REF: 4734

November 12, 2021

Harrisenvironmental CONSULTING

Bushfire Assessment for the proposed rezoning of 120 -140 Bridge Street, Picton, NSW

LGA: Wollondilly

Lots:10 & 11, DP: 1012641

Applicant: Tebco Pty Ltd..

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

BUSHFIRE HAZARD ASSESSMENT

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DISCLAIMER

The recommendations provided in the summary of this report result from 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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EXECUTIVE SUMMARY

This strategic study has been undertaken to inform and support a Planning Proposal for 120 – 140 Bridge Street, Picton. The purpose of the study is to address "gateway" requirements in respect to compliance with the relevant considerations of Ministerial Direction 4.4 - Planning for Bushfire Protection.

The broad principles of the study are to:

- Ensure land is suitable for development in the context of bushfire risk.
- Ensure the new development will comply with the requirements of the PBP 2019.

The proposal entails rezoning the land from RU2 Rural Landscape to IN2 Light Industrial. The objective being to enable the existing business involving the manufacturer of augers and attachments for foundation drilling industry to expand onto adjoining land.

The PBP 2019 and AS3959 address industrial/commercial developments in Section 8 *Other Development*. Specifically in Section 8.3.1 Buildings of Class 5 to 8 under the NCC identifies that the NCC does not provide for any bushfire specific performance requirements. As such the AS3959 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 the PBP. The general fire safety construction provisions of the NCC are required to be considered on a case-by-case basis.

Therefore, this study demonstrates how the following objectives can be met in relation to access, water supply and services and emergency and evacuation planning:

- Provision of safe access to/from the public road system for firefighters providing property protection during a bushfire and for occupant egress for evacuation.
- Provision of suitable emergency and evacuation (and relocation) arrangements for occupants of the development;
- Provision adequate services of water for protection of buildings during and after the passage of bushfire and to locate gas and electricity so as not to contribute to the risk of life to building.
- Provision for the storage of hazardous materials away from the hazard wherever possible.

1 INTRODUCTION

This Strategic Bushfire Hazard Assessment is for the proposed rezoning of Lots 10 and 11 DP 101241 at 120-140 Bridge Street, Picton.

The subject land currently supports the operations of Tebco Pty Ltd, a manufacturer of auger drills and attachments with infrastructure on 120 Bridge Street and 140 Bridge Street being used as a depot to store items. A portion of Lot 10 is zoned as IN2 – Light Industrial and the remainder of the lots are zoned as RU2 – Rural Landscape. The landowner is seeking to rezone the land from its current zoning of RU2 to IN2 across both lots in order to expand the existing business onto the adjoining land.

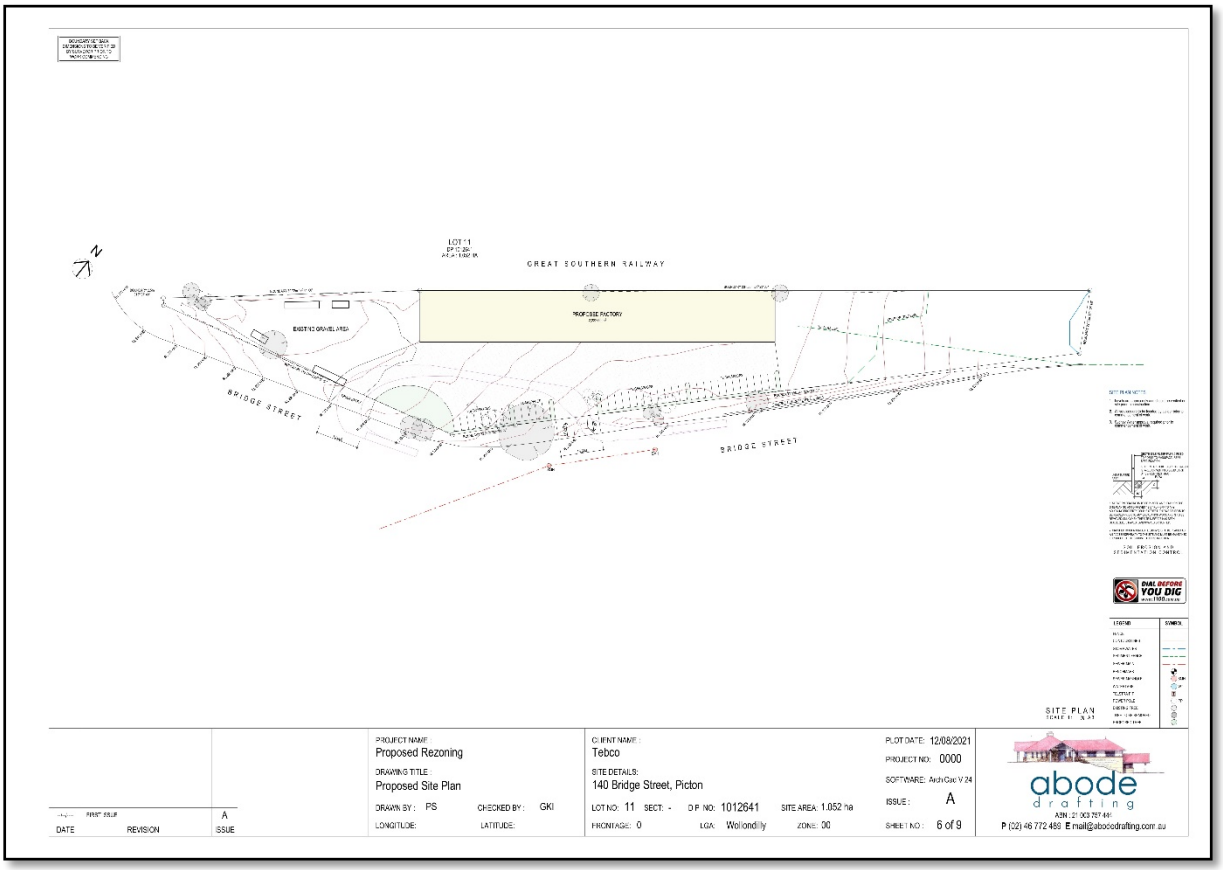
The concept plans for the land proposes to construct a 2,232 m^2 building on the subject lot, with 37 car park spaces as well as a truck and car entry. The building is proposed to be located:

- 40 m from 26 degree downslope dry sclerophyll forest on the north east elevation;
- 56 m from 25 degree downslope dry sclerophyll forest on the south east elevation;
- 33 m from 5- 10 degree downslope remant on the north elevation.

