



BUSHFIRE ASSESSMENT REPORT

PROPOSED WAREHOUSE, LOGISTICS AND INDUSTRIAL FACILITIES HUB

**MAMRE ROAD
KEMPS CREEK**

**JULY 2020
REF: 20083**

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**PROPOSED WAREHOUSE, LOGISTICS
AND INDUSTRIAL FACILITIES HUB**

KEMPS CREEK

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PREFACE

This document provides an assessment of the bushfire attack potential and the necessary bushfire protection strategies for the proposed future industrial development of the subject site at Kemps Creek. Aspects considered in relation to the Bushfire Assessment Report include; vegetation type, slopes, water supplies, entry and egress access, provision of defensible space, maintenance of defensible space, responsibilities for the upkeep of defensible space and construction standards for future industrial buildings at the site.

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SECTION 1

BACKGROUND DETAILS

1.1 INTRODUCTION

This Bushfire Assessment Report has been prepared by *Conacher Consulting Pty Ltd* for the proposed Warehouse, Logistics and Industrial Facilities Hub at Kemps Creek.

The objectives of this Report are to:

- i) Detail the assessment of the site in relation to bushfire hazard and attack;
- ii) Address the relevant requirements of Planning for Bushfire Protection (Rural Fire Service, 2019);
- iii) Identify if the development complies with the aims and objectives of Planning for Bushfire Protection (RFS, 2019);
- iv) Prepare a Report that supplies the relevant information for assessment by Council and the Department of Planning Industry and Environment as part of the documentation for an application for State Significant Development.

The whole of this document relates to the requirements of the Secretary's Environmental Assessment Requirements (SEAR's) as identified on page 7 of the SEAR's as produced below:

"Bushfire - including:

- *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."*

Previous versions of this Bushfire Assessment Report have been prepared (Conacher Consulting 2019) and subsequently reviewed by the Rural Fire Service. Following receipt of comments and a meeting with the Rural Fire Service (12th March 2020) amendments have been made to the layout plan and proposed works within the area along the western edges of the warehouse development area to address the matters raised by the RFS.

These changes to the previous site plans include:

- Perimeter access road (16.8 metres wide)
- Future open space recreational areas, including car parking areas.
- Road and reserve edge landscaping to be compatible with an asset protection zone plantings as required in Planning for Bushfire Protection (Rural Fire Service 2019), which are identified in Appendix 1 of this Report.

1.2 DESCRIPTION OF THE PROPERTY

The subject site comprises Lot 34 DP 1118173, Lot 1 DP 1018318, Lot X & Lot Y DP 421633 and Lot 22 DP 258414 and is approximately 11.7 hectares in size. The site is located to the west of Mamre Road and to the east of South Creek. The northern part of the site adjoins the Orchard Hills / Kemps Creek water supply pipeline easement.

1.3 PROPOSED DEVELOPMENT

The proposal is for subdivision and subsequent earthworks on the land to provide for a proposed Warehouse, Logistics and Industrial Facilities Hub. The proposed development also involves the construction of warehouses / industrial facilities with associated offices and infrastructure (roads, services, stormwater treatment basins etc) while also providing areas for future outdoor recreation development. A development plan is included as Figure 1. The development proposal is summarised below:

- Lots 1-10 Industrial warehouses and ancillary office space
- Lot 11, 12, 13 Stormwater Treatment Basin
- Lots 14-17 Outdoor recreation opportunities (RE1, RE2 Zones)
- Stage 1 Retained Vegetation

1.4 REPORT REQUIREMENTS

This Bushfire Assessment Report has been prepared to address the reporting requirements identified in Planning for Bushfire Protection (RFS 2019) and the Secretary's Environmental Assessment Requirements (SEARs) as issued for the site / project by the Department of Planning and Environment (now the Department of Planning, Infrastructure and Environment).

SECTION 2

BUSHFIRE ATTACK ASSESSMENT

2.1 BUSHFIRE ASSESSMENT CRITERIA

Bushfire Prone Land Map

Council's Bushfire Prone Land Map shows that the site is classified as bushfire prone land with Category 2 vegetation located within the site, as shown in Figure 2.

The site is also adjoined in all directions by mapped Category 2 vegetation.

Forest Fire Danger Index

The subject site is located within Penrith Council Local Government Area in the Greater Sydney Region. The Forest Fire Danger Index for the Greater Sydney Region is rated at 100 for use in determining asset protection zone requirements and categories for bushfire attack.

