

Bushfire Hazard Assessment

SSD – 4348 (MOD 6)

Oakdale West Estate

Erskine Park

Prepared for

Goodman Property Services (Aust.)



Version 1.0

12 November 2020

Project Name:	Oakdale West Estate – SSD – 4348 (MOD 6) at Erskine Park
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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 11 DP1178389, Lot 3031 DP1168407, Lot 6 DP229784, Lot 2 DP84578, Lot 3 DP85393, Lot 11 DP1178389
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 <i>Planning for Bushfire Protection 2019</i>?	YES
Does this development comply with the Aims and objectives of <i>Planning for Bushfire Protection 2019</i>?	YES
Is referral to the NSW RFS required?	NO

Assessment Framework	<input type="checkbox"/> <i>Planning for Bushfire Protection 2006</i> <input checked="" type="checkbox"/> <i>Planning for Bushfire Protection 2019</i> <input checked="" type="checkbox"/> Meets the deemed to satisfy provisions <input type="checkbox"/> Alternate solution/ performance-based assessment
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2. Introduction

Blackash Bushfire Consulting has been engaged by Goodman to provide a Bushfire Hazard Assessment report to support an application for the Modification to the State Significant Development Approval for the staged development of land within the Western Sydney Employment Area (WSEA), known as the Oakdale West Estate (OWE). The proposed development is classified as 'State Significant Development' (SSD) pursuant to Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) and consent is sought for Modification 6 (MOD 6) of the staged development of the land for warehousing and distribution uses.

The MOD 6 proposal seeks to modify the existing approval for the staged development of the OWE facilitated via a staged SSDA process. The original SSDA approved the Concept Proposal for the staged development of the OWE including:

- Development of a regional warehousing and distribution hub with 24 hour/day, seven day/week operation;
- Indicative site/lot layout, site access, internal road network, site levels, drainage, building envelopes, parking and landscaping;
- Development Controls; and
- Biodiversity Offsets.

The original SSDA also approved the Stage Development and construction of a road connecting the OWE to the Lenore Drive.

Industrial development such as the proposed OWE 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 that required by the NSW Rural Fire Service (NSW RFS). 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 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 November 2015 and revised SEARs issued in October 2017. The SEARs contain a requirement that the EIS for the Master Plan and Stage 1 works must address bushfire – including consideration of bushfire measures as outlined in *Planning for Bushfire Protection 2006*, particularly asset protection zones, access and water utilities.

A new version of Planning for Bushfire Protection was legislated in March 2020. To ensure best practice, this assessment has been completed against PBP 2006 to ensure compliance with the SEARS and also PBP 2019 to ensure best practice is reflected in ensuring people and assets are protected from the effects of bushfire.

The report also aims to ensure consistency with the original SSD approved Concept Plan and Consent Condition B20 – Bushfire Protection of Schedule B – Conditions 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.

