REF: 7235BF

PREPARED: 14/01/2025

VALID TO: 14/01/2026

# BUSHFIRE HAZARD ASSESSMENT

## PROPOSED OFFICE BUILDING

## 55 MARTIN ROAD, BADGERYS CREEK

LGA: Liverpool

Lot 4 DP 611519

HARRIS ENVIRONMENTAL CONSULTING

kate@hec.eco

# BUSHFIRE HAZARD ASSESSMENT

VERSION CONTROL

| | | | | |
|---|---|---|---|---|
| Title | Bushfire Hazard Assessment | | | |
| Site address | 55 Martin Road, Badgerys Creek | | | |
| Prepared By | Courtney Hildebrandt | | | |
| Approved by: | Katherine Harris BPAD L3 26947 | | | |
| **Version Number** | **Modified By** | **Modifications Made** | **Date Modified** | **Status** |
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| 1.1 | KH | DA Report | 14/01/2025 | Complete |

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## DISCLAIMER

The recommendations provided in the summary of this report are a result of the analysis of the proposal in relation to the requirements of Planning for Bushfire Protection 2019. Utmost care has been taken in the preparation of this report however there is no guarantee of human error. The intention of this report is to address the submission requirements for Development Applications on bushfire prone land. There is no implied assurance or guarantee the summary conditions will be accepted in the final consent and there is no way Harris Environmental Consulting is liable for any financial losses incurred should the recommendations in this report not be accepted in the final conditions of consent. This bushfire assessment provides a risk assessment of the bushfire hazard as outlined in the PBP 2019 and AS3959 2018. It does not provide protection against any damages or losses resulting from a bushfire event.

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## APPENDIX

# EXECUTIVE SUMMARY

This Bushfire Hazard Assessment is for the proposed office building at 55 Martin Road, Badgerys Creek. The assessment confirms the subject lot is identified as bushfire prone. The assessment confirms the subject lot is mapped as bushfire prone. The development is considered a Class 5-8 development and assessed in accordance with Section 8 PBP 2019.

This assessment classifies the bushfire-prone vegetation within 140m of proposed subject lot as:

| | Vegetation Formation | Effective Slope | Distance from hazard |
|---|---|---|---|
| **Office Building** | | | |
| **North** | Grassland | 0-5° Downslope | 20.6 m |
| **East** | Grassland | Flatland | 53.3 m |
| **South** | Grassland | Flatland | 52.0 m |
| **West** | Managed | 0-5° Downslope | > 140 m |

The relevant technical bushfire protection provisions under the National Construction Code (NCC) for design and construction of building standards are:

- AS3959 - *2018 Construction for Buildings in Bushfire Prone Areas* or,
- *NASH Standard Steel Framed Construction in Bushfire Areas (2014) if* a steel frame is proposed.

The NCC does not provide for any bushfire-specific performance requirements for these particular classes of buildings. As such AS 3959 and the NASH Standard are not considered as a set of Deemed to Satisfy provisions, however compliance with AS 3959 and the NASH Standard must be considered when meeting the aims and objectives of PBP. Construction is considered on a case-by-case basis. In this case, the proposed development is exposed to **BAL 19**.

The APZ is required to be managed for 15 m to all elevations.
An APZ should be established from the commencement of building works and maintained for perpetuity.

The subject lot is located on Martin Road. This is a two-wheel drive, all-weather through road. Road surfaces and bridges are sufficient to carry fully loaded firefighting vehicles.
Whilst the access is less than 70 m from the nearest public through road, access will need to be provided for the static water supply. The proposed access does provide a compliant turning area and carriage width.

The proposed internal access is required to comply with the PBP- Property Access Table 7.4a. This includes:

- A minimum carriageway width of four metres;
- provide enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m;
- Curves a minimum inner radius of six metres;
- The minimum distance between inner and outer curves is six metres;
- The cross fall is not more than 10 degrees;
- Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads;
- The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
- There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

The nearest hydrant is greater than 100 m from the proposed development, therefore a static water supply will be required.
The requirements of the static water supply are:

- A 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.
- Above ground tanks are required to be manufactured of concrete or metal and raised tanks have their stands protected. All above ground water pipes external to the building are required to be metal including and up to any taps. Pumps are to be shielded. Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm storz outlet and a gate or ball valve.

Any bottled gas will be installed and maintained under AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Electrical transmission lines, if above ground, will be managed under specifications issued by the respective energy supplier.

## PROPOSAL

The owners of 55 Martin Road, Badgerys Creek propose to construct an office building on Lot 4 DP 611519. This proposal will be required to satisfy the relevant specifications and requirements of EP&A Act s4.14. Harris Environmental Consulting was commissioned to provide this bushfire assessment. The assessment confirms the subject lot is mapped as bushfire prone. The development is considered a Class 5-8 development and assessed in accordance with Section 8 PBP 2019.

Consent can be achieved if:

a) Liverpool Council is satisfied that the development conforms to the specifications and requirements of the PBP.
b) Or Liverpool Council is satisfied that the development does not conform to the relevant requirements but only after it has consulted with the Commissioner of the NSW RFS concerning measures to be taken in respect to the development to protect persons property and the environment from danger that may arise from a bushfire.

Figure 1 shows the subject lot location.
Figure 2 provides a broad scale aerial view of the subject site.
Figure 3 shows a close up of the subject lot.
Figure 4 shows the proposed plan.

