

Bushfire Assessment Report

Industrial Storage and Distribution Facility

75-87 Dunheved Circuit SAINT MARYS

Prepared for

On behalf of Concrete Estates Pty Ltd

C/- EMKC Australia Pty Ltd (Project Development Manager)



Project Tracking:

Project Name:	J026 – Industrial Development Bushfire Assessment
Client Details:	Concrete Estates Pty Ltd c/- EMKC Australia Pty Ltd Matthew Brehaut Assistant Development Manager Level 1, 140 Bourke Street Melbourne, Victoria 3000
Project Address	Lot 2 DP1175850 75-87 Dunheved Circuit, SAINT MARYS NSW
Local Government Area	Penrith City Council
Land Zoning	IN1 – General Industrial
Bushfire Prone Land	Vegetation Buffer
Proposed Development	Construct industrial warehouse facility on vacant land
BCA Building Classification	Class 7b: Buildings are typically warehouse, storage building or buildings for display of goods that is for wholesale.

Version	Primary Author(s)	Description	Date Completed
V1.1	Dan Pedersen BPAD16293	Final	27 April 2021

Dan Pedersen / Director Cool Burn Fire Ecology

B.Sc. (ecology), Grad. Dip. (Design for Bush fires)
Fire Protection Association of Australia BPAD Level 3 BPD-PA 16293



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1. Introduction

EMKC on behalf of Concrete Estates Pty Ltd have commissioned Cool Burn Pty Ltd (Cool Burn) to prepare a Bushfire Assessment Report for the proposed development - construction of an industrial warehousing facility for storage and distribution of PVC piping.

The proposed industrial development is at 75-87 Dunheved Circuit, Saint Marys (the site), legally known as Lot 2 DP1175850 (Figure 1). The site is currently a vacant site. This type of development is classified as a Class 7b structure (BCA).

The site is within the Penrith City Council Local Government Area (LGA) and has been mapped as within land affected as Bushfire Prone (Figure 2). Penrith City Council are the consent authority and require a Bushfire Assessment to support the approvals and construction of the industrial warehousing facility.

To satisfy Council for the purpose of bushfire protection, Cool Burn have reviewed and applied the following guidelines and standards:

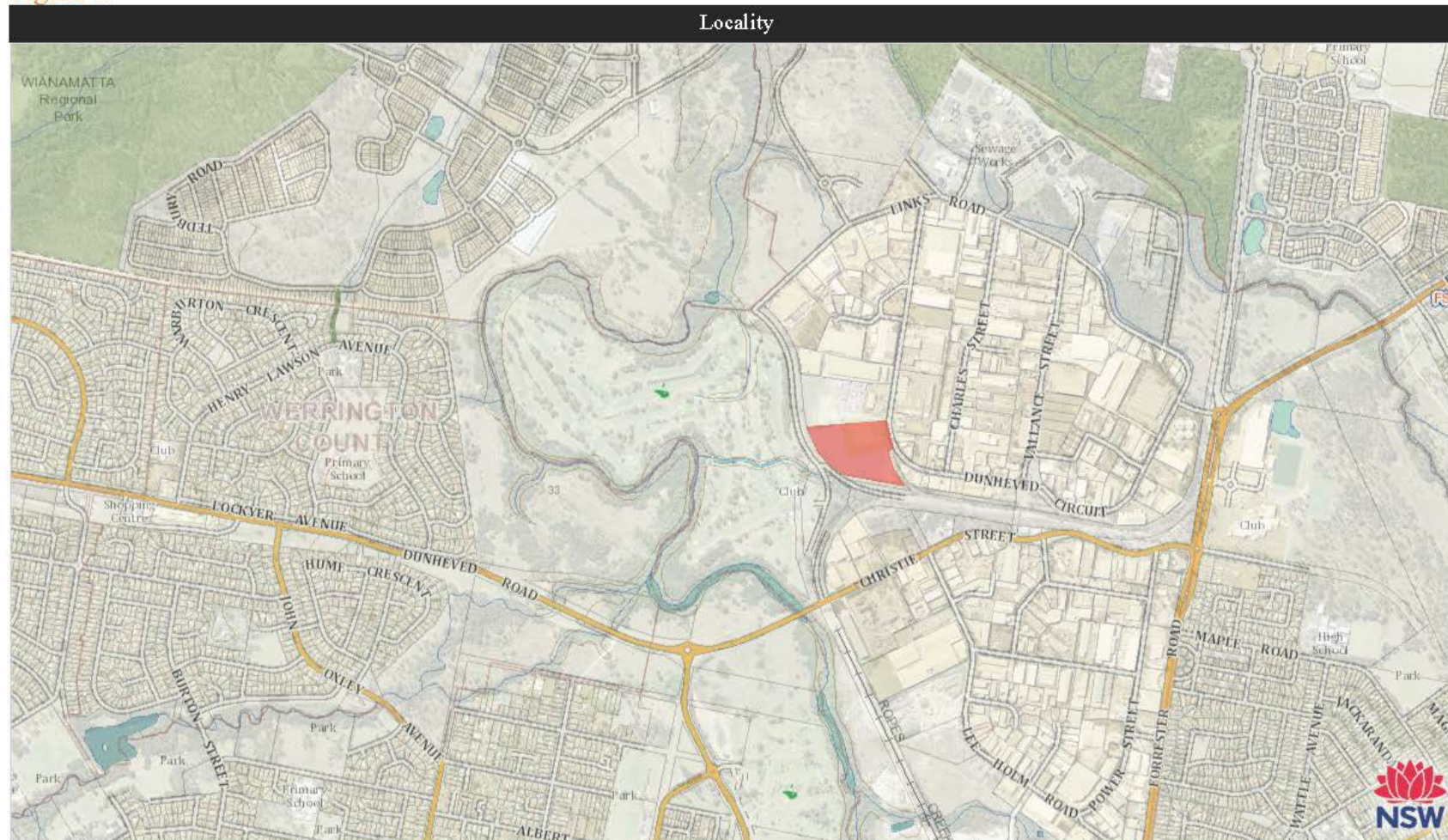
- Planning for Bushfire Protection 2019

This assessment takes into account various factors such as the bushfire prone nature of the land and surrounding vegetation, bushfire risk and proposed use in the consideration of the assessment against Planning for Bushfire Protection (PBP 2019) requirements.

This assessment has been prepared by a suitably qualified bushfire practitioner, Dan Pedersen (BPAD Level 3 BPAD 16293).

