BLACKASH
BUSHFIRE CONSULTING

Bushfire Hazard Assessment

SSD 9794683

Building: 2A, 2C & 2D

Oakdale West Industrial

Kemps Creek

Prepared for

Goodman Property Services Pty Ltd

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Version 1.1

13 October 2021

Project Name:	Oakdale West Industrial – SSD 9794683 (Building: 2A, 2C & 2D)
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Contents

1. Summary

Table 1 is a summary of compliance with relevant documents and approaches to limit bushfire attack and meet the requirements of the NSW planning framework for new development in Bushfire Prone Areas.

Table 1: Summary

Planning for Bushfire Protection 2019 Classification	"Other" commercial/ industrial
Location	Lot 105 DP1262310 & Lot 107 DP1262310
Local Government Area	Penrith
Can this proposal comply with AS3959, 2009	AS3959, 2009 does not apply as a DTS Provision
Does this development comply with the requirements of *Planning for Bushfire Protection 2019?*	YES
Does this development comply with the Aims and objectives of *Planning for Bushfire Protection 2019?*	YES
Is referral to the NSW RFS required?	NO

Assessment Framework	☒ *Planning for Bushfire Protection 2006* ☒ *Planning for Bushfire Protection 2019*
	☒ Meets the deemed to satisfy provisions ☐ Alternate solution/ performance-based assessment

2. Introduction

Blackash Bushfire Consulting has been engaged by Goodman to provide a Bushfire Hazard Assessment report to support a State Significant Development application for the proposed industrial buildings 2A, 2C & 2D at the Oakdale West Industrial (OWE). A report was previously prepared by Blackash Bushfire Consulting on 25 November 2020. New plans have since been developed and this new report has been prepared to address the new layout.

The precinct sites are shown in Figure 1 and form part of the larger OWE which comprises 154 hectares of land within the Western Sydney Employment Area [WSEA] and is owned by a Joint Venture (JV) between Goodman and Brickworks Limited (Brickworks, parent company of the Austral Brick Company Pty Ltd).

The site has bushfire prone land adjoining it and bushfire has been a key consideration in the design process. Commercial and industrial development is designated as "other" development in PBP 2019. As "other" development, a key issue for the proposal will be meeting the aim and objectives of *Planning for Bushfire Protection* and the performance requirements for commercial and industrial development.

This report has been completed having regard to Secretary for Planning and Environment's (the Secretary) Environmental Assessment Requirements (SEARs) issued for the proposal in 2021.

The proposed industrial facility is required to respond and implement an appropriate level of bushfire protection measures, as per *Planning for Bushfire Protection 2019* (PBP 2019). This report will demonstrate that an appropriate combination of protection measures has been considered and achieved to provide compliance with the intent and performance measures within PBP 2006 and PBP 2019 and consistent with the original SSD approved Concept Plan and Consent Condition B20 and C12 for the Concept Proposal and the *Oakdale Industrial Estate – West Bushfire Protection Assessment*, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016 and updated 13 January 2020.

This assessment has been prepared by Corey Shackleton, Principal Bushfire & Resilience (FPAA BPAD Level 3 Certified Practitioner No. BPD-L3-34603) who is recognised by the NSW RFS as qualified in bushfire risk assessment and have been accredited by the Fire Protection Association of Australia as a suitably qualified consultant to undertake alternative solution proposals.

3. Site Context

The precincts are shown in Figure 1, forming part of the larger OWE site. The OWE site comprises 154 hectares of land within the Western Sydney Employment Area [WSEA] and is owned by a Joint Venture (JV) between Goodman and Brickworks Limited (Brickworks, parent company of the Austral Brick Company Pty Ltd).

The site is located in the Penrith Local Government Area (LGA) at the far south-western extent of the WSEA.

The OWE site is bound to the north by the Water NSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with Transgrid infrastructure. Other boundaries interface with adjoining rural lands used for a mix of rural-residential, agricultural. Emmaus Catholic College and Emmaus Retirement Village is located to the west of the site. To the east of the site is Goodman's Oakdale South Estate.

Given the commence of the OWE development, the site is now almost entirely cleared and significant earthworks and the construction of key infrastructure has commenced.

Figure 1: Site/Precinct Locations

4. Legislative Framework

The proposed industrial development is designated as "other" development by the PBP 2006 and PBP 2019. The NSW RFS has reviewed PBP 2006 and now released a new document known as *Planning for Bushfire Protection 2019* (**PBP 2019**) and the NSW RFS has requested that all new proposals are assessed against PBP 2019.

The site is identified as 'bushfire prone land' (see Figure 2) for the purposes of Section 10.3 of the *Environmental Planning and Assessment Act, 1979* (**EPA Act**) and the legislative requirements for development on bushfire prone lands are applicable. All development on bushfire prone land must consider and comply with PBP 2019. However, industrial development has considerable flexibility and the nature of the development often results in the structures providing a higher degree of bushfire resistance than required by the NSW RFS.

As "other" development, the proposed industrial development and future development is addressed through demonstrating compliance with the aim and objectives of PBP.

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. 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* (AS 3959) and the NASH Standard are not considered as a set of 'deemed to satisfy' provisions. However, compliance with AS 3959 and NASH should be considered when meeting the aims and objectives of PBP.

Whilst bushfire is not captured in the NCC for Class 5-8 buildings or storage of the pallets, PBP 2019[1] articulates the following objectives which will be applied in relation to access, water and services, and emergency and evacuation planning:

- *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, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and*

[1] Planning for Bushfire Protection 2019 (p.76)

- *provide for the storage of hazardous materials away from the hazard wherever possible.*

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

Because of their size, complexity, importance and/or potential impact, the Department of Planning, Industry and Environment (DPIE) is predominantly responsible for assessing development applications relating to State Significant Development. The Minister for Planning is the consent authority for SSD applications.