**FIGURE 1 SITE LOCATION**

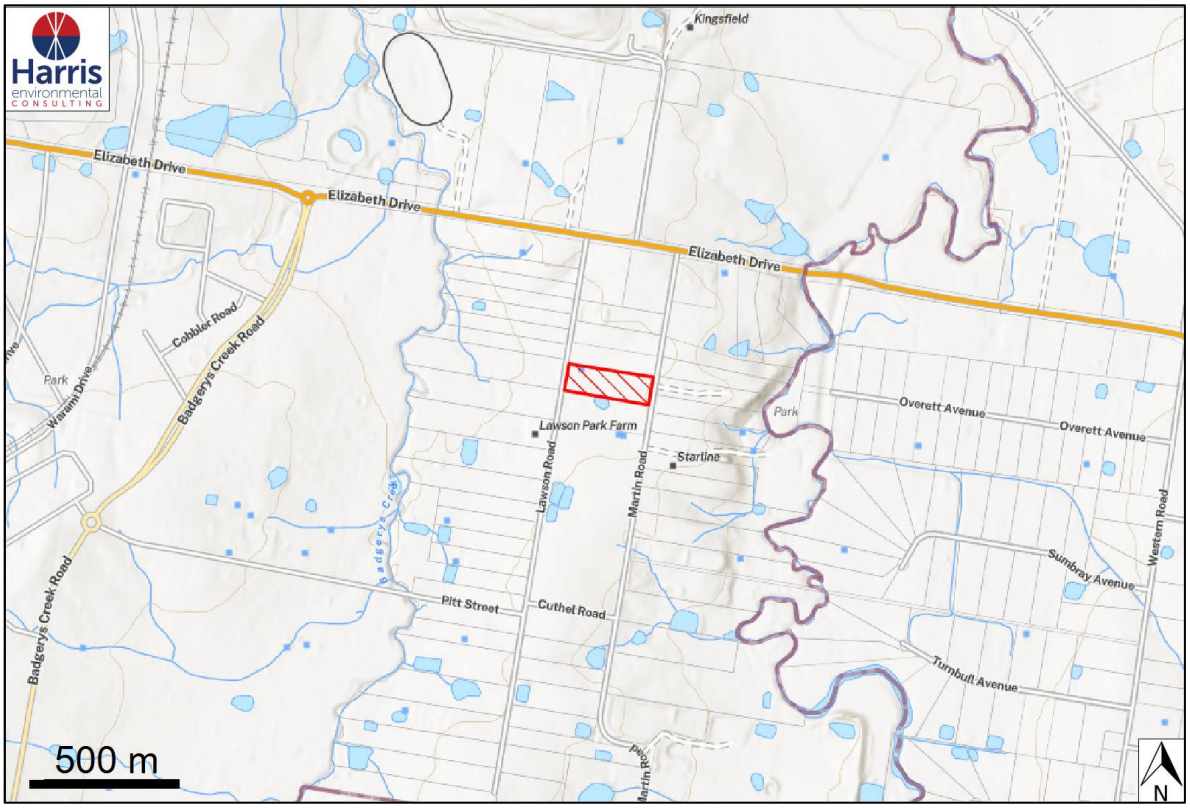


**FIGURE 2 BROAD SCALE AERIAL VIEW OF THE SUBJECT SITE**

