



Bushfire Assessment

Access Logistics Park

**884-928 Mamre Road,
Kemps Creek**

Altis Kemps Creek Pty Ltd

20 July 2021

(Ref: 20140)

report by
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1 Introduction

Street or property name:	884-928 Mamre Road	
Suburb, town or locality:	Kemps Creek	Postcode: 2745
Lot/DP no:	Lot 52 and 53 DP 259135	
Local Government Area:	Penrith City Council	
Type of development:	State Significant Development for industrial uses	

1.1 Background

Altis Kemps Creek Pty Ltd commissioned Peterson Bushfire to prepare a Bushfire Assessment Report for a proposed warehouse and logistics park located within bushfire prone land. This report presents the assessment and recommendations to ensure compliance with the relevant bushfire protection legislation and policy. It has been prepared by a consultant accredited by the Fire Protection Association of Australia's BPAD scheme (Accreditation No. BPD-L3-18882).

1.2 Location of subject land

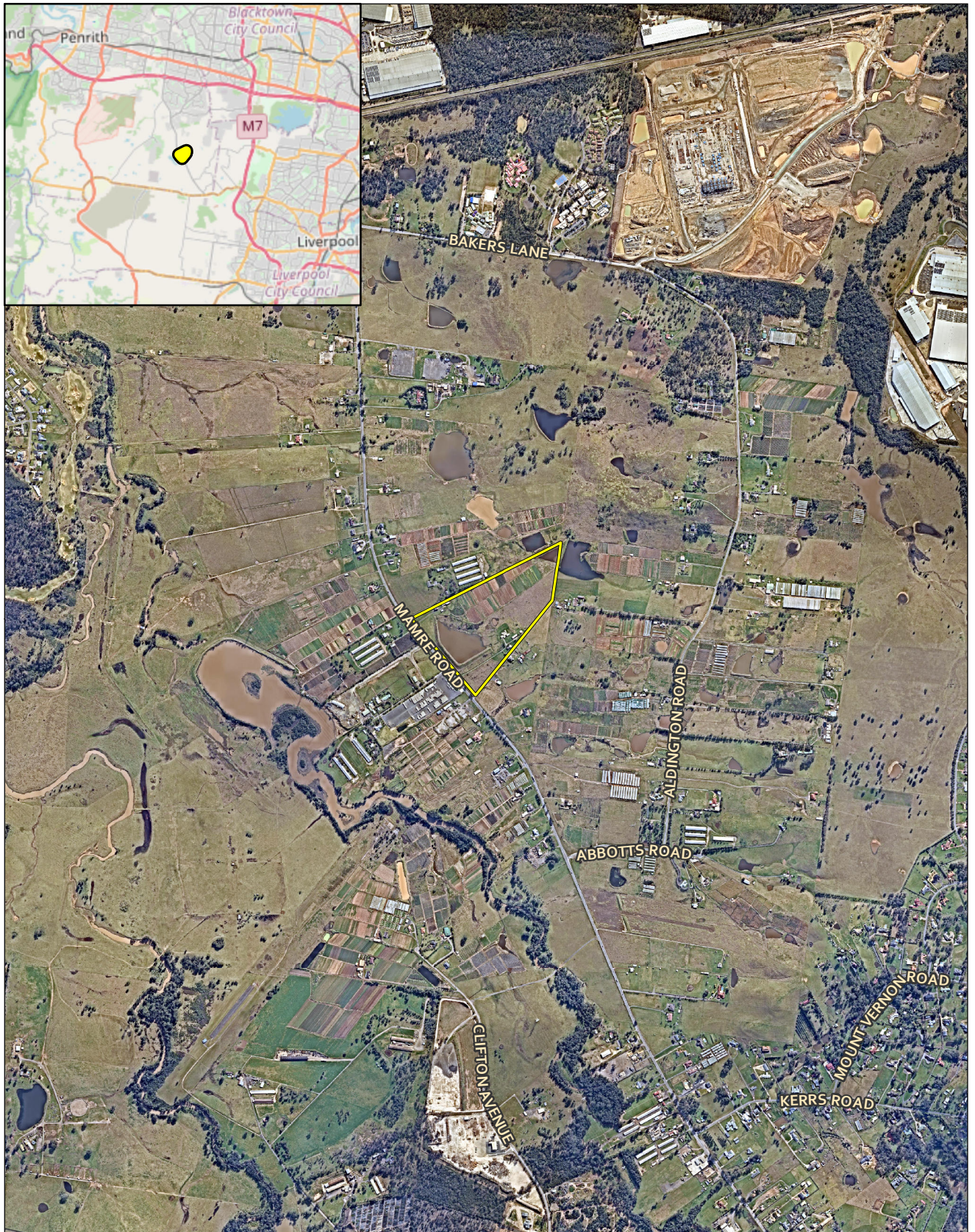
The subject land is comprised of two lots with a combined area of approximately 20.3 hectares, situated within the Mamre Road Precinct in the Western Sydney Employment Area. It is located on the eastern side of Mamre Road approximately 2.5 km south of the Erskine Park industrial precinct as shown on Figure 1. The subject land is surrounded by cleared lands comprising agricultural and light industrial uses.

