



Bushfire Assessment

Planning Proposal

**Alspec Industrial Business
Park, Luddenham Road,
Orchard Hills**

HBB Property

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(Ref: 20074)

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Executive summary

Objective

This Bushfire Assessment Report was commissioned by HBB Property to inform a Planning Proposal application seeking approval to rezone bushfire prone land on Luddenham Road, Orchard Hills to allow the development of an industrial business park. The objective was to assess the bushfire hazard and risk and recommend bushfire protection measures commensurate with the risk to achieve compliance with the relevant specifications and requirements for protection against bushfires.

Compliance with legislation and policy

A Planning Proposal on bushfire prone land must have regard to Section 9.1(2) Direction 4.4 – ‘Planning for Bush Fire Protection’ of the *Environmental Planning and Assessment Act 1979* as well as the NSW Rural Fire Service document ‘Planning for Bush Fire Protection 2019’.

Bushfire hazard and risk

The hazard consists predominantly of grassland, with forest remnants to the north and south and a conservation area designated by the Draft Cumberland Plain Conservation Plan within the south-western portion of the site.

The risk rating for a future industrial business park is ‘medium’ based on comparative risk ratings specified within the Cumberland Zone Bushfire Risk Management Plan (Cumberland Zone Bushfire Risk Management Committee 2010).

Measures to achieve compliance

Bushfire protection measures for the planned industrial business park recommended within this report to achieve the requirements are listed below:

- Provision of defendable 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.

Conclusion

The report concludes that the Planning Proposal together with the recommended bushfire protection measures satisfies the specifications and requirements of Ministerial Direction No. 4.4 and *Planning for Bush Fire Protection 2019*.

1 Introduction

1.1 Background

HBB Property commissioned Peterson Bushfire to prepare a Bushfire Assessment Report to accompany a Planning Proposal to rezone bushfire prone land at Orchard Hills to allow the development of an industrial business park. This report addresses the requirements for the assessment of Planning Proposals involving bushfire prone land, namely the *Environmental Planning and Assessment Act 1979* Section 9.1(2) Direction 4.4 – ‘Planning for Bush Fire Protection’.

1.2 Location of subject land

The subject land consists of nine lots located at the corner of Luddenham Road and Patons Lane as shown on Figure 1. At approximately 125 hectares in size, the subject land is bounded by Patons Road to the north, Luddenham Road to the east, a private rural lot to the south and Department of Defence lands to the west.

The subject land is comprised of:

- Lot 1 DP 1099147
- Lot 1 DP 396972
- Lots 1-4 DP 520117
- Lot 24 DP 331426
- Lot 242 DP 1088991
- Lot 2 DP 219794

1.3 The proposal

The subject land is currently zoned RU2 Rural Landscape and the Planning Proposal seeks to rezone the land to IN1 General Industrial for the proposed development of the Alspec Industrial Business Park. The development will involve warehouses, public roads and infrastructure. A concept development plan is included as Figure 2.

The large proportion of the subject land cannot be developed for industrial purposes. The western margin of the subject land has been dedicated to the proposed Outer Sydney Orbital and the south-western portion has been designated as conservation under the Draft Cumberland Plan Conservation Plan.



Legend

-  Watercourse
-  Subject Land



 **DKGIS**
Date: 3/03/2022



Figure 1: The Location of the Subject Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

2 Assessment requirements

The subject land is identified as 'bush fire prone land' as shown on Figure 3. Planning Proposal submissions involving bush fire prone land must have regard to Section 9.1(2) Direction 4.4 – 'Planning for Bush Fire Protection' of the *Environmental Planning and Assessment Act 1979* as well as the NSW Rural Fire Service document 'Planning for Bush Fire Protection 2019' (referred to as 'PBP' throughout this report).

2.1 Direction 4.4 requirements

The objectives of Direction 4.4 are:

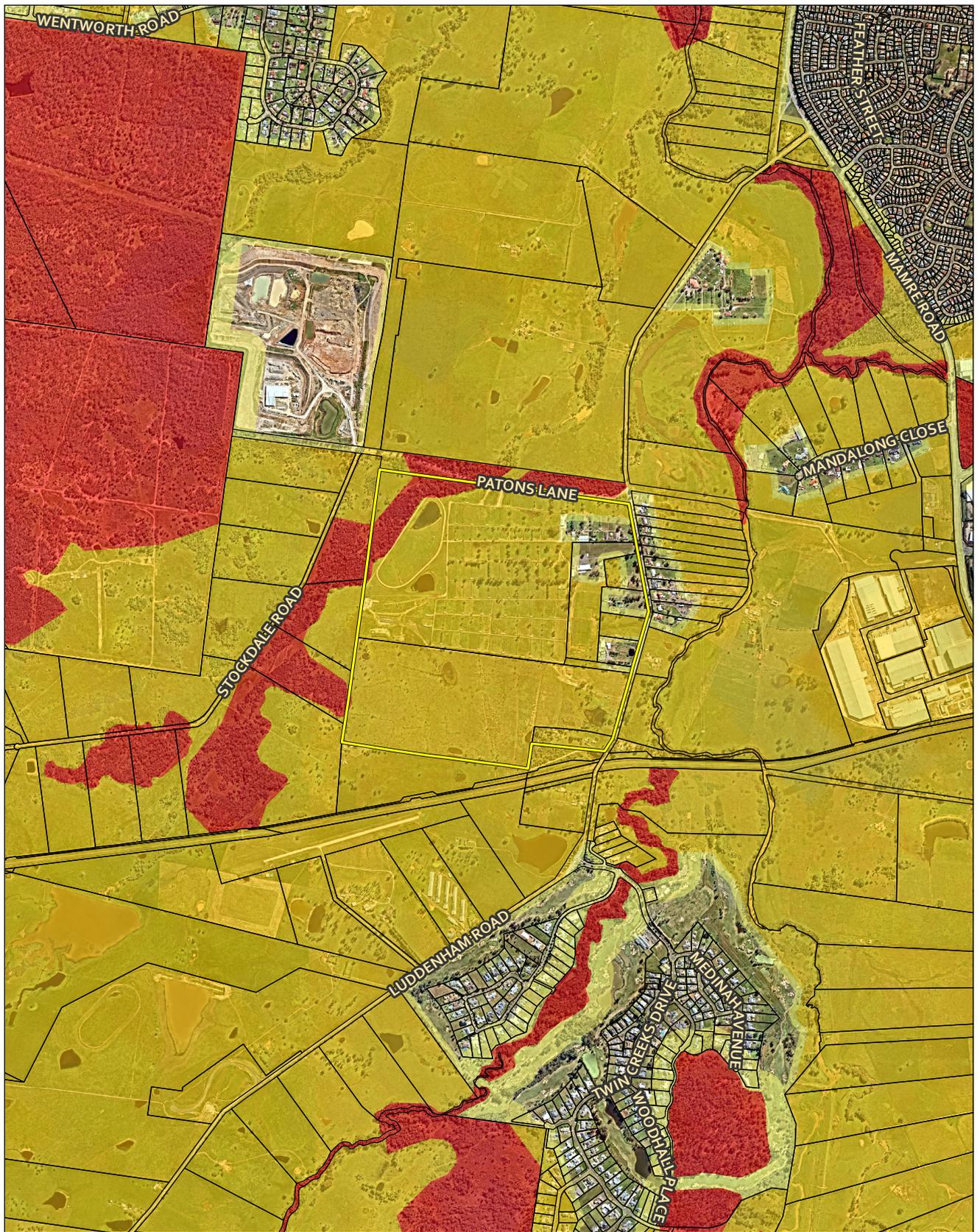
- *To protect life, property and the environment from bushfire hazards, by discouraging the establishment of incompatible land uses in bushfire prone areas; and*
- *To encourage sound management of bushfire prone areas.*

Direction 4.4 instructs councils on the bushfire matters which need to be addressed when drafting and amending Local Environmental Plans (LEP). They are as follows:

- *A draft LEP shall:*
 - *have regard to the document Planning for Bush Fire Protection 2006;*
 - *introduce controls that avoid placing inappropriate developments in hazardous areas; and*
 - *ensure that bushfire hazard reduction is not prohibited within the asset protection zone.*
- *A draft LEP shall, where development is proposed, comply with the following provisions, as appropriate:*
 - *provide an asset protection zone incorporating at a minimum:*
 - *an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and,*
 - *an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road.*
 - *for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the draft LEP permit Special Fire Protection Purposes (as defined*

under Section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with,

- *contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks,*
- *contain provisions for adequate water supply for fire-fighting purposes,*
- *minimise the perimeter of the area of land interfacing the hazard which may be developed,*
- *introduce controls on the placement of combustible materials in the Inner Protection Area.*



Legend

- Subject Land
 - Cadastre
 - Vegetation Category 1
 - Vegetation Category 2
 - Vegetation Buffer
- Bushfire Prone Land**



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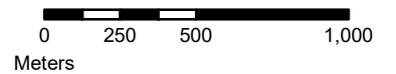


Figure 3: Bushfire Prone Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

2.2 Planning for Bush Fire Protection 2019 (PBP) requirements

Most of the Direction 4.4 provisions are specified within PBP. This report addresses both Direction 4.4 and PBP, combining responses to requirements where there is overlap between the requirements.

