



Bushfire Assessment

**Proposed warehouse
(COPE Sensitive Freight)**

**Alspec Industrial Business
Park - Orchard Hills**

HBB Property

05 April 2024

(Ref: 20074)

report by
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FPA AUSTRALIA (NO.BPAD18882)
BPAD LEVEL 3 ACCREDITED PRACTITIONER

ABN 28 607 444 833

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1 Introduction

Street or property name:	221-227 Luddenham Road	
Suburb, town or locality:	Orchard Hills	Postcode: 2748
Lot/DP no:	Lot 1 DP 1293805	
Local Government Area:	Penrith City Council	
Type of development:	Warehouse development	

1.1 Background

HBB Property commissioned Peterson Bushfire to prepare a Bushfire Assessment Report for a proposed warehouse development on a lot identified as 'bushfire prone land'.

This report presents the assessment and recommendations to ensure compliance with the relevant bushfire protection legislation for development proposals on bushfire prone land.

This bushfire assessment has been prepared by a consultant accredited by the Fire Protection Association of Australia's BPAD scheme (Accreditation No. BPD-L3-18882).

1.2 Location and description of proposal

The COPE Sensitive Freight development application is seeking approval to construct a warehouse and distribution building on 221-227 Luddenham Road, Orchard Hills (the subject land), situated within the Alspec Industrial Business Park (AIBP) at 221-235 Luddenham Road, Orchard Hills. Figure 1 shows the boundary of the AIBP and the subject land.

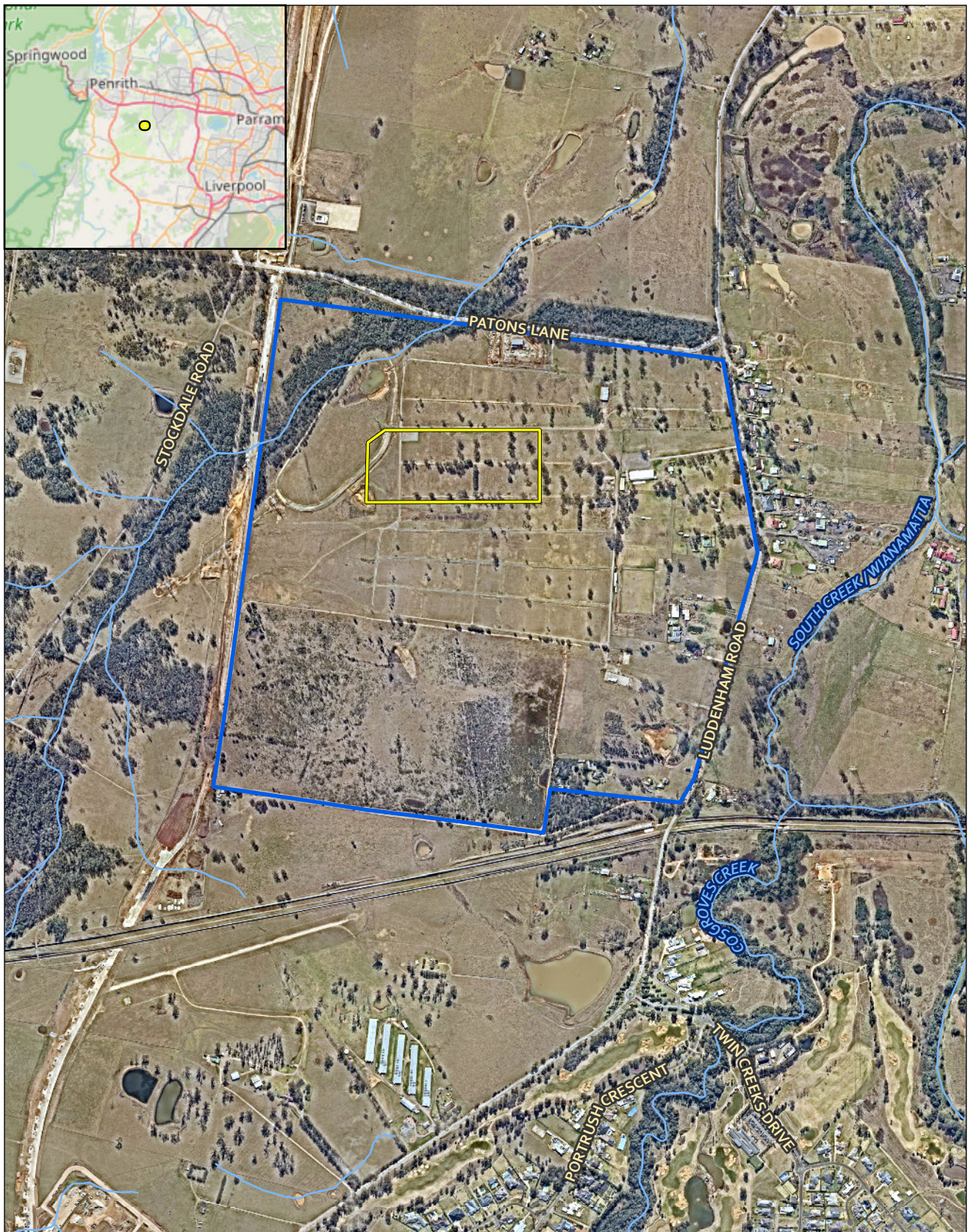
The AIBP Planning Proposal was lodged to Penrith City Council (PCC) in December 2022 and expected to be finalised in February 2024. The AIBP Planning Proposal amended the Penrith Local Environmental Plan (PLEP) 2010 through rezoning the central and eastern portions of the AIBP site to E4 General Industrial which permits the development and operation of warehouse and distribution uses.