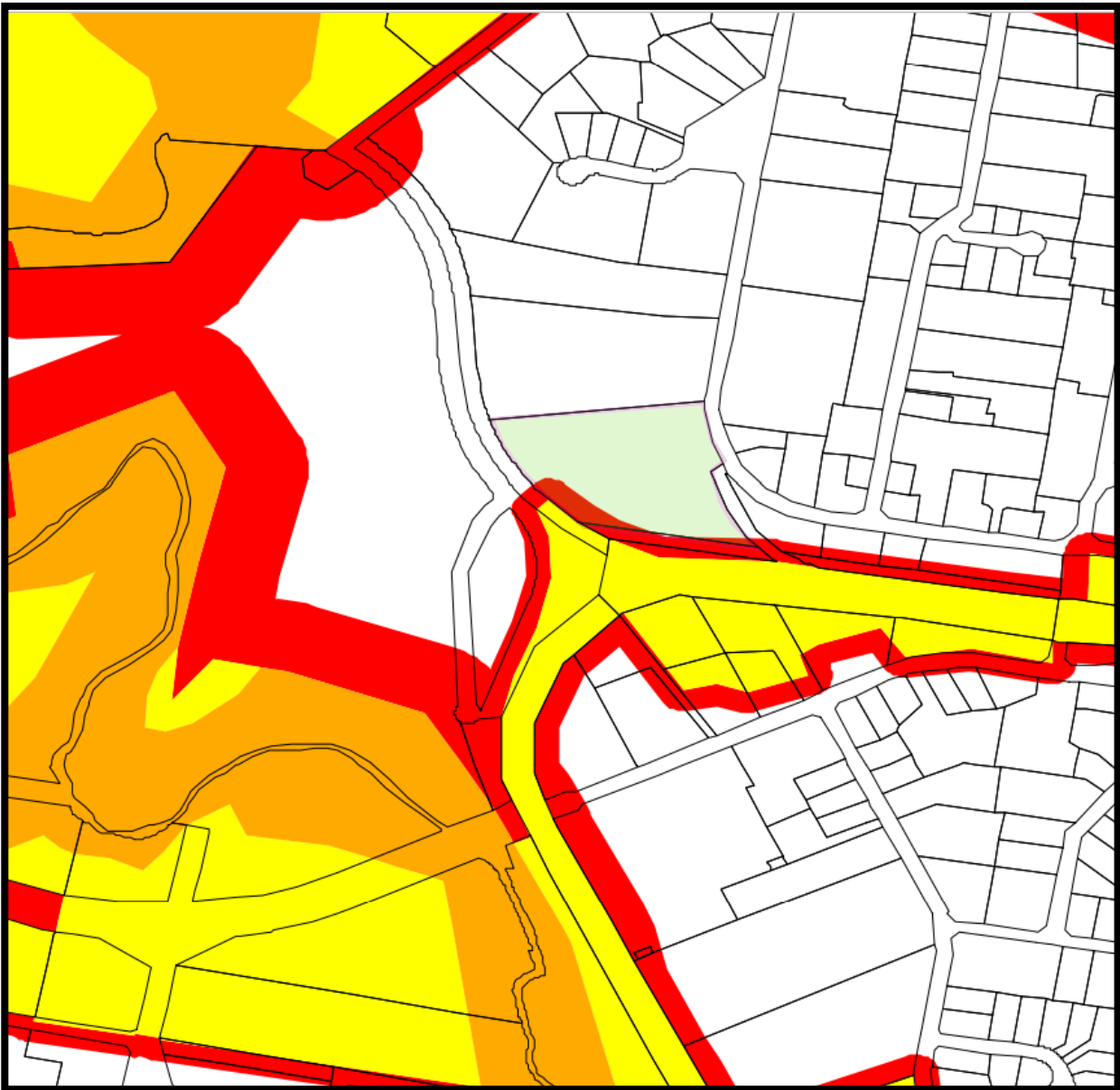
Figure 1 Location

Figure 1



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Figure 2 Bushfire Prone Land Map



Penrith City Council LGA – Bushfire Prone Land Map (2015)

2. Legislative Framework

The site is within designated bushfire prone land. The development in bushfire prone areas triggers a number of legislative considerations depending on the type of development proposed.

Section 4.14 of the *Environmental Planning and Assessment Act (EPA Act)* requires that development conforms to the RFS document *Planning for Bushfire Protection (PBP 2019)*.

The industrial warehouse facility is considered as “other” development and a Class 7b structure under the National Construction Code (NCC).

PBP 2019 identifies ‘other non-residential’ development which includes commercial uses, industrial uses, infrastructure and development. In order to comply with PBP 2019, the following conditions must be met for a new use within a Bushfire Prone Area:

- satisfy the aim and objectives of PBP 2019;
- consider any issues listed for the specific purpose for the development; and
- propose an appropriate combination of Bushfire Protection Measures (BPMs).

The aim and objectives that must be satisfied in PBP 2019 include:

The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.

2.1. “Other” Development

Under the building classification system within the National Construction Code (NCC), Class 5 to 8 buildings include offices, shops, factories, warehouses, public car parks and other commercial and industrial facilities. Class 7b are typically warehouse, storage building or buildings for display of goods that is for wholesale.

The NCC does not provide for any bushfire specific performance requirements for these particular classes of building. As such the *Australian Standard for Construction of Buildings in Bushfire Prone Areas (AS3959)* and the *National Association for Steel-framed Housing (NASH Standard)* are not considered a set of ‘deemed to satisfy’ provisions. Whilst bushfire is not

captured in the NCC for Class 5-8 buildings, the following objectives from PBP 2019 will be applied in relation to access, water and services, and emergency and evacuation planning:

- provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;
- provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;
- 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
- provide for the storage of hazardous materials away from the hazard wherever possible.