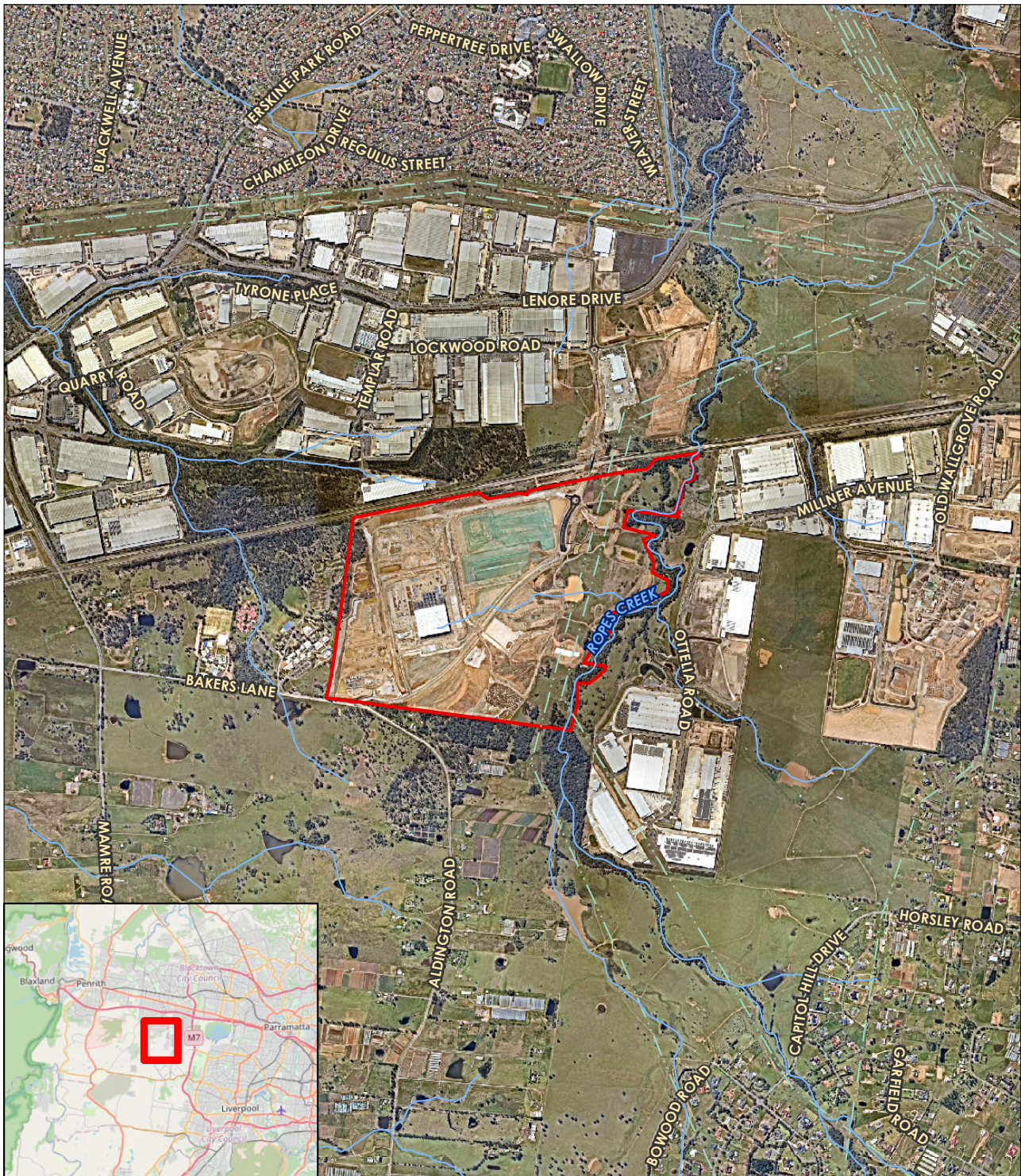
3. Site Context

The OWE is shown in Figure 1 and is legally described as Lot 11 DP1178389. The 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 OWE is located in the Penrith Local Government Area (LGA) at the far south-western extent of the WSEA.

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



Legend

-  Watercourse
-  Electricity Transmission Line
-  Subject Land



Date: 4/11/2020

0 250 500 1,000 1,500
Metres

Coordinate System: GDA 1994 MGA Zone 56
Imagery: © Nearmap

Figure 1: Site Location

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 2019¹ 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.

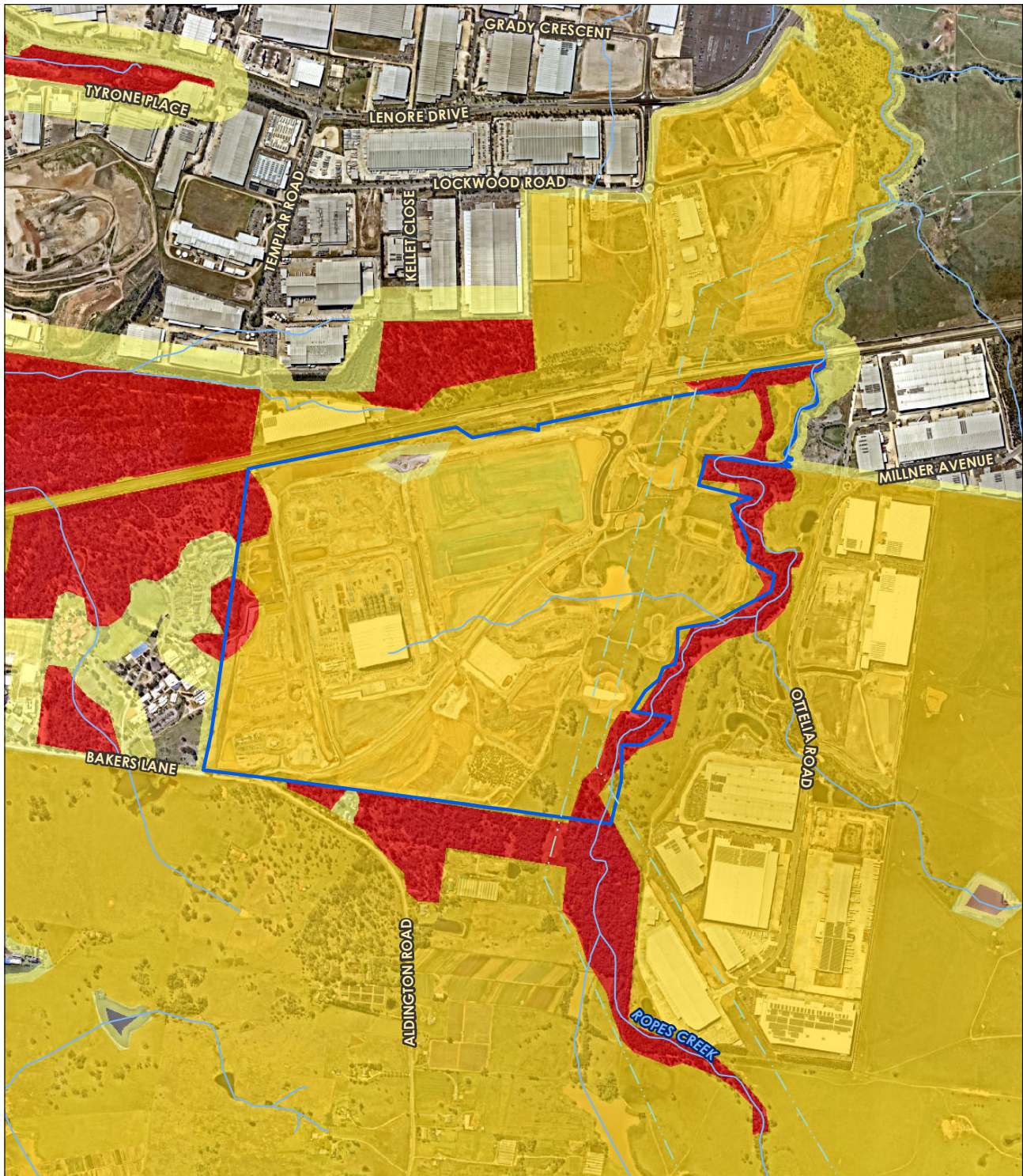
Even where comments are sought at the strategic planning stage, further development applications may need to be referred to the NSW RFS.