Applications designated as state significant projects are exempt from requiring a bushfire safety authority (**BFSA**). Given their scale however, the requirements of PBP should still be applied, and consultation with the NSW RFS has already occurred as part of the original SSD approval process.

5. Bushfire Prone Land

Bushfire prone land maps provide a trigger for the development assessment provisions and consideration of sites that are bushfire prone.

Bushfire prone land (**BFPL**) is land that has been identified by council, which can support a bushfire or is subject to bushfire attack. Bushfire prone land maps are prepared by local council and certified by the Commissioner of the NSW RFS.

Figure 2 shows the Bushfire Prone Land Map for the site. The extract from the Penrith Bushfire Prone Map shows that the land to the west/northwest of Building 2A and south of Buildings 2C and 2D contains Category 1 Bushfire Prone Vegetation. The vegetation within the precincts is mapped as Category 2 Bushfire Prone Vegetation but has since been cleared as part of the OWE development.

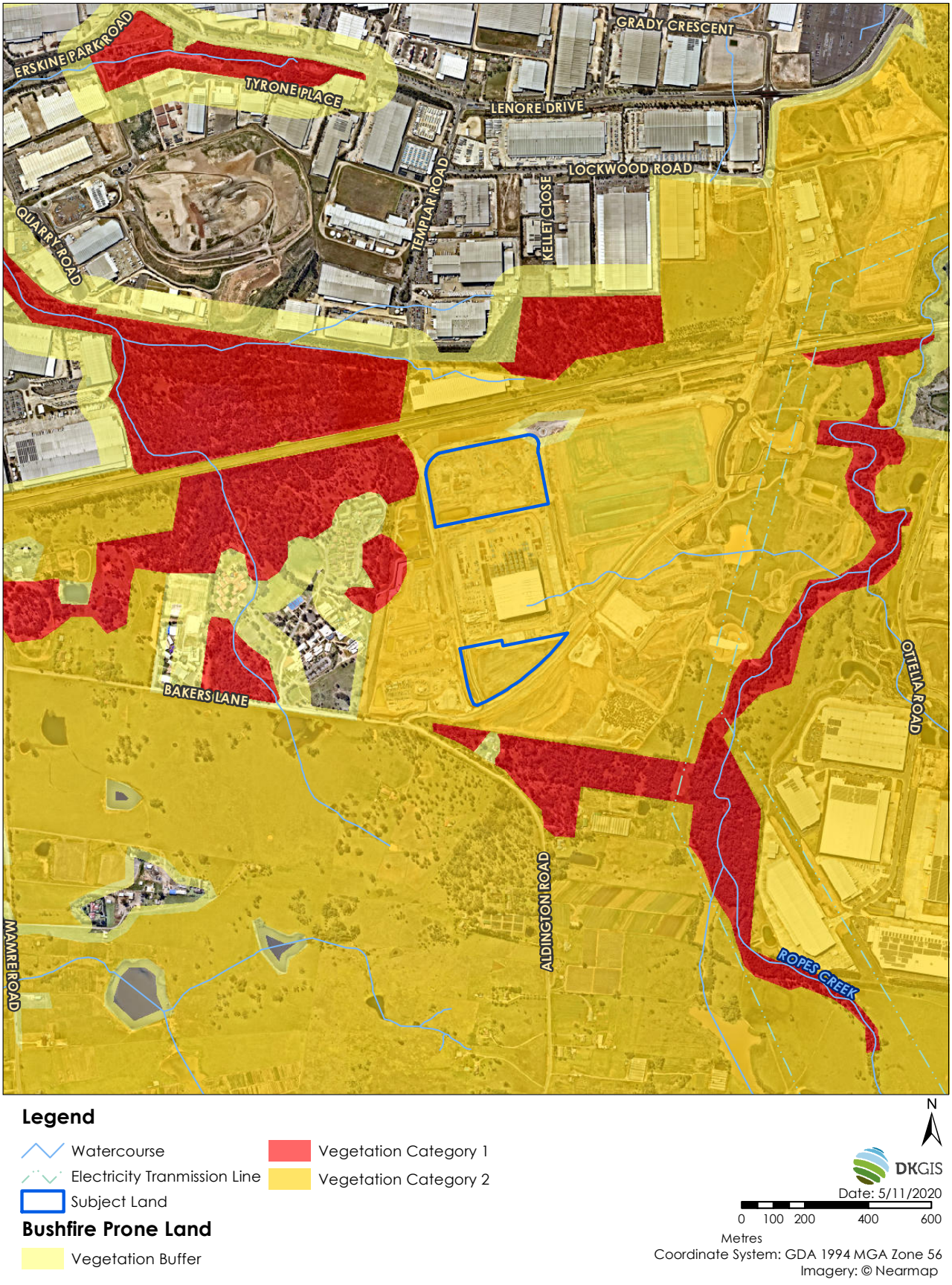

Figure 2: Bushfire Prone Land

6. The Proposal

The Concept design for the OWE (Figure 3) was developed in consideration of a comprehensive constraint's analysis of the site, with particular reference to riparian lands, vegetation and flooding. The OWE Masterplan was approved through an SSD process, which includes Precincts 2A, 2C & 2D.

The proposed 2A precinct (Figure 4) is a 34,262 sqm warehouse facility that includes 1 x 1,050 sqm, mezzanines, dock office and warehouse amenities taking the Gross Floor Area to 44,015 sqm and Gross Lettable Area to 35,612 sqm. The proposed 2C and 2D precincts (Figure 5) includes 3 warehouses facilities (5,150sqm, 4,735sqm and 5,860sqm), 3 office spaces (350sqm, 330sqm and 375sqm), carparking and other associated infrastructure. These are consistent with the overarching aim for the broader Oakdale Estate to create high quality warehouse and logistics estate which maximises the employment generating potential of the land to create an efficient, attractive and high-quality employment zone for Western Sydney.