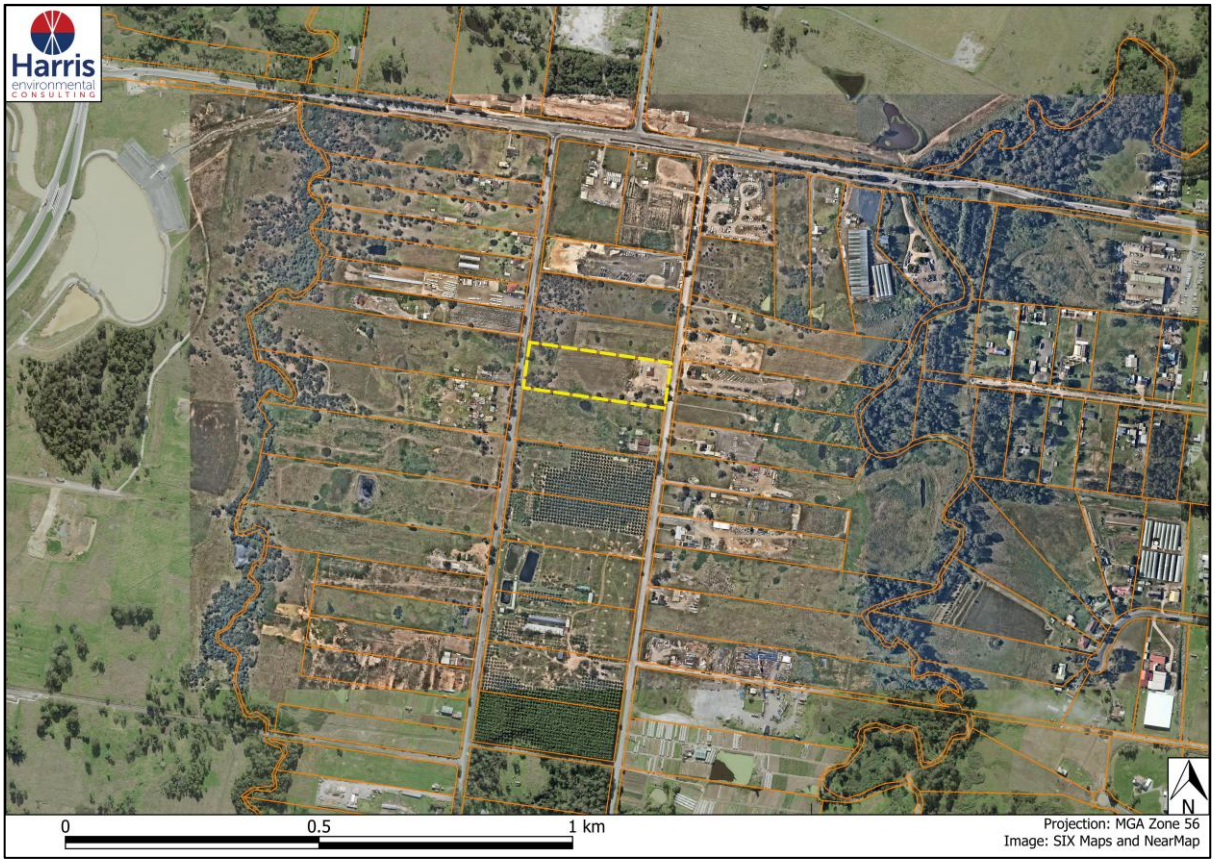
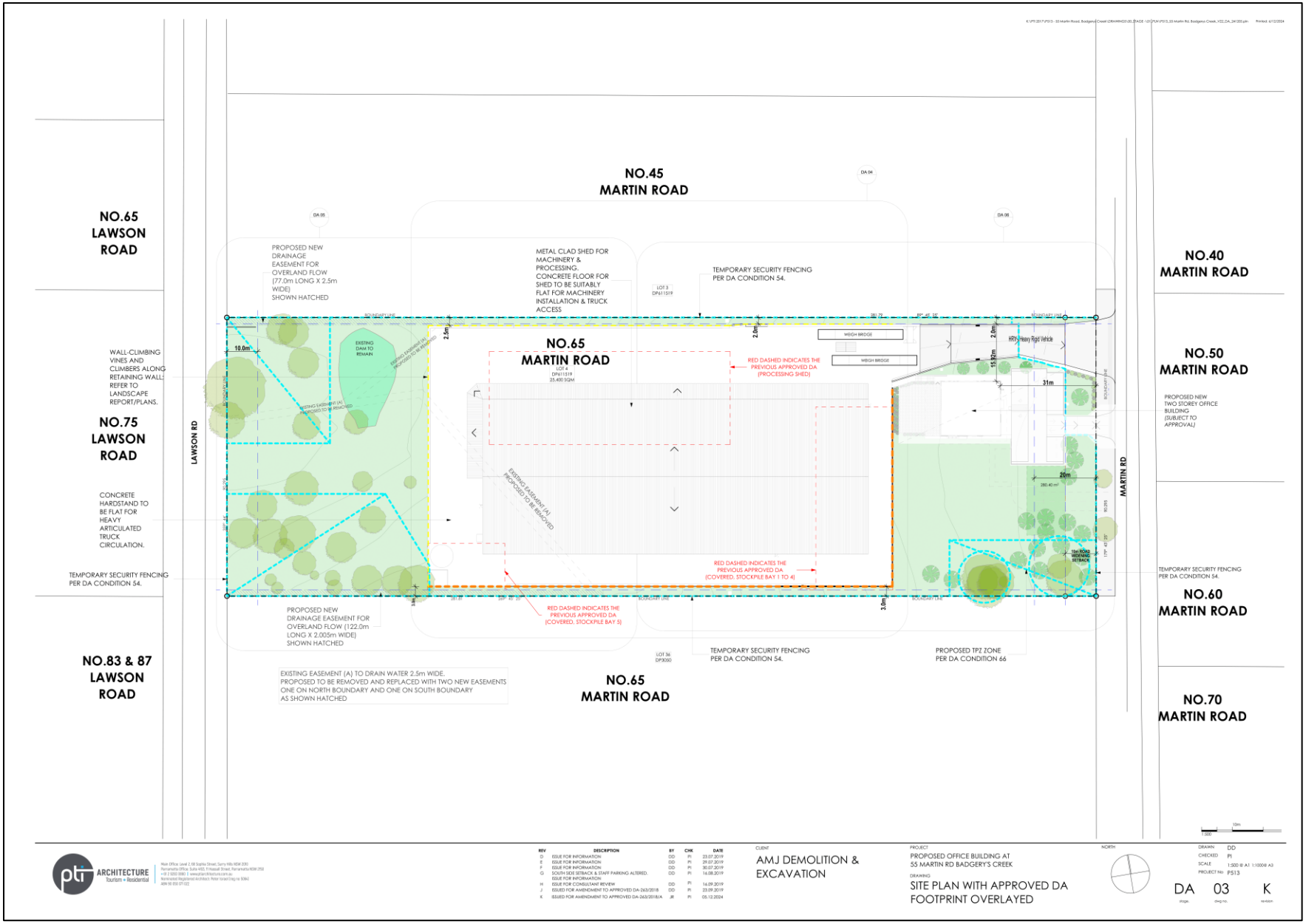
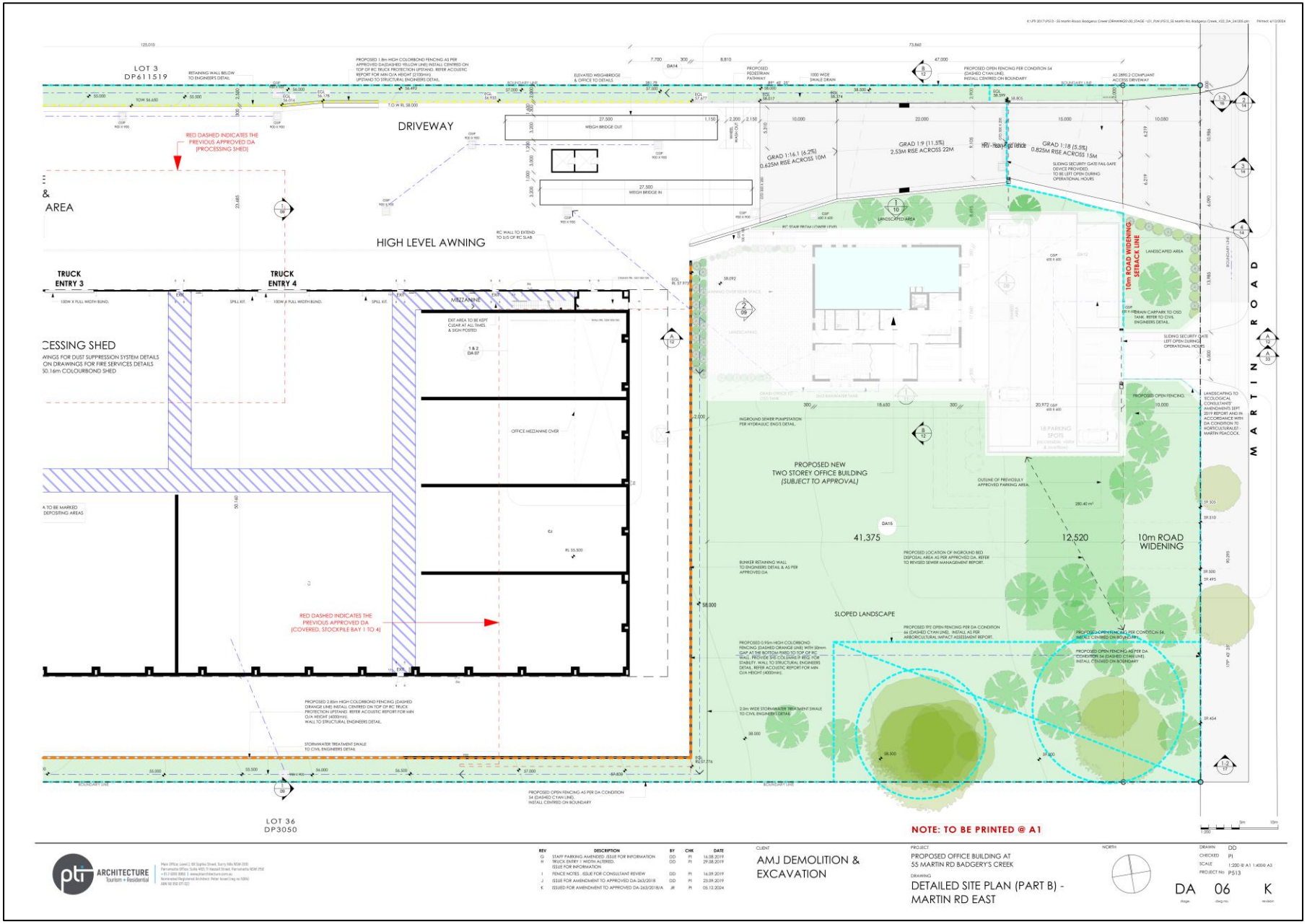