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 Ropes Creek corridor contains Category 1 Bushfire Prone Vegetation with Category 1 vegetation occupying the land to the south and west of the site. The vegetation within the site is mapped as Category 2 Bushfire Prone Vegetation.



Legend

-  Watercourse
-  Vegetation Category 1
-  Vegetation Category 2
-  Electricity Transmission Line
-  Subject Land

Bushfire Prone Land

-  Vegetation Buffer



Date: 4/11/2020

0 100 200 400 600

Metres

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

Figure 2: Bushfire Prone Land

6. The Proposal

The Concept Proposal for the OWE was developed in consideration of a comprehensive constraints analysis of the site, with particular reference to riparian lands, vegetation and flooding. The constraints analysis resulted in the identification of 64.48ha of undevelopable land across the site. Much of this land lies adjacent to the creekline running along the eastern boundary of the site and has been reserved to protect the integrity of the waterway and associated vegetation. Some of this vegetation has been identified as being of particular significance and will be retained in perpetuity as an offset to the loss of other, less significant vegetation on the site.

The proposed development is 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.

A fundamental consideration in the formulation of the Concept Proposal is to create large development lots which provide for the flexibility to suit the broad range of end user requirements as well as maximising the potential to accommodate larger footprint facilities in keeping with current best practice for efficiency of warehouse and distribution supply chain operations.

The OWE is intended to become a significant warehousing and distribution complex, forming part of a larger, integrated network of facilities to be operated by Goodman in the WSEA.

Both the original (Figure 3) and MOD 6 (Figure 4) Concept Proposal has been derived to accommodate warehouse and distribution development in a functional and efficient manner whilst respecting key environmentally sensitive land. Key principles determining the Concept Proposal layout are as follows:

- Provide a rational, efficient road access system which is integrated with the future regional road network;
- Provide large, flexible, regular shaped 'lots' to cater for a diverse range of sizes having regard to the market demand for different sized warehouses and particularly large footprint facilities;
- Respect existing water ways and environmentally sensitive land;
- Address the limitations of the easement existing on the eastern boundary of the site;
- Provide land for a future zone substation in the location required by Endeavour Energy based on demand modelling.

The OWE would be developed over five stages, with timing determined by market demand.



Figure 3: Oakdale West Estate 2019 approved Masterplan (showing Defendable Space).