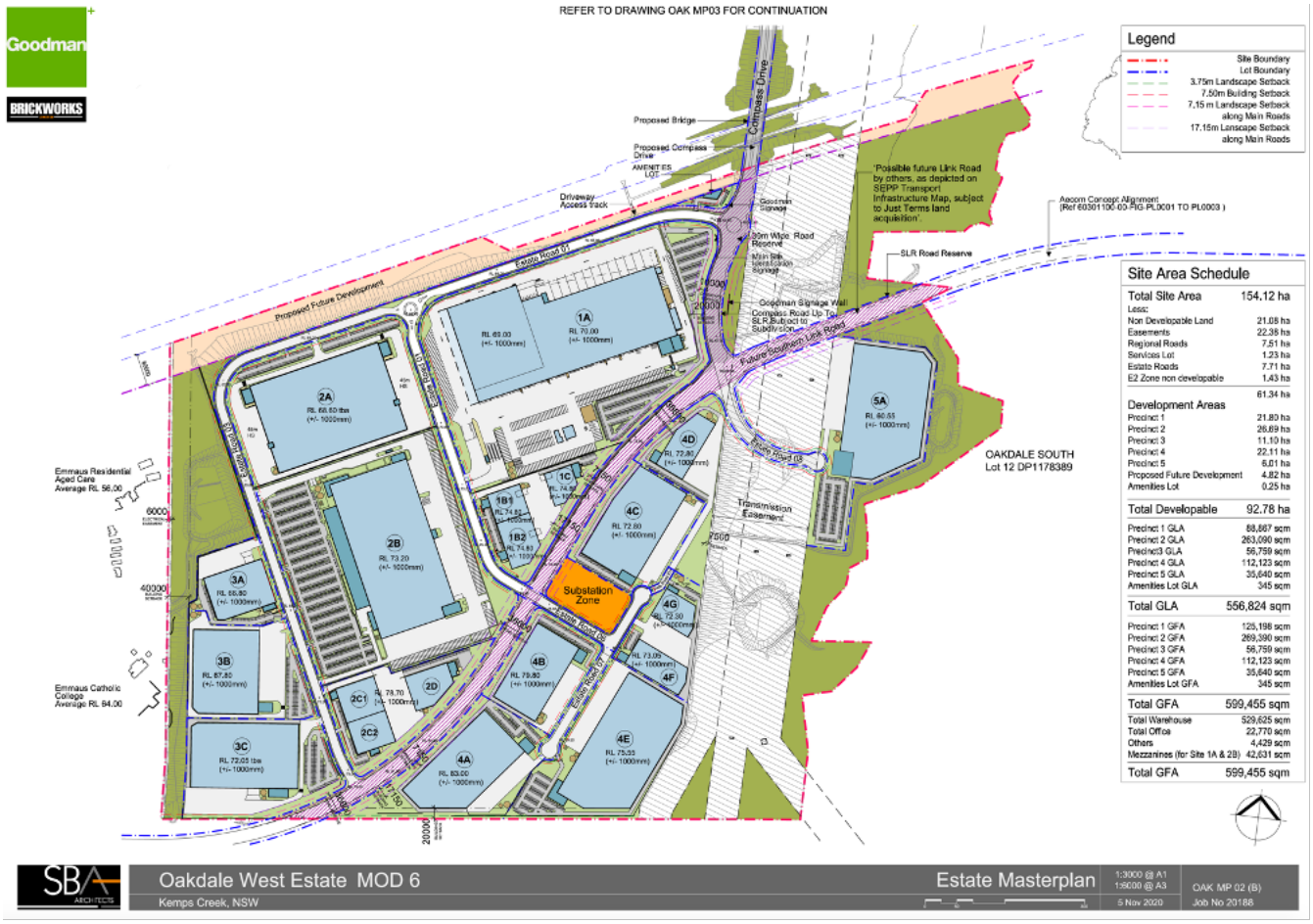

Figure 3: Oakdale West Estate Concept Masterplan

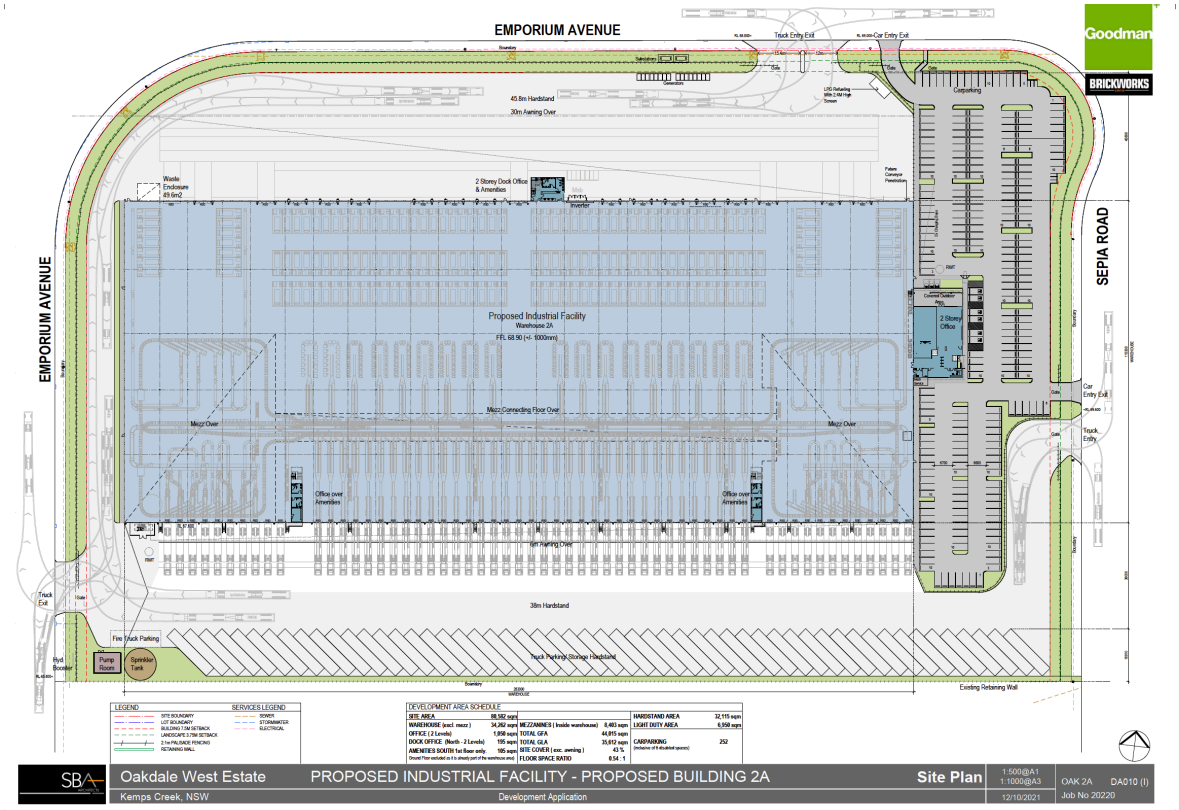

Figure 4: Proposed Precinct 2A

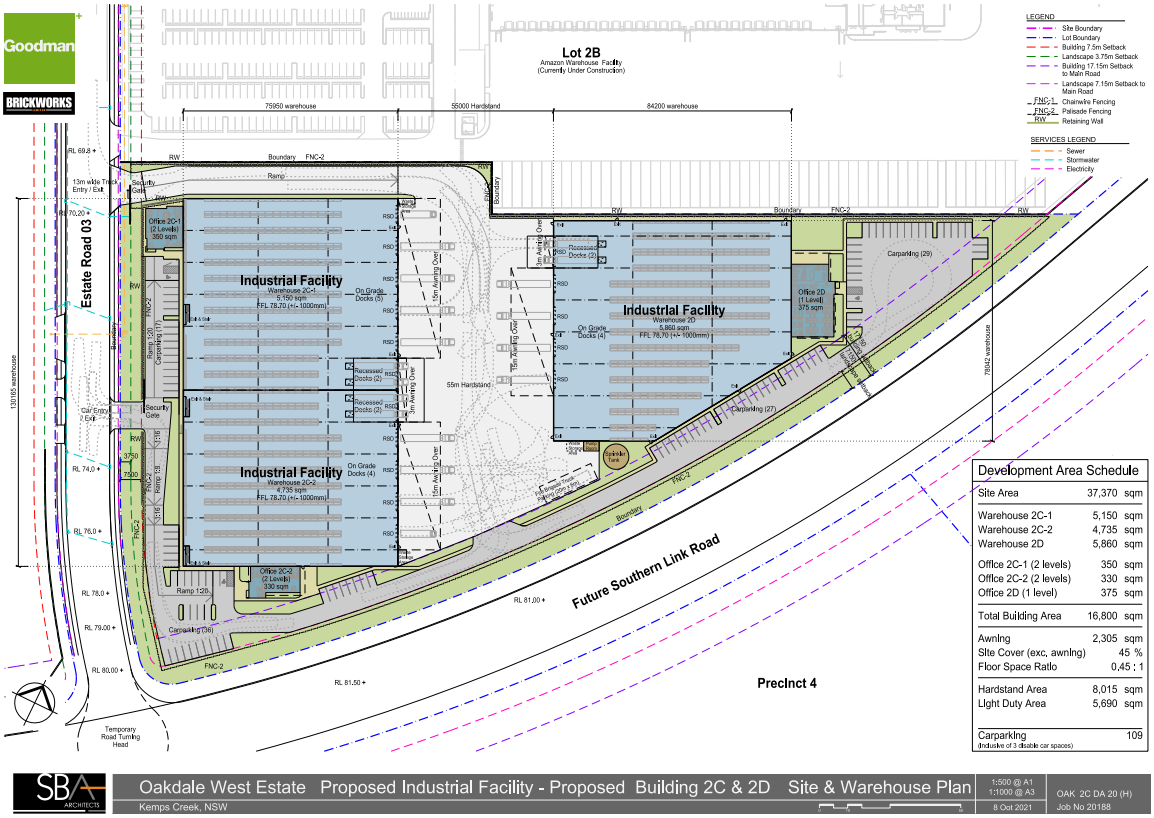

Figure 5: Proposed Precincts 2C and 2D.

7. Site Assessment Methodology

The Bushfire Assessment Report is based on a desktop assessment of the site utilising the following resources:

- *Planning for Bushfire Protection* (NSW RFS, 2019);
- *Planning for Bushfire Protection* (NSW RFS, 2006);
- Aerial mapping;
- Site Inspection; and
- Detailed GIS analysis.

The methodology used in this assessment is in accordance with PBP and is outlined in the following sections.

7.1. Bushfire Hazard

An assessment of the bushfire hazard is necessary to determine the application of bushfire protection measures such as Asset Protection Zone (APZ) locations and dimensions and future building levels.

The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site and which determine the planning and building response of PBP 2019.

7.2. Vegetation

Predominant Vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP 2019. Vegetation types give rise to radiant heat and fire behaviour characteristics.

The predominant vegetation is determined over a distance of at least 140 metres in all directions from the proposed site boundary or building footprint on the development site. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate.

The land around the site is identified as bushfire prone land (see Figure 2) and is made up of a mixture of woodland and forest vegetation communities (see Figure 6), grassland and managed land. Small patches of remnant woodland exist to the west of Precinct 2A and forest and woodland exists to the south of Precincts 2C and 2D.

Figure 6: Vegetation and Slope

7.3. Slopes Influencing Bushfire Behavior

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 100 m transect measured outwards from the development boundary or the existing/ proposed buildings.

The slopes within and adjoining the precincts are mild and generally fall downslope from the sites (Figure 6).

