

BUSHFIRE THREAT ASSESSMENT

FOR

PROPOSED MIXED USE DEVELOPMENT

AT

52 SINCLAIR ST, GOULBURN
NSW

Prepared for: KDC

6 February 2019

AEP Ref: 1812



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1.0 Introduction

At the request of KDC (the client), Anderson Environment & Planning (AEP) have produced this report to assess the bushfire protection measures required by the NSW Rural Fire Service's "Planning for Bushfire Protection 2006" (PBP) and the construction requirements of the proposed development in accordance with the provisions of the Building Code of Australia – Volume 2, Edition 2010 and Australian Standard 3959-2009 (AS 3959) – "Construction of buildings in bushfire-prone areas".

The proposal is classified as containing Class 5, Class 8 and Class 9 buildings (BCA). For this reason, parts of the development are exempt from AS 3959 building requirements if the aim and objectives of the PBP can be met as stated below.

"The BCA does not provide for any bush fire specific performance requirements and as such AS 3959 does not apply as a set of 'deemed to satisfy' provisions. The general fire safety construction provisions are taken as acceptable solutions, but the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management."

Other parts of the development, specifically the Class 9 building, will require the application of AS 3959.

The proposed development does not involve subdivision, and as such is a "Non-Integrated Development" assessed under Section 4.14 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). When such development can be shown to comply with the deemed-to-satisfy provisions of the Building Code of Australia (BCA), then the certifying authority can determine compliance and issue the relevant construction certificate without referral to the RFS. This BTA letter addresses the required heads of consideration relevant to obtaining approval.

For the purposes of referencing, this document should be referred to as:

Anderson Environment & Planning (2019). *Bushfire Threat Assessment for Proposed Mixed Use Development at 52 Sinclair St, Goulburn NSW*. Unpublished report for KDC, February 2019.



2.0 Site Particulars

The proposed development is located at 52 Sinclair St, Goulburn NSW (the study area). Other details are as follows:

- **Address** – 52 Sinclair St, Goulburn NSW
- **Title Details** – Lot 22 DP750050
- **LGA** – Goulburn-Mulwaree
- **Subject Site** – The above mentioned lot.
- **Study area** – The study area includes the subject site and the immediate surrounds of the proposed development.
- **Zoning** – Under the *Goulburn Mulwaree Local Environmental Plan 2009* (the LEP), the study area is zoned E3 Environmental Management, B6 Enterprise Corridor and RU6 Transition.
- **Current Land Use** – The site contains two sealed roads and paddock land grazed by horses and rabbits. Remnant woodland stands in the northwest corner.
- **Surrounding Land Use** – Surrounding land is zoned E3 Environmental Management, B6 Enterprise Corridor and RU6 Transition. A council waste management facility is located nearby.

Figure 1 depicts the location of the site laid over an aerial photograph of the locality.

Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Legend

-  Site Boundary
-  Cadastre



0 250 500 750 1000

1:15,000



Note:
1. Boundaries are not survey accurate
2. Do not scale off the plan



AEP

Title: Figure 1 - Site Location

Date: Jan 2019

Location: 52 Sinclair St, Goulburn NSW

Client: KDC

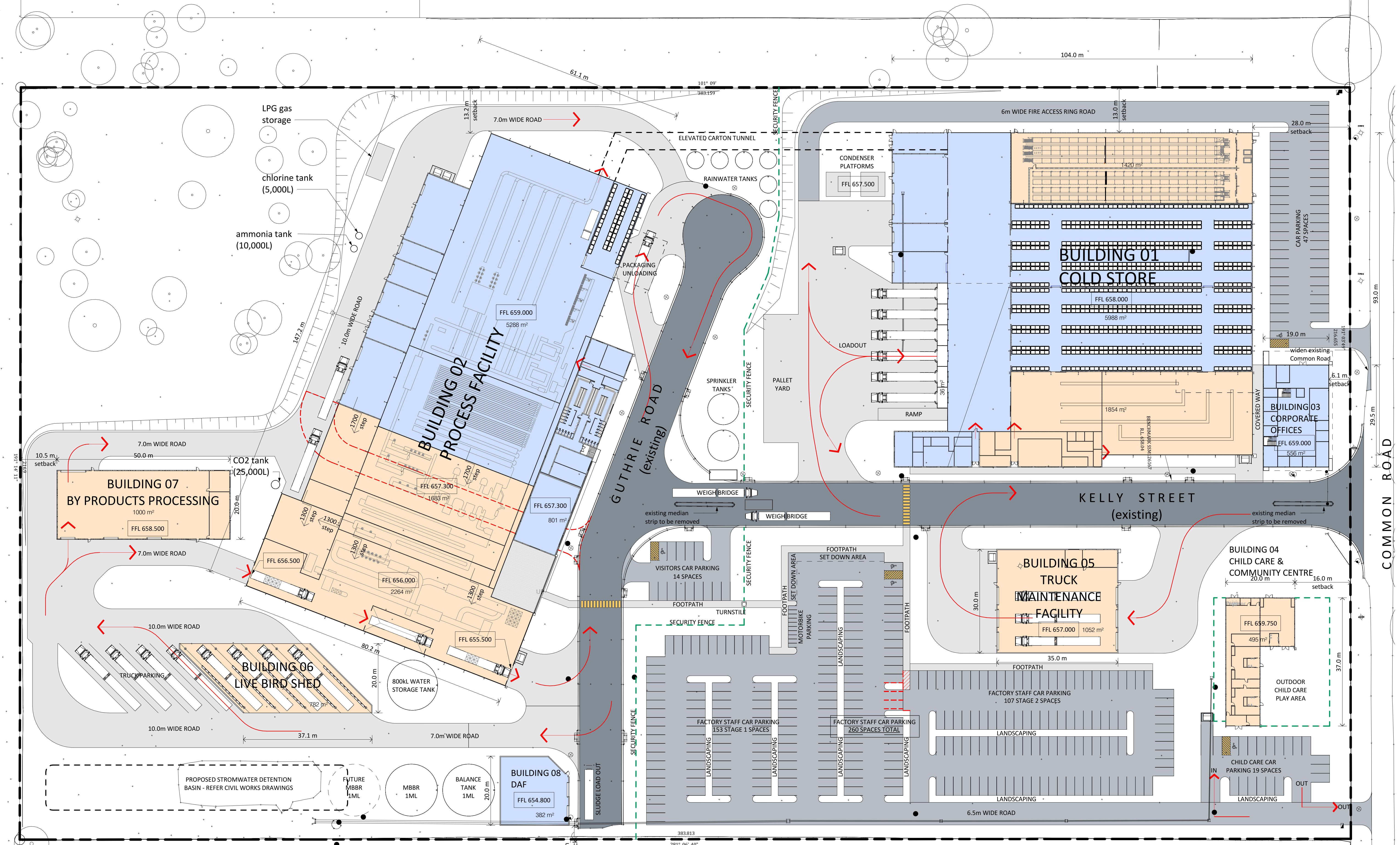
AEP ref: 1812



3.0 Proposed Development

The proposed development involves the construction of several buildings, carparks and ancillary buildings. The development is collectively considered 'mixed use development'.

A proposed plan of development is included as **Figure 2**.



STAGING COLOUR LEGEND

Blue	STAGE 1
Orange	STAGE 2

STAGING AREA SCHEDULE

STAGING	BUILDING AREA
	599 m²
STAGE 1	13228 m²
STAGE 2	10842 m²
	24669 m²

EXTERNAL PAVEMENT LEGEND

Grey	EXISTING PAVEMENT
Light Grey	NEW HEAVY DUTY PAVEMENT
Medium Grey	NEW LIGHT DUTY PAVEMENT

PROPERTY DESCRIPTION

LOT: 22	AREA: 8.3Ha
DP: 750050	

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PROPOSED PROCESSING FACILITY

OVERALL SITE PLAN - FINAL STAGE - NO CONTOURS

Project No - **W21314**

Dwg No - **00K008 - 3**

Date - **03/04/19**

A1 = 1:500 (A3 = 1:1000) 0 5 10

4.0 Bushfire Hazard Assessment

4.1 Bushfire Prone Land Mapping

Examination of the Planning Portal (2019) confirms a classification of Vegetation Buffer and Vegetation Category 1. This designation has triggered the need for this Bushfire Threat Assessment.

