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Bushfire Assessment

Kemps Creek Warehouse, Logistics & Industrial Facilities Hub SSD-9522 Mod

Mamre Road, Kemps Creek

Altis Frasers JV Pty Ltd

3 November 2021

(Ref: 21100)

report by

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

ABN 28 607 444 833

Contents

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1 Introduction

Street or property name:	657-769 Mamre Road		
Suburb, town or locality:	Kemps Creek	**Postcode:**	2745
Lot/DP no:	Lot 34 DP 1118173, Lot X DP 421633, Lot 1 DP 1018318, Lot Y DP 421633 and Lot 22 DP 258414		
Local Government Area:	Penrith City Council		
Type of development:	State Significant Development for industrial uses		

1.1 Background

Altis Frasers JV Pty Ltd commissioned Peterson Bushfire to prepare a Bushfire Assessment Report for a proposed modification to an approved industrial development located within 'bushfire prone land'. This report presents the assessment and recommendations to ensure compliance with the relevant bushfire protection legislation and policy.

The approved project is State Significant Development SSD-9522 and this Bushfire Assessment Report has been prepared to address Key Issue 'Bush Fire' of the Planning Secretary's Environmental Assessment Requirements (SEARs). The SEARs as they relate to bushfire protection and the corresponding section of the report where they are addressed is listed in Table 1 below.

Table 1: List of SEARs as they relate to bushfire protection

SEARs	Report reference
- *assess the level of hazard posed to future development by the land or adjacent land and how the hazards may change as a result of development; and*	• Section 3
- *address the requirements of Planning for Bushfire Protection 2006 (now RFS 2019), and in particular, the provision of access (including perimeter roads) and provision of water supply for firefighting purposes.*	• Section 5, Table 3.

1.2 Location and description of subject land

The subject land is situated west of Mamre Road and north of Bakers Lane as shown on Figure 1. The subject land is within the north-western portion of the Mamre Road Precinct in the Western Sydney Employment Area.

1.3 Proposal

The proposed modification to approval SSD-9522 issued December 2020 seeks the following:

- Changes to estate road widths and removal of Sequence 1B intersection works; and
- Reconfiguration of Lots 1-4.

A development layout plan is included as Figure 2.

This assessment focuses on Lots 1-4 in the northern part of the site where changes in design warrant a re-assessment of bushfire protection requirements.

Legend

- Watercourse
- Subject Land
- Cadastre

N

DKGIS

Date: 31/10/2021

0 125 250 500

Metres

Figure 1: The Location of the Subject Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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Legend

Subject Land

N

DKGIS

Date: 31/10/2021

0 25 50 100

Metres

Figure 2: The Proposal

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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1.4 Assessment requirements

This Bushfire Assessment Report has been prepared to address Key Issue 'Bush Fire' of the Planning Secretary's Environmental Assessment Requirements (SEARs). The Key Issue is as follows:

- *assess the level of hazard posed to future development by the land or adjacent land and how the hazards may change as a result of development; and*
- *address the requirements of Planning for Bushfire Protection 2006 (now RFS 2019), and in particular, the provision of access (including perimeter roads) and provision of water supply for firefighting purposes.".*

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 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.

