

Bushfire Assessment Report (BAR):

Project Name: 38 Hill End Road - Industrial Shed

Prepared for: David Carter

January 2023





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Introduction

Access Environmental Planning has been commissioned by Dave Carter of D&C Powerline Constructions to prepare a Bushfire Assessment for an Industrial Shed development at Lot 5 'Meramie Grove' 38 Hill End Road Carleon (**Figure 1**, **Table 1**).

The development proposes subdivision including (on proposed Lot A) one industrial shed with office space and amenities (floor area 1186 m²), associated car parking and hard stand for truck movements and deliveries to the site (development plans in **Appendix**). The site is currently surrounded by vacant land, on three sides, that will be developed into similar industrial type land use in the short term.

Part of the land parcel is located in the vegetation buffer zone of bushfire prone land, located to the south and the development must consider provisions under the Planning for Bushfire Protection guidelines.

Property Details

Table 1: Client and proposed development location details.

Applicant	Dave Carter of D&C Powerline Construction Pty Ltd
Contact	0418 439 533
Council	Mid-Western Regional Council (MWRC)
Lot / DP	Lot 5 of 'Meramie Grove' (Original part Lot 17/DP 756897)
Address	Industrial Subdivision - 38 Hill End Road Carleon 2850
Land Zoning	IN1 – General industrial
Lot Size (m2)	7992
Bushfire Prone Land	Vegetation Buffer



Figure 1: Site context and location.



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Legislation

Environmental Planning and Assessment (EP&A) Act 1979

Developments on certain bush fire prone land (Clause 4.14) must conform to the specifications and requirements of the relevant version of the *Planning for Bush Fire Protection* (PBP 2019) document prepared by the NSW Rural Fire Service (RFS). Planning for bushfire protection (PBP) principles are:

- control development types allowed in bush fire prone areas;
- minimise radiant heat and flame impacts by adequate separation distance of the development from bush fire hazards;
- minimise the building vulnerability;
- enable appropriate access and egress for the public and firefighters;
- provide adequate resources including water supplies for bush fire suppression operations;
- focus on property preparedness, including maintenance and emergency planning; and
- facilitate the maintenance of Asset Protection Zones (APZs), access for firefighting and on site equipment for fire suppression.

PBP acknowledges the lower risk of industrial, commercial or 'other' development (compared to residential development) but such development must:

- Satisfy the aims and objectives of PBP
- Consider development specific issues, and
- Propose an appropriate combination of bushfire protection measures (BPMs)

The provision of a defendable space must be appropriate for the scale of the development and protection measures must work in combination to minimise bush fire impacts and facilitate unhindered access to all required services.

Under the National Construction Code (NCC), Class 5 to 8 buildings include offices, factories, warehouses and industrial facilities however, there is no bush fire specific performance requirements for such buildings. "As such the Australian Standard for Construction of buildings in bush fire prone areas (AS 3959) and the National Association of Stee-Framed Housing (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" (PBP 2019). The following objectives apply:

- 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;
- to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;
- to provide adequate services of water for the protection of buildings during and after the passage of bush fire, locating gas and electricity so as not to contribute to the fire risk; and
- provide for the storage of hazardous materials away from the hazard wherever possible.

The general fire safety construction provisions of the NCC are considered acceptable solutions but development specific assessment is also considered prudent.

Bushfire Prone Land

Part of the site is designated vegetation buffer of bushfire prone land. The site and surrounding industrial lots, are old agricultural land, clear of woody vegetation, with negligible bushfire risk.

Bushfire prone land, that can support a bushfire, is mapped (**Figure 2**, from the NSW Planning Portal) south of the proposed development but is separated from the site by 30 m of managed land including a classified road. The location of MWRC infrastructure: the waste disposal facility and sewage plant to







the south, potentially also reduces the risk of bush fire from this direction. Further assessment of bush fire risk to the site has been conducted by considering vegetation formations and slope for the various elevations in accordance with PBP 2019.



Figure 2: Bushfire Prone Land (BFPL) mapping.