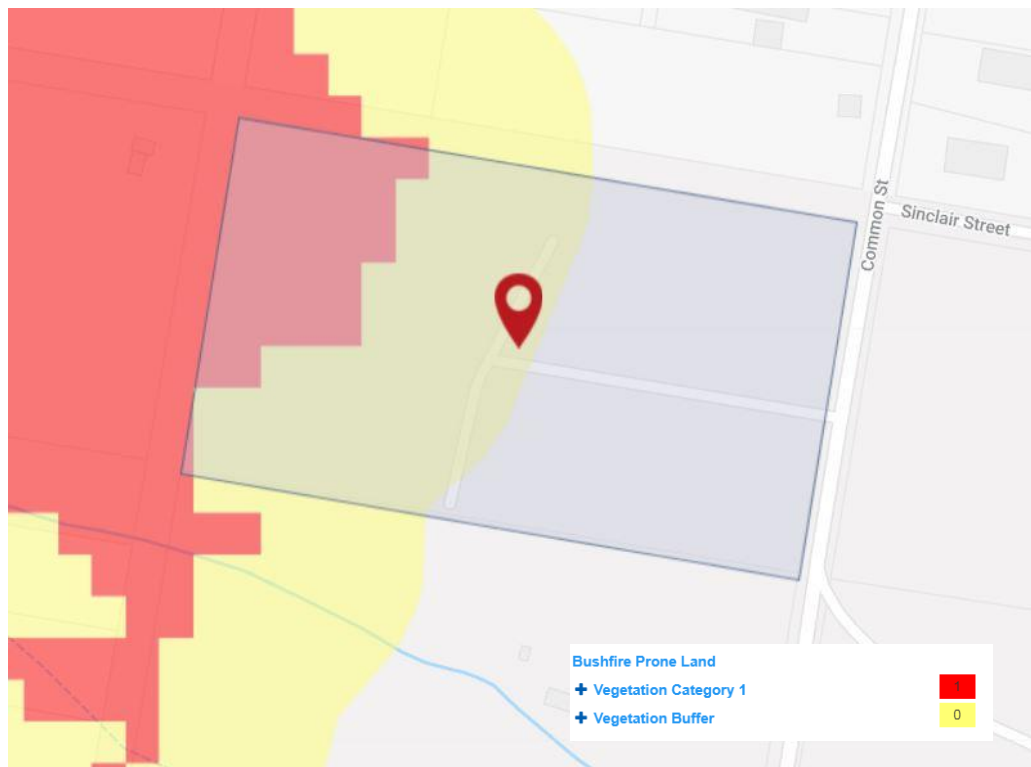


Figure 3 – Extract from Planning Portal (2019)



Appendix 3 of the PBP provides the steps required to determine the level of bushfire hazard that applies to the site. Factors influencing the hazard level include:

- The formation of vegetation surrounding the site (as defined by Keith 2004);
- The distance between vegetation and the site (or proposed buildings therein);
- The effective slope for each patch of vegetation; and
- The Fire Danger Index (FDI) of the council area within which the development occurs.

These factors together provide an indication of the level of threat posed to the development from any vegetation retained within the site and surrounding vegetation in the event of a bushfire, and the required mitigation measures to be taken in the form of Asset Protection Zones (APZs) and building construction standards. These measures are detailed further in **Section 5** below.

4.2 Vegetation Analysis

The site and surrounds occur within the Southern Ranges region, with existing vegetation subsequently classified with a Fire Danger Index (FDI) of 100 as per Appendix 2 of the PBP.

AEP understands that the current proposal will retain vegetation on the subject site, therefore both on and off-site vegetation is considered within this BTA. Nearby hazard vegetation is considered to constitute “Woodland” under the PBP (see **Figure 4**) and consists of areas in the northwest of the site and to the west offsite.

4.3 Slope Analysis

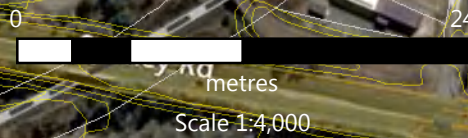
The site slopes down from the northwest. Vegetation in the northwest is upslope / flat.