The COPE project area is situated within the western portion of the AIBP site and has a direct interface with an electrical easement to the north-west, and two future basins along the northern and western boundaries of the subject land. The proposed development has a direct interface with the north-south internal local road, which provides access to Patons Lane and Luddenham Road. The proposed development site plan is shown on Figure 2.




The Bushfire Assessment Report prepared by Peterson Bushfire for the AIBP Planning Proposal presented a summary of findings and recommendations still of relevance to the COPE local DA which supported the rezoning of AIBP and the development of the COPE proposal.

Bushfire protection measures recommended within the Bushfire Assessment Report for the Planning Proposal are listed below:

- Provision of defensible space consisting of public roads and 6 m wide fire access roads.
- Adequate access for emergency response and evacuation consisting of alternate access to the existing road network.
- Compliant road widths and design.
- Appropriate landscaping.
- Adequate water supply to allow fire-fighting operations by fire authorities.



Legend

-  Watercourse
-  Subject Land
-  Estate Boundary



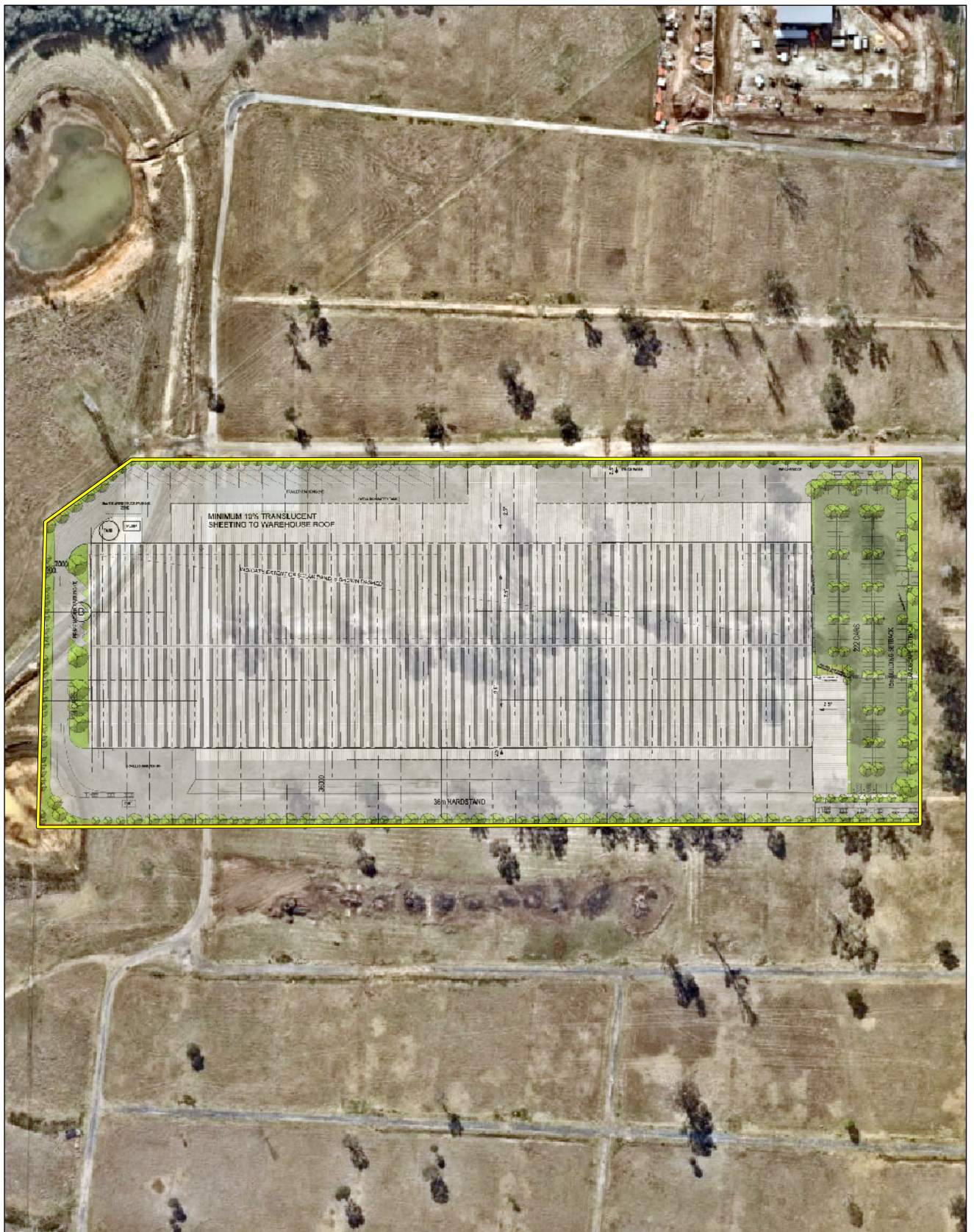
Date: 12/10/2023

0 100 200 400
Metres



Figure 1: The Location of the Subject Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

-  Cadastre
-  Subject Land



Date: 5/04/2024

A scale bar labeled 'Metres' with markings at 0, 12.5, 25, and 50.

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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1.4 Assessment requirements

The subject land is identified as bushfire prone land as shown by the bushfire prone land mapping on Figure 3. The development does not involve habitable uses (Class 1, 2 or 3) or Special Fire Protection Purpose (SFPP) development as defined by 'Planning for Bush Fire Protection 2019' (PBP). Section 8.3 of PBP prescribes the assessment methodology and bushfire protection measures for other uses that do not involve a habitable dwelling or SFPP development.