**FIGURE 3 CLOSE UP VIEW OF SUBJECT LOT**

## FIGURE 4 PROPOSED PLAN




LOT 3
DP611519
DRIVEWAY
HIGH LEVEL AWANING
TRUCK ENTRY 3
TRUCK ENTRY 4
MEZZANINE
OFFICE MEZZANINE OVER
RED DASHED INDICATES THE PREVIOUS APPROVED DA (PROCESSING SHED)
RED DASHED INDICATES THE PREVIOUS APPROVED DA (COVERED, STOCKPILE BAY 1 TO 4)
PROPOSED NEW TWO STOREY OFFICE BUILDING (SUBJECT TO APPROVAL)
OUTLINE OF PREVIOUSLY APPROVED PARKING AREA.
SLOPED LANDSCAPE
10m ROAD WIDENING SETBACK LINE
10m ROAD WIDENING
MARTIN ROAD
41.375
12.520
LOT 36
DP3050
NOTE: TO BE PRINTED @ A1
ARCHITECTURE
Tourism + Residential
AMJ DEMOLITION & EXCAVATION
PROPOSED OFFICE BUILDING AT
55 MARTIN RD BADGERY'S CREEK
DETAILED SITE PLAN (PART B) - MARTIN RD EAST
DA 06 K

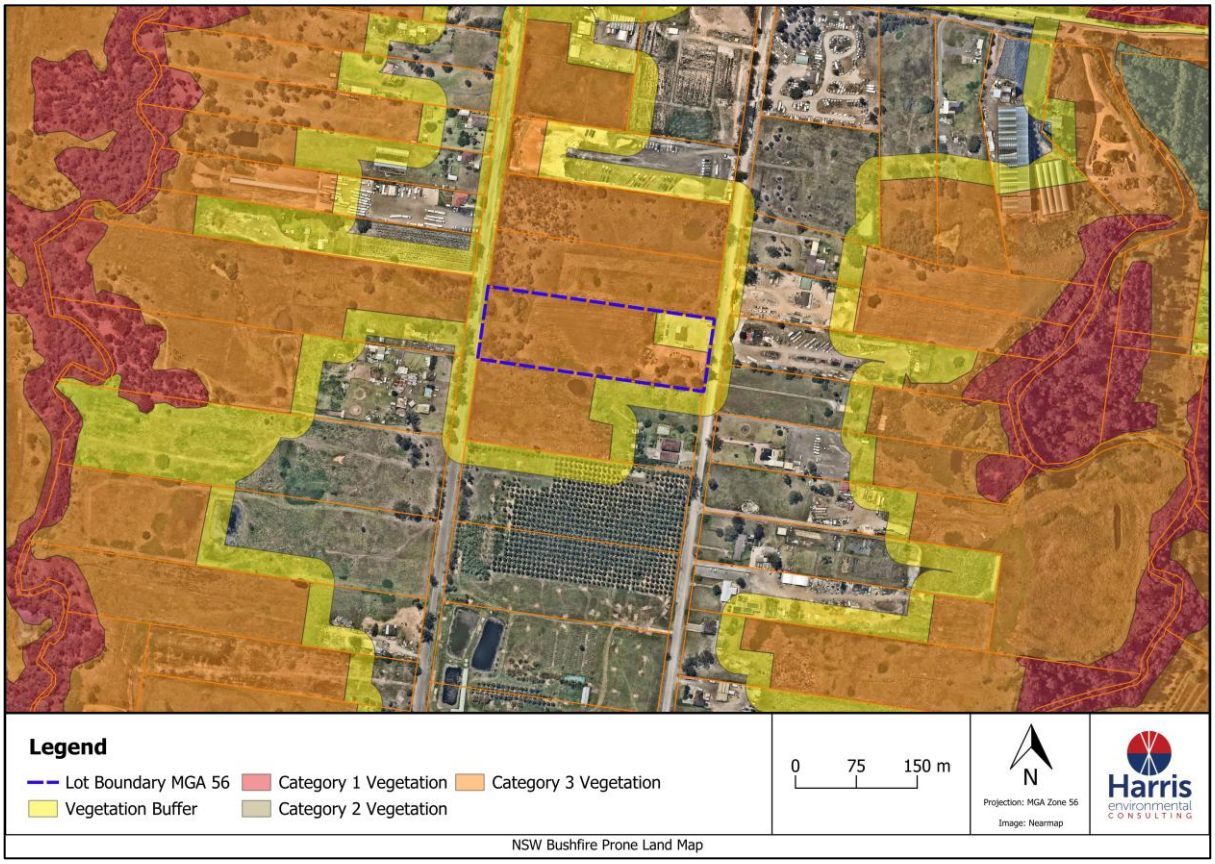
## PLANNING LAYERS

The following planning layers are described in Table 1 and shown in the Figures below:

**TABLE 1 PLANNING LAYERS**

| MAP | FIGURE | DESCRIPTION |
|---|---|---|
| **Bushfire Prone Land Map** | 5 | The subject lot is mapped “Vegetation Category 3” and “Vegetation Buffer 100 m”. |
| **LEP Zone Map** | 6 | The subject lot is zoned as “ENT - Enterprise”. |
| **Vegetation Mapping** | 7 | The vegetation surrounding within the subject lot is mapped predominantly as “Cumberland Dry Sclerophyll Forest” (DPIE, 2022). |
| **Biodiversity Values Map** | 8 | There are areas within the subject lot identified on 16/12/24 as having high biodiversity value under the Biodiversity Offsets Scheme under the *Biodiversity Conservation Act 2016.* However. The values are not within the development or the APZ. |