Proposal Details

The proposed development is an industrial shed composed of steel sheeting on concrete slab (**Table 2**). The single storey shed dimensions are approximately 20 m x 50 m with attached office and amenities area of 15.4 m x 6.8 m, giving a building footprint of 1186 m² (including an awning) (development plans are shown in the **Appendix**). To the north of the proposed building there will be provision of a car parking area (for up to 11 vehicles) and hard stand, allowing safe and efficient heavy vehicle movement, accommodating trucks up to semi-trailer size (19 m length). Landscaping consisting of well-maintained groundcover, shrubs and trees will be installed according to MWRC guidelines along the boundary to the south (9 m distant) and west (12 m distant) of the proposed building.

Proposal Type	New industrial development				
Select any that apply:	New building	X	Urban	Isolated rural	
	Rural residential				
	Commercial	X	Warehouse	Shed	X
	Addition to existing				
	Single storey	X	Multiple storey		
Any other type					
Description	Large industrial shed (steel and concrete) with attached office/amenities space, car parking and hardstand area				
Copy of Plans (attached)	Yes	X	No		

Table 2: Outline of development characteristics.



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Site Assessment

Methodology

This bushfire assessment is based on a desktop analysis and brief site visit. Resources accessed include:

- Bushfire hazard mapping
- Planning for Bushfire Protection (PBP) (NSW RFS, 2019)
- Aerial imagery

To compile information regarding asset protection zones (APZs) the vegetation and slope was assessed in all directions, out to a distance of 140 m, from the proposed development site (**Table 3**). A measure of fire weather factors, such as vegetation dryness, air temperature, wind speed and humidity, contribute to the Forest Fire Danger Index (FFDI) which is 80 for the MWRC area.

Site Details

Table 3: Assessed site vegetation and slope details.

Site	Elevation					
characteristic	North	South	East	West		
Vegetation	Grass	Road / Woodland	Grass	Grass		
Separation distance (m)	31	14/30	250	22		
Describe slope	Downslope	Upslope	Downslope/Flat	Upslope/Flat		
Actual slope (°)	4	4	2	2		
Slope (hazard) (°)	0 - 5	0 -5	0 - 5	0 - 5		
BAL	12.5	12.5	N/A - Managed Land	12.5		

If proposal is greater than 100 m from vegetation hazard then there are no construction requirements.

Table 4: Additional site characteristics.

Factor	Site Conditions
Forest Fire Danger Index (FFDI)	80
BAL	12.5
Building BAL	To be constructed to 12.5 where applicable
Certified Fire Trails	None
Threatened Species	None known – see statement of environmental
	effects (SEE)
Endangered Ecological Community (EEC)	None known (SEE)
Other significant environmental features	None
Indigenous Cultural Heritage	None known (SEE)







As the distance of the proposed development to fire hazard vegetation is known this informed the Bush Fire Attack Level (BAL) required for the building. BAL 12.5 may undergo ember attack (**Table 5**).

Table 5: Radiant heat flux exposure	and Bushfire Attack Level	(BAL) (PBP p 85, 2019).
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Heat flux exposure	Description	AS 3959 construction level
N/A	Minimal attack from radiant heat and flame due to the distance of the building from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements.	BAL-LOW
⊴12.5	Attack by burning debris is significant with radiant heat (not greater than 12.5kW/m ²). Radiant heat is unlikely to threaten building elements (such as unscreened glass). Specific construction requirements for ember protection and accumulation of debris are warranted.	BAL-12.5
>12.5 ⊴19	Attack by burning debris is significant with radiant heat flux (not greater than 19kW/m ²) threatening some building elements (such as screened glass). Specific construction requirements for embers and radiant heat are warranted.	BAL-19
>19 ≤29	Attack by burning debris is significant and radiant heat flux (not greater than 29kW/m ²) threatens building integrity. Specific construction requirements for ember and higher levels of radiant heat are warranted. Some flame contact is possible.	BAL-29
>29 ≤40	Radiant heat flux and potential flame contact could threaten building integrity.	BAL-40
>40	Significant radiant heat and significantly higher likelihood of flame contact from the fire front will threaten building integrity and result in significant risk to residents.	BAL-FZ

Bushfire Protection Measures

Bushfire protection measures (BPMs) are the relevant specifications and requirements that need to be satisfied to improve life safety, property protection and community resilience to bush fire attack. They include:

- Asset protection zones (APZs),
- Access,
- Construction, siting and design,
- Landscaping,
- Services, and
- Emergency and evacuation planning.