2 DEVELOPMENT PROPOSAL

The subject land comprises of 1.4 hectares and forms a rectangular shape that curves along Bridge Street. The existing industrial buildings within the IN2 zone are to be retained, as well as the continual use of 140 as a depot. The proposed factory is to be constructed on 140 Bridge Street as shown in Figure 1. The entire subject lot is proposed to be rezoned as IN2 – Light Industrial.

FIGURE 1 PROPOSED PLAN



3 SITE ANALYSIS

3.1. Location

The subject land is within the Wollondilly Shire Council Local Government Area located 1.2 km west of the Old Hume Highway. The Main Southern Railway line bound the site on the north, and the Picton industrial area is located towards the eastern elevation, as shown in Figure 2.

A broad-scale aerial view of the subject site, as shown in Figure 3, displays a modified agricultural environment towards the northern, southern and western elevations with large parcels of unmanaged forest towards the south and western elevations. Large lot industrial and residential sites are located towards the west of the subject lot.

FIGURE 2 SITE LOCATION

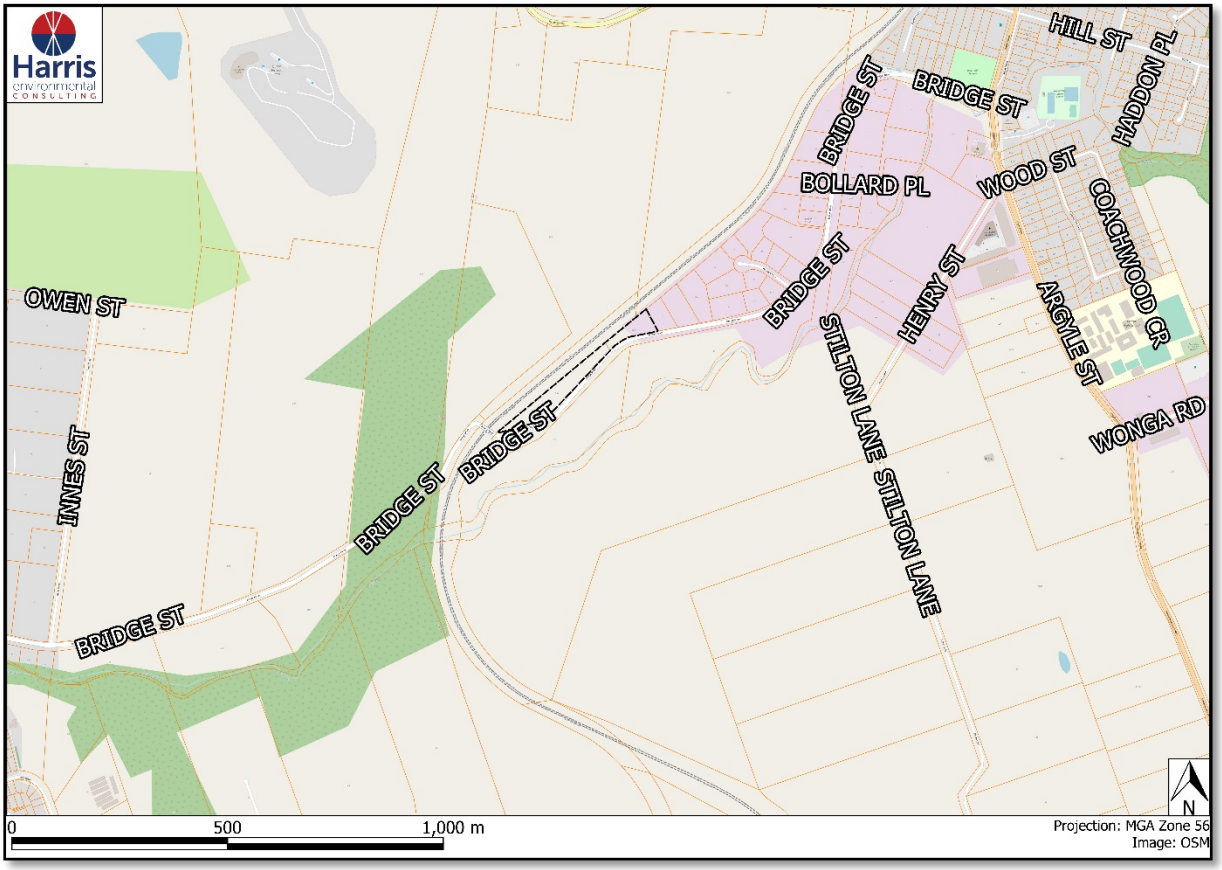
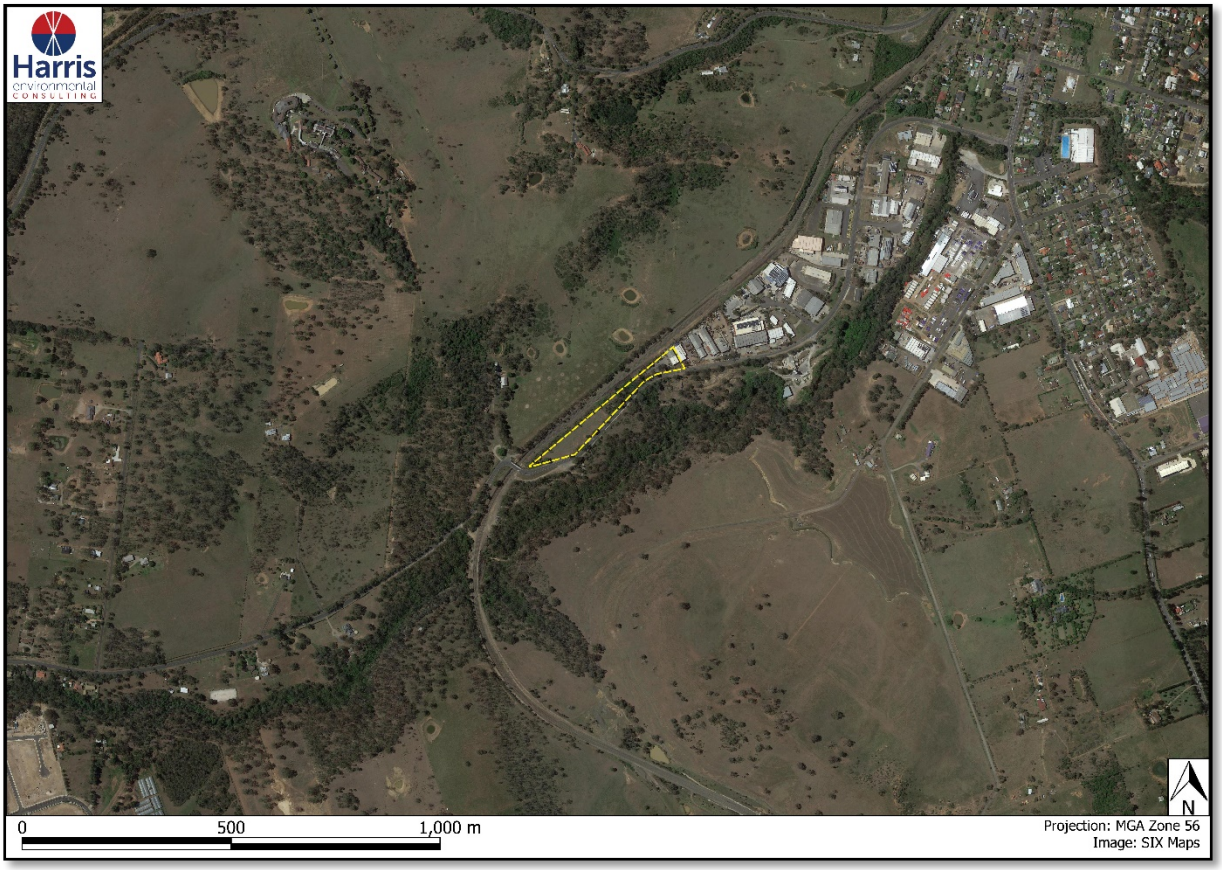