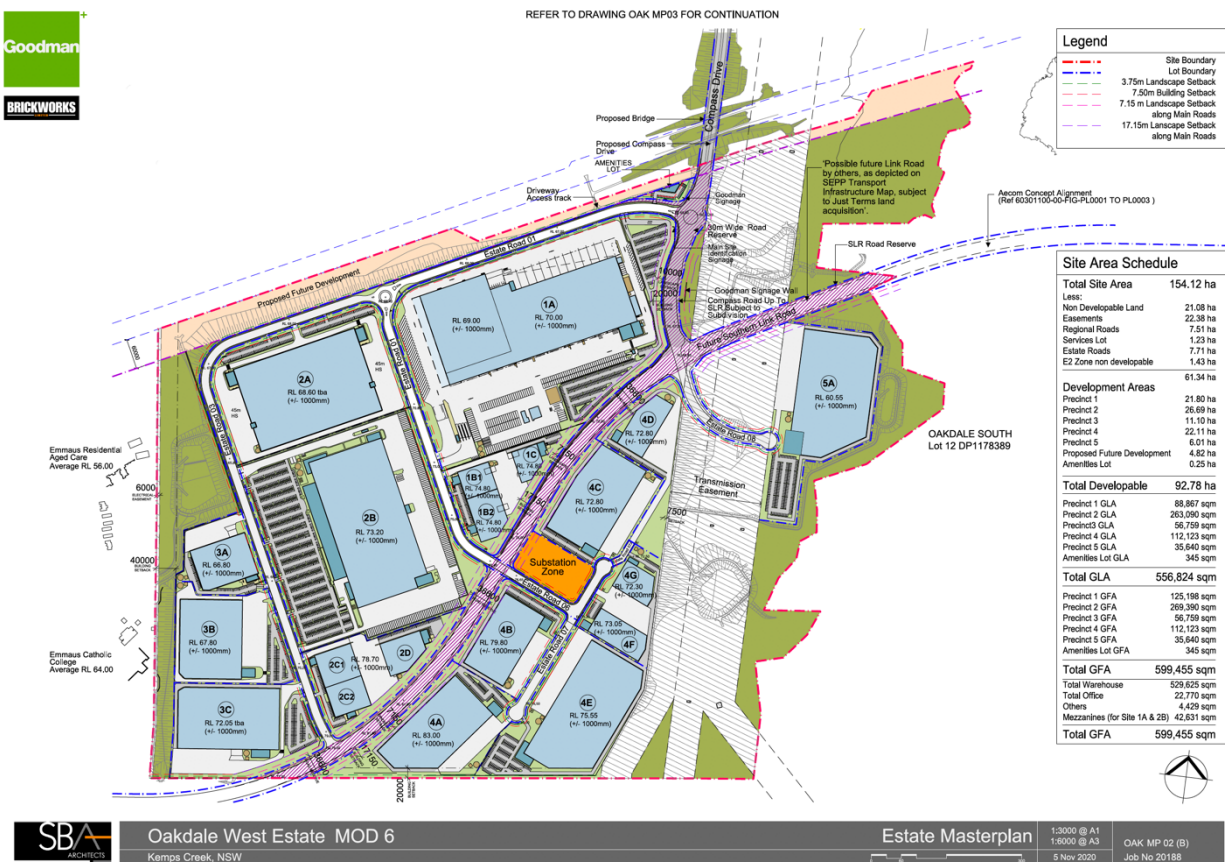


Figure 4: Proposed MOD 6 Concept Layout.

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.

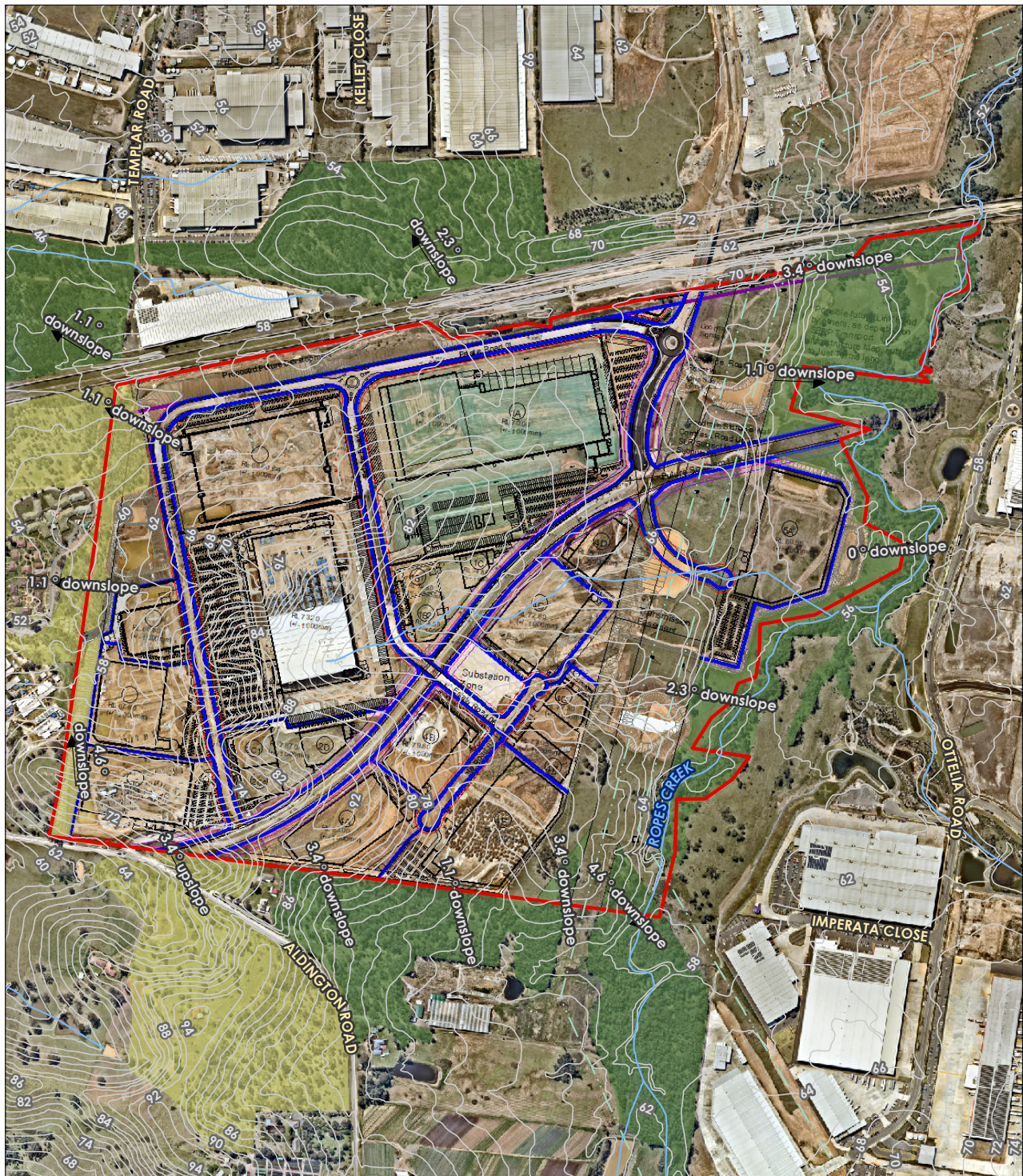
The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site, and which determine the planning and building response of PBP 2019.