2.2.Limitations of Planning for Bushfire Protection 2019

Due to certain limitations, the BPMs contained in PBP do not guarantee that loss of life, injury and/or property damage will not occur during a bush fire event. Limitations of the document include, but are not limited to uncertainties in the following areas:

- Fire Danger Index and climatic variability
- fuel loads
- existing and future developments
- human behaviour
- maintenance.

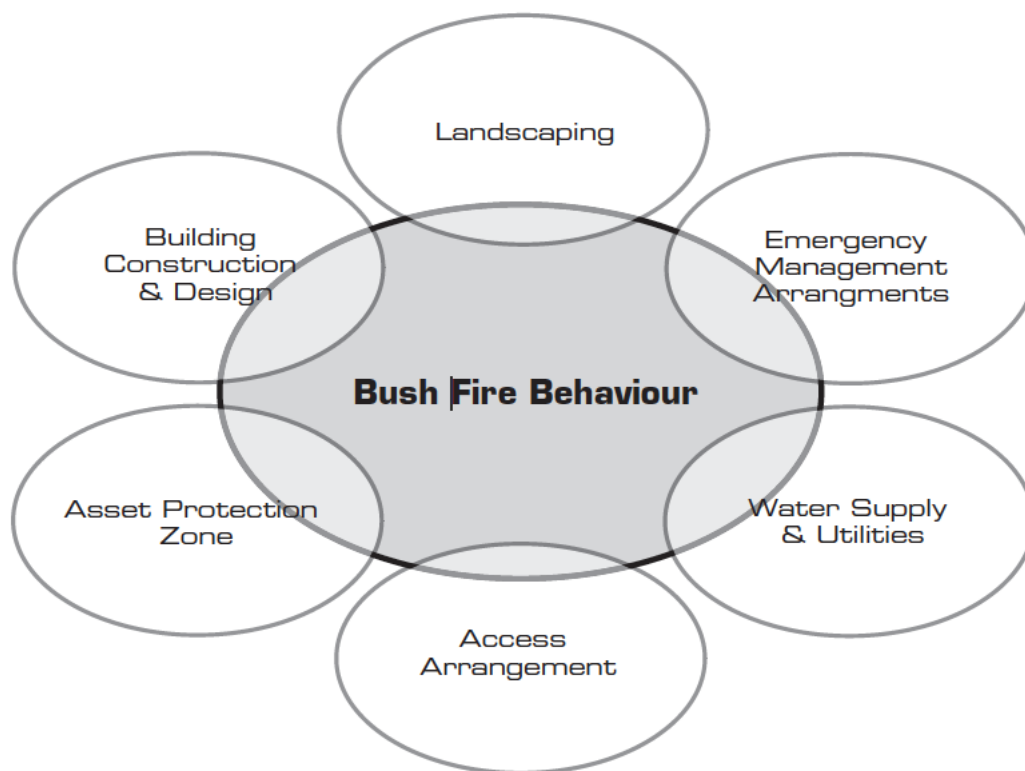
It is possible that days of higher Fire FDI than the FDI levels assumed within PBP 2019 may be experienced (ie above FDI 100). The performance of buildings constructed in accordance with PBP and the NCC may be inadequate due to excessive levels of radiant heat exposure, flame contact, embers travelling further than expected and excessive winds.

3. Bushfire Risk Assessment

PBP 2019 recognises the unique attributes of development and promotes detailed site analysis and the application of a combination of BPMs to achieve an acceptable outcome.

The BPMs work in combination to provide a suite of measures that meet the aim and objective and of PBP (shown in Figure 3).

Figure 3 Bushfire Protection Measures



3.1. Bushfire Threat Assessment Methodology

PBP 2019 provides a methodology to determine the bushfire threat and commensurate size of any APZ that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation.