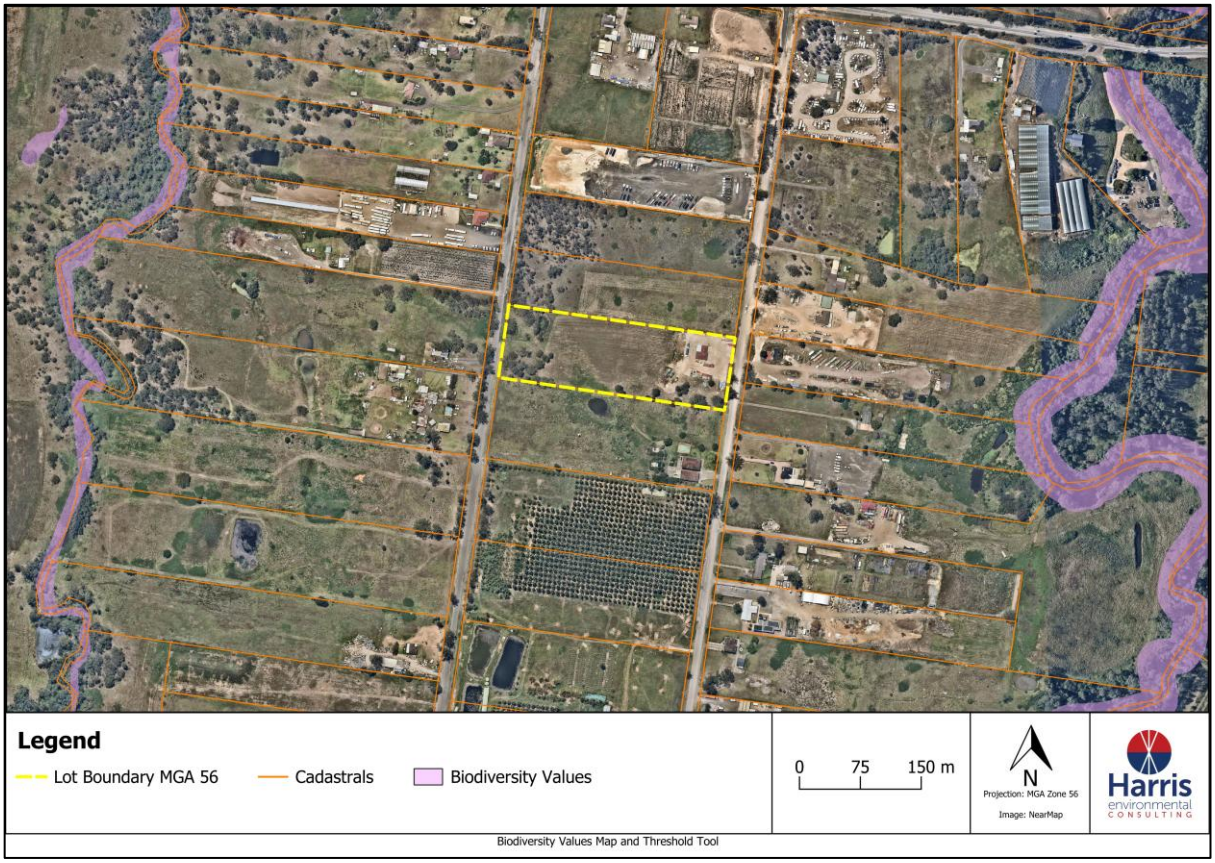
**FIGURE 5 BUSHFIRE PRONE MAP**



## FIGURE 6 LEP ZONE MAP


## FIGURE 7 VEGETATION MAPPING

## FIGURE 8 BIODIVERSITY MAPPING



# SITE DESCRIPTION

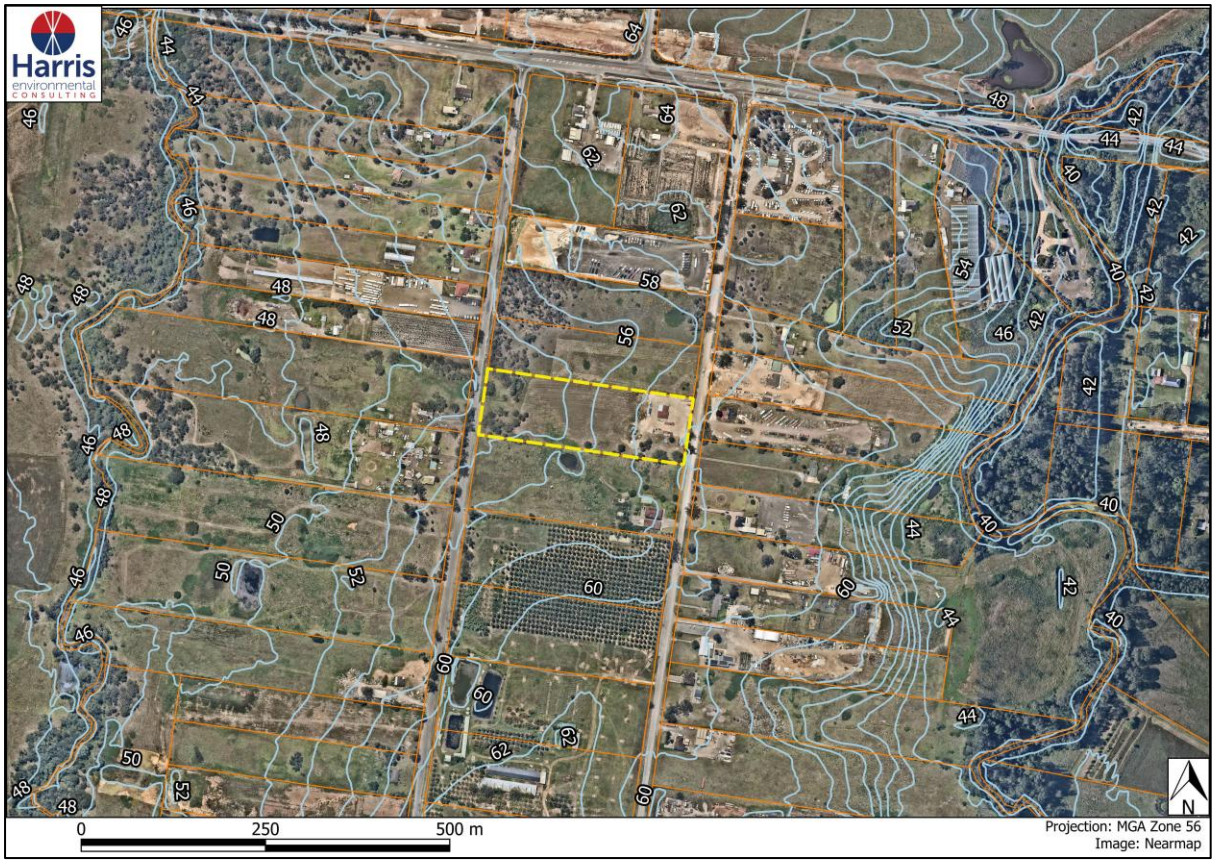
## 1.1. Slope and aspect of the site within 100 m

The slope that would most significantly influence fire behaviour was determined over 100 m. This assessment was made using 2 m contour intervals.

The Australian Standard AS3959 - 2018 and PBP 2019 identify that the slope of the land under the classified vegetation is much more important than the slope between the site and the edge of the classified vegetation.

As can be seen in Figure 9, the land surrounding the subject lot is relatively flat, with gentle upslopes and downslopes.

FIGURE 9 SLOPE




## 3.2. Identification of significant environmental features

The owner has not provided any studies of environmental significance.

## 1.2. Vegetation formation within 140 m of proposed development

Figure 10 shows the managed and unmanaged land within 140 m of the proposed development.

The vegetation formations are described below and summarised in Tables 2. Photos are provided below (Photos 1-2).

The vegetation to the north, east and south of the proposed office building has been classified as Grassland in accordance with *Planning for Bushfire Protection 2019*.