In order to comply with PBP, the following conditions must be met:

- *satisfy the aim and objectives of PBP outlined in Chapter 1;*
- *consider any issues listed for the specific purpose for the development set out in this chapter; and*
- *propose an appropriate combination of bushfire protection measures.*

It is also important to ensure that a 'defendable space' is provided for the size and scale of the development.

The aim and objectives of PBP are listed below:

1. *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. The objectives are to:
 - a) *afford buildings and their occupants protection from exposure to a bush fire;*
 - b) *provide for a defendable space to be located around buildings;*
 - c) *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;*
 - d) *ensure that appropriate operational access and egress for emergency service personnel and occupants is available;*
 - e) *provide for ongoing management and maintenance of BPMs; and*
 - f) *ensure that utility services are adequate to meet the needs of firefighters.*

Section 8.3.1 of PBP lists the issues specific to Buildings Class 5-8. As stated in PBP, the NCC does not provide for any bushfire specific performance requirements for these building classes. As such the Asset Protection Zones (APZ) and Bushfire Attack Levels (BAL) do not apply as deemed-to-satisfy provisions for bushfire protection. The general fire safety construction provisions of the NCC are taken as acceptable solutions however construction requirements for bushfire protection (i.e. BALs) are to be considered on a case-by-case basis in order to satisfy the aim and objectives of PBP.

The specific issues to be assessed for Buildings Class 5-8 are in relation to access, water supply and services, and emergency and evacuation planning as follows:

1. *Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;*
2. *Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;*
3. *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*
4. *Provide for the storage of hazardous materials away from the hazard wherever possible.*