Vegetation Classification

The vegetation within the adjoining lands is classified as a Grassland / Woodland Vegetation Formation according to the vegetation classification criteria used in Planning for Bushfire Protection (RFS 2019).

Development Category

The proposal is for an industrial subdivision and includes warehouse, logistics and industrial facilities within the subject site as part of an application for State Significant Development. This is classified as other non-residential development. The proposal is not a residential subdivision, an infill or a Special Fire Protection Purpose development within Chapters 5, 6 or 7 of Planning for Bushfire Protection (RFS, 2019). Development consent is required from the Department of Planning Industry and Environment. The Rural Fire Service has been consulted with regards to the application and Bushfire Assessment Report.

Planning for Bushfire Protection (RFS, 2019)

Due to the proposed development being industrial, and the fact that part of the site contains land mapped as Bushfire Prone Land, a Bushfire Assessment Report has been prepared in accordance with the requirements of *Planning for Bushfire Protection* (RFS, 2019).

State Legislation

The proposal is subject to the provisions of the Environmental Planning and Assessment Act (1979) through the application of a State Significant Development proposal which requires the consent authority (Department of Planning Industry and Environment) to consider the requirements of Planning for Bushfire Protection (RFS, 2019).

In relation to the Rural Fires Act, Section 100B of this Act does not apply to the proposed development as the proposal is for a future industrial development incorporating land subdivision. This will not require an application to the RFS for a Bushfire Safety Authority. However consultation with the Rural Fire Service has continued during the preparation of the project proposal.

Adjoining and Surrounding Development

Areas of rural dwellings and associated land use are located to the east of Mamre Road and in the south-east corner of the site. A major water supply pipeline is located to the north. The riparian area of Kemps Creek is located to the west of the site.

2.2 BUSHFIRE ATTACK ASSESSMENT

As the proposed development is not for a residential subdivision or residential building, the assessment of categories of bushfire attack and level of building construction according to the Australian Standard 3959-2018 (Construction of Buildings in Bushfire Prone Areas) and the Building Code of Australia is not required for the industrial subdivision and future buildings. A combination of defendable space and/or fire retardant construction materials is most often employed to protect against the impact of a bush fire. A summary of the defendable space between the proposed development and the bush fire threat is provided in Table 2.1.

TABLE 2.1 DEFENDABLE SPACE BETWEEN THE BUSHFIRE THREAT AND THE PROPOSED DEVELOPMENT			
Direction	Vegetation Classification (greatest threat within 140m)	Effective Slope (within 100m)	Existing or proposed Defendable Space (m)
North	Reduced Vegetation Managed Land	Upslope (cross-slope)	Managed pipeline easement (30m wide)
South	Grassland – Managed Land	0-5° downslope	5 metres
West	Riparian Grassland/ Woodland	0-5° downslope	>20 metres
East	Reduced Vegetation Mamre Road	Upslope	Managed Land Mamre Road

In relation to the subject site and the proposed development, the principal direction of bushfire attack is from the grassland / woodland vegetation to the west and south.

The existing managed lands to the north, south and east of the proposed development, construction of the buildings using fire retardant materials and provision of an area of defendable space between adjoining vegetation and future buildings will provide adequate separation distance to prevent direct flame contact and material ignition to any future buildings.

The management of the bushfire hazard to the north and west are addressed in Section 3.1 of this Report.

2.3 EXISTING AND FUTURE BUSHFIRE RISK

The site is exposed to an existing risk of bushfire attack from any bushfire occurring within the adjoining grassland areas. However this risk will be reduced for any future development by the implementation of appropriate setbacks, constructed roads and removal of the bushfire prone vegetation within the site as development occurs.

Future development of the site is not likely to increase the bushfire hazard to adjoining areas because the bushfire hazard within the site will ultimately be removed. The suitability of the proposed use for each lot would be a matter to be assessed by Council for any development application.

A variety of bushfire protection matters for reducing the bushfire risk to future development are identified in Section 3.1 and as shown in Figure 3.

SECTION 3

BUSHFIRE PROTECTION MATTERS

3.1 DEFENDABLE SPACE AND BUSHFIRE HAZARD MANAGEMENT

It is considered that the surrounding managed lands and infrastructure to the south-east, and partially to the west provides a sufficient separation from any bushfire hazard in these directions.