The following assessment is prepared in accordance with PBP 2019. This assessment is based on both a site inspection, detailed GIS mapping and desktop and 'on-ground' assessment of the site utilising the following resources:

- Planning for Bush Fire Protection (NSW RFS, 2019);
- Council Bushfire Prone Land Map;
- Aerial mapping;
- Detailed GIS analysis;

3.2. Bushfire Prone Land

Bushfire prone land (BFPL) is land that can support a bushfire or is subject to bushfire attack. Bushfire prone land maps provide a trigger for the development assessment provisions. Any land parcels affected by BFPL must apply the legislative requirements for developing and building on bushfire prone lands.

BFPL is identified by Council (November 2014) and mapping prepared, which is certified by the Commissioner of the RFS, for the purposes of Section 10.3 of the EPA Act.

Figure 2 shows that the site is affected by buffers associated with Category 2 vegetation.

3.3. Vegetation Assessment

The RF Regulation requires a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in PBP 2019.

Predominant Vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP 2019. The relevant vegetation types found to be within and adjacent to the site are shown in Figure 4.

Vegetation surrounding the site is for the majority managed land, associated with industrial development or the golf course (west). The bushfire prone vegetation affecting the site has been determined as:

- Cumberland Plain Woodland remnant (less than 2ha total area)

The predominant bushfire prone vegetation to the proposed construction site is the remnant woodland to the south (Figure 4).

REVISIONS		
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B	SYDNEY WATER ASSET SURVEY OVERLAY	29.03.21
C	WAREHOUSE SHIFTED DOWN TO AVOID SEWERAGE LINE	16.04.21
D	LD PAVEMENT AREA CORRECTED	23.04.21
E	1% FLOOD EXTENT	30.04.21
F	REVISION - SITE ADDRESS, OSD TANK, RWT, SILOS	14.05.21

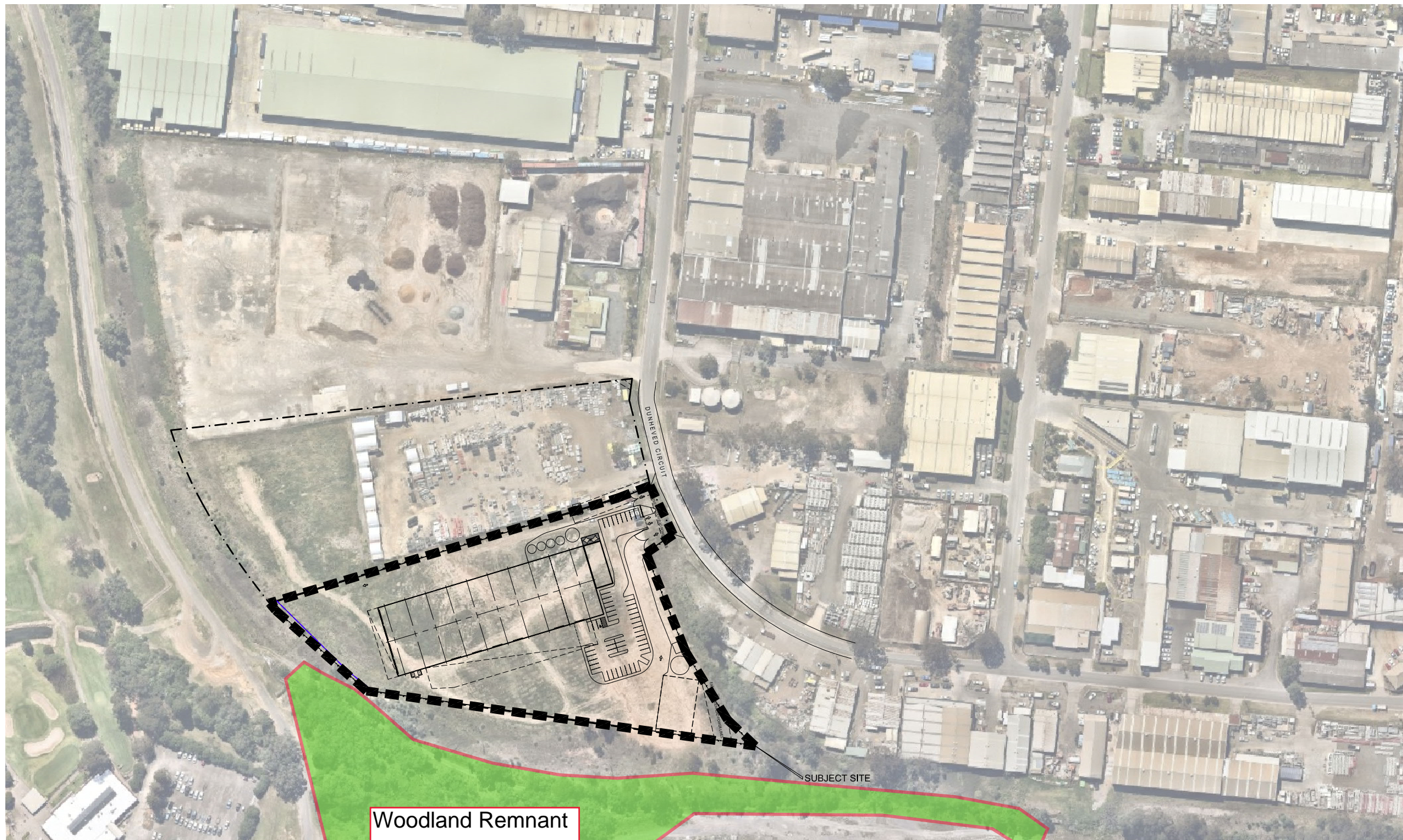
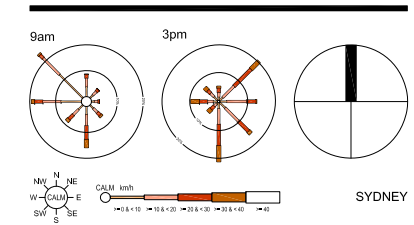