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 5), grassland and managed land. Small patches of remnant woodland exist within and surrounding the site with the remainder of the area being managed/ non hazard areas.



Legend

- | | |
|-------------------------------|-----------------------------|
| Watercourse | Vegetation Formation |
| Contour - 2m | Woodland |
| Electricity Transmission Line | Forest |
| Subject Land | |

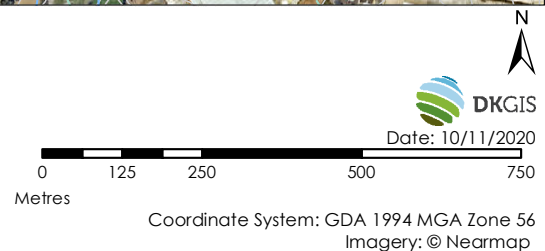


Figure 5: Vegetation and Slope

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 site are mild and generally fall downslope from the site (Figure 5).

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 defensible space and minimises material ignition. APZs are shown in Figure 6 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.

The tables below (Tables 2-6) provide a summary of the APZ across all buildings along the boundaries of the development and adjoining unmanaged vegetation. Figure 5 depicts the APZ provided across the site.

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	0-5° Downslope	Woodland	12 metres	60 metres

Table 3: APZ Assessment – building 3A.

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	0-5° Downslope	Woodland	12 metres	32 metres

Table 4: APZ Assessment – buildings 3B and 3C.

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	0-5° Downslope	Woodland	12 metres	8 metres

**Note: The hazard to the west of buildings 3B and 3C is primarily a low-risk narrow screen of Woodland (Photo 1).*

Table 5: APZ Assessment – buildings 4A and 4E.

Direction	Slope	Vegetation	Flame Zone Width	APZ Proposed
North	NA	No hazard	Nil	NA
East	NA	No hazard	Nil	NA
South	0-5° Downslope	Forest	22 metres	19 metres
West	NA	No hazard	Nil	NA

Table 6: APZ Assessment – building 5A.

Direction	Slope	Vegetation	Flame Zone Width	APZ Proposed
North	Level	Forest	18 metres	20 metres
East	Level	Forest	18 metres	20 metres
South	Level	Forest	18 metres	20 metres
West	NA	No hazard	Nil	NA



Photo 1: Looking north along the western boundary. Photo shows the managed land to the west, perimeter sealed maintenance track and vegetated mound.



Photo 2: Looking northeast from the western boundary. Photo shows the retaining wall and sound barrier which separates building 3A from the western boundary.