Asset Protection Zones

Asset protection zones (APZs) are areas of reduced fuel load and effectively buffer developed assets from bushfire attack as well as providing a defendable space, allowing fire-fighting activities. The methodology for calculating the required APZ distances (formulated for residential development) is contained within Appendix 1 of PBP 2019. This APZ provision is therefore in excess of that required for 'other' (industrial) development. As APZs for the proposal have been determined in accordance with PBP there is an increased margin of safety for the proposed industrial development giving a higher level of assurance in the developments' capacity to withstand a bush fire threat.

APZs will be managed and maintained to prevent the spread of fire.



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Access

The site has good access via adjacent public roads Hill End Road and Marsh Avenue. These roads

- have adequate capability to handle increased volumes of traffic in the event of a bushfire emergency, and
- have two way access.

Access arrangements to the development site are designed for semi-trailer traffic and therefore allow adequate emergency response vehicle manoeuvring space.

Construction

The construction standards to be used for the proposed development building elements will be in accordance with AS3959, BAL 12.5 where applicable. Non-combustible sarking will be used. There are no timber building elements and subfloors that require specific protection measures. Use of chain mesh fencing will minimise spread of bush fire.

Landscaping

All landscaping will be designed and managed to minimise building exposure to flame contact, radiant heat and wind-driven embers. Clear low-cut lawn or pavement areas will be maintained close to the building. Trees and shrubs used in boundary landscaping will be maintained so vegetation will not overhang the building and tree canopies will not be continuous. For larger maturing trees lower limbs will be removed up to a height of 2 m above ground, with smooth barked and evergreen trees the preferred species type.

Services

Water

There will be adequate water supplies for firefighting as reticulated water is to be provided to the new development and an adequate water supply for firefighting purposes will be installed and maintained. The following requirements from PBP 2019 (p. 59, 60) will be provided for the new development:

- fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005;
- hydrants are not located within any road carriageway;
- fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005;
- all above-ground water service pipes external to the building are metal, including and up to any taps; and
- fire hose reels are constructed in accordance with AS/NZS 1221:1997 Fire hose reels and installed in accordance with the relevant clauses of AS 2441:2005 Installation of fire hose reels.

Electricity

The location of electricity services will limit any possible ignition of bushland or buildings by underground power provision or ensuring no trees are close to power lines.

Gas

The location and design of gas services will not lead to the ignition of bushland or the fabric of buildings as all installations will be according to industry standards, guidelines of relevant authorities and using metal piping for above ground connections.



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Emergency planning

It is recommended that the bush fire maintenance plan and fire emergency procedures for the site be reviewed to ensure appropriate management responses in the event of extreme or above fire danger ratings and fires in the vicinity of the site.

Recommendations

The following recommendations are made to achieve bushfire protection measures for the proposed industrial shed development:

The construction standard will be to BAL 12.5 where applicable to an industrial, steel and concrete shed in accordance with the Australian Standard for Construction of Building in Bushfire Prone Areas (AS3959).

Landscaped areas will be maintained to minimise the accumulation of potential fire fuel load.

A site emergency management plan will be required during operation phase of the development.

Concluding Remarks

This report details a bushfire risk assessment for the proposed commercial development comprising an industrial shed at Lot 5 "Meramie Grove" 38 Hill end Road, Carleon. The proposed development site is located within the vegetation buffer zone of adjacent bushfire prone land. The development proposes a large industrial shed with office space, amenities, on-site parking and truck turning area.

All elements of bushfire attack, in accordance with the aims and objectives of the Planning for Bushfire Protection (2019) guidelines, have been considered. The development will proceed by implementing the recommendations as stated above to satisfy NSW bushfire planning requirements and demonstrate compliance with Planning for Bushfire Protection (2019) aspirations.

Declaration

I declare that this bush fire assessment report has been prepared in accordance with the requirements of the relevant legislation. The report has all available information that is relevant to the bush fire assessment of the development to which it relates and to the best of my knowledge, the information contained herein is neither false nor misleading.