Figure 4 Bushfire Assessment Map

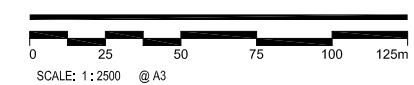


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PROJECT
PIPE MAKERS
75 - 87 DUNHEVED CIRCUIT
ST MARYS, NSW

DRAWING TITLE
PROPOSED ESTATE PLAN



CREATE DATE: 14.05.2021 PLOT DATE: 14.05.2021
LAST SAVED BY: yoonmeng.joh

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3.4.Slopes Influencing Bushfire Behaviour

The RF Reg requires an assessment of the slope of the land on and surrounding the property, out to a distance of 100 metres from the boundaries of the property or from the proposed development footprint.

The 'effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP 2019. This is conducted by measuring the worst-case scenario slope where the vegetation occurs over a 100m transect measured outwards from the development boundary or the existing/ proposed buildings.

The slopes supporting the bushfire prone vegetation (south) are assessed as generally Flat (Figure 4).

3.5.Asset Protection Zones

For proposed new uses, PBP 2019 requires that a minimum separation is provided in the form of Asset Protection Zones (APZ) or defensible space. The APZ is a fuel-reduced, physical separation between buildings and bushfire hazards.

For 'other' developments, APZ requirements are based on providing defensible space as well as any other performance standards detailed in AS1949:2017 or other relevant standard.

To satisfy the PBP 2019, the proposed development can demonstrate suitable access and landscaping around the industrial facility, exceeding 10m width, and which are consistent with a defensible space. This defensible space (i.e. 10m trafficable and have capacity for B-Double heavy vehicles) would be applied to all elevations of the proposed warehouse, such that no specified APZ are required.

3.6.Construction

The general fire safety construction provisions of the NCC are taken as acceptable solutions. No specific bushfire protection construction requirements apply to this industrial facility.

3.7.Landscaping

The proposed warehouse facility and operational area will occupy the whole site, with landscaping proposed along eastern edge of site and in the car parking area.

Any landscaping should consider potential for ember associated with a fire in bushland to the south. Landscaping design should ensure the vegetation is maintained to a standard similar to minimum APZ standards, which would ensure no buildup of dry fine fuels at or near vulnerable building components.