FIGURE 3 BROAD-SCALE AERIAL VIEW OF THE SUBJECT SITE



3.2. Topography

The site is characterised by a ridgeline that slopes steeply downwards towards the southern elevation. The subject lot also slopes slightly downwards towards the north east and the Main Southern Railway Line.

Contours were obtained from ground surface models in ASCII grid format derived from C3 LiDAR (Light Detection and Ranging) from an ALS50ii (Airborne Laser Scanner). The data has an accuracy of 0.3m (95% Confidence Interval) vertical and 0.8m (95% Confidence Interval) horizontal. The DEM has had been processed through a Gaussian Filter with a Radius of 10 and Sigma of 5. Figure 5 shows 2m contour intervals across and surrounding the subject site.

The Australian Standard AS3959-2018 identifies 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. The effective slope that would most significantly influence fire behaviour was determined over 100 m from the proposal, using 2-metre contour intervals and shown in Figure 7.

The proposed factory is located along the northern boundary of the Lot 11. South of the proposed development, the forest vegetation falls away to 24.79˚ and 26.06˚ downslope. The land directly north of the proposed development slopes upwards.

FIGURE 4 SLOPE

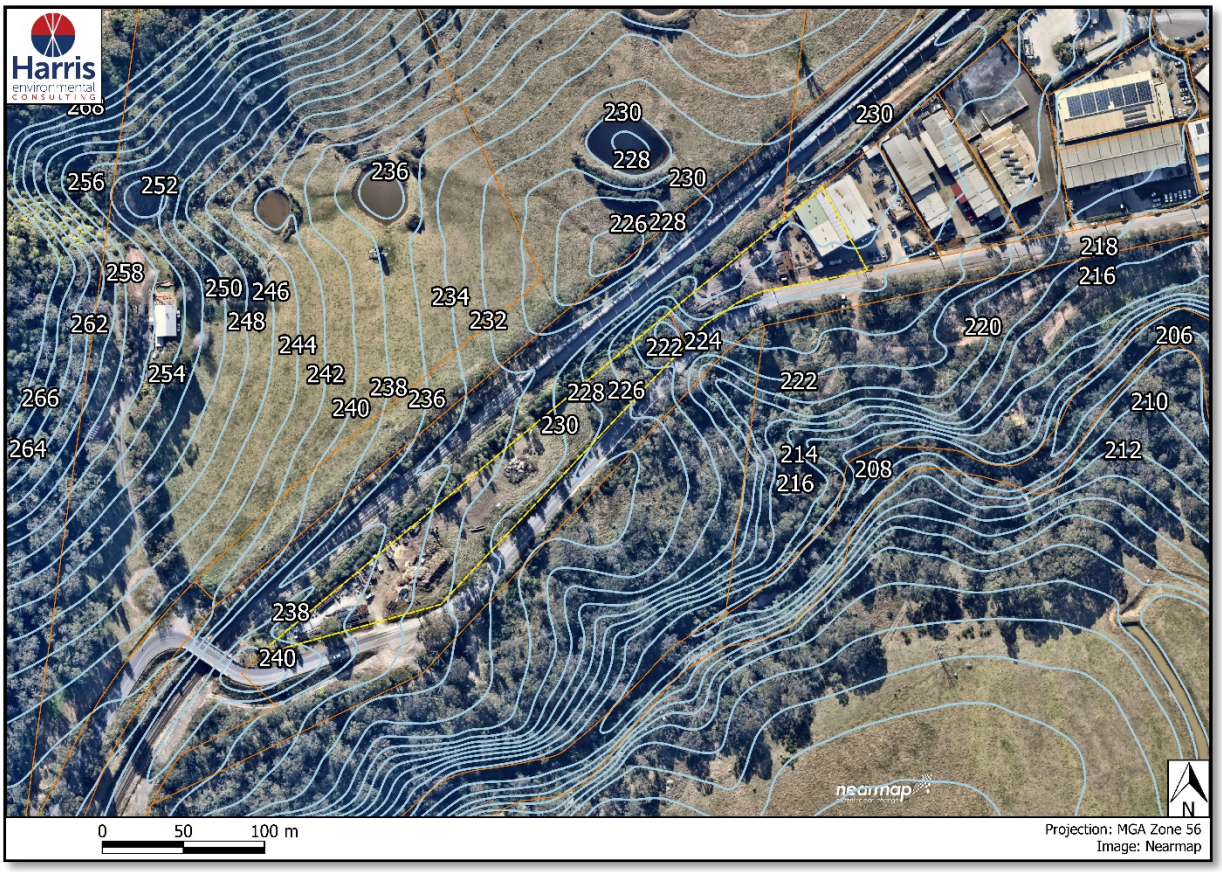
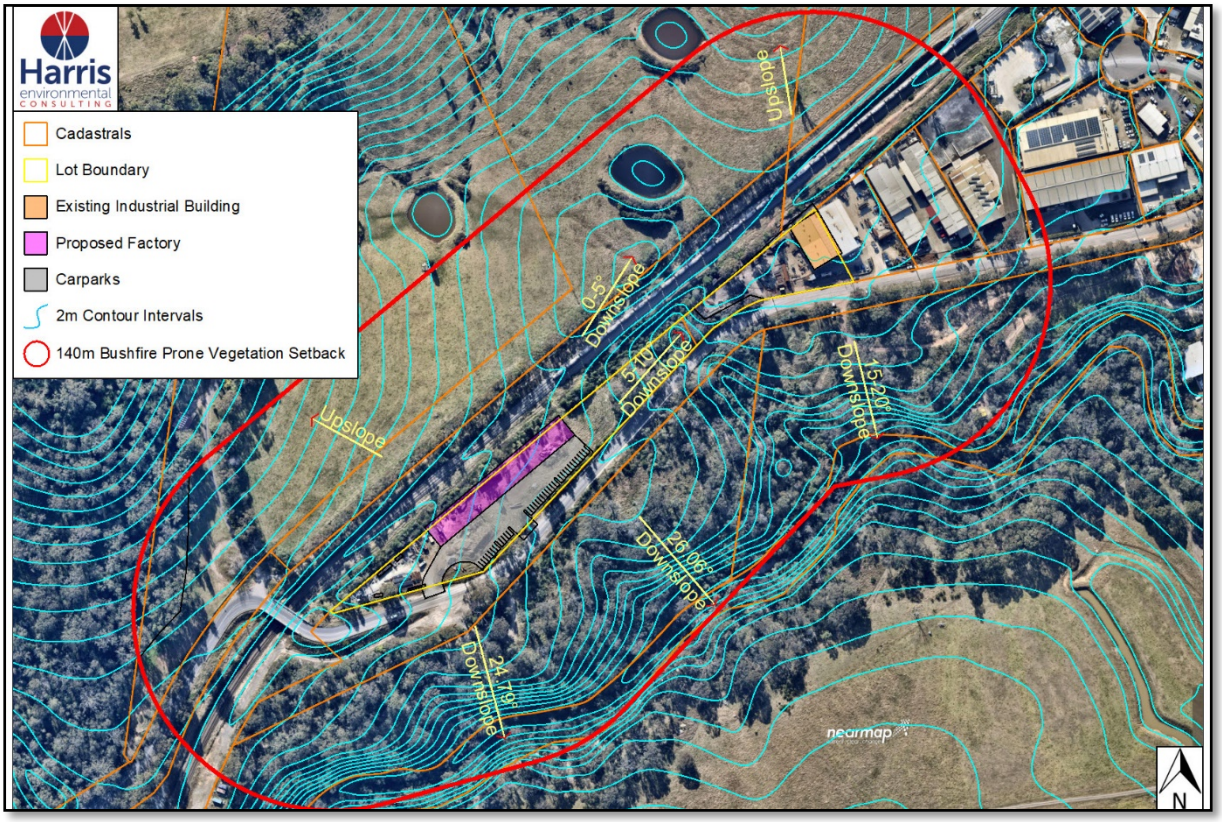


FIGURE 5 EFFECTIVE SLOPE



3.3. Climate and Bushfire Season