Examination of slope class to relevant hazard areas reveals:

- **Northwest** – Upslope / flat towards Woodland Vegetation; and
- **West** - >0-5 degrees downslope towards Woodland Vegetation.

Figure 4 provides a visual representation of the vegetation and effective slope as it applies to the proposal.

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Legend

- Site Boundary
- Cadastre
- 2m Contour
- Site Plan
- Woodland Hazard Vegetation



Assessment Buffers

- 100m Slope Assessment
- 140m Vegetation Assessment

Flat/upslope

>0 - 5 degrees downslope

Note:
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2. Do not scale off this plan



AEP

Title: Figure 4 - Vegetation and Slope Assessment

Date: Apr 2019

Location: 52 Sinclair St, Goulburn

Client: KDC

AEP Ref: 1812



5.0 Bushfire Hazard Mitigation

5.1 Applicable Asset Protection Zones

The development, being mixed use, contains several classes of building and bushfire protection status. Offices (Class 5) and Production areas (Class 8) do not require formal Asset Protection Zones (APZs) as acceptable solutions are to be achieved by meeting the aims and objectives of the PBP in relation to emergency planning, access and water supply. However, the creation of defendable space will be required. Hazard vegetation is located to the west of the development, so it is recommended that defendable space is available there, including suitable emergency vehicle access.

The development also includes a proposed Childcare Centre, which under PBP 2006 is a Special Fire Protection Purposes development (SFPP) and does require APZs. For an SFPP in an FDI 100 area:

- >0 – 5 degrees downslope from hazard woodland, an APZ of 50m is required; and
- Upslope / flat from hazard woodland, an APZ of 40m is required.

These APZs are marked on **Figure 5**.

5.2 Construction Standards – AS 3959-2009

As outlined above, the existence of SFPP development has resulted in the need for APZs, and hence consideration of related construction standards.

Bushfire Impact and AS-3959-2009

The Australian Standard 3959-2009 “Construction of buildings in bushfire prone areas”, details six (6) levels of construction standard that are required for buildings, depending upon the expected impact of a bushfire from adjacent areas. These Bushfire Attack Levels (BALs) are measured from the edge of the hazard and incorporate vegetation type and slopes (see Section 4 above) to determine the relevant distance for each BAL rating (and associated construction standard). The relationship between the expected impact of a bushfire and the BAL rating is provided in **Table 1** below.

Table 1 – BAL Construction Standard

Bushfire Attack Level	Maximum radiant heat impact (kW/m ²)	Level of construction standard under AS 3959-2009
Low		No special construction requirements
12.5	≤12.5	BAL – 12.5
19	12.6 to 19.0	BAL – 19
29	19.1 to 29	BAL – 29
40	29 to 40	BAL – 40
Flame Zone	≥40	BAL – FZ (Not deemed to satisfy provisions)

The BAL construction standards applicable for the proposed development are:

Flat/upslope towards Woodland vegetation to the northwest

- <12m – BAL-FZ
- 12 to <16m – BAL-40
- 16 to <24m – BAL-29
- 24 to <33m – BAL-19
- 33 to < 100m – BAL-12.5

≥0 – 5 degrees downslope to Woodland vegetation to the west

- <15m – BAL-FZ
- 15 to <21m – BAL-40
- 21 to <29m – BAL-29
- 29 to <41m – BAL-19
- 41 to < 100m – BAL-12.5

SFPP developments require that radiant heat levels of >10kW/m² must not be experienced by emergency services. Given the positioning of the Childcare Centre in relation to the hazard vegetation, the development will achieve this requirement, as shown in **Figure 5**.

The BCA does not provide for any bush fire specific performance requirements for buildings of Classes 5 and 8 within which this development falls. General fire safety construction provisions are an acceptable solution.

5.3 Emergency and Evacuation Planning

To ensure a prompt and coordinated response to the threat of bushfire, a site-specific Bushfire Emergency and Evacuation Management Plan (EEMP) is to be produced. The EEMP should include triggers for site evacuation in an emergency, and pre-emptive site evacuation



on forecast days of extreme / catastrophic fire weather. Procedures specific to this development that will be incorporated into the EEMP include a co-ordinated evacuation plan for the entire site. Details regarding the evacuation procedures are to be clearly signposted and placed strategically around the various buildings and industrial units.