3.8. Access

The PBP 2019 access requirements state that access roads shall enable safe access and egress for community evacuation at the same time that emergency service personnel are arriving to undertake firefighting operations. To this end, roads would provide sufficient width and other dimensions to ensure safe unobstructed access and allow firefighting crews to operate equipment around the vehicle.

Road width is defined as the trafficable width from kerb to kerb (inside edges) or the inside edge of the table drain.

Public road access to the existing industrial site is via Dunheved Circuit, a sealed 2-way road that demonstrate the acceptable solutions and meet the NSW RFS performance criteria (PBP 2019).

Property access from Dunheved Circuit will support carrying capacity and turning capacity suitable for B-Double articulated heavy vehicles, circling from the site entry around the perimeter of the warehouse. The design is deemed satisfactory, capable to demonstrate the acceptable solutions and meet the NSW RFS performance criteria (PBP 2019).

The access layout including public road access and property access provides ample and suitable access for emergency events, and currently meet the acceptable performance requirements as stated in PBP 2019.

3.9. Water and Services

The industrial facility will be supplied via the existing reticulated water supply, with hydrants located at regular intervals, and water supply accessible and reliable for firefighting operations.

Fire hydrant, spacing, design and sizing within the facility will comply with the relevant clauses of Australian Standard (AS 2419.1:2005) and the NCC.

The on-site hydrant design will ensure hydrants are not located within any road carriageway, and clearly identified.

Electricity and gas services will meet current Australian Standards and will not have potential to ignite bushland and/or the fabric of buildings.

3.10. Emergency Management

Emergency and evacuation planning will be inherently included in the industrial facilities' Emergency Management Plan (EMP). With respect to bushfire considerations, the EMP should consider informing the potential for bushfire evacuation, and the most appropriate actions with respect to evacuation.

4. Conclusion

Bushfire risk to the proposed industrial warehouse facility has been assessed in accordance with the methodology detailed in PBP 2019. This type of development is considered as “other” development (‘Class 7b Structure’) under Planning for Bushfire Protection 2019.

The site is captured under the bushfire prone land mapping, and upon further investigation, the highest bushfire threat to the proposed facility is remnant woodland area to the south.

The design incorporates a heavy vehicle thoroughfare at the perimeter of the warehouse (suitable for B-Double vehicles), and which provides an acceptable defensible space for any emergency operations, including firefighting. Subsequently, no specific APZ are required.

The general fire safety construction provisions of the NCC are taken as acceptable solutions (no specific bushfire protection construction requirements apply to this industrial facility).

The bushfire assessment has taken into consideration the existing and proposed access and water provisions, and emergency management response.

It is determined the location and design for the proposed industrial warehouse facility meets the aims and objectives of PBP 2019 and can demonstrate compliance with the acceptable solutions for ‘other development’ PBP 2019.

Dan Pedersen | Principal Bushfire Ecology

Cool Burn Pty Ltd

B.Sc., Grad. Dip. (Design for Bushfires),

Fire Protection Association of Australia BPAD Level 3 BPD-PA 16293



5. Assessment Against the Aims and Objectives of PBP

The proposed industrial warehouse facility requires an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in PBP 2019. Table 1 details the compliance with PBP.

Table 1 Compliance with Aim & Objectives of PBP

Aim	Meets Criteria	Comment
<i>The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, onsite amenity and the protection of the environment.</i>	Yes	The proposed development complies with PBP 2019. The location of the industrial warehouse facility has considered bushfire risk and applied bushfire protection measures to mitigate the risk
Objectives	Meets Criteria	Comment
<i>Afford occupants of any building adequate protection from exposure to a bushfire.</i>	Yes	Suitably setback from bushfire hazard
<i>Provide for defensible space to be located around buildings.</i>	Yes	Defensible space inherent in surrounding landscape and design
<i>Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent direct flame contact and material ignition.</i>	Yes	The general fire safety construction provisions and specifications are taken as acceptable solution to avoid material ignition.
<i>Ensure that safe operational access and egress for emergency service personnel and occupants is available.</i>	Yes	Access and egress for emergency vehicles and evacuation can meet the requirements of PBP
<i>Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads, in the asset protection zone.</i>	Yes	The facility purpose and general operational arrangements would satisfy this objective.
<i>Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).</i>	Yes	Existing and proposed services would satisfy this objective.