PBP also specifies the type of bushfire assessment and level of information and detail required for Planning Proposal submissions. PBP Section 4 'Strategic Planning' outlines the submission requirements. The Planning Proposal is to be assessed in accordance with PBP Section 4.4.1 whereby the nature, scale and risk of the proposal and its potential impact on the wider infrastructure network is such that a Strategic Bush Fire Study (SBFS) is not required in accordance with PBP Section 4.2. A SBFS is required for strategic development proposals whereby new areas are to be developed for residential or SFPP development. The Planning Proposal does not seek to introduce these uses.

2.2.1 PBP assessment objectives for development other than residential and SFPP

Section 8.3 of 'Planning for Bush Fire Protection 2019' (PBP) prescribes the assessment methodology and bushfire protection measures for uses other than those that involve a habitable dwelling (Class 1, 2 or 3) or Special Fire Protection Purpose (SFPP) development. These other uses are buildings of Class 5-8 under the National Construction Code (NCC) and include commercial, retail, and industry uses. As stated within Section 8.3.1 of PBP, the NCC does not provide for any bushfire specific performance requirements for these types of uses. As such the Asset Protection Zones (APZ)s and Bushfire Attack Levels (BALs) do not apply as deemed-to-satisfy provisions for bushfire protection. Whilst bushfire is not captured in the NCC for Class 5-8 buildings, the following objectives are to be applied in relation to access, water supply and services, and emergency and evacuation planning:

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.

3 Bushfire hazard assessment

An analysis of the bushfire environment, or parameters that give rise to the bushfire hazard, threat and risk, provides the foundation for determining compliance with Direction 4.4 and the relevant specifications and requirements of PBP. Parameters to be analysed are discussed in the following subsections and consist of bushfire hazard (comprising vegetation and topography) and the risk of fire impacting on the site.

The hazard has been assessed in accordance with PBP site assessment methodology. The subject land and adjacent bushfire hazards were inspected on 2nd June 2020. Photographs are included at Appendix A. Figure 1 shows the wider landscape influencing a bushfire approaching the site.