1.3 Proposal


The proposal is a State Significant Development (SSD-17647189) which seeks approval for a warehouse and logistics park that will include the following:

- Sixteen lot subdivision;
- Public roads;
- Associated works including bulk earthworks, infrastructure and utilities; and
- Construction of one warehouse within proposed Lot 2 facing Mamre Road, and associated hardstand, landscaping, utilities and services.

A development layout plan is included as Figure 2.



Legend

 Subject Land



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Date: 20/05/2021

0 250 500 1,000
Metres

Figure 1: The Location of the Subject Land


Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap




Legend

- Subject Land
- Cadastre

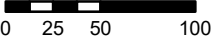


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Date: 20/07/2021



0 25 50 100
Metres

Figure 2: The Proposal

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

1.4 Assessment requirements

This Bushfire Assessment Report has been prepared to address Key Issue 'Bushfire' of the Planning Secretary's Environmental Assessment Requirements (SEARs) issued 14 May 2021 (SSD-17647189). The Key Issue is listed in Table 1 below:

Table 1: SEARs requirement report section references

SEARs requirement	Report section
<i>Bushfire – including a bushfire assessment against the requirements of Planning for Bush Fire Protection (NSW Rural Fire Service, 2019).</i>	<ul style="list-style-type: none"> • Assessment - Section 4 • Recommendations – Section 5

The subject land is identified as bushfire prone land by Penrith City Council as shown by the bushfire prone land mapping on Figure 3. Development proposals on bushfire prone land are to comply with the NSW Rural Fire Service (RFS) document *Planning for Bush Fire Protection 2019* (RFS 2019), referred to within this report as 'PBP'.

The development does not involve subdivision for habitable uses (Class 1, 2 or 3) or Special Fire Protection Purpose (SFPP) development. Section 8.3 of PBP prescribes the assessment methodology and bushfire protection measures for other uses that do not involve a habitable dwelling or SFPP development. 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) and Bushfire Attack Levels (BAL) do not apply as deemed-to-satisfy provisions for bushfire protection. Whilst bushfire is not captured in the NCC for industrial land uses involving 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.