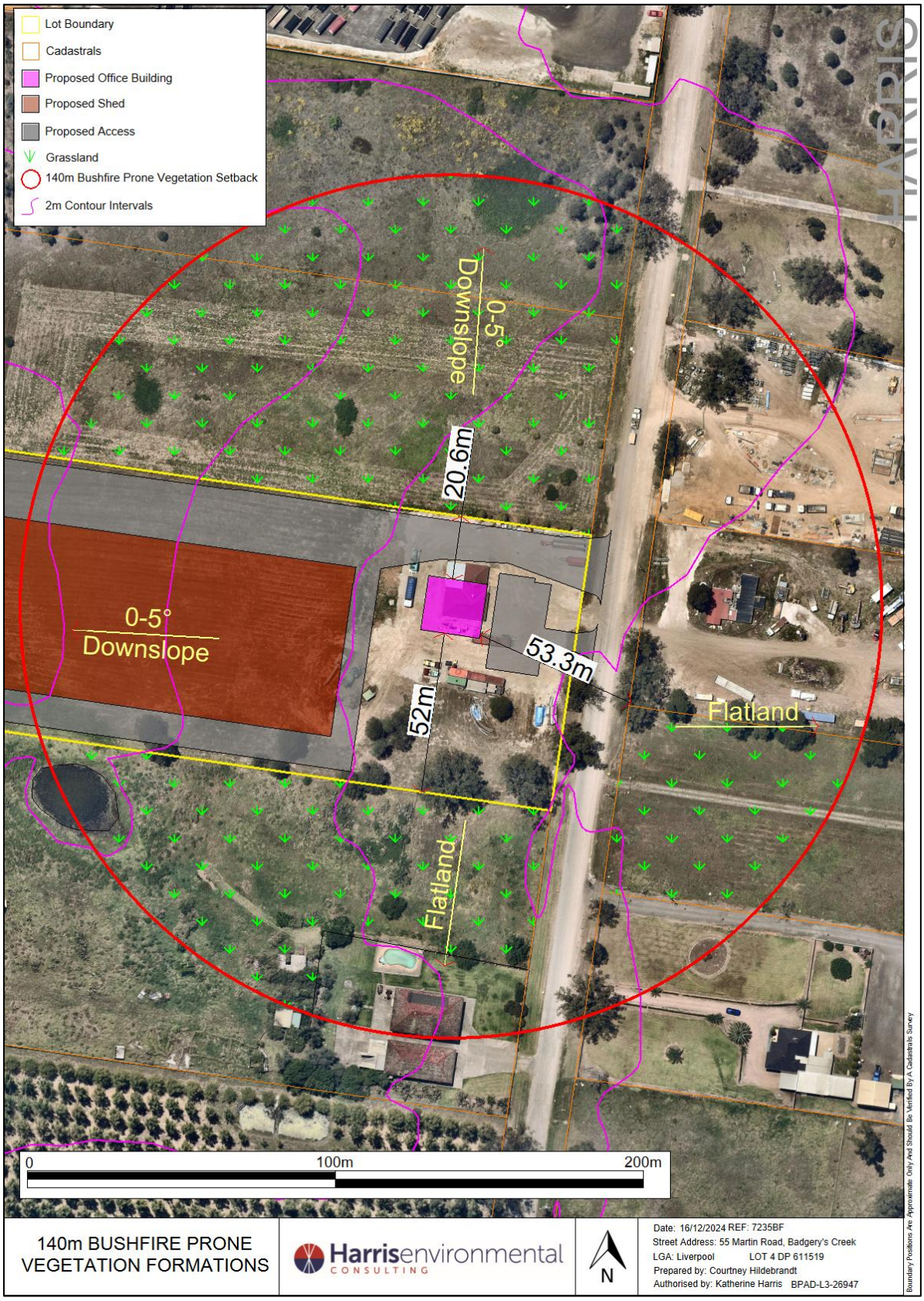
**TABLE 2 PREDOMINATE VEGETATION CLASSIFICATION FOR 140M**

| | Vegetation Formation | Effective Slope | Distance from hazard |
|---|---|---|---|
| **Office Building** | | | |
| **North** | Grassland | 0-5° Downslope | 20.6 m |
| **East** | Grassland | Flatland | 53.3 m |
| **South** | Grassland | Flatland | 52.0 m |
| **West** | Managed | 0-5° Downslope | > 140 m |

**PHOTO 1 GRASSLAND HAZARD**

**PHOTO 2 MANAGED LAND WITHIN THE SUBJECT LOT**

**FIGURE 10 BUSHFIRE PRONE VEGETATION WITHIN 140M**



# 4. BUSHFIRE THREAT ASSESSMENT

## 4.1. Asset Protection Zones (APZ)

Table A1.12.5 *Planning for Bush Fire Protection 2019* has been used to determine the width of the required APZ for the proposed development using the vegetation and slope data identified.

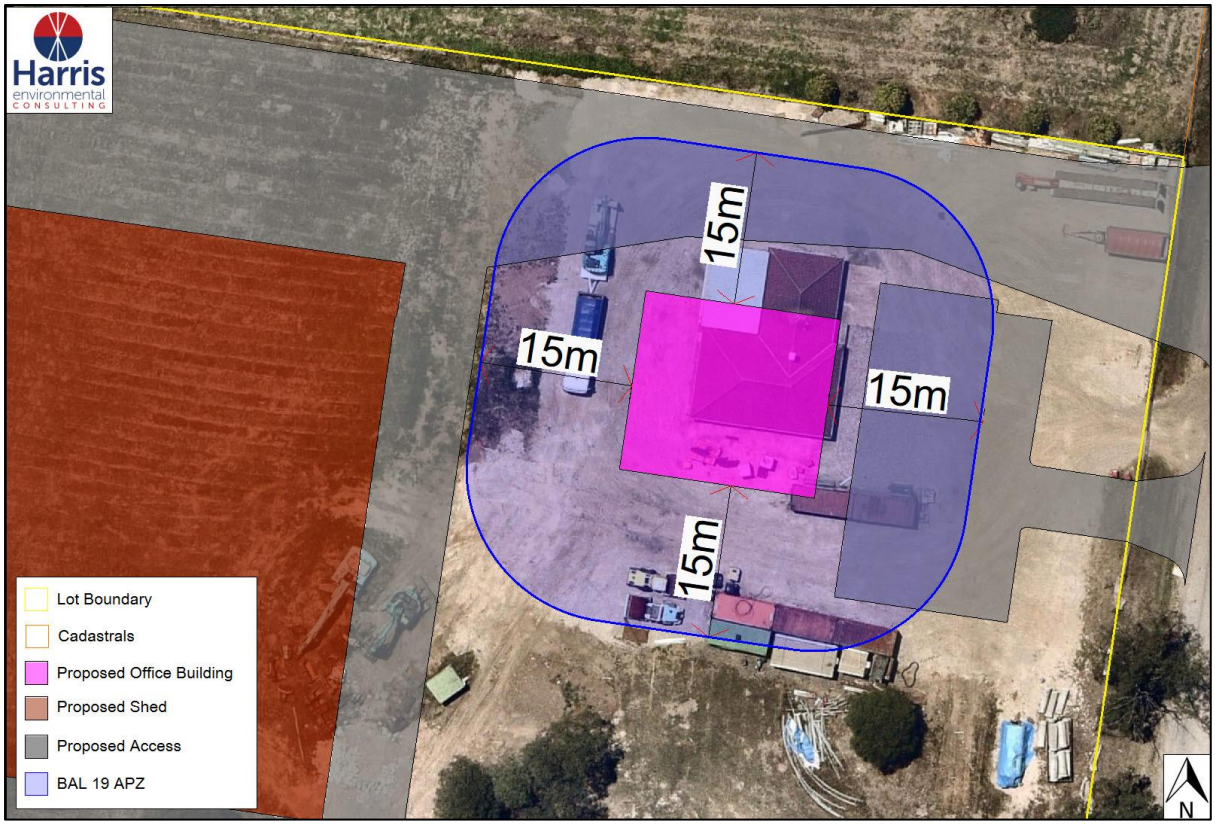
Table 3 and Figure 11 show the BAL setbacks and APZ determination for the proposed office building.
The APZ is required to be managed for 15 m to all elevations.