3.1 Vegetation

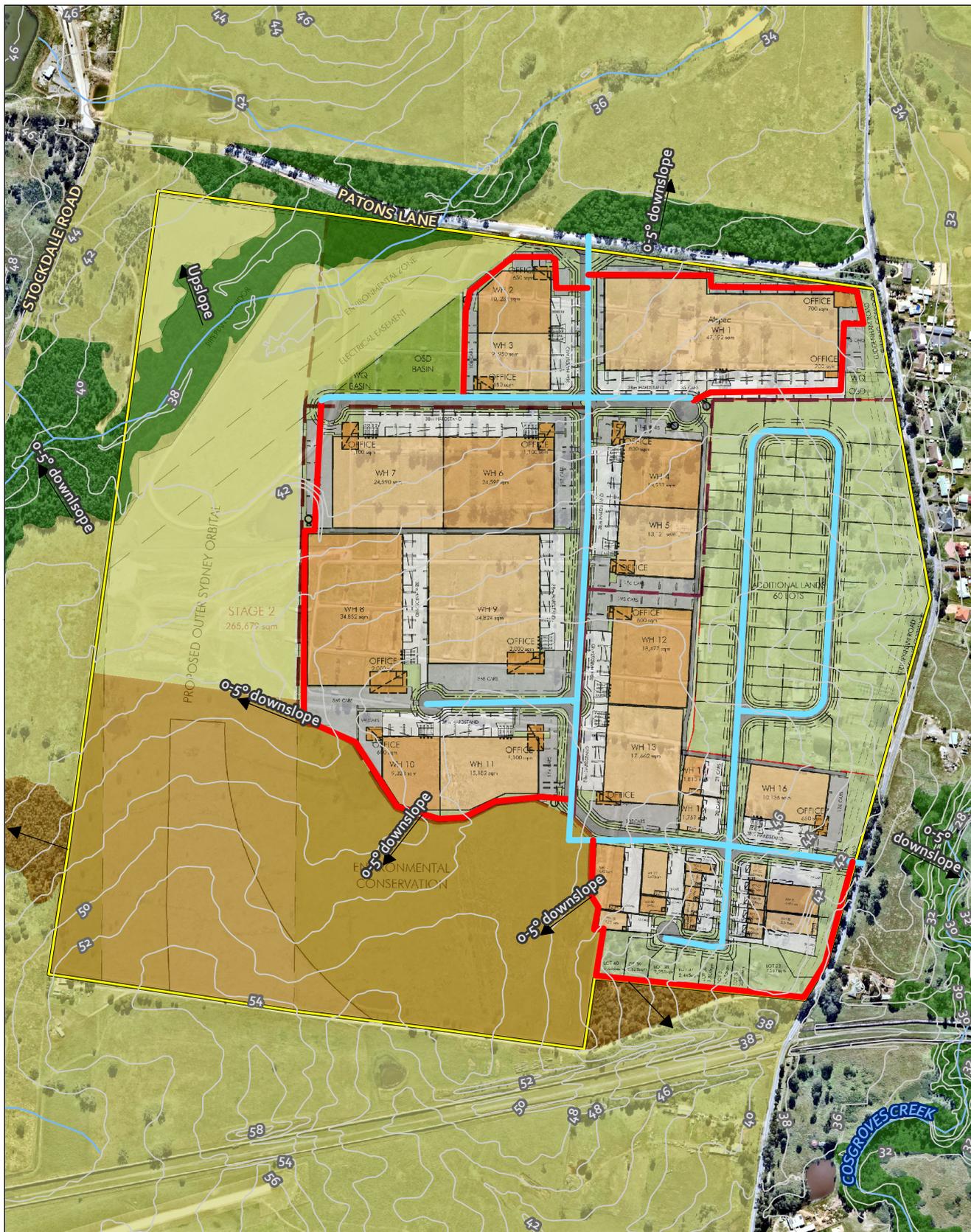
The predominant vegetation surrounding the site has been assessed in accordance with PBP. There are three vegetation structural formations as listed in Table 1 below and mapped on Figure 4.

Table 1: Predominant vegetation classification adjacent the site

Structural formation/classification	Location
Grassland	<ul style="list-style-type: none"> • Powerline easement and proposed basins to the north-west • Grazing land to the south • Outer Sydney Orbital corridor within western portion of the site
Woodland	<ul style="list-style-type: none"> • Conservation area in south-western portion is showing signs of regeneration and will become woodland
Forest	<ul style="list-style-type: none"> • Along Patons Lane to the north

3.2 Topography

Figure 4 shows the pattern of the terrain across the immediate landscape. The predominant feature is the gentle fall in all directions in the PBP slope class of 'downslope 0-5 degrees'. The slope classes are mapped on Figure 4.



Legend

- Contour - 2m
- Watercourse
- Fire Access Road
- Public Road
- Subject Land
- Vegetation Formation**
- Forest
- Grassland
- Woodland



Date: 3/03/2022



Figure 4: Bushfire Hazard Analysis

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

3.3 Bushfire risk

Bushfire risk is defined (Cumberland Zone Bush Fire Risk Management Committee 2010) as the chance of a bushfire igniting, spreading and causing damage to assets of value. Therefore, risk is analysed not only in terms of the existence of an adjacent hazard, but also the potential for ignition, fire spread, and factors contributing to fire control and response.

The Cumberland Zone Bush Fire Risk Management Plan (Cumberland Zone Bush Fire Risk Management Committee 2021) does not state a risk level for the subject land since the land is undeveloped. As a comparison, the Erskine Park Industrial Area 1.5 km to the east shares a similar bushfire threat profile to the proposal and has been rated at 'medium' bushfire risk and number '4' priority out of a possible scale of 1 to 5, with 1 being the highest priority. The Plan also states that the level of risk acceptability in the district is 'high', meaning areas of high, medium and low risk do not require specific treatments and are likely to be managed by routine procedures.

Relatively speaking, the risk rating of future development facilitated by the Planning Proposal would not be higher than that specified for the Erskine Park Industrial Area. This is because the bushfire landscape and vulnerability of the future occupants will remain the same. In addition, the future development will have compliant bushfire protection measures. Required measures to achieve compliance are discussed in the following Section 4 – 'Addressing Compliance'.