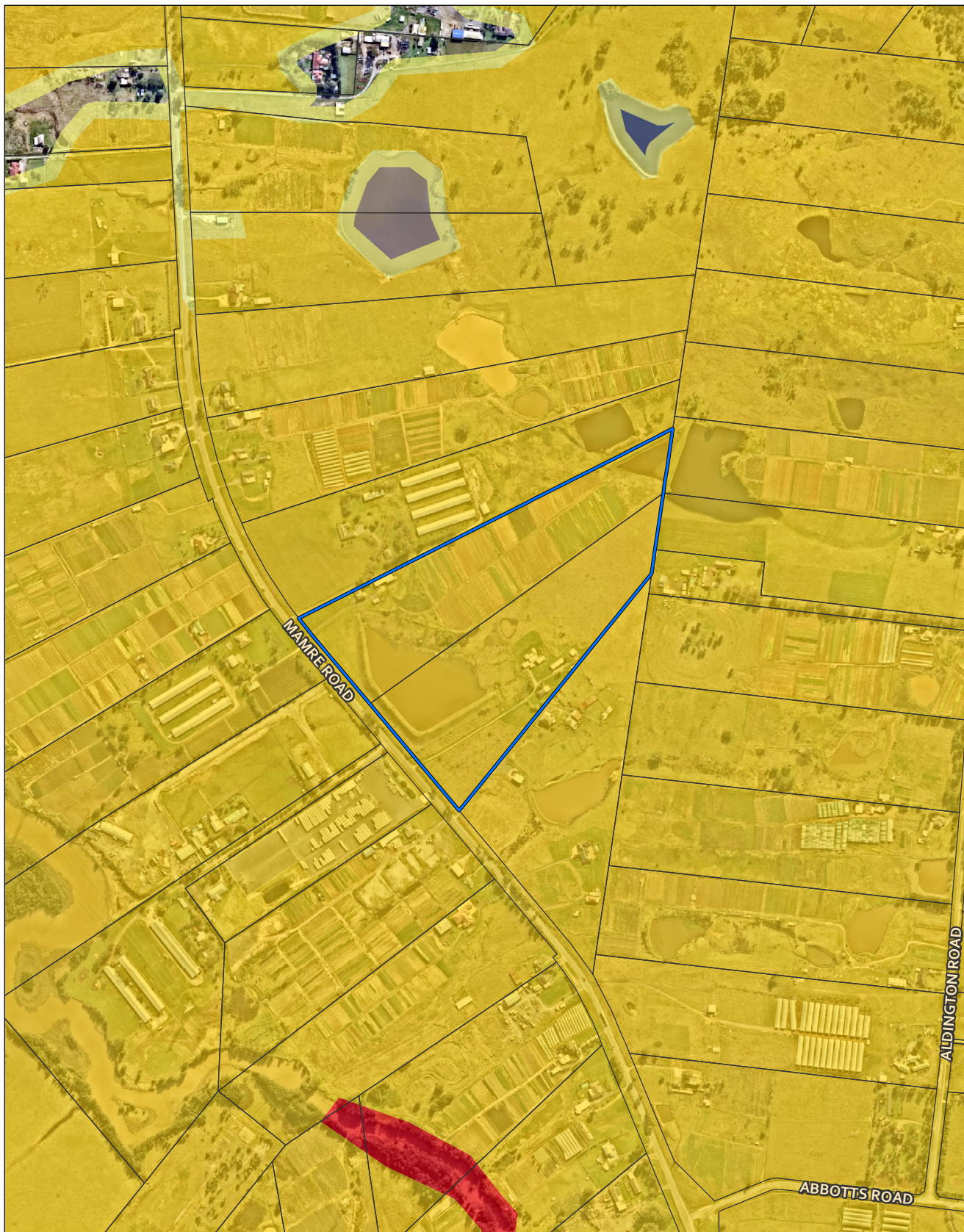
2 Bushfire prone land

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

The Penrith Bushfire Prone Land Map presented in Figure 3 identifies the subject land and adjoining lands as Vegetation Category 2, which represents potential grassland hazard in this instance and reflects the predominance of cleared properties surrounding. Any development proposal within a lot containing mapped bushfire prone land (i.e. bushfire prone property) is to comply with the requirements of PBP.