The Wollondilly/Wingecarribee Bush Fire Risk Management Plan (RFS, 2017) describes the subject location typically experiences variable climate due to the topographical and altitudinal differences across the shires. The Picton region north of the highlands generally experiences a warm temperate climate with peak rainfall in the summer and autumn months. Prevailing weather conditions associated with the bushfire season usually coincide with strong southwest to northwest winds influenced by drought and rainfall conditions. The significant bushfire season is from August through to December but can continue through to March, depending on the onset of the summer rainfall period. There are frequent dry lightning storms occurring during the bush fire season.

The region has an average of 400 bushfires and grass fires each year, some of which are considered major events. Several major fires have started in the inhabited areas of the region and have travelled in an easterly direction, impacting on catchments. Most other major fires that have started in the west are associated with storm ignition and coincided with extensive dry periods alongside hot westerly winds.

The three main sources of ignition in the Wollondilly/Wingecarribee area are lightning strikes associated with summer storm western, arson and pile burns escaping private residential properties.

The NPWS Fire History- Wildfires and Prescribed Burns indicate that the subject site that there is no recorded previous wildfire over 100 years.

The greatest bushfire threat in the future could potentially be the forest towards the southern elevation of the subject lot and the open, unmanaged Grassland located north of the subject lot. This bushfire threat is to be managed through any Development Application requiring to meet the relevant bushfire protection guidelines of the PBP 2019.