An APZ should be established from the commencement of building works and maintained for perpetuity.

**TABLE 3 APZ AND BAL DETERMINATION**

| | ***North*** | ***East*** | ***South*** | ***West*** |
|---|---|---|---|---|
| **Vegetation** | Grassland | Grassland | Grassland | Managed |
| **Gradient** | Flatland | Flatland | 0-5° Downslope | 0-5° Downslope |
| **BAL 19 required Setbacks** | 15 -< 22 m | 15 -< 22 m | 17 -< 25 m | 17 -< 25 m |
| **Distance to Office Building** | 20.6 m | 53.3 m | 52.0 m | - |
| **APZ BAL of Office Building** | **BAL 19** | **BAL 19** | **BAL 19** | **BAL 19** |

**FIGURE 11 APZ**



### 4.2. Relevant Construction Standard

The Australian Standard AS3959 – 2018 and *NASH Standard Steel Framed Construction in Bushfire Areas* (2014) are the enabling standards that address the performance requirements of both parts 2.3.4 and Part GF5.1 of the Building Code of Australia for the Construction of Class 1, 2 and Class 3 buildings within a designated Bushfire Prone Area.

The following was determined for this site:

*Relevant fire danger index*……FDI 100
*Flame temperature* ……1090 K

The NCC does not provide for any bushfire-specific performance requirements for these particular classes of buildings. As such AS 3959 and the NASH Standard are not considered as a set of Deemed to Satisfy provisions, however compliance with AS 3959 and the NASH Standard must be considered when meeting the aims and objectives of PBP. Construction is considered on a case-by-case basis. In this case, the proposed development is exposed to **BAL 19.**

### 4.3. Emergency Management

The applicants are advised to obtain the *NSW Rural Fire Service – "Guidelines for the Preparation of Bush Fire Evacuation Plans" & 'Bush Fire Survival Plan'.* In the event of emergency, the any future owners should ensure they are familiar with the RFS Bush Fire Alert Levels and use their Bush Fire Survival Plan.

### 4.4. Adequate Water and Utility Services

The proposed buildings will require a reticulated or static water supply. The nearest hydrant is greater than 100 m from the proposed development, therefore a static water supply will be required.

The requirements of the static water supply are:

- A 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.
- Above ground tanks are required to be manufactured of concrete or metal and raised tanks have their stands protected. All above ground water pipes external to the building are required to be metal including and up to any taps. Pumps are to be shielded. Underground tanks should have an access hole of 200 mm and a hardened ground surface within 4 m of the access hole. A suitable connection for firefighting purposes is required such as a 65mm storz outlet and a gate or ball valve.

Any bottled gas will be installed and maintained under AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

Electrical transmission lines, if above ground, will be managed under specifications issued by the respective energy supplier.

### 4.5. Safe Operational Access

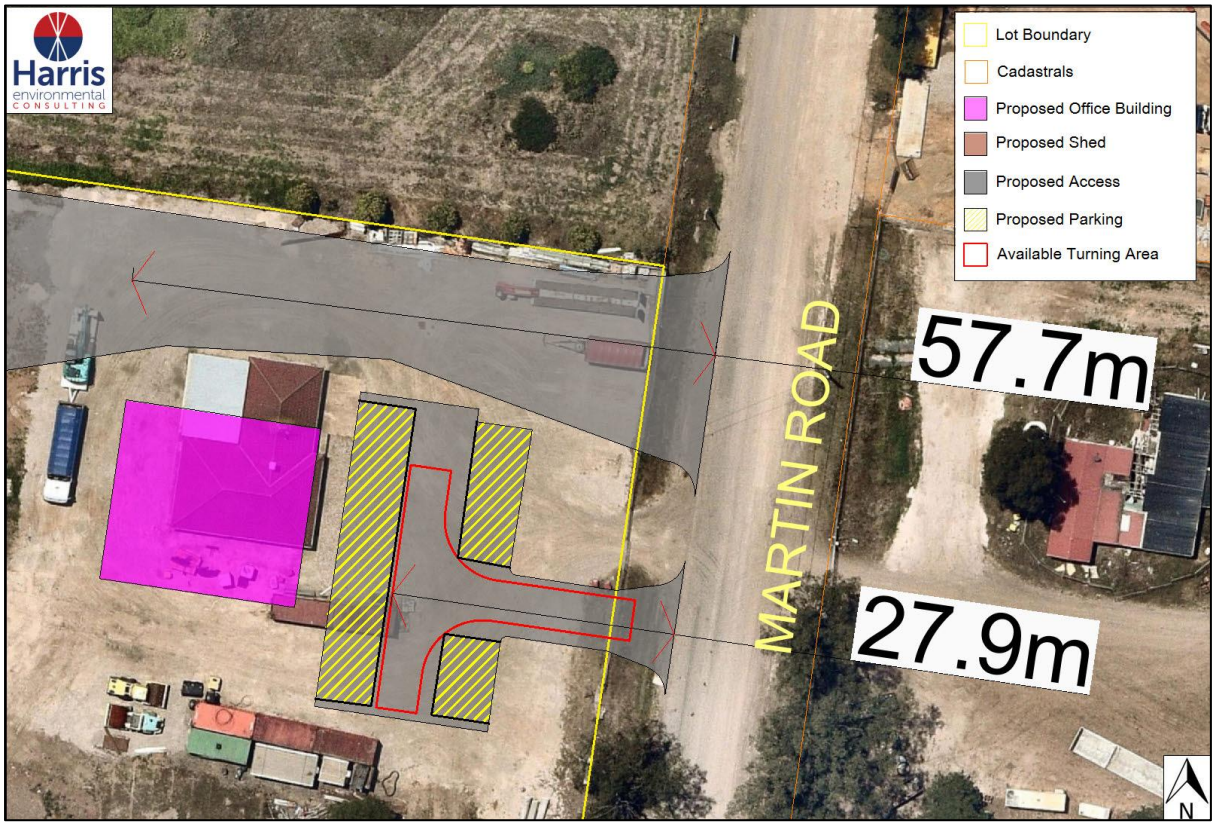
The PBP (2019) requires the provision of safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

The subject lot is located on Martin Road. This is a two-wheel drive, all-weather through road. Road surfaces and bridges are sufficient to carry fully loaded firefighting vehicles.
Whilst the access is less than 70 m from the nearest public through road, access will need to be provided for access to the static water supply. The proposed access does supply compliant turning area and carriage width.