7.4. Fire Weather

The fire weather is dictated by PBP and assumes a credible worst-case scenario and an absence of any other mitigating factors relating to aspect or prevailing winds. The sites have a Fire Danger Index (FDI) of 100 as per PBP 2019.

7.5. Asset Protection Zones

An Asset Protection Zone (APZ) is a buffer zone between a bushfire hazard and buildings. The APZ is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, smoke and ember attack. The appropriate APZ distance is based on vegetation type, slope and the nature of the development.

The APZ can include roads or properties managed to be consistent with APZ standards set out in NSW RFS document *Standards for Asset Protection Zones*. The APZ provides a fuel-reduced, physical separation between buildings and bush fire hazards is a key element in the suite of bush fire measures and dictates the type of construction necessary to mitigate bushfire attack.

PBP 2019 requires APZs for commercial and industrial development to provide a defendable space and minimises material ignition. APZs are shown in Figure 7 and are consistent with the original SSD approval and the *Oakdale Industrial Estate – West Bushfire Protection Assessment*, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016 and updated 13 January 2020.

The site will be managed and maintained to prevent the spread of a bushfire towards the building and to prevent the spread of fire onto or from the site in accordance with section 63 of the *Rural Fires Act, 1997* (RF Act). The areas around the buildings is cleared and maintained to mineral earth or non-combustible surfaces and is not a fire hazard.

Tables 2 and 3 (below) provide a summary of the APZ for the proposed buildings and Figure 7 provides a depiction of the APZ.

Table 2: APZ Assessment – building 2A.

Direction	Slope	Vegetation	Flame Zone Width	APZ Proposed
North	NA	No hazard	Nil	NA
East	NA	No hazard	Nil	NA
South	NA	No hazard	Nil	NA
West	0-5º Downslope	Woodland	12 metres	47 metres

Table 3: APZ Assessment – buildings 2C and 2D.

Direction	Slope	Vegetation	Flame Zone Width	APZ Proposed
North	NA	No hazard	Nil	NA
East	NA	No hazard	Nil	NA
South	0-5º Downslope	Forest	22 metres	>100 metres
West	NA	No hazard	Nil	NA

Photo 1: Looking south along the western boundary of precinct 2A. Photo shows the perimeter sealed maintenance track, sound barrier and retaining wall.

Photo 2: Looking south along the western boundary precinct 2A. Photo shows the perimeter sealed maintenance track, sound barrier and retaining wall.

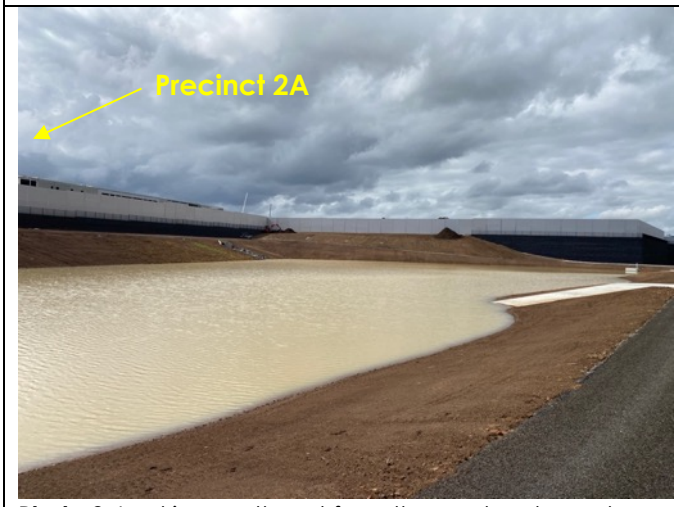

Photo 3: Looking southeast from the western boundary. Photo shows the detention basin and retaining wall and sound barrier adjoining Precinct 2A to the west.

Photo 4: Looking west at the remnant pocket of woodland vegetation in the north-western corner of the site adjoining Precinct 2A.

Photo 5: Looking southeast along the southern boundary. Photo shows adjoining forest vegetation.

Photo 6: Looking south at the forest vegetation adjoining the site to the south.

