



Bushfire Assessment

**New Primary School at
Murrumbateman**

Hansen Yuncken

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(Ref: 21052)

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1 Introduction

1.1 Introduction

This Bushfire Assessment Report accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD-11233241).

The development is for a new primary school located at 2 Fairley Street, Murrumbateman (refer to Figure 1 for site location).

This report addresses the relevant Secretary's Environmental Assessment Requirements (SEARs), namely:

Key Issue No. 20 'Bush fire': Provide a bush fire assessment that details proposed bush fire protection measures and demonstrates compliance with Planning for Bush Fire Protection (NSW RFS, 2019).

1.2 The proposal

The proposed development is for construction and operation of a new primary school with Core 21 facilities in Murrumbateman that will accommodate up to 368 students.

The proposed development (refer to Figure 2 for proposed layout) includes:

- A collection of 1-2 storey buildings containing 14 home base units, 2 special education learning units, hall, administration facilities and library.
- On-site parking lot with 40 spaces and kiss-and-ride area.
- Outdoor sports court and play area.
- Integrated landscaping, fencing and signage.

1.3 Site description

The site is located at 2 Fairley Street, Murrumbateman, in the local government area of Yass Valley Council. The site is formally described as Lot 302 DP1228766 (refer to Figure 1). The site is irregular in shape and has an area of 15,434.92 m².

The site is located at the northern end of the Murrumbateman village, which is characterised by a mix of uses including low density residential and some commercial.

Immediately surrounding development includes a tourist hotel to the north across Fairley Street, Murrumbateman Library (located in the former Murrumbateman schoolhouse, a local heritage item) to the south, a medical centre and childcare centre to the west, and rural land and equestrian facilities to the east across Barton Highway. There is also a cycling and equestrian pathway to the south between the site and library.

The site contains an existing parking lot in its northern end and a driveway along its western boundary. There is also a mound of soil at the southern end of the site. The site is otherwise cleared and vacant.

1.3 Assessment requirements

This Bushfire Assessment Report has been prepared to address Key Issue No.20 'Bush fire' of the SEARs (refer to Section 1.1). The SEARs requires an assessment of the proposal in accordance with the NSW Rural Fire Service (RFS) document *Planning for Bush Fire Protection 2019* (NSW RFS, 2019).

Chapter 6 of *Planning for Bush Fire Protection 2019* (referred to as 'PBP' throughout this report) addresses proposals involving schools (Special Fire Protection Purpose – SFPP) and outlines the assessment methodology and protection measures, such as Asset Protection Zones (APZ), Bushfire Attack Levels (BAL), adequate access and water supply for fire-fighting, and vegetation management.