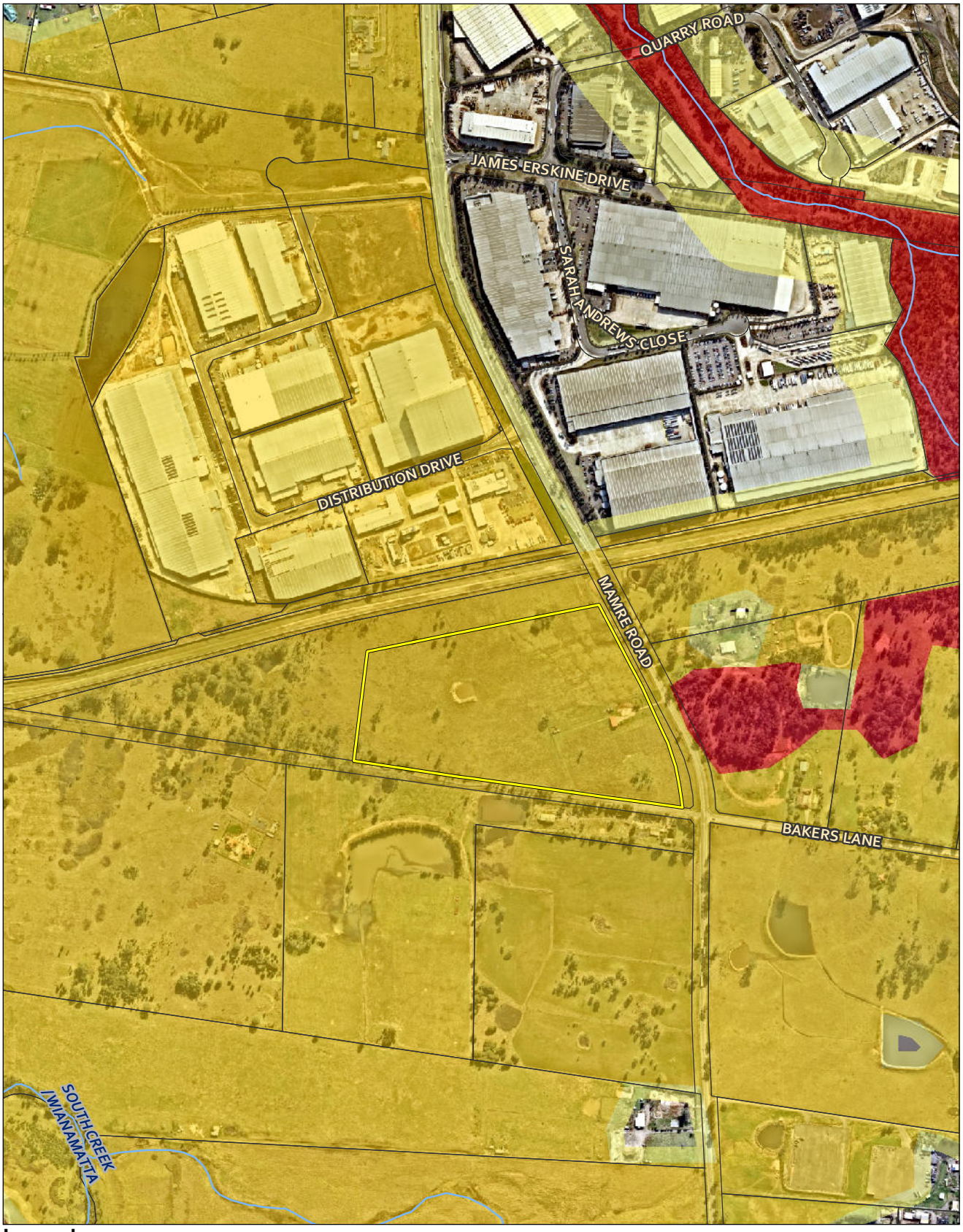
2 Bushfire prone land

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 supporting a potential grassland hazard. 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

Watercourse
Subject Land
Cadastre

Bushfire Prone Land

Vegetation Buffer
Vegetation Category 1
Vegetation Category 2

N

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Date: 31/10/2021

0 125 250 500

Metres

Figure 3: Bushfire Prone Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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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 Lots 1-4 has been assessed in accordance with the methodology specified by PBP. The vegetation within the 140 m assessment area is mapped on Figure 4 and is described below.

- ***Woodland to the east and west***

  Patches of Shale Plains Woodland occur to the east of Mamre Road and west of the development site as shown on Figure 4. These patches are classified as 'woodland' vegetation.

- ***Grassland surrounding***

  Cleared paddocks adjoin the development site to the north, east, south-west and west where not managed by existing development or where bulk earthworks has not commenced for the remainder of the estate. The paddocks have the potential to act as a grassland hazard depending on the management regime (i.e. grazing), grass growth rates and curing. This potential is to be considered in hazard assessments as a 'grassland' hazard.

The patch of woodland east of Mamre Road within the E2 zone will be conserved and woodland vegetation to the west within the RE1 and ENZ zones may also be conserved as the development of the precinct takes place. The immediate surrounding grassland will eventually be replaced with industrial development.

This assessment addresses the hazard that was present at time of report preparation which exceeds the level of hazard that will occur in the future once the precinct is developed.