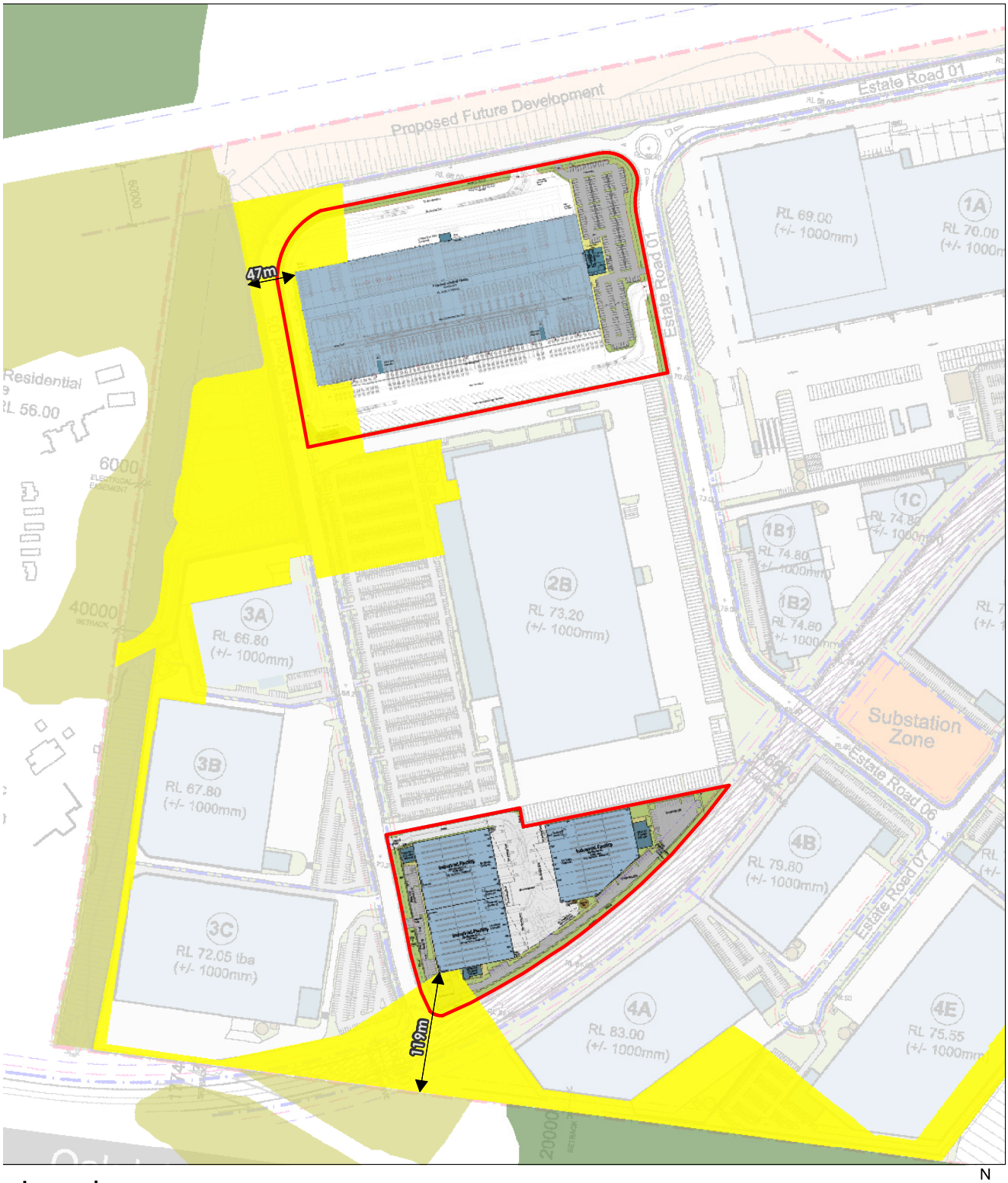

Figure 7: Asset Protection Zones

7.6. Bushfire Attack Levels

The Bushfire Attack Level (**BAL**) is a means of measuring the severity of a building's or sites potential exposure to ember attack, radiant heat and direct flame contact. In the Building Code of Australia, the BAL is used as the basis for establishing the requirements for residential construction to improve protection of building elements.

The Bushfire Attack Levels to the site have been determined based on the requirements of PBP 2019 through Table A1.12.5 and is shown in Table 4. As "Other" development, the development must comply with objective 3 of PBP 2019 which requires that the development:

> *3. Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent the likely fire spread to buildings.*

Asset Protection Zones (see section 7.5) will be provided around the development that will include perimeter roads and hardstand areas. Where required, the buildings will be constructed to meet the relevant requirements of AS3959-2018 as identified in PBP 2019.

The building requirements for design and construction vary according to the bushfire attack level for the building. The building requirements for each BAL are set out in *Australian Standard: 3959 Construction of buildings in bushfire-prone areas 2009 (**AS3959**)*.

Table 4: Bushfire Attack Levels (source PBP 2019 Table A1.12.5)

KEITH VEGETATION FORMATION		BUSH FIRE ATTACK LEVEL (BAL)				
		BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
		Distance (m) asset to predominant vegetation class				
ALL UPSLOPE AND FLAT LAND	Rainforest	< 8	8 -< 11	11 -< 16	16 -< 23	23 -< 100
	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 18	18 -< 24	24 -< 33	33 -< 45	45 -< 100
	Grassy and Semi-Arid Woodland (including Mallee)	< 9	9 -< 12	12 -< 18	18 -< 26	26 -< 100
	Forested Wetland (excluding Coastal Swamp Forest)	< 7	7 -< 10	10 -< 14	14 -< 21	21 -< 100
	Tall Heath	< 12	12 -< 16	16 -< 23	23 -< 32	32 -< 100
	Short Heath	< 7	7 -< 9	9 -< 14	14 -< 20	20 -< 100
	Arid-Shrublands (acacia and chenopod)	< 5	5 -< 6	6 -< 9	9 -< 14	14 -< 100
	Freshwater Wetlands	< 4	4 -< 5	5 -< 7	7 -< 11	11 -< 100
	Grassland	< 8	8 -< 10	10 -< 15	15 -< 22	22 -< 50
> 0 > 5 DEGREES – DOWNSLOPE	Rainforest	< 11	11 -< 14	14 -< 21	21 -< 29	29 -< 100
	Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	< 22	22 -< 29	29 -< 40	40 -< 54	54 -< 100
	Grassy and Semi-Arid Woodland (including Mallee)	< 12	12 -< 16	16 -< 23	23 -< 32	32 -< 100
	Forested Wetland (excluding Coastal Swamp Forest)	< 9	9 -< 12	12 -< 18	18 -< 26	26 -< 100
	Tall Heath	< 13	13 -< 18	18 -< 26	26 -< 36	36 -< 100
	Short Heath	< 8	8 -< 10	10 -< 15	15 -< 22	22 -< 100
	Arid-Shrublands (acacia and chenopod)	< 5	5 -< 7	7 -< 11	11 -< 16	16 -< 100
	Freshwater Wetlands	< 4	4 -< 6	6 -< 8	8 -< 12	12 -< 100
	Grassland	< 9	9 -< 12	12 -< 17	17 -< 25	25 -< 50

Tables 5 and 6 (below) provides a summary of the Bushfire Attack Levels assessment, while Figure 8 provides a detailed map of the BALs as they apply across the building.

Table 5: Bushfire Attack Levels – building 2A.

Direction	Slope	Vegetation	APZ Proposed	Bushfire Attack Level
North	NA	No hazard	NA	See Figure 8*
East	NA	No hazard	NA	No Requirement
South	NA	No hazard	NA	See Figure 8*
West	0-5º Downslope	Woodland	47 metres	See Figure 8*

**Note: The extent of the BAL for the building is depicted in detail in Figure 8.*

Table 6: Bushfire Attack Levels – buildings 2C and 2D.

