of vegetation that connects to a much larger area of vegetation further to the west. This vegetation has been mapped as containing *Coastal Sandstone Gully Forest*. The site inspection found that this vegetation meets with the Keith (2004) description of a 'dry sclerophyll forest' and in accordance with Appendix 1 in PBP, it will be assessed as **Forest**.

3.2 Effective Slope

PBP states in A1.5 that 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).'

In regards to the site, the effective slopes for each hazard facing were inspected and calculated through a combination of topographic mapping as sourced by NSW Spatial Services (1m contours)(a stated accuracy of 0.3m (95% Confidence Interval) vertical and 0.8m (95% Confidence Interval) horizontal.) and ground truthing. The effective slope measured 100m from the proposed development for the hazard facing aspects are;

West/North-West: Flat/Up Slope

Figure 4 provides the topographic and vegetation mapping for the site and surrounding area.

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. PBP and 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 with additional construction requirements outlined in PBP section 7.5. 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, Eastern & Southern	Western/North-Western
Vegetation¹ within 100m of development	Managed Lands	Forest
Effective Slope of Land	-	Flat/Up Slope
APZ Required/Setback Provided²	>100m	~80m
Bushfire Attack Level (BAL)³	BAL Low	BAL 12.5
Recommended Construction	As per the NCC	As per the NCC

Notes for Table 1:

- Refer to Keith (2004), AS 3959-2018 and PBP
- Bushfire Attack Levels are in accordance with the Table A1.12.5 in PBP
- 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.
- 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, the proposed development would be subject to BAL 12.5 as per AS3959-2018 from the western/north-western aspects.

The NCC does not provide for any bush fire specific performance requirements for this particular class of buildings. As such AS 3959 and the NASH Standard are not considered as a set of Deemed to Satisfy provisions, however, compliance with AS 3959 and the NASH Standard must be considered when meeting the aims and objectives of PBP. Therefore, bushfire protection measures for the proposed development are provided within the recommendations of this report with recognition of the minor nature of the proposed works and the surrounding site conditions.



Figure 4: Bushfire Site Plan (proposal location highlighted in blue)
Source: Nearmap, 2020

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

- **All areas currently maintained should be maintained for the lifetime of the development.**
- Fuel management within the site should be maintained in accordance with an Inner Protection Area (IPA) as detailed within Appendix 4 of PBP.
- Hazardous/Flammable material storage should be avoided on the northern portions of the property

5.1.1 Environmental Considerations

No tree clearing is required for bushfire protection.

5.2 Construction Standards

Whilst bush fire is not captured in the NCC for Class 5-8 buildings, the following is recommended (where applicable) for the proposed development for compliance with PBP;

- That the proposed exhaust ducts and any mechanical ducted provides screens (aluminium, steel or bronze metal mesh having an aperture size of $\leq 2\text{mm}$) over air intake vents and ensuring that exhaust vents are either screened or fitted with dampers that close when positive outward air pressure is lost to ensure the maintain ember protection to the inside of the building.

5.3 Property Access and Evacuation Safety

- Safe access is provided to the subject property by Old Pittwater Road and the existing concrete driveway (>5m in width). This road will serve both as an access point for firefighters and an egress point for occupants during a bushfire event.
- It is recommended that the building occupants prepare a bushfire survival plan which addresses the option to leave early prior to 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)

5.4 Water and Utility Services Supply

5.4.1 Water

The site is connected to the reticulated supply of water and within 90m of a water hydrant (See Figure 4). No details of any internal fire hydrant system have been provided. In recognition of these factors, 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 structure;

5.4.2 Gas (if applicable)

- Any gas cylinders or gas connections should be installed and maintained in accordance with 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 underground connection

7.0 AIMS & OBJECTIVE COMPLIANCE

The following table indicates compliance or otherwise with the objectives as outlined in Section 8.3.1 of PBP for Class 5 to 8 buildings.

PBP OBJECTIVE	COMPLIANCE
to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;	Old Pittwater Road and the internal and surrounding road network are considered adequate for fire-fighter access and occupant evacuation. The internal road/parking areas within the property would allow for safe vehicle movement to and from the site.
to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;	Recommendations for the production of a bushfire survival plan in accordance with RFS guidelines have been recommended
to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and	The existing water and hydrant network are deemed to be sufficient (no water pressure testing provided). Any new gas and electricity supply should meet with the recommendations of this report.
provide for the storage of hazardous materials away from the hazard wherever possible.;	Recommendations to not store flammable material on the northern portions have been made.

With reference to the above comments and nature of the proposed development, it is considered that with the inclusion of the recommendations detailed within this report, the proposal is deemed to meet with the objectives as outlined in Section 8.3.1 of PBP

6.0 CONCLUSION

Clarke Dowdle & Associates have been engaged to conduct a Bush Fire Assessment Report upon the property located at 100 Old Pittwater Road, Brookvale, NSW. This original assessment was performed in June 2020 and was conducted in accordance with the procedures and methods recommended in the NSW Rural Fire Service published document 'Planning for Bushfire Protection, 2019' (PBP).

This report has outlined and provided recommendations demonstrating how the proposed development may comply with the performance criteria set out in PBP.

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



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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.
- Standards Australia, (2018), *AS3959 Construction of Buildings in Bushfire-prone Areas*. Standards Australia International