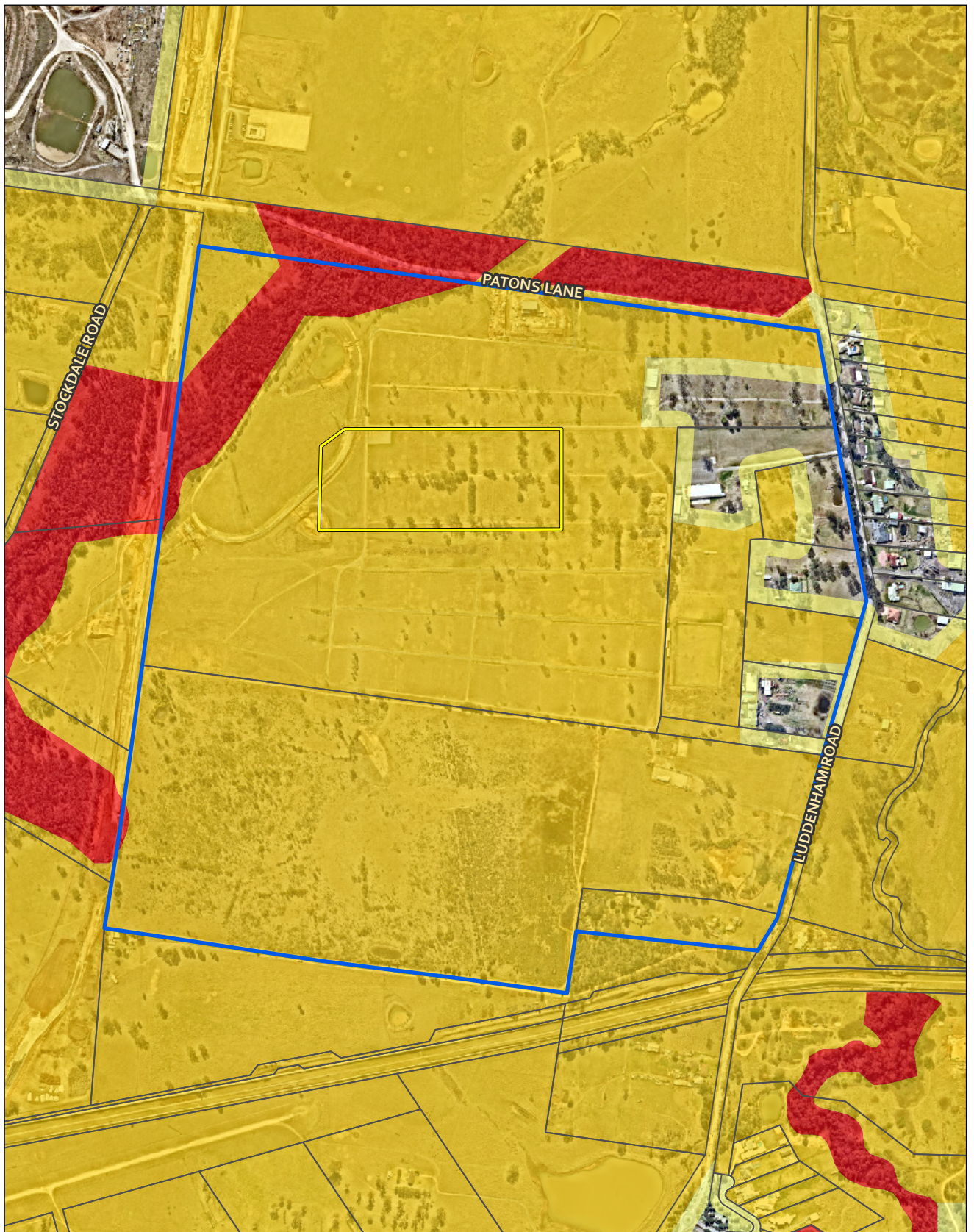
2 Bushfire prone land

The purpose of bushfire prone land mapping is to identify lands that may be subject to bushfire risk based simply of the presence of vegetation that could act as a hazard. The maps are a planning tool used to trigger further detailed assessment. They do not present a scalable measure of hazard, threat or risk. These parameters are to be determined under further assessment in accordance with PBP (i.e. this Bushfire Assessment Report).

The bushfire prone land mapping presented in Figure 3 identifies the presence of bushfire prone vegetation throughout the AIBP and surrounding lands. Any development proposal within a lot containing mapped bushfire prone land (i.e. bushfire prone property) is to comply with the requirements of PBP.

The maps are produced at a broad scale by desk-top Geographic Information Systems (GIS) covering an entire Local Government Area (LGA). They are often conservative and are designed to identify any potential bushfire threat of all levels. The identification of hazards is discussed in the following Section 3.

Most importantly, the identification of bushfire prone land does not preclude development. The maps are not prescriptive and simply trigger further detailed assessment.