Direction	Slope	Vegetation	APZ Proposed	Bushfire Attack Level
North	NA	No hazard	NA	No Requirement
East	NA	No hazard	NA	No Requirement
South	0-5º Downslope	Forest	>100 metres	No Requirement
West	NA	No hazard	NA	No Requirement

7.6.1. Application of AS3959 (2018)

Construction must comply with the corresponding Bushfire Attack Level (BAL) as shown in Figure 8.

The application of each BAL is as defined on Figure 8 and not broadly applied across the entire elevation/building. The construction must comply with corresponding sections of the Australian Standard AS3959-2018 *Construction of buildings in bush fire-prone areas* or NASH Standard (1.7.14 updated) *National Standard Steel Framed Construction in Bushfire Areas* – 2014 as appropriate, and Section 7.5 of *Planning for Bush Fire Protection 2019*.

The construction for the remainder of the proposed buildings not denoted with a BAL in Figure 8 is greater than 100 metres from any bushfire hazard. Consistent with AS3959, construction greater than 100 metres from a bushfire hazard is classified as BAL-Low. AS3959 describes BAL-Low as "*There is insufficient risk to warrant specific construction requirements*". Therefore, the construction for the remainder of the proposed building not denoted with a BAL in Figure 8, is appropriately BAL-Low.

The construction of the buildings in this manner complies with *Planning for Bush Fire Protection 2019* and the National Construction Code (NCC).

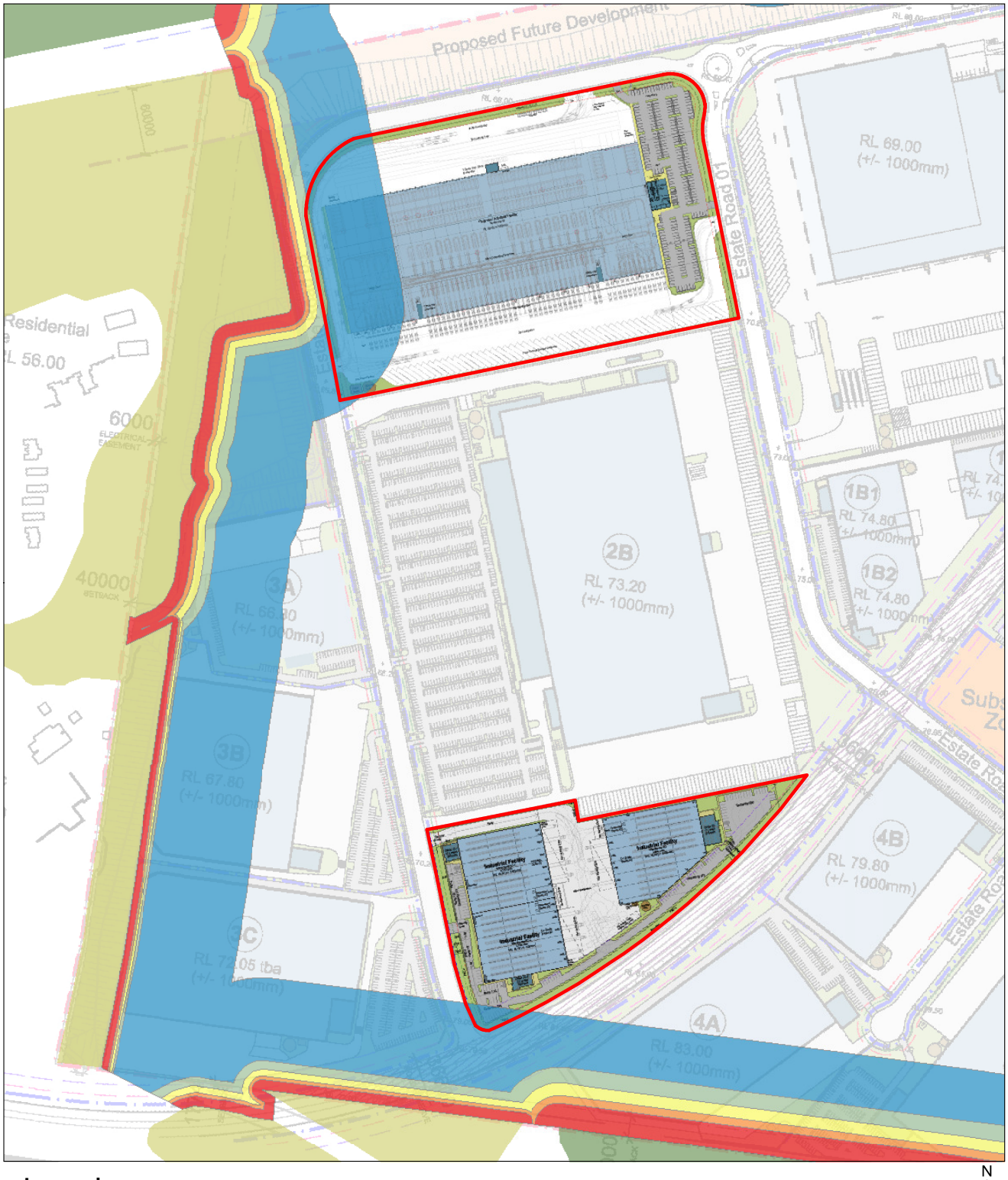

Figure 8: Bushfire Attack Levels

8. Access

PBP 2019 requires that the design of access roads enables safe access and egress for people attempting to leave the area at the same time that emergency service personnel are arriving to undertake firefighting operations.

Figure 3 shows the OWE Masterplan which includes the access to the site.

Vehicular access to the proposed Oakdale West Estate will be provided via Compass Drive which connects in the north-eastern part of the OWE, providing a link north to Lenore Drive and the broader external road network.