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

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



Legend

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



Date: 20/05/2021

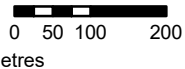


Figure 3: Bushfire Prone Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

3 Bushfire hazard

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

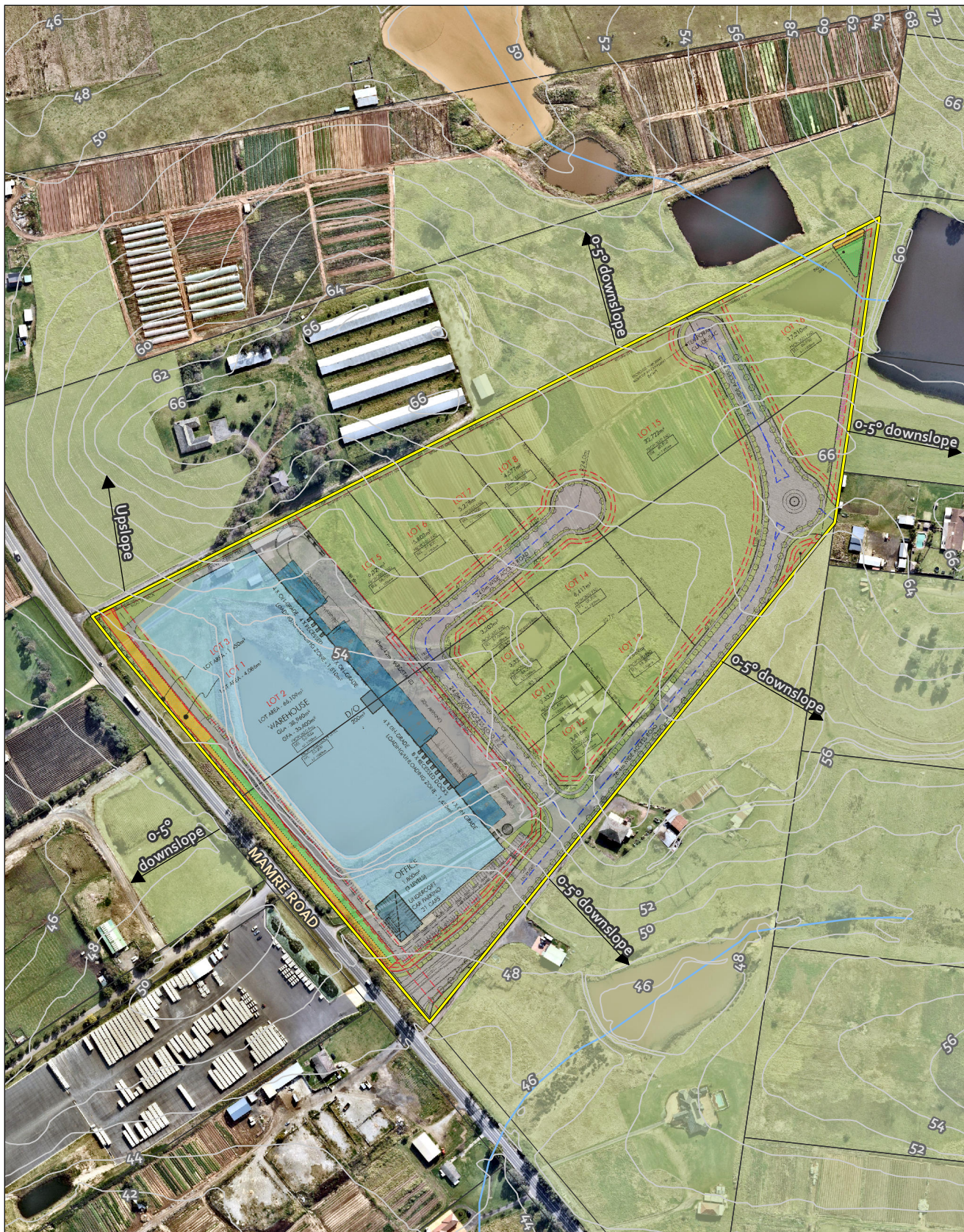
3.1 Predominant vegetation

The 'predominant vegetation' influencing fire behaviour approaching the subject land has been assessed in accordance with the methodology specified by PBP. The vegetation within the 140 m assessment area consists of cleared paddocks on all sides of the subject land as shown on Figure 4. These paddocks have the potential to act as a grassland hazard depending on the management regime (i.e. grazing), grass growth rates and curing.




3.2 Effective slope

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

The effective slope consists of gentle downslopes within the PBP slope class of 0-5 degrees generally in all directions except for the north-west where the slope class is 'upslope'. The slope assessment is indicated on Figure 4.