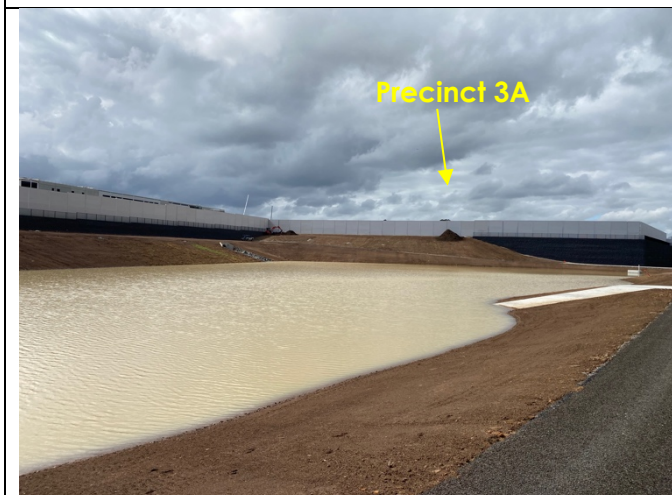


Photo 3: Looking southeast from the western boundary. Photo shows the detention basin and retaining wall and sound barrier.



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



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.

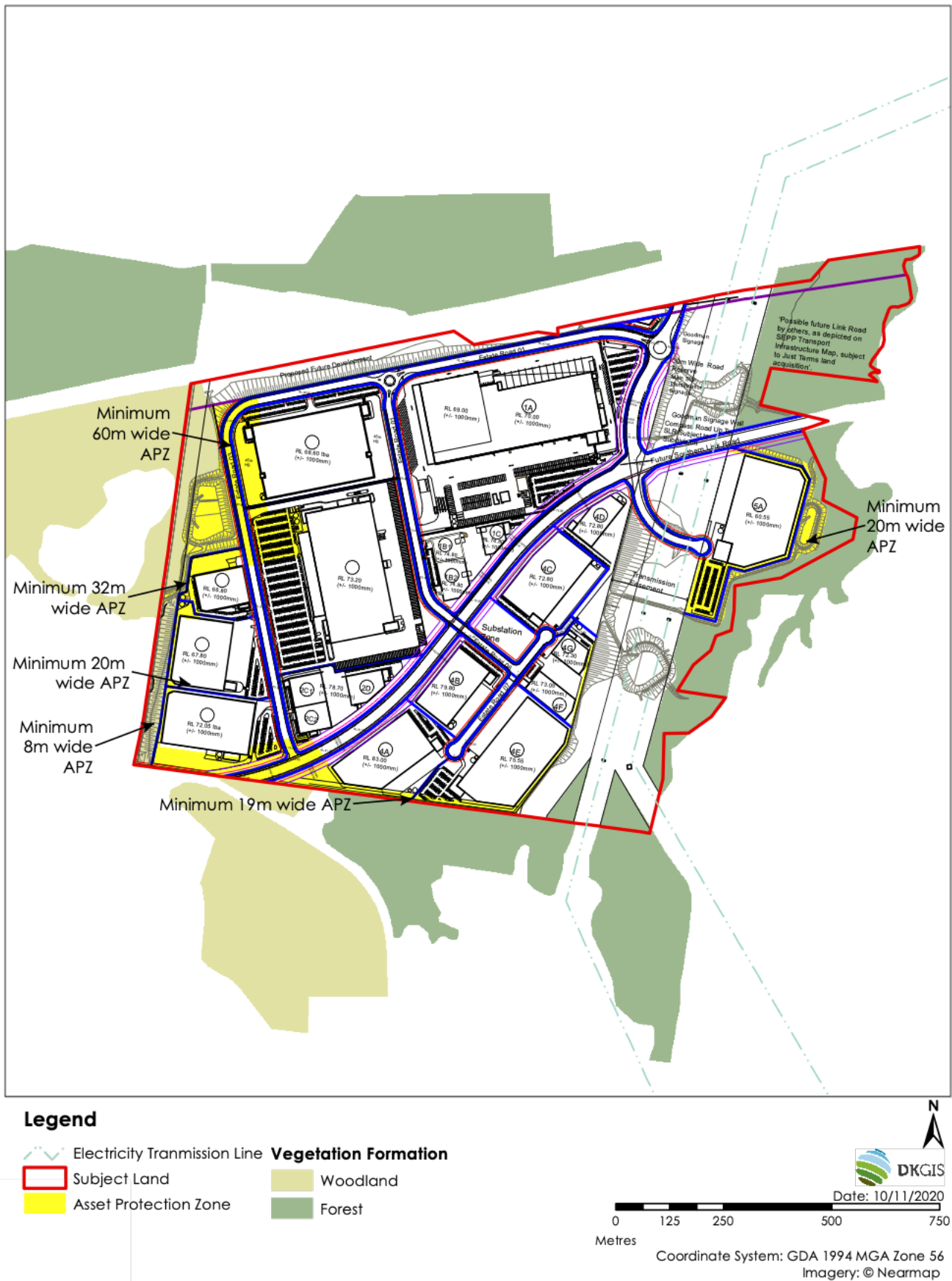


Figure 6: Asset Protection Zones

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 has been completed from PBP 2019 Table A1.12.5 and is shown in Table 7. The BAL for the site is shown in Figure 7.

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. The buildings will be constructed to meet the relevant requirements of AS3959-2018 as identified in PBP 2019.