Champton DO

Christopher Botfield



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References

- Australian Building Codes Board (2019). National Construction Code Volume One Building Code of Australia. <u>https://ncc.abcb.gov.au/editions/2019-a1/ncc-2019-volume-two-amendment-</u><u>1/section-1-governing-requirements/part-a6-building</u>
- 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 (RFS). (2019). Planning for Bush Fire Protection: A Guide for councils, planners, fire authorities and developers. <u>https://www.rfs.nsw.gov.au/___data/assets/pdf_file/0005/130667/Planning-for-Bush-Fire-Protection-2019.pdf</u>





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Abbreviations

AEP	Access Environmental Planning Pty Ltd
AS	Australian Standard
AS3959	Australian Standard AS 3959:2018 Construction of buildings in bush fire-prone areas
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BAR	Bushfire Assessment Report
BCA	Building Codes of Australia
BFPL	Bush fire prone land
BPM	Bushfire protection measure
DA	Development application
DCP	Development Control Plan
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Reg	Environmental Planning and Assessment Regulation 2021
FFDI	Forest Fire Danger Index
kW/m ²	Kilowatts per metre squared
LEP	Local Environment Plan
NASH	National Association of Steel-framed Housing (2014)
NCC	National Construction Code
PBP	Planning for Bush Fire Protection 2019
RF Act	Rural Fires Act 1997
RF Reg	Rural Fires Regulation 2021
RFS	Rural Fire Service



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Appendix – Development Plans



PROPOSED INDUSTRIAL SHED

LOT 5 OF 'MERAMIE GROVE' **38 HILL END ROAD INDUSTRIAL SUBDIVISION**



LOCATION PLAN NOT TO SCALE

DRAWING SCHEDULE

- 00015 01 LOCATION PLAN & 3D PERSPECTIVES
- 00015 02 PROPOSED SUBDIVISION 00015 03 CUT & FILL PLAN
- 00015 04 SITE PLAN
- 00015 05 FLOOR PLAN & CARPARK CALCULATIONS 00015 06 OFFICE FLOOR PLAN
- 00015 07 ELEVATIONS

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ABN: 126 890 474 02 Mudgee NSW 2850 0421 270 486 evolvebd@outlook.com CLIENT: DBC POWERUNES PROJECT No: 00015

PROJECT: PROPOSED INDUSTRIAL SHED LOT 5 MARSH AVENUE 'MERAMIE GROVE'

DRAWING TITLE LOCATION PLAN & DRAWING No: 01 of 07

REVISION: C ISION DATE DESCRIPTION A 22:11.2022 CONCEPT DI B 25.11.2022 DA PLANS FOR CLIENT 05.12.2022 ISSUED FOR DAVCC

----This descring is in the read in conjunct building descrings, specifications and drawings applicable to this project.

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ANY DISCREPANCIES SHALL BE REFERRED TO EVOLVE BUILDING DESIGN BEFORE PROCEEDING

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE & LEVELS ARE EXPRESSED IN METRES.

PRIOR TO CONSTRUCTION ALL LEVELS, DIMENSIONS, SITE CONDITIONS & SERVICES SHALL BE CHECKED & CONFIRMED ON SITE & WITH RELEVANT SERVICE AUTHORITIES.

WORKMANSHIP & MATERIALS ARE TO BE IN ACCORDANCE WITH THE RELEVANT CURRENT SA'A CODES INCLUDING ALL AMENDMENTS, THE 'BUILDING CODE OF AUSTRALIA - VOLUME 2, 2016 '; POLICY REQUIREMENTS OF 'MID WESTERN REGIONAL COUNCIL';

THE RELEVANT SERVICE AND STATUTORY AUTHORITIES SHALL BE NOTIFIED IN ADVANCE & THEIR APPROVALS OR SERVICES, IF NECESSARY SHALL BE OBTAINED



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EVOLVE BUILDING DESIGN ABN: 126 890 474 02 Mudgee NSW 2850 0421 270 486 evolvebd@outlook.com CLIENT: DBIC POWERUNES PROJECT No: 00015 PROJECT: PROPOSED INDUSTRIAL SHED LOT 5 MARSH AVENUE 'MERAMIE GROVE'

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FLOOR PLAN

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