Legend

-  Contour - 2m
-  Watercourse
-  Subject Land
-  Cadastral
-  Vegetation Formation
-  Grassland



Date: 20/07/2021

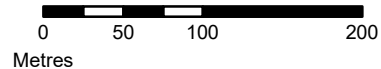


Figure 4: Bushfire Hazard Analysis

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

4 Bushfire protection measures

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

Table 2: PBP bushfire protection measures for developments other than dwellings and SFPP

Objectives (PBP Section 8.3.1)	Measures
1. Access	<ul style="list-style-type: none"> • Access to public road • Adequacy of internal property roads • Defendable space - Providing fire-fighter access between buildings and the hazard.
2. Emergency and evacuation arrangements	<ul style="list-style-type: none"> • Bushfire Emergency Management and Evacuation Plan • Adequacy of internal property roads
3. Water supply and other utilities	<ul style="list-style-type: none"> • Water supply for fire-fighting including provisions for hydrants or static water supplies. • Ensuring installation of electricity and gas supplies do not contribute to the risk of fire to a building.
4. Hazardous materials	<ul style="list-style-type: none"> • Appropriate storage of hazardous materials away from bushfire hazards.

4.1 Access

4.1.1 Public road access

The public road access currently consists of Mamre Road which provides alternate access in the north and south directions. In the future, the development will have additional access by way of new industrial precinct road from the eastern end of the subject land.

The subdivision proposal includes a public road that will extend from Mamre Road in the west to the future precinct road in the east. Public road design and construction is to comply with Table 5.3b of PBP as listed on the following page. An exemption is that the length of the proposed road may be greater than 200 m until such time that the connection to the east is constructed. The exemption is acceptable due to the hazard being low risk grassland and the development being non-habitable.

PBP design and construction standards for public roads in bushfire prone areas:

- *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.*

- *Perimeter roads are:*
 - *two-way sealed roads;*
 - *8 m carriageway 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 internal of no greater than 500 m;*
 - *curves of roads have a minimum inner radius of 6 m;*
 - *the maximum road grade is 15° and average grade is 10°;*
 - *the road crossfall does not exceed 3°;*
 - *a minimum vertical clearance of 4 m to any overhanging obstruction, including tree branches, is provided.*
- *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 internal 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.*

4.1.2 Internal property roads

The warehouse development within proposed Lot 2 will have internal property access featuring separate car and truck entry points from the proposed subdivision road to the east. A minimum 6 m wide fire access road is proposed along the northern boundary common to the grassland hazard adjacent, and all remaining sides of the warehouse will have access roads, parking and hardstand with ample turning opportunities (refer to Figure 2). The internal road access is deemed to be adequate for the proposal. Additional provisions for bushfire protection are not required.

Any access roads or driveways within proposed Lots 5-16 are to be assessed under future development applications for each lot.

4.1.3 Defendable space

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

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

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

The warehouse development in proposed Lot 2 will be separated from the grassland hazard adjacent to the north by the 6 m wide fire access road within a boundary setback of at least 12 m. An adequate defendable space is therefore provided. Additional provisions for bushfire protection are not required.

Future warehouses within proposed Lots 5-8, 15 and 16 will require a minimum 6 m wide fire access road which is to provide vehicular access between warehouses and the external boundary if a grassland hazard is still present on the adjoining properties. The defendable space access roads are to be through roads and link back to the internal public roads. The adjoining site to the north has been acquired by Mirvac and future development will remove the grassland hazard, negating the need for the defendable space.

The defendable space and entire site are to be maintained to achieve the performance requirement of an Inner Protection Area (IPA) as described by Appendix 4 of PBP. The following landscaping specifications can be followed to achieve an IPA standard at this site:

Trees

- Trees at maturity should not touch or overhang the building; and
- Tree canopies should not be connected when at maturity. Gaps between crowns or groups of crowns are to be maintained at distances of 2 to 5 m.

Shrubs

- Ensure gaps in the vegetation, such as between garden beds, to prevent the spread of fire towards the building;

- Clumps of shrubs should be separated from glazing and doors by a distance of at least twice the height of the vegetation.