Legend

- Subject Land
- Estate Boundary
- Cadastre

Bushfire Prone Land

- Vegetation Category 1
- Vegetation Category 2
- Vegetation Buffer



Date: 12/10/2023

0 100 200 400
Metres

Figure 3: Bushfire Prone Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

3 Bushfire hazard

An assessment of the bushfire hazard is necessary to determine the application of bushfire protection measures such as APZ location and dimension. This section provides a detailed account of the vegetation communities (bushfire fuels) and the topography (effective slope) that combine to create the bushfire hazard that may affect bushfire behaviour.

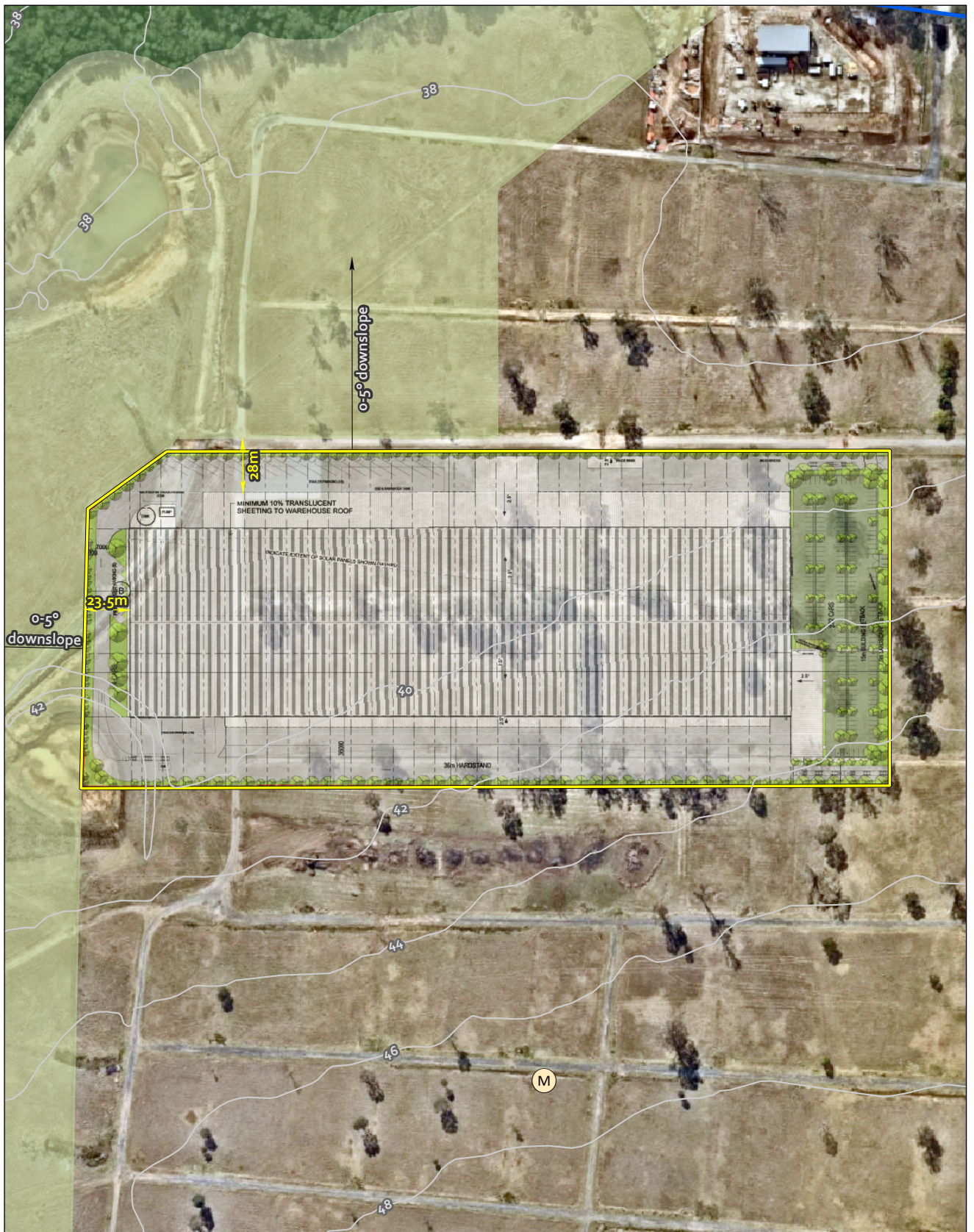
3.1 Predominant vegetation

In accordance with PBP the predominant vegetation class has been determined for a distance of at least 140 m out from the subject land. As shown on Figure 4, the only bushfire hazard within the assessment area is a potential grassland adjoining to the north and west beyond the development precinct of the AIBP.