Implementation of defendable space incorporating the proposed perimeter road from the grassland / woodland vegetation containing the bushfire hazard and future buildings is recommended. The buildings are to be constructed of non-flammable building material.

The areas of defendable space will incorporate the following bushfire protection measures.

Areas north of buildings on Lots 1, 2, 4

- Regularly managed vegetation (slashed/mowed areas 60 metres wide) along the possible freight rail corridor areas.
- Carparking, access and landscaped areas in lots.

Areas west of building on Lot 4

- Managed vegetation in RE1/RE2 land.

Areas west of buildings on Lots 4 and 10

- In lot carparking areas and driveways.
- Road edge areas planted and managed as an APZ (inner protection area standard).
- Future outdoor active and passive recreation areas, carparking areas and landscaped areas.

These items are illustrated in the Bushfire Protection Measures Plan provided in Figure 3.

This area of defendable space should comprise building setback areas containing car parks, internal access driveways and landscape areas. This area of land will provide a space which can be maintained to prevent accumulation of rubbish and vegetative materials and which can be accessed if required after a local bushfire event to undertake any maintenance or property protection actions.

The landscape areas, access roads and curtilage or hard standing areas within the proposed development are to be maintained as an Inner Protection Area (IPA) in accordance with the standards described in PBP (RFS, 2019) and provided as Appendix 2 of this Report. The responsible party for the inspection and maintenance of the gardens or curtilage areas will be the owners of the land or the building occupants.

3.2 SPECIFIC BUSHFIRE PROTECTION REQUIREMENTS

Building Construction

The proposed future buildings following subdivision would be Class 7b or 8 (factory or warehouse) building classification under the provisions of the Building Code of Australia. Class 7 and 8 buildings are not covered by the provisions of Planning for Bushfire Protection (RFS 2019). Planning for Bushfire Protection (RFS 2019 pg 76) identifies that for Class 5 – 8 buildings *“The general fire safety construction provisions of the National Construction Code are taken as acceptable solutions. However construction requirements for bushfire protection will need to be considered on a case by case basis.”*

The proposed warehouse buildings following subdivision are to be constructed from fire-retardant materials such as precast concrete panels, masonry and/or metal sheeting.

Additional Bushfire Protection Measures

Due to the presence of the retained grassland / woodland vegetation within 100m of the proposed development, it is considered that additional safeguards against ember and flame attack are warranted. Some specific measures to reduce the potential for damage from ember attack during a bushfire event include:

- i) Maintenance of the retained areas of curtilage or hard standing areas within the development to the standards of an Inner Asset Protection Zone in accordance with PBP (RFS, 2019);
- ii) The installation of adequate water supply infrastructure where hydrant spacing, sizing and pressures comply with AS2419.1-2005 including strategically placed fire hydrants around the proposed development;

3.3 ACCESS

The intent for measures relating to site access (roads) is to provide safe operational access to structures and water supply for emergency services while building occupants are evacuating from a site (RFS 2019).

Road access to the industrial development is proposed to be provided from one central access point on Mamre Road. The internal road network is designed to link to future road layout for land to be developed to the south. Internal access roads (20 metres wide) are proposed to each future lot within the industrial estate. Two of these internal access roads will be cul-de-sac style roads with road end turning circles exceeding the 12 metre outer radius turning circle as required in Planning for Bushfire Protection (RFS, 2019).

It is most likely that bushfire appliances will generally operate from hydrants located within the public road system or using hydrants to be located within the subject site.

The proposed development will benefit from an internal access with ingress and egress routes directly to a public road, and then to the local area public road network. Within the proposed development and adjoining areas there are areas such as car parking, or hard standing areas that will enable adequate access and turning areas for fire appliances. These facilities in combination with the existing public road system will provide an adequate ingress and egress route and will enable the safe evacuation of people while simultaneously enabling access for emergency services.

The external public road system within the local area complies with the requirements for access for fire fighting appliances and will be adequate for use in any fire emergency.

3.4 WATER SERVICES

The proposed development will use the existing water reticulation from the surrounding infrastructure therefore a supplementary form of water supply will not be necessary for fire fighting purposes. This water supply arrangement is to be provided in compliance with *'Planning for Bushfire Protection, 2019'* in respect of water supply. The reticulated water supply, fire hydrant spacing, sizing and pressure is to comply with the requirements of AS2419.1 – 2005. A certification or test report from the Water Supply Authority is to be provided to demonstrate that the requirements of AS2419.1-2005 can be achieved during a bushfire event.