5.4 Access and Egress

The proposed development will have access points from Common Road, Kelly Street (running east to west through the site) and Guthrie Road (running north to south through the site). Access roads into the development have already been constructed and meet access road requirements under section 4 of the PBP.

Internal roads would also need to comply with section 4 of the PBP though again given the nature of the development is likely to accommodate heavy vehicles likely to be utilising the site.

Emergency response times would be expected to be rapid with Goulburn Mulwaree Remote Area Fire Brigade located approximately 4km away with an expected response time of approximately 3 minutes.

5.5 Water Supply

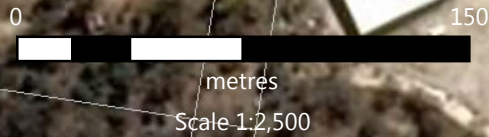
Water supply should aim to meet the objectives of section 4.1.3 of Planning for Bushfire Protection (2006). Where a reticulated water supply is possible:

- Access points for reticulated water supply to developments incorporate a ring main system for all internal roads;
- Fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority, once development has been completed. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles; and
- The provisions of public roads in section 4.1.3 in relation to parking are met.

It is expected that the development will be serviced by a reticulated water supply system extended from the existing developments in the area.

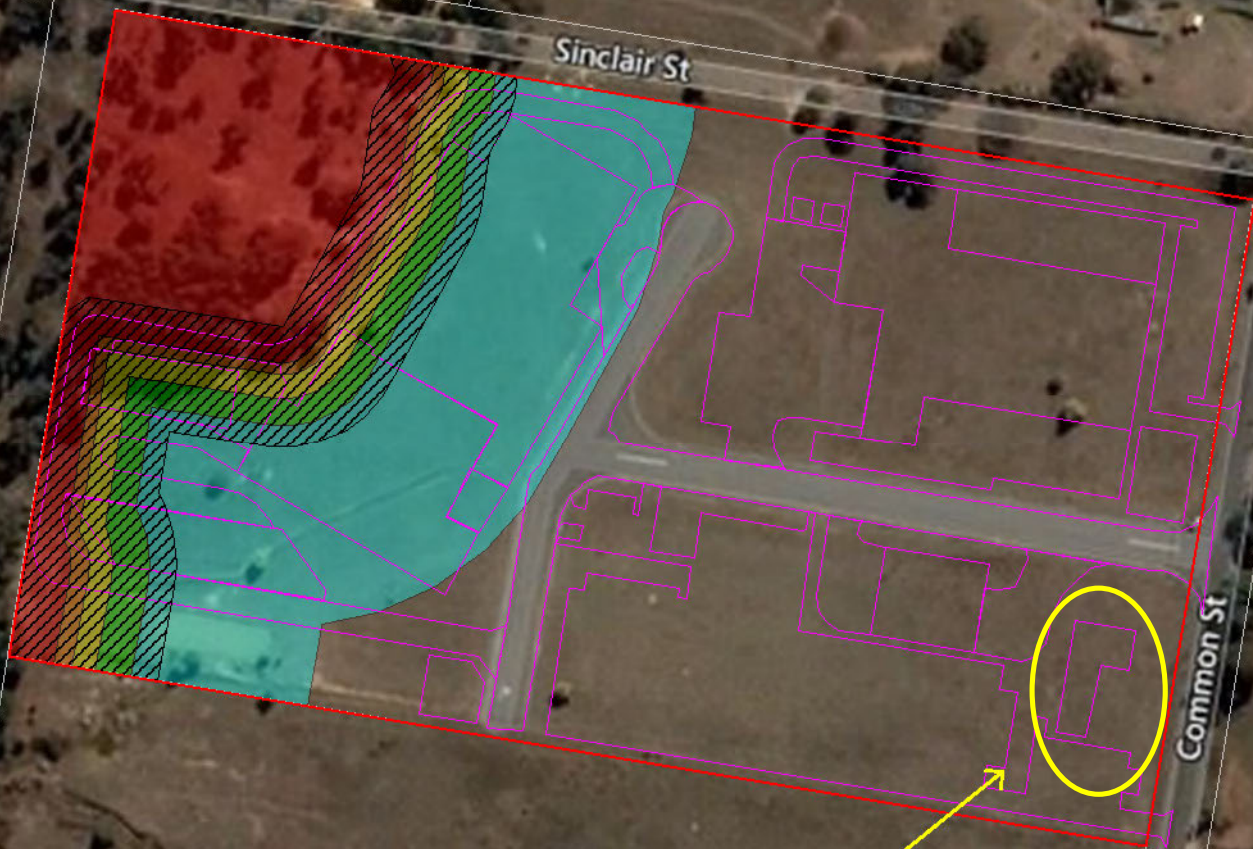
The reticulated water supply and street hydrant access will need to be delivered in accordance with AS 2419.1–2005.