Lands to the east and south within the AIBP development area will be cleared and modified prior to the construction of the proposed warehouse.

3.2 Effective slope

The 'effective slope' influencing fire behaviour has been assessed in accordance with the methodology specified within PBP. This is conducted by measuring the slope that would most significantly influence fire behaviour where the hazard has been identified within 100 m of the subject land. The effective slope was measured using a 2 m contour layer as shown on Figure 4. The effective slope class underneath the grassland hazard is 'downslope 0-5 degrees'.



Legend

- | | |
|---|--|
| M Managed Land | Subject Land |
| Contour - 2m | Vegetation Formation |
| Cadastre | Forest |
| Estate Boundary | Grassland |



Date: 5/04/2024

0 12.525 50
Metres

Figure 4: Bushfire Hazard Analysis

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

4 Bushfire protection measures

PBP requires the assessment of a suite of bushfire protection measures that in total provide an adequate level of protection for development proposals on bush fire prone land. The measures required to be assessed for the development type proposed are listed in Tables 2 and 3 below and are discussed in detail in the remainder of this section.

Table 2: Generic PBP bushfire protection measures

Aim & Objectives (PBP Section 1.1)	Measures
Aim	
<i>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.</i>	<ul style="list-style-type: none"> Achieving the objectives below will satisfy the aim.
Objectives	
1. <i>afford buildings and their occupants protection from exposure to a bush fire;</i>	<ul style="list-style-type: none"> Building setbacks from bushfire hazards. Building construction specifications or standards. Defendable space - Providing fire-fighter access between buildings and the bushfire hazard.
2. <i>provide for a defendable space to be located around buildings;</i>	
3. <i>provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;</i>	
4. <i>ensure that appropriate operational access and egress for emergency service personnel and occupants is available;</i>	<ul style="list-style-type: none"> Access to public road Adequacy of internal property roads Assessment of perimeter access
5. <i>provide for ongoing management and maintenance of BPMs; and</i>	<ul style="list-style-type: none"> Design and layout to ensure maintenance can occur by occupants without reliance on other parties

Aim & Objectives (PBP Section 1.1)	Measures
6. <i>ensure that utility services are adequate to meet the needs of firefighters.</i>	<ul style="list-style-type: none"> • Water supply for fire-fighting including provisions for hydrants or static water supplies. • Ensuring installation of electricity and gas supplies do not contribute to the risk of fire to a building.

Table 3: Specific PBP bushfire protection measures for buildings Class 5-8

Objectives (PBP Section 8.3.1)	Measures
1. <i>Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.</i>	<ul style="list-style-type: none"> • Access to public road • Adequacy of internal property roads including assessment of perimeter access • Defendable space - Providing fire-fighter access between buildings and the hazard
2. <i>Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development.</i>	<ul style="list-style-type: none"> • Bushfire Emergency Management and Evacuation Plan • Adequacy of internal property roads
3. <i>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.</i>	<ul style="list-style-type: none"> • Water supply for fire-fighting including provisions for hydrants or static water supplies. • Ensuring installation of electricity and gas supplies do not contribute to the risk of fire to a building.
4. <i>Provide for the storage of hazardous materials away from the hazard wherever possible.</i>	<ul style="list-style-type: none"> • Appropriate storage of hazardous materials away from bushfire hazards.

4.1 Access

4.1.1 Public road access

The public road access will consist of the new estate road that will link Patons Lane in the north to Luddenham Road in the south-east. The new estate road will be constructed and operational prior to the proposed development and will comply with the acceptable solutions for the standard of public roads in bushfire prone areas (in accordance with Table 5.3b of PBP).

The new estate road will provide alternate points of access for bushfire emergency response and evacuation.

4.1.2 Internal roads

The internal access roads consist of a separate car and truck thoroughfares. The truck access road will loop around the southern, western and northern boundaries and will integrate with large hardstand areas and parking. The road design complies with the acceptable solutions for property access roads in bushfire prone areas as per Table 5.3b of PBP. The road has been designed to be suitable for heavy vehicle movements.