4 Addressing compliance

This section details how compliance with the assessment requirements listed in Section 2 are addressed. The response to requirements is set out following the structure of Direction 4.4, followed by PBP. There is duplication of requirements between Direction 4.4 and PBP; in these cases, the relevant report subsection is referred to for the appropriate response.

4.1 Direction 4.4

The objectives of Direction 4.4 can only be satisfied once the provisions are achieved. Demonstration of achieving the provisions is provided below (Section 4.1.2). Statements of how the objectives are achieved are as follows:

4.1.1 Objectives

Objective 1

“To protect life, property and the environment from bushfire hazards, by discouraging the establishment of incompatible land uses in bushfire prone areas”

The intention of the objective is to avoid a development outcome that is faced by or poses a risk that cannot be managed to an acceptable level. The assessment of ‘incompatible’, ‘inappropriate’ and ‘acceptable’ is a subjective one, and one that is not defined within PBP, legislation or related policy. To guide an assessment, reference should be made to the measures specified by *Planning for Bush Fire Protection 2019* (see Section 4.2), such as the ability to achieve acceptable access and egress.

Section 3.3 demonstrates that the risk to future development will not be higher than ‘medium’ risk therefore making it compatible with the surrounding bushfire prone area as permitted by the Cumberland Zone Bush Fire Risk Management Plan (Cumberland Zone Bush Fire Risk Management Committee 2021). The proposed use is not considered incompatible with the surrounding bushfire prone area.

Objective 2

“To encourage sound management of bushfire prone areas”

The recommended bushfire protection measures demonstrate sound management of the of the site for the intended use. The provisions and how they are to be addressed are listed in Section 4.1.2.

4.1.2 Provisions

Provision 1

“have regard to Planning for Bush Fire Protection”

Addressing this provision is detailed in Section 4.2. The Planning Proposal complies with PBP.

Provision 2

“introduce controls that avoid placing inappropriate developments in hazardous areas”

The proposed land use is not considered inappropriate and the area is not considered hazardous. Controls (bushfire protection measures) will be set in place to ensure compliance with PBP. The controls are set out in Section 4.2.

Provision 3

“ensure that bushfire hazard reduction is not prohibited within the asset protection zone”

A specific APZ distance is not required for the proposed use (warehouse developments). As discussed at Section 2.2.1, APZs do not apply as deemed-to-satisfy provisions for bushfire protection for Class 5-8 buildings. The provision of ‘defendable space’ access between all buildings and a bushfire hazard is discussed in Section 4.2.

Provision 4

“provide an asset protection zone incorporating at a minimum:

- an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and,
- an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road”

Refer to response to Provision 3 above.

Provision 5

“for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the draft LEP permit Special Fire Protection Purposes (as defined under Section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with”

The proposed does not involve infill development. This provision does not apply.

Provision 6

“contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks”

Figure 4 identifies the two-way public road access and fire access roads within future lots. More detail on the proposed access is detailed in Section 4.2.

Provision 7

“contain provisions for adequate water supply for fire-fighting purposes”

All aspects of future development are to have a hydrant supply that complies with PBP. More details are provided at Section 4.2.

Provision 8

“minimise the perimeter of the area of land interfacing the hazard which may be developed”

The hazard interface is minimised as evident on Figure 4. The perimeter is not excessive and does not create ‘pinch-points’ or ‘bottle-necks’ amongst the hazard.

Provision 9

“introduce controls on the placement of combustible materials in the Inner Protection Area”

Section 4.2 details the how the site and is to be maintained.

4.2 Planning for Bush Fire Protection 2019 (PBP)

Compliance with *Planning for Bush Fire Protection 2019* (PBP) is achieved by addressing the objectives relating to access, water supply and services as discussed at Section 2.2.1. Sections 4.2.1 to 4.2.4 below outline the bushfire protection measures integrated into the design to ensure compliance.

4.2.1 Defendable space

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

As future development will 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 development of building Class 5 to 8 which includes industrial facilities, warehouses and office space.

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 materials are typically non-combustible and meet NCC building and structural fire requirements.

A future business park will have a defendable space between buildings and the hazard consisting of a public road or fire access road of minimum 6 m wide. Figure 4 shows the conceptual layout of the access roads demonstrating that a defendable space is achievable at all locations that will be adjacent a hazard.

The defendable space will allow continuous thoroughfare around the perimeter of the business park ensuring fire-fighters can gain access to conduct property defence if required. The defendable space is also required to ensure fire-fighters can access all sides of the buildings for structural fire control. The design requirements for roads are specified in Section 4.2.2 below.