The OWE road network will be constructed to provide heavy rigid and articulated vehicle access to each of the proposed buildings. This internal road network provides suitable access for fire-fighting appliances similar to NSW RFS Category 1 Tankers and Fire & Rescue NSW Composite and Aerial Appliances.

The OWE design provides access around each of the proposed facilities and to the bushfire prone vegetation within the corridor along the western boundary. This is provided by a perimeter service road.

Given the comprehensive nature of the road design, access complies with the requirements of PBP 2019.

9. Water Supply and Utilities

PBP 2019 (p. 47) requires that adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

Suitable water supply arrangements will be provided for firefighting that meet the NSW RFS requirements. A reticulated water supply for potable water supply and fire hydrants will be provided to the site. The fire-fighting water supply to the proposed buildings shall comply with the Building Code of Australia [BCA] and A.S. 2419.1 – 2005. This will adequately service buildings 2C and 2D.

The proposed 2A facility shall be provided with a ring-main to the hazard (western) side of the building, complete with Millcock Valves fitted with Stortz Coupling and Blanking Cap.

10. Emergency Management Arrangements

Emergency management arrangements will be demonstrated through a separate Bushfire Emergency Management and Evacuation Plan which will be provided prior to occupation that will include triggers for closing the site and what to do in the event of a bushfire emergency.

11. Assessment Against the Aim and Objective of PBP

All development in Bushfire Prone Areas needs to comply with the aim and objectives of PBP. Table 11 shows the compliance with PBP. Table 3 shows compliance with these elements.

Table 11: Compliance with Aim & Objectives of PBP.

Aim	Meets Criteria	Comment
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.	Yes	Landscaping, defendable space, access and egress, emergency risk management and construction standards are in accordance with the requirements of PBP and the aims of PBP have been achieved.
Objectives	**Meets Criteria**	**Comment**
Afford occupants of any building adequate protection from exposure to a bushfire.	Yes	The development provides opportunity for all occupants to be shielded from any external bushfire. Construction material will comply with the relevant AS3959 requirements.
Provide for a defendable space to be located around buildings.	Yes	Defendable space is provided on all sides of the proposed building.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent the likely fire spread to buildings.	Yes	The building is separated from the remnant vegetation areas and provide APZs and commensurate construction in accordance with AS3959.
Ensure that safe operational access and egress for emergency service personnel and occupants is available.	Yes	The site has direct access to public roads, and access and egress for emergency vehicles and evacuation is adequate. A perimeter road is provided around the building. The development provides for the movement of heavy articulated trucks about the site.
Provide for ongoing management and maintenance of bushfire protection measures.	Yes	The site will be managed by Goodman including all APZ and landscaping in accordance with PBP.
Ensure that utility services are adequate to meet the needs of firefighters.	Yes	Utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).

The suite of bushfire protection measures provided for the proposed development satisfies the objectives for buildings of Class 5-8 under the NCC as identified in section 8.3.1 of PBP 2019.

12. Recommendations

The following recommendations are made to ensure the Oakdale West Estate is provided with adequate bushfire protection in accordance with PBP:

Recommendation 1: At the commencement of building works and in perpetuity, the entirety of each precinct (2A, 2C and 2D) shall be maintained as an Asset Protection Zone. The APZ shall be established and maintained as an inner protection area as outlined within *Planning for Bushfire Protection 2019* and the NSW RFS document '*Standards for Asset Protection Zones*'.

Recommendation 2: Fire hydrants are provided in accordance with Building Code of Australia E1.3, AS2419.1:2005, including the ring main requirements for large isolated buildings and those identified in Section 9.

Recommendation 3: Building 2A is constructed in accordance *Australian Standard AS 3959-2009 Construction of buildings in bushfire-prone areas* (AS 3959-2018) to the extent identified in Figure 8. Construction of Building 2A should also include the following additional measures in the identified BAL-12.5 areas:

- The downpipe/stormwater system to the internal box gutters shall be sized to provide a self-flushing of combustible materials from the roof/gutter. This shall include increased fall in the box gutters to the sumps;
- Any operable windows shall be fitted with aluminium/stainless steel mesh flyscreens having a maximum mesh aperture size of 2mm;
- Access doors [PA and Vehicle] to the buildings shall be fitted with seals that seal the bottom, stiles and head of the door against the opening/frame to prevent the entry of embers into the building. Particular attention shall be given to the gap at the head of the curtain of the roller doors, where mohair type seals can be used;
- External timber doors shall be fitted with a stainless steel/Colorbond kick plate of 400mm high on the outside of the door;
- External glazed doors and windows shall comply with the requirements for glazing less than 400mm above finished ground level; paths / pavement and elevated roofs;
- Any external vents, grilles and ventilation louvres shall have stainless steel mesh with a maximum aperture of 2mm square fitted to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm; and
- Roof ventilators shall be fitted with stainless steel flymesh [2mm aperture] to prevent the entry of embers into the building or be fitted with a louvre system which can be closed in order to maintain a maximum aperture or gap of no more than 2mm.

13. Conclusion

The Bushfire Hazard Assessment to support a Development Application (DA) for the construction of industrial buildings at the Oakdale West Estate (OWE).

The site is on bushfire prone land. Commercial and industrial development is designated as "other" development in PBP 2019. As "other" development, the proposed development has considerable flexibility and the nature of the development often results in the structures providing a higher degree of bushfire resistance than that specified by PBP and AS3959.

The proposed precincts are able to respond and implement an appropriate level of bushfire protection measures, as per PBP 2019.

This Report is a Bush Fire Hazard Assessment that provides the required information to assist the DPIE in determining compliance in accordance with the aims and objectives of *Planning for Bushfire Protection 2006 and 2019* and is considered consistent with the original SSD approved Concept Plan and Consent Conditions B20 and C12 for the Concept Proposal and the *Oakdale Industrial Estate – West Bushfire Protection Assessment*, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016 and updated 13 January 2020.

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Appendix 1 References

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