3.5 SITE LANDSCAPING

Future landscape plantings within the site should be of a type and density which can be easily managed with a low bushfire hazard. A regularly maintained grass/turf ground cover with occasional garden beds or small groupings of trees, shrubs or native plants such as *Lomandra* species would be appropriate. Landscaping plantings and property maintenance should be undertaken in accordance with the requirements of *Planning for Bushfire Protection (RFS 2019)* as outlined in Appendix 2 of this Report.

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 AIM AND OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION

“The aim of Planning for Bushfire Protection is to provide for the protection of human life and minimise impacts on property from the threat of bushfire, while having due regard to development potential, site characteristics and protection of the environment” (PBP pg 10).

The preparation of this Bushfire Assessment Report and subsequent assessment by Council and/or the Rural Fire Service ensures compliance with the aim of Planning for Bushfire Protection.

The following comments are provided in relation to satisfying the objectives of PBP.

Objective 1

- (i) afford buildings and their occupants protection from exposure to a bush fire;*

Measures have been identified which should be implemented within the proposed development in regard to building protection. The proposed development will be constructed from fire retardant materials such as precast concrete panels, masonry and/or sheet metal. This will provide adequate protection from exposure to a bush fire within the grassland / woodland vegetation to the east.

Objective 2

- (ii) provide for a defensible space to be located around buildings;*

A defensible space is provided by the existing surrounding cleared areas and roadways adjoining the future lots of the proposed development. A defensible space of 10 metres is proposed to the adjoining vegetation in the south and west is recommended until the adjoining bushfire hazard has been managed or removed. This defensible space can be incorporated into the adjoining roadways and lot areas and areas with reduced vegetation managed to the condition of an asset protection zone.

Objective 3

- (iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;*

Adequate separation will be provided to the bushfire hazard areas adjoining the proposed development through the provisions of the proposed roadways, setbacks and managed areas. This separation distance in combination with other measures such as fire retardant construction materials, adequate supply of water and the provision of adequate access will provide appropriate separation between the hazard and buildings which will prevent direct flame contact and material ignition.

Objective 4

- (iv) ensure that appropriate operational access and egress for emergency service personnel and occupants is available;*

It is expected that the existing sealed public road system within the local area is designed and constructed in accordance with Planning for Bushfire Protection (RFS, 2019) as described in Section 5.3.2 (RFS, 2019). This will ensure multi-path safe operational ingress

for emergency services and also simultaneous safe egress for workers and the public during an emergency.

Objective 5

- (v) *provide for ongoing management and maintenance of bush fire protection measures,*

The owners (or their agents) are to undertake regular inspections and undertake management of the grounds including any gardens, curtilage or hard standing areas within the proposed development. This will include maintenance of the vegetation and fuel loads within the whole of the site to the standards of an Inner Protection Area (IPA) in accordance with PBP (RFS, 2019).

Objective 6

- (vi) *ensure that utility services are adequate to meet the needs of fire fighters*

With respect to the adequate supply of water services the proposed development is expected to comply as the area has a reticulated water supply installed. It is expected that the internal fire fighting infrastructure is connected to the existing external reticulated water supply and is constructed and installed according to AS 2419.1 – 2005. It is recommended that fire hydrants be installed at the western and southern perimeters of the development. A certification or tests report from the Water Supply Authority is to be provided to demonstrate that the requirements of AS2419.1 – 2005 can be achieved during a bushfire event.

4.2 CONCLUDING COMMENTS

The bushfire attack hazard from the grassland / woodland vegetation to the south and west will be decreased by the use of fire retardant construction materials such as precast concrete panels, masonry and/or sheet metal and the provision of an area of defensible space of at least 10 metres comprising roadways, car park, internal access driveways or managed vegetation.

With the implementation of the measures recommended, and outlined in Section 3 of this Report, the overall aims and objectives of Planning for Bushfire Protection (RFS, 2019) can be achieved for the proposed development.