Table 7: 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

The tables below (Tables 8-12) provide a summary of the Bushfire Attack Levels across all buildings along the boundaries of the development and adjoining unmanaged vegetation. Figure 7 depicts the BAL requirements across the site.

Table 8: Bushfire Attack Levels – building 2A.

Direction	Slope	Vegetation	APZ Proposed	Bushfire Attack Level
North	NA	No hazard	NA	BAL-12.5
East	NA	No hazard	NA	BAL-12.5
South	NA	No hazard	NA	BAL-12.5
West	0-5° Downslope	Woodland	60 metres	BAL-12.5

Table 9: Bushfire Attack Levels – building 3A.

Direction	Slope	Vegetation	APZ Proposed	Bushfire Attack Level
North	NA	No hazard	NA	BAL-12.5
East	NA	No hazard	NA	BAL-12.5
South	NA	No hazard	NA	BAL-12.5
West	0-5° Downslope	Woodland	32 metres	BAL-12.5

Table 10: Bushfire Attack Levels – buildings 3B and 3C.

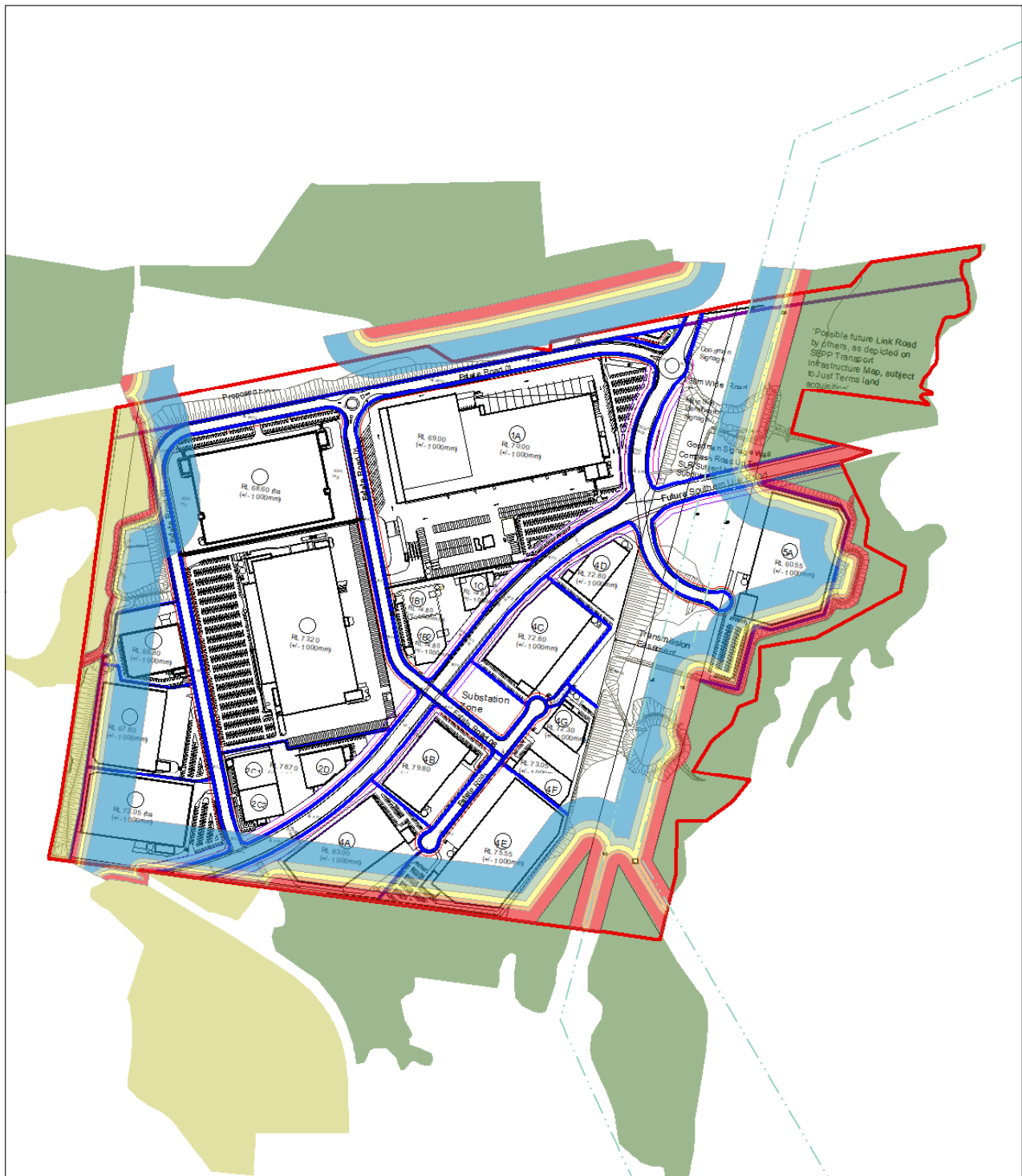
Direction	Slope	Vegetation	APZ Proposed	Bushfire Attack Level
North	NA	No hazard	NA	BAL-FZ
East	NA	No hazard	NA	BAL-40
South	NA	No hazard	NA	BAL-FZ
West	0-5° Downslope	Woodland	8 metres	BAL-FZ

Table 11: Bushfire Attack Levels – buildings 4A and 4E.