The proposed internal access is required to comply with the PBP- Property Access Table 7.4a. This includes:

- A minimum carriageway width of four metres;
- provide enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m;
- Curves a minimum inner radius of six metres;
- The minimum distance between inner and outer curves is six metres;
- The cross fall is not more than 10 degrees;
- Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads;
- The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
- There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

FIGURE 12 ACCESS TO THE PROPOSED OFFICE



## 5. LANDSCAPING

An APZ is required to be established and should be maintained for perpetuity.

Appendix 4 (*PBP 2019*) provides guidelines for landscaping and Bushfire Provisions within the APZ. To incorporate bushfire protection measures into future development, the owner is advised to consider the following:

- Avoid planting trees species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopy.
- Avoid planting deciduous species that may increase fuel at surface/ground level by the fall of leaves.
- Avoid climbing species to walls and pergolas.
- Locate combustible materials such as woodchips/mulch, flammable fuel stores (LPG gas bottles) away from the building.
- Locate combustible structures such as garden sheds, pergolas, and materials such as timber furniture away from the building.
- Ensure any vegetation planted around the building is a suitable distance away so these plants do not come into physical contact with the building as they mature.
- The property should be developed to incorporate suitable impervious area surrounding the house, including courtyards, paths, and driveways.

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 defendable 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.

## 6. SUMMARY

- The NCC does not provide for any bushfire-specific performance requirements for these particular classes of buildings. As such AS 3959 and the NASH Standard are not considered as a set of Deemed to Satisfy provisions, however compliance with AS 3959 and the NASH Standard must be considered when meeting the aims and objectives of PBP. Construction is considered on a case-by-case basis. In this case, the proposed development is exposed to **BAL 19**.

- The APZ is required to be managed for 15 m to all elevations.

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- The proposed internal access is required to comply with the PBP- Property Access Table 7.4a. This includes:
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  - Curves a minimum inner radius of six metres;
  - The minimum distance between inner and outer curves is six metres;
  - The cross fall is not more than 10 degrees;
  - Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads;
  - The internal road surfaces and bridges have a capacity to carry fully loaded firefighting vehicles (23 tonnes) and provide signage that clearly indicates the bridge capacity; and
  - There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.

- The proposed buildings will require a reticulated or static water supply. The nearest hydrant is greater than 100 m from the proposed development, therefore a static water supply will be required.
- The requirements of the static water supply are:
  - A 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.
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- Any bottled gas will be installed and maintained under AS1596 and the requirements of the relevant authority. If gas cylinders need to be kept close to the buildings, the release valves must be directed away from the building and away from any combustible material. Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

- Electrical transmission lines, if above ground, will be managed under specifications issued by the respective energy supplier.

## 7. REFERENCES

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Standards Australia (2005). AS 2419.1: 2005 *Fire hydrant installations Part 1: System design, installation and commissioning.*

## APPENDIX I DEFINITION OF ASSET PROTECTION ZONES

Vegetation within the APZ should be managed in accordance with APZ specifications for the purposes of limiting the travel of a fire, reducing the likelihood of direct flame contact and removing additional hazards or ignition sources. The following outlines some general vegetation management principles for APZs:

1) Discontinuous shrub layer (clumps or islands of shrubs not rows);

2) Vertical separation between vegetation stratums;

3) Tree canopies not overhanging structures;

4) Management and trimming of trees and other vegetation in the vicinity of power lines and tower lines in accordance with the specifications in “Vegetation Safety Clearances” issued by Energy Australia (NS179, April 2002);

5) Maintain low ground covers by mowing / whipper snipper / slashing; and

6) Non-combustible mulch e.g., stones and removing stores of combustible materials;

7) Vegetation to be planted should consist of fire retardant/ less flammable species strategically located to reduce attack from embers (i.e., as ember traps when in small clumps and short wind breaks).

## APPENDIX II DEFINITIONS & ABBREVIATIONS

**Asset Protection Zone**- A fuel reduced area surrounding a buffer zone between a bushfire hazard and an asset. The APZ includes a defendable space within which firefighting operations can be carried out. The size of the required APZ varies with slope, vegetation and FFDI.

**AS3959-2019:** Australian Standard AS 3959:2018 Construction of buildings in bush fire-prone areas.

**Bush fire prone area-** an area of land that can support a bush fire or is likely to be subject to bushfire attack, as designated on a bush fir prone land map

**Bush fire prone vegetation (BFPV)** – A map prepared by Council in accordance with RFS guidelines and defining area of vegetation by BFPV categories

**Bushfire prone land map (BFPL)** A map prepared in accordance with RFS guidelines and certified by the Commissioner of the NSW RFS under section 146 (2) of the Environmental Planning and Assessment Act (1979)

**BFSA:** Bush fire safety authority.

**Effective Slope**: The land beneath the vegetation which most significantly effects fire behavior, having regard to the vegetation present.

**Fire Danger Index (FDI)** The chance of a fire starting, its rate of spread, its intensity and the difficulty potential for its suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long- and short term drought effects.

**Fire hazard:** the potential for land o carry a bush fire, utilizing materials or fuels that can be ignited

**Grasslands**- Grassed areas capable of sustaining a fire. Under Australia standard 3959 Construction of buildings in bushfire -prone areas, identified as low open shrubland, hummock grassland, closed tussock grassland, tussock grassland, open tussock, sparse open tussock, dense sown pasture, sown pasture, open herbfield and sparse open herb field. Grass, whether exotic or native, which is regularly maintained at or below 10 cm in height (includes maintained lawns, golf course, maintained public reserves, parklands, nature strips and commercial nurseries) are regarded as managed land

**Inner Protection Area (IPA)**: the component of an APZ which closest to the asset (measured from unmanaged vegetation). It consists of an area maintained to minimal fuel loads so that a fire path is not created between the hazard and the building.

**Managed land-** Managed land is land that has vegetation removed or maintained to limit the spread and impact of bushfire. It may include existing developed land ( i.e. residential, commercial or industrial) roads, golf course fairways, playgrounds or sports fields, vineyards, orchards, cultivated ornamental gardens, and commercial nurseries.

**PBP 2019:** Planning for Bushfire Protection 2019