4.3 RECOMMENDATIONS

The following recommendations are provided in relation to reducing the potential for loss of life and property by the impact of bushfire:

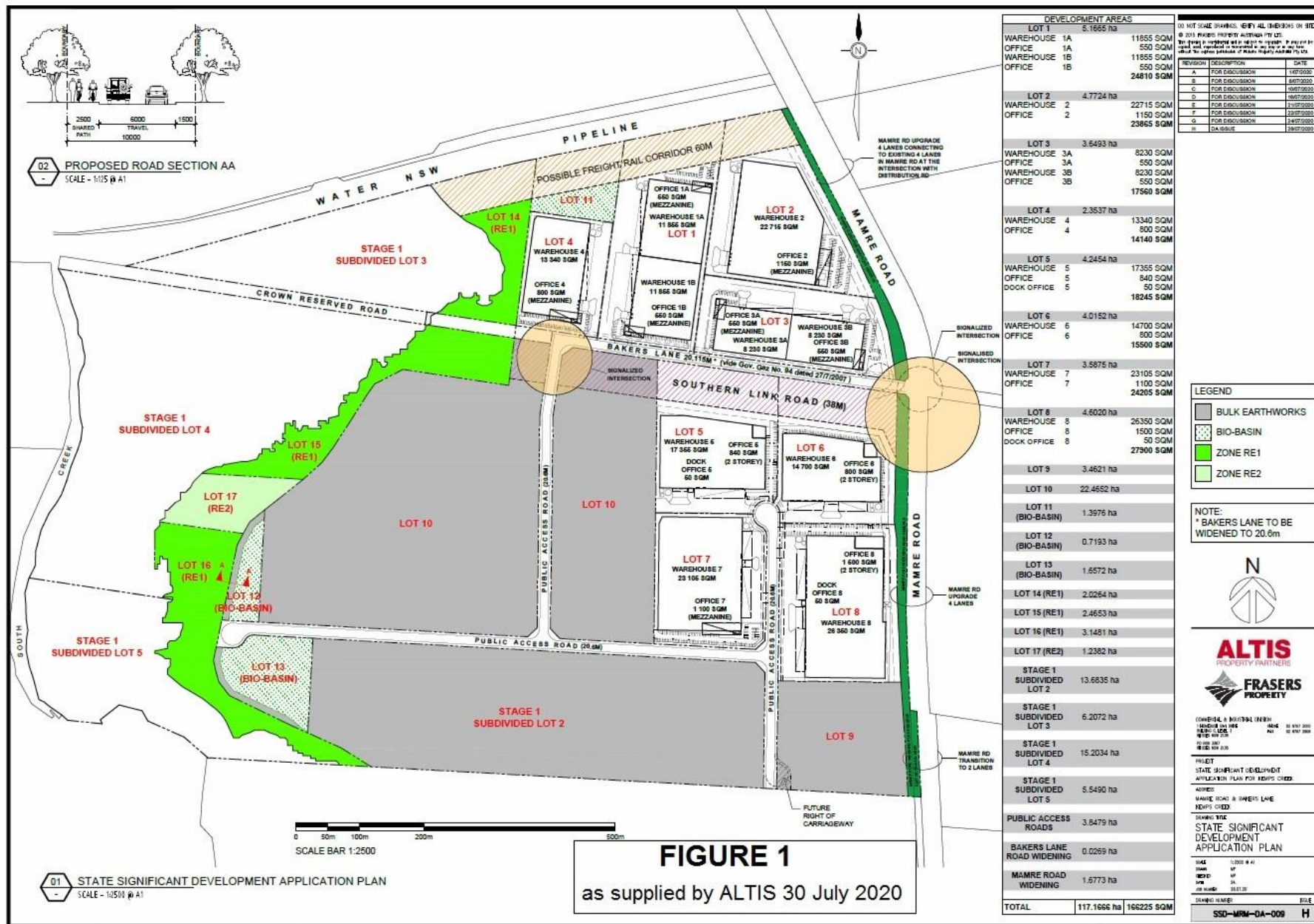
- i. Implement a 10 metre (minimum) area of defensible space adjoining the western and southern lots, where these lots adjoin unmanaged grassland / woodland vegetation (ie lots 4, 10 and Lot 2 of Stage 1).
- ii. Use cladding materials for the external surfaces of the development which are fire retardant materials such as metal sheeting, pre-cast cement panels or masonry.
- iii. Undertake regular inspections and maintenance of the Managed Lands or curtilage / landscaped areas / hard standing areas within the proposed development is to be undertaken by the owners (or their agents) according to PBP (RFS, 2019).
- iv. Maintain of any retained areas of Managed Lands or curtilage / gardens within the development as an Inner Protection Area (IPA) in accordance with PBP (RFS 2019).
- v. Ensure that future landscape plantings within the site are in accordance with the requirements of Appendix 4 of Planning for Bushfire Protection (RFS 2019).