Legend

 Subject Land



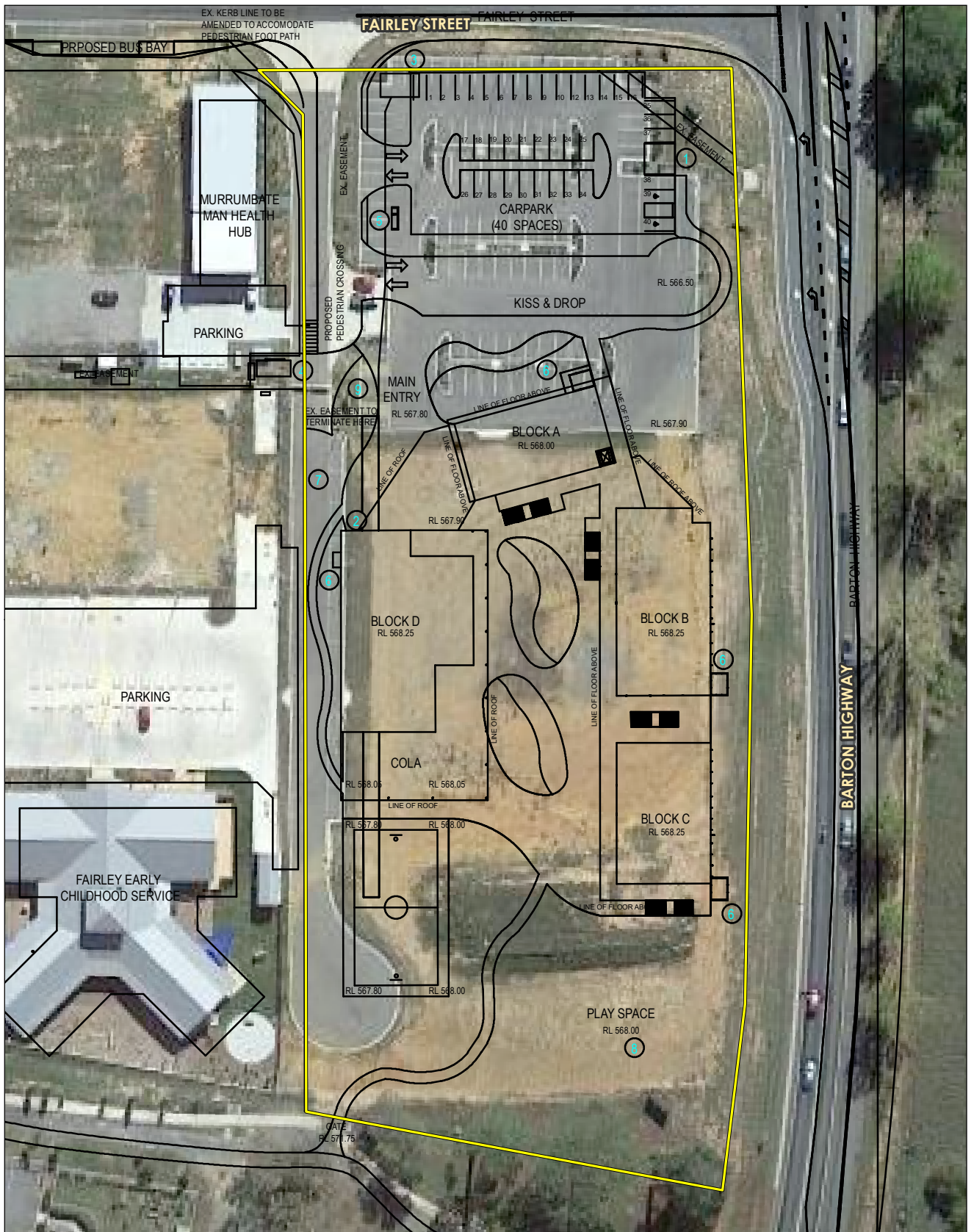
Date: 29/04/2021

0 250 500 1,000
Metres



Figure 1: The Location of the Subject Land

Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Dept, Customer Service NSW



Legend

-  Site Plan
-  Subject Land



Date: 29/04/2021

0 12.5 25 50
Metres

Figure 2: The Proposal

Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Google

2 Bushfire hazard

An assessment of the bushfire hazard is necessary to determine the application of bushfire protection measures such as Asset Protection Zone (APZ) location and dimension. This section provides a detailed account of the vegetation communities (bushfire fuels) and the topography (effective slope) that combine to create the bushfire hazard that may affect bushfire behaviour.

The 'predominant vegetation' and 'effective slope' influencing fire behaviour has been assessed in accordance with the methodology specified by PBP. Site assessment was conducted on 26th April 2021. Photographs are included at Appendix A.

2.1 Bushfire prone land

The purpose of bushfire prone land mapping is to identify lands that may be subject to bushfire risk based simply of the presence of vegetation that could act as a hazard. The maps are a planning tool used to trigger further detailed assessment. They do not present a scalable measure of hazard, threat or risk. These parameters are to be determined under further assessment in accordance with PBP (i.e. this Bushfire Assessment Report).

The local Bushfire Prone Land Map presented in Figure 3 shows that the subject land is not identified as bushfire prone land. The nearest mapped bushfire prone vegetation is greater than 3 km to the north-west, south-east and south-west as shown on Figure 3. Regardless of the mapping affectation, the SEARs have requested an assessment of the proposal against PBP.