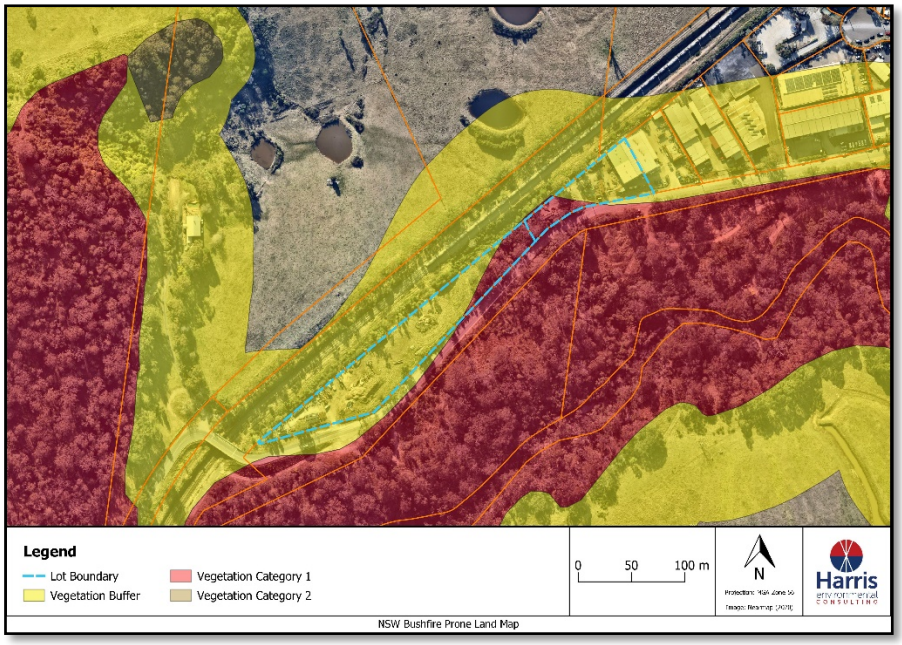
4 PLANNING LAYERS

The following planning layers are described in Table 7 and shown in the Figures below:

4.1. Bushfire Prone Land

The subject site is mapped “Vegetation Category 1” in the centre of the subject lot, and with a Vegetation Buffer located on the existing industrial building and depot site as as shown in Figure 7.

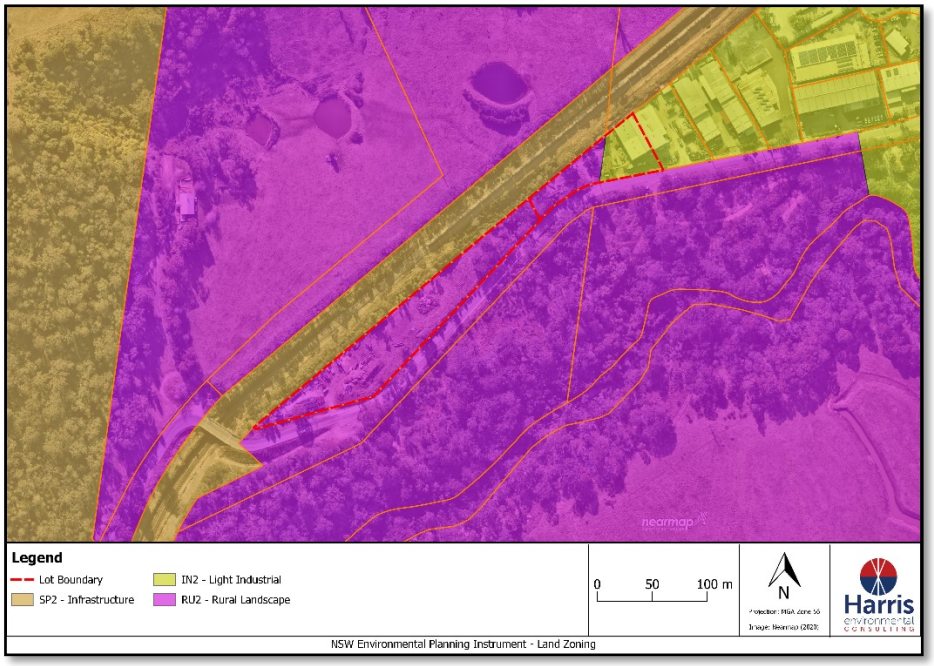
FIGURE 6 BUSHFIRE PRONE MAP



4.2. Land-use Zone

The subject lot is currently partially zoned as ‘IN2 – Light Industrial’ on Lot 10 and ‘RU2 – Rural Landscape’ across the remainder of the lots, as shown in Figure 8.

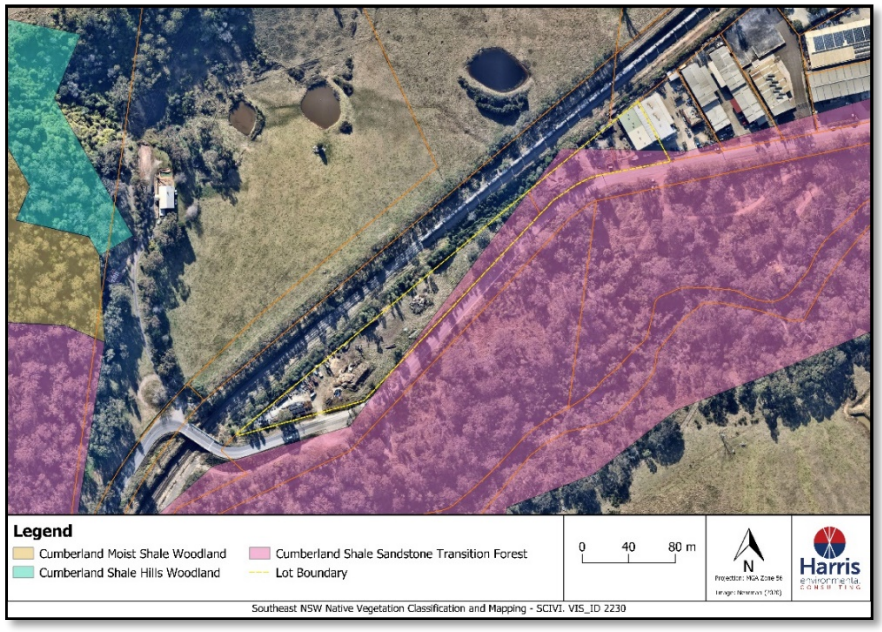
FIGURE 7 LEP ZONE MAP



4.3. Southeast Native Vegetation Maps

The NSW Southeast Native Vegetation mapping (Tozer et al. 2010) shown in Figure 9 has classified the vegetation on the neighbouring southeastern lots as “Cumberland Shale Sandstone Transition Forest”.