The defendable space will be clear of vegetation) and will therefore satisfy the fuel management performance requirements of an Inner Protection Area (IPA) as described by PBP. Vegetation management requirements are discussed in Section 4.3 below.

4.2.2 Access

The assessment of access is to consider the adequacy of public road access, property access roads and defendable space. The following information demonstrates that the proposed access design complies with PBP.

Adequacy of access and egress

The business park will benefit from two access points; one to the north from Patons Lane, and the second to the east from Luddenham Road. The access design achieves alternate access points and in varying directions, hence achieving PBP objectives.

Internal access

A public road is proposed that will form a through providing access to all areas of the site. The access roads have been designed to cater for large truck movements and will therefore be suitable for fire and emergency authorities as well as evacuation if required. The roads will comply with the PBP design requirements for non-perimeter roads as listed below.

PBP design standards for roads servicing residential subdivision:

- *Property access roads are two-wheel drive, all weather roads.*
- *Perimeter roads are provided for residential subdivisions of three or more allotments.*
- *Subdivisions of three or more allotments have more than one access in an out of the development.*
- *Traffic management devices are constructed to not prohibit access by emergency service vehicles.*

- *Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.*
- *All roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end.*
- *Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.*
- *Where access/egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.*
- *The capacity of perimeter and non-perimeter road surfaces and any bridges and causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); Bridges/causeways to clearly indicate load rating.*
- *Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.*
- *Hydrants are provided in accordance with AS 2419.1:2005.*
- *There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.*
- *Non-perimeter roads are:*
 - *Minimum 5.5 m width kerb to kerb;*
 - *parking is provided outside of the carriageway width;*
 - *hydrants are located clear of parking reserves;*
 - *there are through roads, and these are linked to the internal road system at an interval of no greater than 500 m;*
 - *curves of roads have a minimum inner radius of 6 m;*
 - *the road crossfall does not exceed 3°;*
 - *a minimum vertical clearance of 4 m to any overhanging obstruction, including tree branches, is provided.*

Perimeter access

As discussed in Section 4.2.1, all hazard interface areas will feature an access road acting as defensible space. At a minimum, the access will be a 6 m wide fire access road designed to be suitable for the thoroughfare of Fire & Rescue NSW pumpers. Evacuation will occur on the

public road network whilst operational response will occur on the designated fire access roads which will provide the perimeter access.

4.2.3 Landscaping

Vegetation and landscaping across the site is to comply with the performance objectives of an Inner Protection Area (IPA) standard as prescribed by Appendix 4 of PBP. The site will be cleared and subject to bulk earthworks resulting in the removal of all vegetation. Future vegetation will only consist of landscaping to internal roads, landscape treatment to detention basins, and eventually within each individual lot. As such, the site will comply with IPA requirements.

4.2.4 Water supply and utilities

Water supply

The development will require fire hydrants to be installed to comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419) so that all sides of a building envelope are within 70 m of a hydrant by lay of the hose (or 90 m with a tanker parked in-line maximum 20 m from the hydrant).

Electrical supply

The electrical supply will be provided below ground and will therefore comply with PBP.

Gas supply

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

5 Conclusion and recommendations

The information presented in this Bushfire Assessment Report demonstrates that the proposal to rezone the subject land for the future development of an industrial business park can satisfy the Ministerial Direction No. 4.4 – ‘Planning for Bush Fire Protection’ and the requirements of *Planning for Bush Fire Protection 2019*. This is achieved by providing compliant bushfire protection measures such as defensible space and adequate access.

The proposal is not considered incompatible with the surrounding environment and bushfire risk. With sound bushfire management, the proposal can coexist within the rural setting which is assessed to present a medium bushfire risk.

Bushfire protection measures for the planned industrial business park recommended within this report to achieve the requirements 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.



David Peterson



References

Cumberland Zone Bush Fire Management Committee (CZBFMC) 2021. *Bush Fire Risk Management Plan*. Prepared by the CZBFMC pursuant to section 52 of the Rural Fires Act 1997.

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. 2005. *Fire hydrant installations - System design, installation and commissioning*, AS2419.1, Fourth edition 2005, Standards Australia International Ltd, Sydney.

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.

Appendix A - Photographs



Photograph 1: Forest hazard to the north of Patons Lane



Photograph 2: Woodland hazard adjacent to the south-east



Photograph 3: Grassland hazard adjacent to the south of the conservation area



Photograph 4: Grassland hazard in Outer Sydney Orbital corridor to the west