Direction	Slope	Vegetation	APZ Proposed	Bushfire Attack Level
North	NA	No hazard	NA	BAL-40
East	NA	No hazard	NA	BAL-FZ
South	0-5° Downslope	Forest	19 metres	BAL-FZ
West	NA	No hazard	NA	BAL-FZ

Table 12: Bushfire Attack Levels – building 5A.

Direction	Slope	Vegetation	APZ Proposed	Bushfire Attack Level
North	Level	Forest	20 metres	BAL-40
East	Level	Forest	20 metres	BAL-40
South	Level	Forest	20 metres	BAL-40
West	NA	No hazard	NA	BAL-12.5



Legend

Electricity Transmission Line

Subject Land

Vegetation Formation

Woodland

Forest

Bushfire Attack Level (BAL)

BAL - Flame Zone

BAL - 40

BAL - 29

BAL - 19

BAL - 12.5



Date: 10/11/2020

0 50 100 200 300

Metres

Coordinate System: GDA 1994 MGA Zone 56
Imagery: © Nearmap

Figure 7: 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 4 shows the proposed MOD 6 Masterplan including the proposed access within the site.

Vehicular access to the proposed Oakdale West Estate will be provided with the construction of the Western North South Link Road (WNSLR) which would connect in the north-eastern part of the site, providing a link north to Lenore Drive and the broader external road network. Completion of the WNSLR as the primary access for the OWE would eliminate any reliance on Bakers Lane for site access. Bakers Lane would only be used for access during the early stages of the construction process, prior to the completion of the WNSLR.

This road and the proposed internal access roads 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 to the bushfire prone vegetation within the Ropes Creek corridor, the vegetation in the corridor along the western boundary and the vegetation on the land to the south. This is provided either by a perimeter road or by vehicular access to the future buildings or parking areas incorporated into the defendable space setback.

Fire trail access is also provided within the Ausgrid Power Line Easement to assist in firefighting and fire prevention operations.

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 extended into the site. The fire-fighting water supply to the new buildings shall comply with the Building Code of Australia [BCA] and A.S. 2419.1 – 2005.

Buildings 2A, 3A, 3B, 3D, 3E, 4A, 4E and 5A shall be provided a ring-main to the hazard side of the building, complete with Millcock Valves fitted with Stortz Coupling and Blanking Cap.

10. 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 13 shows the compliance with PBP.

Table 13: 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, defensible 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 defensible space to be located around buildings.	Yes	Defensible space is provided on all sides of the proposed buildings.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent the likely fire spread to buildings.	Yes	The structures are 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 buildings. 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).

11. 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, an Asset Protection Zone shall be established and maintained as per Figure 6. 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: Buildings are constructed in accordance *Australian Standard AS 3959-2009 Construction of buildings in bushfire-prone areas (AS 3959-2018)* as identified in Tables 8-12 and also include the following additional measures:

- 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.

12. Conclusion

Blackash Bushfire Consulting have completed a Bushfire Hazard Assessment Report for the industrial development known as the Oakdale West Estate. The Application is for the modification (MOD 6) of the previously approved SSD-7348 and will be submitted to the Department of Planning, Industry and Environment for determination.

The MOD 6 proposal seeks to modify the existing approval for the staged development of the OWE facilitated via a staged SSDA process. The Department of Planning and Environment Secretary's Environmental Assessment Requirements have been assessed and the proposed modification does not increase the bushfire risk to the site and is considered generally consistent with 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 report demonstrates that the proposed development satisfies the requirements of *Planning for Bush Fire Protection 2006 and 2019*, in particular the provision of asset protection zones, access (including perimeter roads) and water supply for firefighting purposes.

The proposed development is industrial development and considered as “other” development in *Planning for Bushfire Protection 2019* and complies with the aim and objectives of that document.

The Building Code of Australia does not provide for any bushfire specific performance requirements for the proposed development and as such AS3959, 2018 does not apply as a deemed to satisfy provision.

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 2019* and consistent with the original SSD approved Concept Plan and Consent Condition B20 – Bushfire Protection of Schedule B – Conditions 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

Australian Building Codes Board Building Code of Australia Volumes 1&2

Councils of Standards Australia AS3959 (2018) – Australian Standard Construction of buildings in bushfire-prone areas

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