FIGURE 8 VEGETATION MAPPING



4.4. Biodiversity Values

The proposed development area is not mapped as having high biodiversity value. However, the unmanaged land within the subject lot was mapped to have a high biodiversity value as of September 16, 2021 (NSW Department of Planning, Industry and Environment, 2021).

FIGURE 9 BIODIVERSITY VALUE MAP

5. BUSHFIRE THREAT ASSESSMENT

5.1. Bushfire Vegetation Formations

The bushfire vegetation formations within 140 m of the indicative site plan as shown in Figure 11. The 140 m setback is identified as a red line. Only the vegetation within the redline will require to be classified when any Development application is sought. The following bushfire vegetation formations are identified:

- Forest: A cluster of trees is located south of the subject site and 40 m of the proposed factory. The second cluster of forest trees is located 184 m west of the proposed development.
- Remnant Vegetation: Narrow strip of vegetation consisting of a mixture of tree species is located in centre of the subject lot. This vegetation also interfaces a portion of the Railway Line running west-east along the northern boundary of the subject lot and proposed indicative development.
- Grassland: The agricultural land towards the northern elevation is classified as Grassland.

Table 1 shows the relevant setbacks for the vegetation formations identified.

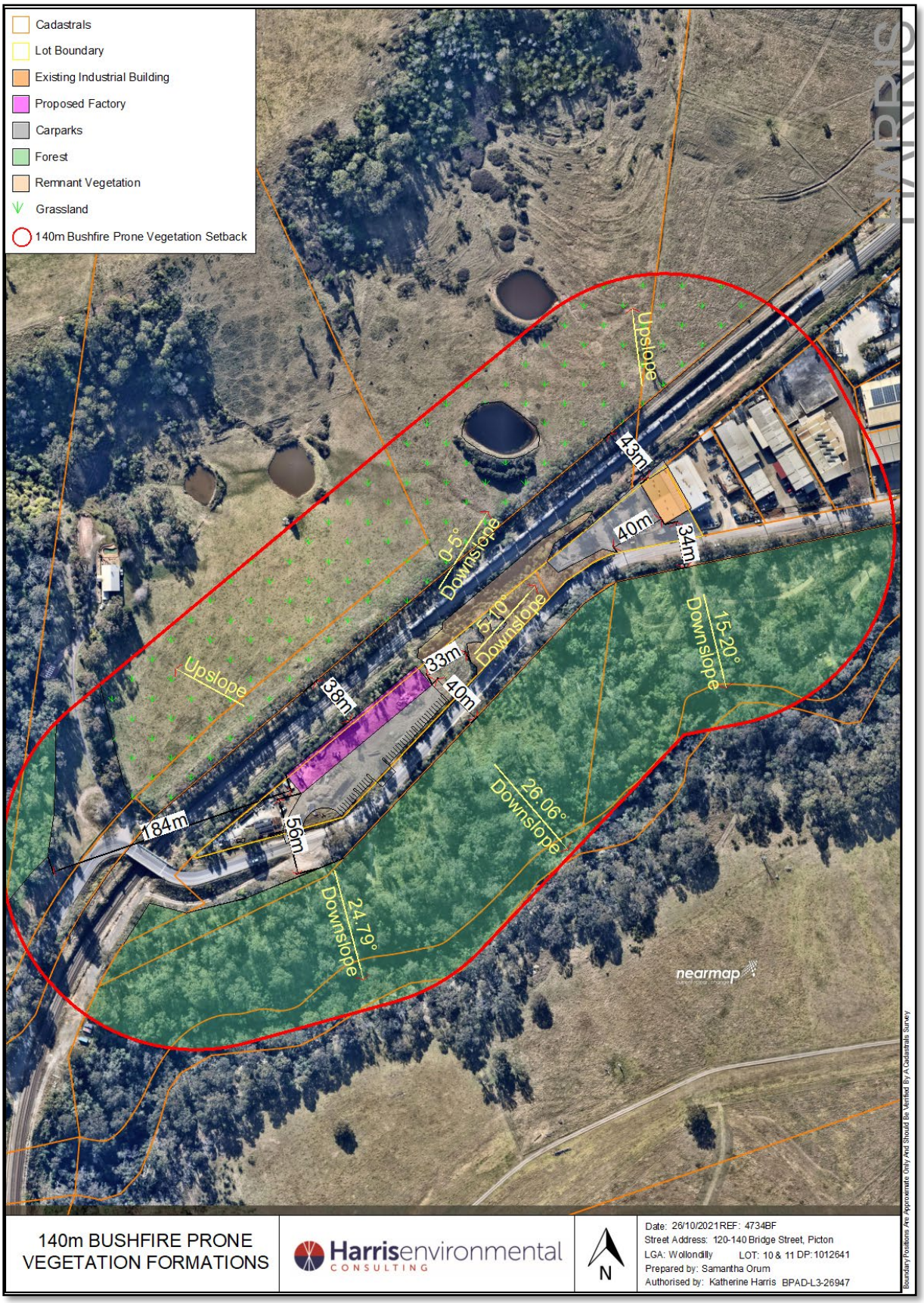
An FDI of 100 and a flame temperature of 1090 K was used for this location.