Appendix 1 References

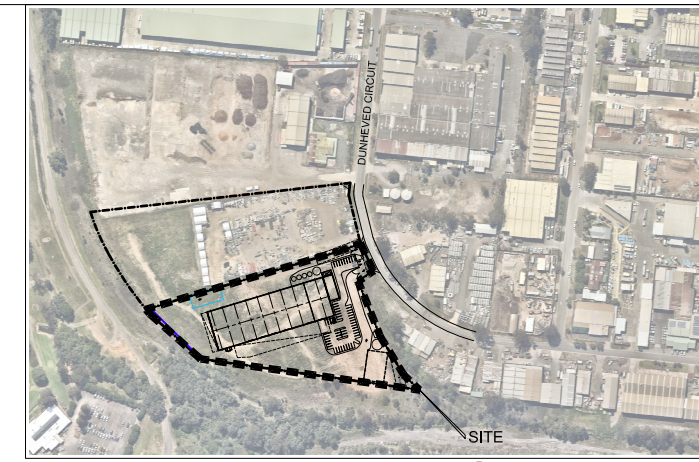
Keith, David (2004) – Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT. The Department of Environment and Climate Change

NSW Rural Fire Service (2015) Guide for Bushfire Prone Land Mapping

NSW Rural Fire Service (2019). Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners. Australian Government Publishing Service, Canberra

NSW Government (1979) Environmental Planning and Assessment Act 1979. NSW Government Printer

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LOCATION PLAN

NOTES

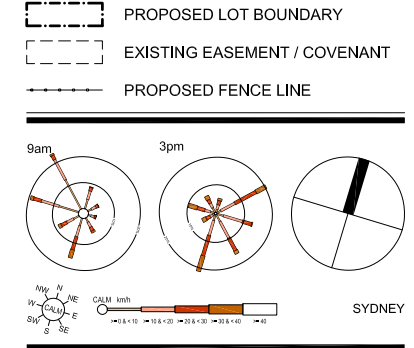
TYPICAL CAR PARKING DIMENSIONS
 UNLESS OTHERWISE NOTED OR DIMENSIONED, ALL CAR PARKING SHOWN ARE OF THE FOLLOWING TYPICAL DIMENSIONS:
 • BOTH STANDARD & ACCESSIBLE SPACES = 2.6m X 5.5m TYPICAL
 • CAR PARKING AISLE WIDTH = 6.5m TYPICAL

TYPICAL FENCE TYPES (ADJACENT GATES TO MATCH)
 FN-1 1.8m HIGH BLACK GARRISON FENCE, TO STREET FRONTAGE AS SHOWN.
 FN-2 1.8m HIGH BLACK CHAIN WIRE MESH FENCE WITH ADDITIONAL 3 ROWS OF BARBED WIRE ABOVE TO 2.1m OVERALL FENCE HEIGHT, TO SITE PERIMETER AS SHOWN.

DEVELOPMENT SUMMARY

SITE AREA	20,200 sqm
WAREHOUSE	4,800 sqm
OFFICE (2 LEVELS)	500 sqm
TOTAL BUILDING AREA	5,300 sqm
EFFICIENCY / SITE AREA	26.24 %
FUTURE WAREHOUSE	600 sqm
AWNING (6m)	240 sqm
AWNING (15m)	1420 sqm
CAR PARKING PROVIDED	53 spaces
LIGHT DUTY PAVEMENT (LD)	1,838 sqm
HEAVY DUTY PAVEMENT (HD)	10,280 sqm
* INCL. 366 sqm AREA OVER DETENTION TANK	
UNDERGROUND OSD TANK	366 sqm

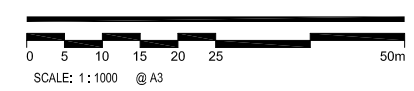
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PIPE MAKERS
 75 - 87 DUNHEVED CIRCUIT
 ST MARYS, NSW

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CREATE DATE: 14.05.2021 PLOT DATE: 14.05.2021
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