Groundcovers

- Grass should be kept mown (as a guide grass should be kept to no more than 100mm in height);
- Leaves and vegetation debris should be regularly removed;
- Organic mulch is not to be used within 1 m of a building.

4.2 Emergency and evacuation

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

Due to the low level of bushfire risk presented by the surrounding cleared lands, the preparation of a 'Bushfire Emergency Management and Evacuation Plan' for the warehouse development and proposed lots is not considered to be warranted in this case.

4.3 Water supply and other utilities

Water supply

The proposed public roads will require fire hydrants to be installed to comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419). The warehouse will require fire hydrants to be installed to comply with AS 2419 so that all sides of a building 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).

Electricity supply

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

Gas supply

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

4.4 Hazardous materials

The warehouse development on proposed Lot 2 is not involve the storage of hazardous or combustible materials external to the building.

5 Conclusion and recommendations

The proposal consists of a warehouse logistics park located on 'bush fire prone land' and surrounded by cleared lands consisting of paddocks and managed areas. The bushfire threat is the potential for the paddocks to present a grassland hazard.

As stated within Section 8.3.1 of PBP, the NCC does not provide for any bushfire specific performance requirements for the type of development or use proposed. As such the Asset Protection Zone (APZ) and building construction requirements (i.e. Bushfire Attack Levels – BALs) of PBP and AS 3959-2018 not apply as deemed-to-satisfy provisions for bushfire protection.

However, PBP requires an assessment of the proposal against four objectives as listed in Table 3 below. This assessment concludes that all four objectives are satisfied with the adoption of the recommendations listed following Table 3.

Table 3: Compliance with PBP Section 8.3.1 objectives

Objectives (PBP Section 8.3.1)	Compliance statement
Provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation	<u>Section 4.1 demonstrates compliance.</u> Appropriate access to the public road system via internal public roads with connections to future precinct roads. Defendable space provided to proposed warehouse development on proposed Lot 2 and remaining lots are able to accommodate defendable space.
Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development	<u>Section 4.2 demonstrates compliance.</u> The assessment does not require the preparation of a 'Bushfire Emergency Management and Evacuation Plan' due to the low bushfire risk at the site.
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	<u>Section 4.3 demonstrates compliance.</u> Compliant hydrant coverage and installation of gas supplies is required. The electrical supply will be below ground.

Objectives (PBP Section 8.3.1)	Compliance statement
Provide for the storage of hazardous materials away from the hazard wherever possible	<u>Section 4.4 demonstrates compliance.</u> Hazardous or combustible materials are not to be stored externally.

The following recommendations were made within this report:

1. Public road design and construction is to comply with Table 5.3b of PBP. An exemption is the interim single access road may be longer than 200 m.
2. The entire site is to be maintained to achieve the performance requirement of an Inner Protection Area (IPA) as described by Appendix 4 of PBP. The following landscaping specifications can be followed to achieve an IPA standard at this site:
 - a. Trees:
 - i. Trees at maturity should not touch or overhang the building;
 - ii. Tree canopies should not be connected when at maturity. Gaps between crowns or groups of crowns are to be maintained at distances of 2 to 5m.
 - b. Shrubs:
 - i. Ensure gaps in the vegetation, such as between garden beds, to prevent the spread of fire towards the building;
 - ii. Clumps of shrubs should be separated from glazing and doors by a distance of at least twice the height of the vegetation.
 - c. Groundcovers:
 - i. Grass should be kept mown (as a guide grass should be kept to no more than 100mm in height);
 - ii. Leaves and vegetation debris should be regularly removed;
 - iii. Organic mulch is not to be used within 1 m of a building.
3. The proposed public roads require fire hydrants to be installed to comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).
4. The warehouse 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 the building 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).

5. Any gas services are to be installed and maintained in accordance with *AS/NZS 1596-2014 The storage and handling of LP gas*.
6. Hazardous or combustible materials are not to be stored externally.

In the author's professional opinion, with the adoption of the above recommendations, the proposed development will comply with *Planning for Bush Fire Protection 2019 (PBP)* and therefore addresses Key Issue 'Bushfire' of the SEARs (SSD-17647189).



David Peterson



References

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