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Legend

- Site Boundary
- Cadastre
- Site Plan
- SFPP APZ
- SFPP BALs**
 - BAL - FZ
 - BAL - 40
 - BAL - 29
 - BAL - 19
 - BAL - 12.5



SFPP Development

Note:
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2. Do not scale off this plan



Title: Figure 5 - Required BALs and APZ (SFPP)

Date: Apr 2019

Location: 52 Sinclair St, Goulburn

Client: KDC

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6.0 Other Considerations

The following analysis applied to the site in reference to environmental features present.

- **Riparian Corridors** – none present.
- **SEPP (Coastal Management)** – none present.
- **SEPP 44 Koala Habitat** – none present.
- **Areas of geological interest** – none present.
- **Environmental protection zones or steep lands (>18°)** – none present.
- **Land slip or flood prone areas** – none present.
- **National Parks estate or various other reserves** – E3 zoning is present in the northwest corner of the site.
- **Threatened species matters** – threatened species could potentially utilise the site, but such will not be notably affected by the proposed development.
- **Aboriginal Heritage** – none known to be present.



7.0 Conclusion

Investigations undertaken for this Bushfire Threat Assessment have revealed that the proposed development will be affected by bushland hazard onsite and offsite to the northwest and west.

To ensure a prompt and coordinated response to the threat of bushfire, a site-specific Bushfire Emergency and Evacuation Management Plan (EEMP) is to be produced for the entire site. The EEMP should include triggers for site evacuation in an emergency, and pre-emptive site evacuation on forecast days of extreme / catastrophic fire weather. Procedures specific to this development that will be incorporated into the EEMP include a co-ordinated evacuation plan for the site. Additionally, details regarding the evacuation procedures are to be clearly signposted and placed strategically around the building.

Suitable access and egress to the site will be provided via entrance from Common Road, Kelly Street and Guthrie Road, which will allow for adequate access for emergency vehicles needing to access the site. In addition to this to meet acceptable access principles for evacuation and firefighting, defensible space must be available between assets and hazard vegetation. This is achievable as access roads encircle the entire development and pass between the development and hazard vegetation.

Existing reticulated water supply system for the existing buildings is expected to service the site, and street hydrant access is to be delivered in accordance with AS2419.1 – 2005.

Assuming the above conditions are met it is considered that the development will meet the objectives of the Planning for Bushfire Protection guidelines, via the proposed protection measures, production of a detailed emergency evacuation planning, and appropriate access and egress. When applied, these measures should provide adequate protection in the event of a bushfire occurring in the immediate locality. However, it can never be guaranteed that the site, workers and property therein will not at some stage be affected by a bushfire event.



8.0 References

- NSW Government (2019) *Planning Portal*.
<<https://www.planningportal.nsw.gov.au/>>. Accessed Jan 2019.
- NSW Government (2009) *Goulburn – Mulwaree Local Environment Plan*.
- NSW Government (2013) *Rural Fires Act 1997*. NSW Government, Sydney.
- NSW Government (1979) *Environment and Planning & Assessment Act 1979*. NSW Government, Sydney.
- NSW Government (2008) *Rural Fires Regulation 2008*. NSW Government, Sydney.
- NSW Rural Fire Service (2017) *Planning for Bush Fire Protection* (draft). NSW Government, Sydney.
- NSW Rural Fire Service (2006). *Planning for Bushfire Protection*. NSW Rural Fire Service / NSW Department of Planning, Sydney.
- Standards Australia (2009) *AS-3959 Construction of Buildings in Bushfire-Prone Areas*. Standards Australia, Sydney.