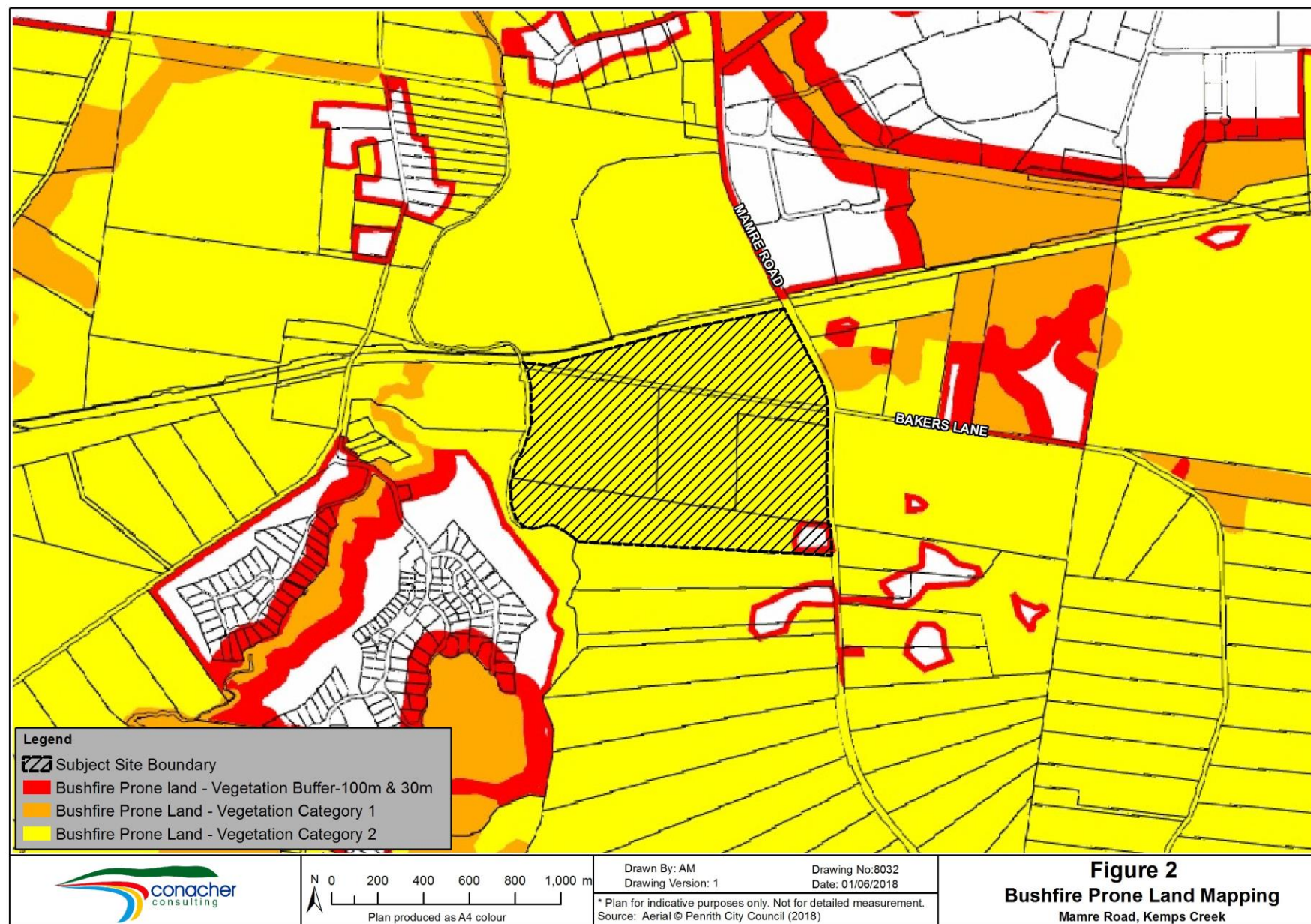
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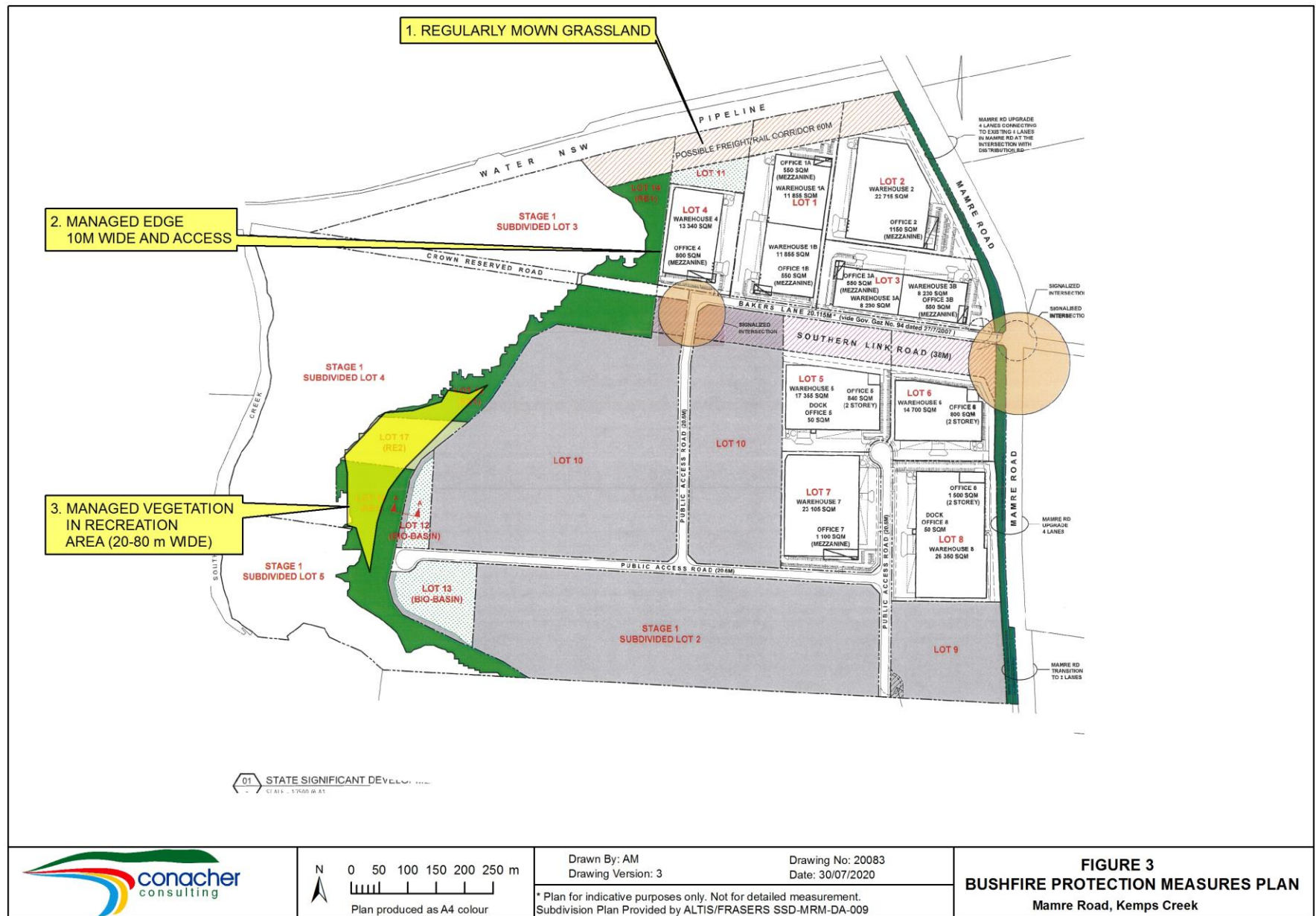
Rural Fire Service (2019) Planning for Bushfire Protection.

Standards Australia (2018 Australian Standard (AS3959) Construction of Buildings in Bushfire Prone Areas.

Standards Australia (2005) Australian Standard (AS2419.1 2005) Fire hydrant installations – System Design, Installation and Commissioning.







APPENDIX 1

ASSET PROTECTION ZONE STANDARDS

APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMs, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website www.rfs.nsw.gov.au.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).



A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.



Figure A4.1

Typical Inner and Outer Protection Areas.