The Australian Standard AS3959 – 2018 is the enabling standard that addresses the performance requirements of parts 2.3.4 and Part GF5.1 of the Building Code of Australia for constructing the Class 1, 2 and Class 3 buildings within a designated Bushfire Prone Area.

TABLE 1 PROPOSAL VEGETATION FORMATION SETBACKS

Vegetation Formation	Effective Slope	BAL 12.5	BAL 19	BAL 29	BAL 40	FZ
Remnant	5-10˚ Downslope	37-<100 m	26-<37 m	18-<26 m	14-<18 m	< 14m
Forest	15-20° Downslope	92-<100	73-<92m	56-<73 m	46-<56 m	< 46m
Grassland	Upslope	22-<50 m	15-<22 m	10-<15 m	8-<10 m	< 8m
Grassland	0-5° Downslope	25-<50 m	17-<25 m	12-<17 m	9-<12 m	< 9m

FIGURE 10 VEGETATION FORMATIONS WITHIN 140 M



5.2. Safe Operational Access

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

General Requirements:

- property access roads are two-wheel drive, all-weather roads;
- traffic management devices are constructed to not prohibit access by emergency services 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;
- secondary access shall be provided to an alternate point on the existing public road system; and

The indicative layout design shows a truck and public access driveway into the site.

The key access routes and the direction of travel to the subject site is shown in Figure 13. The subject lot is located on Bridge Street, which incepts Argyle Street (green) 1.2 km towards the east and Thirlmere Way (pink) 2 km towards the west.

The key access routes towards Argyle Street traverses urban development. The key access route towards Thirlmere Way traverses forest and grassland.

FIGURE 11 DEFENDABLE SPACE

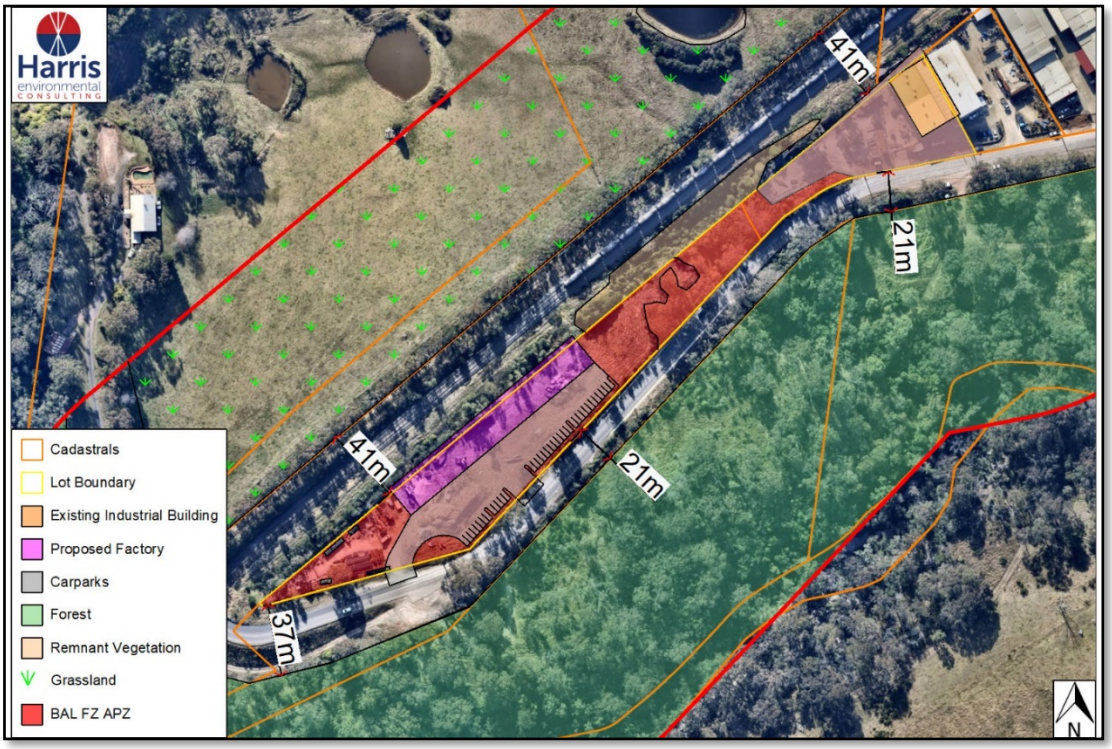
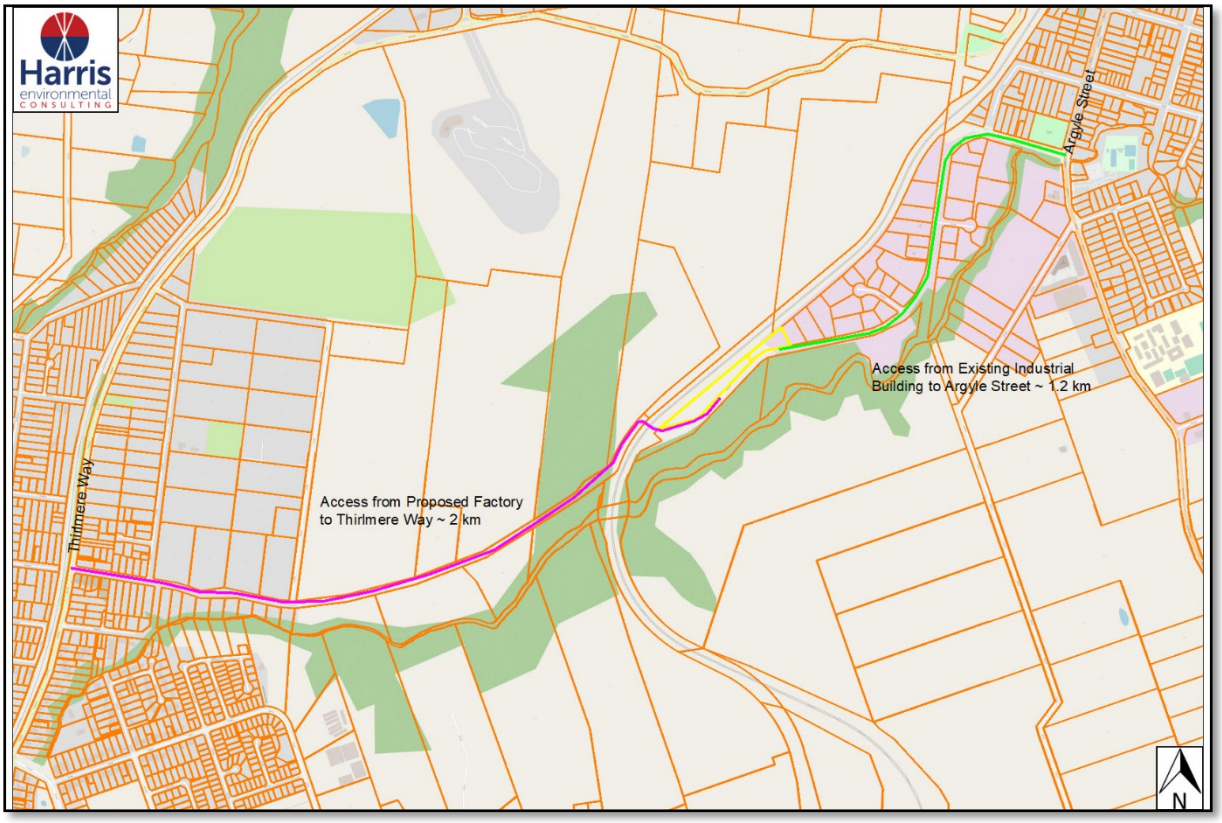