4.1.3 Defendable space

For habitable development types such as dwellings, the application of a bushfire hazard building setback (i.e. Asset Protection Zone) is related to the vulnerability of an asset typically in terms of combustibility of external materials or the nature of the occupants. The resulting Asset Protection Zone (APZ) dimension would stipulate a building construction standard (i.e. Bushfire Attack Level – BAL) under Australian Standard ‘AS 3959-2018 Construction of buildings in bushfire-prone areas’.

As the land use does not include a dwelling or habitable building, PBP does not prescribe an APZ dimension. The general fire safety requirements of the NCC are accepted as adequate bushfire protection for the developments involving Class 5 to 8 buildings.

However, PBP does require the consideration of a managed hazard-separation area for fire-fighting purposes referred to as ‘defendable space’. A defendable space is an area between the building and the bushfire hazard that provides an environment in which fire-fighters can undertake property protection after the passage of a bushfire with some level of safety. The defendable space dimension is defined by the ability to gain access around an asset and conduct defensive fire-fighting operations. Relying on a defendable space in lieu of an APZ is deemed acceptable whereby construction satisfies NCC building and structural fire requirements.

An adequate defendable space is provided for the warehouse and consists of over 20 m to the grassland on the western boundary and over 45 m to the grassland on the northern boundary. The defendable space is shown on Figure 4. Both defendable space scenarios include the heavy vehicle access road and hardstand that can be used by fire appliances.

4.2 Construction standards

As introduced in Section 1.3, building construction provisions for bushfire protection within Australian Standard 'AS 3959-2018 Construction of buildings in bushfire-prone areas' (AS 3959) do not apply to developments of the type proposed as a deemed-to-satisfy requirement under the NCC. Due to the type of development and compliance with NCC requirements for building and structural fire, it is generally accepted that buildings will survive bushfire attack. In addition, staff will not reside at the site and will be familiar with evacuation routes.

However, as stated within Section 8.3.1 of PBP, consideration of building construction provisions is required to satisfy the aim and objectives of PBP and the assessment of which is to be made on a case-by-case basis.

The Bushfire Attack Levels (BAL) impacting the proposal are mapped on Figure 5. Figure 5 shows that only the western façade of the warehouse is subject to BAL-19, and the western end of the northern façade is subject to BAL-12.5. These BALs are the result of grassland only.

Applying BAL compliance to a warehouse is not warranted in this case as the only hazard within the assessment area is grassland. Ember attack is not a significant concern at the site due to the low risk attributes of grassland.

4.3 Landscaping and vegetation management

The subject land is to be maintained to achieve the performance requirement of an Inner Protection Area (IPA) as described by Appendix 4 of PBP. The following landscaping specifications have been designed to achieve the IPA at this site:

- Trees at maturity should not touch or be within 2 m of the building;
- Tree canopies should be separated by 2 to 5 m;
- Ensure gaps in the vegetation, such as between garden beds, to prevent the spread of fire towards the building;
- Landscaping should be separated from the building by at least 1 m;
- Grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- Leaves and vegetation debris should be regularly removed.

4.4 Emergency and evacuation

A 'Bushfire Emergency Management and Evacuation Plan' is typically prepared for facilities within bushfire prone areas depending on the level of bushfire risk. A plan is prepared in accordance with the NSW Rural Fire Service document 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan' (RFS 2014).

Due to the low risk nature of the site, the preparation of a 'Bushfire Emergency Management and Evacuation Plan' is not recommended.



Legend

(M)	Managed Land	Vegetation Formation		BAL 40
	Contour - 2m			BAL 29
	Cadastre			BAL 19
	Estate Boundary	Bushfire Attack Level		BAL 12.5
	Subject Land			

Figure 5: Bushfire Attack Level



Date: 5/04/2024

0 12.5 25 50
Metres

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

4.5 Water supply and other utilities

4.5.1 Water supply

The warehouse will require fire hydrants to be installed to comply with *AS 2419.1 – 2021 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).

4.5.2 Electricity supply

The supply of electricity will be provided underground. Compliance is therefore achieved.

4.5.3 Gas supply

Any gas services are to be installed and maintained in accordance with Australian Standard *AS/NZS 1596-2014 The storage and handling of LP gas*.

4.6 Hazardous materials

The proposal features a diesel refuelling station on the hardstand that will be separated from the warehouse by 25 m and separated from any grassland hazards by hardstand and adjacent detention basin.

5 Conclusion and recommendations

The proposal consists of a warehouse development on a lot that has been identified as bushfire prone land. The bushfire hazard consists of potential grassland within the estate adjoining the northern and western boundaries of the subject land.