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 proposed development. The effective slope was measured using a 2 m contour layer as shown on Figure 4. The effective slopes under the surrounding hazards are indicated on Figure 4.

Legend

- Contour - 2m
- Subject Land
- Defendable Space
- Woodland
- Grassland

N

DKGIS

Date: 31/10/2021

0 25 50 100

Metres

Figure 4: Bushfire Hazard Analysis

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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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	• 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	• Bushfire Emergency Management and Evacuation Plan • Adequacy of internal property roads
3. Water supply and other utilities	• 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	• Appropriate storage of hazardous materials away from bushfire hazards.

4.1 Access

4.1.1 Public road access

The existing public road access currently consists of Mamre Road to the east and Bakers Lane to the south. Mamre Road is the primary collector road in the locale and provide access in the north and south directions. Mamre Road will be widened and improved to service the Mamre Road Precinct and Bakers Lane will become the Southern Link Road providing an additional access option to the east.

Public road design and construction associated with the proposal will comply with Table 5.3b of PBP as listed below. An exception is that the length of the public road exceeds the PBP threshold of 200 m for no-through roads. Such a breach is considered acceptable due to the low risk presented by the adjacent paddocks and the temporary nature of the adjacent hazard.

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 or 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 15º and average grade is 10º;*
    - *the road crossfall does not exceed 3º;*
    - *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 or 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 3º;*
    - *a minimum vertical clearance of 4 m to any overhanging obstruction, including tree branches, is provided.*

4.1.2 Internal property roads

The proposed warehouses in Lots 1-4 will have internal property access roads linked to the approved public roads creating a loop around the warehouses suitable for trucks. The roads will have parking and hardstand areas creating ample turning opportunities. The internal property roads are deemed to be adequate for the proposal. Additional provisions for bushfire protection are not required.

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 proposed warehouses in Lots 1-4 will be separated from the identified hazards by the internal property access roads and additional managed areas. An adequate defendable space is therefore provided. The defendable space is highlighted on Figure 4. Additional provisions for bushfire protection are not required.

Lots 1-4 are to be maintained to achieve the performance requirement of an Inner Protection Area (IPA) as described by Appendix A4.1.1 of PBP. The following landscaping specifications have been designed to achieve the IPA at this site:

Trees

- Trees at maturity should not touch or overhang the building; and
- Tree crowns should not provide a connected canopy between the identified hazard and the building when at maturity.

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 lands, the preparation of a 'Bushfire Emergency Management and Evacuation Plan' for the development is not considered to be warranted in this case.

4.3 Water supply and other utilities

Water supply

The proposed warehouses will require fire hydrants to be installed to comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).

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 proposed warehouses will not involve the storage of hazardous or combustible materials external to the building.

5 Conclusion and recommendations

The proposal consists of modifications to a warehouse, logistics and industrial facilities hub located on 'bush fire prone land'. The bushfire hazard consists of the potential for adjacent paddocks to present a grassland hazard. The approved estate roads and internal property access roads provide an adequate defendable space for the development.

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 do 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	Section 4.1 demonstrates compliance. Appropriate access to the future public road system. Defendable space provided to proposed warehouses in Lots 1-4.
Provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development	Section 4.2 demonstrates compliance. 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	Section 4.3 demonstrates compliance. Compliant hydrant coverage and installation of gas supplies is required. The electrical supply will be below ground.
Provide for the storage of hazardous materials away from the hazard wherever possible	Section 4.4 demonstrates compliance. Hazardous or combustible materials are not to be stored externally.

The following recommendations were made within this report:

1. Proposed Lots 1-4 are to be maintained to achieve the performance requirement of an Inner Protection Area (IPA) as described by Appendix A4.1.1 of PBP. The following landscaping specifications have been designed to achieve the IPA at this site:
    a. Trees:
        i. Trees at maturity should not touch or overhang the building;
        ii. Tree crowns should not provide a connected canopy between the identified hazard and the building when at maturity.
    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.
2. The proposed warehouses on Lots 1-4 will require fire hydrants to be installed to comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).
3. Any gas services are to be installed and maintained in accordance with *AS/NZS 1596-2014 The storage and handling of LP gas*.
4. 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 modification will comply with *Planning for Bush Fire Protection 2019* (PBP) and therefore addresses Key Issue 'Bush Fire' of the SEARs (SSD-9522).

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