FIGURE 12 ACCESS ROUTES



5.3 Adequate Water and Utility Services

Reticulated water is proposed for the proposed factory. Future development applications will require fire hydrant, spacing, design and sizing to comply with the relevant clauses of Australian Standard AS 2419.1:2005 and also that hydrants are not located within any road carriageway.

6 SUMMARY OF FINDINGS

The study demonstrates how the following objectives can be met in relation to compliance with Section 8.3.8 PBP 2019 access, water supply and services and emergency and evacuation planning. The following provides a summary of how the proposal can meet the PBP requirements. In conclusion, this evidence provided in the study shows how the proposal should not be rejected due to bushfire considerations.

Access

The proposal provides safe access to/from the public road system for firefighters providing property protection during a bushfire and for occupant egress for evacuation because key access route is towards Argyle Street traverses urban development.

Firefighter vehicles are provided with safe, all-weather access to structures and hazard vegetation. The proposed design provides the car park and access between the building and the bushfire-prone vegetation. Property access roads are two-wheel drive, all-weather roads;

There are no traffic management devices propped which could prohibit access by emergency service vehicles. The maximum grades for sealed roads do not exceed 15 degrees or an average grade of not more than 10 degrees or other gradient specified by road design standards.

All roads are through roads with no dead-end roads. The capacity of road surfaces will be sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes). There are no bridges/causeways.

Emergency and Evacuation

For future Development Applications, the applicant will provide an emergency /evacuation plan as described in the PBB 2019 will be required. This will need to meet the criteria of the RFS guidelines for the Preparation of *Emergency/Evacuation Plan.* There shall be a trigger system for cancellation of employees at the site on Extreme and Catastrophic Fire Danger Days. Consideration should be given to also preventing occupancy on Severe Fire Danger Days. An onsite manager who can act as a Fire Warden is considered good practice.

Water for Fire Fighting

The proposal can provide adequate services of water for the protection of buildings during and after the passage of bushfire and locate gas and electricity so as not to contribute to the risk of life to building. The subject lot is connected to the local reticulated town water supply and appropriate access to water supply can be provided. Future development applications will require additional hydrants. These fire hydrants will require spacing, design and sizing to comply with the relevant clauses of Australian Standard AS 2419.1:2005. Future hdrants shall not located within any road carriageway.

Fire hydrant flows and pressures will be required to comply with the relevant clauses of AS 2419.1:2005.

All above-ground water service pipes are required to be metal, including and up to any taps.

Hazardous Operations

For future development applications, the applicant will be required to prepare a *Fire Safety Study* using the DPIE Hazardous Industry Planning and Assessment Papers. This study will provide details of any credible fire hazards and associated fire prevention and mitigation measures for the proposed development. The plan will also address the appropriate protection measures commensurate with bushfire hazards and associated risks.

Construction Standard

The proposal is for industrial development; the Building Code of Australia (BCA) bushfire performance requirements (AS 3959- construction of Buildings in Bushfire Prone Area) do not apply to this building class. The PBP 2019 require construction requirements to be considered on a case by case basis and that an appropriate mix of Bushfire Protection Measures be applied.

This proposal can achieve adequate bushfire protection with a fire engineering performance based solution or

- Constructing the external walls from fire-resistant materials;
- Roofing can be constructed from pressed metal and all joints in the roof, walls and between the wall and roof sealed so they are ember proof,
- Any skylights or roof ventilation fixtures installed with metal mesh screens with a maximum aperture size of 5 mm to prevent the ingress of embers,
- Doors to be non-combustible self-closing fire doors with an FRL of -/60/30 conforming with AS 1905.1 and tested under AS 1530.4
- Windows to be fire windows with a FRL of-/60/- when tested in accordance with AS 1530.4 and permanently fixed in the closed position.
- Other openings by construction with an FRL of not less than -/60/- when tested in accordance with AS 1530.4
- Vehicle access doors to be non-combustible, protected with suitable weather strips, draught excluders, draught seals or brushes. Door assemblies fitted with guide tracks with no requirements for edge gap protection. Access doors shall not include ventilation slots.

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APPENDIX I DEFINITIONS

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.

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 RSS under section 146 (2) of the Environmental Planning and Assessment Act (1979)

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.

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.
fire hazard: the potential for land o carry a bush fire, utilising materials or fuels that can be ignited

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.

NPWS- National Parks and Wildlife Service