Adequate defendable space has been provided and will be 20-45 m wide consisting of the heavy vehicle access road and hardstand. Due to the low risk nature of the site and adequate hazard separation distances, the application of BAL construction specifications to the warehouse is not warranted in this case.

PBP requires an assessment of the proposal against the aim and objectives of PBP and the four specific objectives for buildings Class 5-8. Tables 4 and 5 below summarise how the objectives have been satisfied. This assessment concludes that all objectives are satisfied with the adoption of the recommendations listed following Tables 4 and 5.

Table 4: Compliance with PBP aim and objectives

Aim & Objectives (PBP Section 1.1)	Compliance statement
Aim	
<i>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.</i>	Achieving the objectives below will satisfy the aim.
<i>Afford buildings and their occupants protection from exposure to a bush fire;</i>	<u>Section 4.1.3 and 4.2 demonstrates compliance.</u> Defendable space of 20-47 m which includes the access road and hardstand. BAL compliance not required due to low risk.
<i>Provide for a defendable space to be located around buildings;</i>	<u>Section 4.1.3 demonstrates compliance.</u> Defendable space of 20-47 m which includes the access road.
<i>Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;</i>	<u>Section 4.1.3 and 4.2 demonstrates compliance.</u> Defendable space of 20-47 m which includes the access road. BAL compliance not required due to low risk.

Aim & Objectives (PBP Section 1.1)	Compliance statement
<i>Ensure that appropriate operational access and egress for emergency service personnel and occupants is available;</i>	<u>Section 4.1.1 and 4.1.2 demonstrates compliance.</u> New estate and existing public road network complies. Proposed internal road satisfies PBP Acceptable Solutions for property access roads.
<i>Provide for ongoing management and maintenance of BPMS; and</i>	<u>Section 4.3 demonstrates compliance.</u> Recommendation for compliant landscaping.
<i>Ensure that utility services are adequate to meet the needs of firefighters.</i>	<u>Section 4.5 demonstrates compliance.</u> Recommendation for compliant hydrant coverage and, if proposed, installation of gas supplies.

Table 5: Compliance with PBP Section 8.3.1 objectives

Objectives (PBP Section 8.3.1)	Compliance statement
<i>Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation</i>	<u>Section 4.1.1 and 4.1.2 demonstrates compliance.</u> Internal access road complies.
<i>Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development</i>	<u>Section 4.4 demonstrates compliance.</u> Preparation of Bushfire Emergency Management and Evacuation Plan not recommended due to low risk.
<i>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</i>	<u>Section 4.5 demonstrates compliance.</u> Recommendation for compliant hydrant coverage and, if proposed, installation of gas supplies.
<i>Provide for the storage of hazardous materials away from the hazard wherever possible</i>	<u>Section 4.6 demonstrates compliance.</u> The diesel refueling station is appropriately separated from the warehouse and grassland hazards.

The following recommendations were made within this report:

1. The development site is to be maintained to achieve the performance requirement of an Inner Protection Area (IPA) as described by Appendix 4 of PBP. The following landscaping specifications have been designed to achieve the IPA at this site:
 - a. Trees at maturity should not touch or be within 2 m of the building;
 - b. Tree canopies should be separated by 2 to 5 m;
 - c. Ensure gaps in the vegetation, such as between garden beds, to prevent the spread of fire towards the building;
 - d. Landscaping should be separated from the building by at least 1 m;
 - e. Grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
 - f. Leaves and vegetation debris should be regularly removed.
2. Fire hydrants are to be installed to comply with *AS 2419.1 – 2021 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).
3. Gas services are to be installed and maintained in accordance with *AS/NZS 1596-2014 The storage and handling of LP gas*.

In the author's professional opinion, with the adoption of the above recommendations, the proposed development will comply with *Planning for Bush Fire Protection 2019* (PBP).



David Peterson



References

NSW Rural Fire Service (RFS). 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities and Developers*. State of New South Wales through the NSW Rural Fire Service.

Standards Australia. 2014. *The storage and handling of LP Gas*, AS/NZS 1596-2014, Standards Australia International Ltd, Sydney.

Standards Australia. 2018. *Construction of buildings in bushfire-prone areas*, AS 3959, Standards Australia International Ltd, Sydney.

Standards Australia. 2021. *Fire hydrant installations - System design, installation and commissioning*, AS2419.1, Standards Australia International Ltd, Sydney.