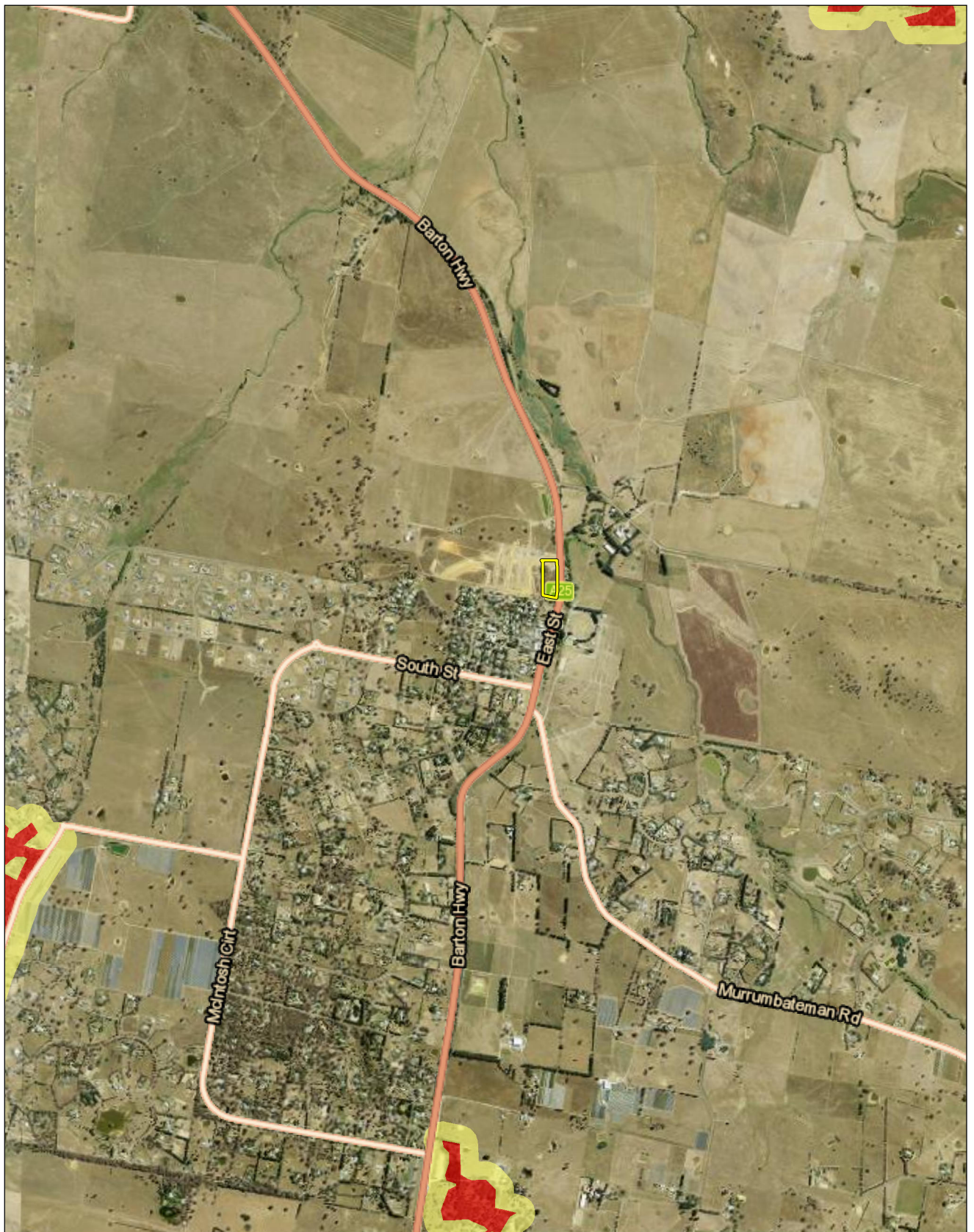
2.2 Predominant vegetation

The bushfire hazard within the 140 m assessment area consists of unmanaged grassland to the east of Barton Highway as mapped on Figure 4. Beyond the grassland is a narrow corridor of exotic trees along a drainage line that is classified as 'low threat – exclusion' in accordance with PBP Section A1.10. This classification is due to the width of the corridor being less than 20 m wide and separation from the site and other areas of vegetation by at least 20 m. The vegetation is also regarded as low threat due to its composition being entirely exotic deciduous trees that do not present the flammability and fuel availability as with native trees. The corridor is therefore not considered a bushfire hazard and consideration of APZ and BAL is not required. The hazard classification was agreed to by RFS during consultation over the phone on 29th April 2021.

The lands in the remaining directions are adequately managed and do not present a hazard.

2.3 Effective slope

The slope contributing to the rate of fire spread towards a proposed development is measured underneath the hazard where it is situated within 100 m of the subject land. The grassland hazard to the east is situated on a gradient in the PBP slope class of 'downslope 0-5 degrees'. The topography of the surrounding lands can be appreciated by the 1 m contour intervals shown on Figure 4.



Legend

- Subject Land
- Bushfire Prone Land**
- Vegetation Buffer
- Vegetation Category 1

Figure 3: Bushfire Prone Land

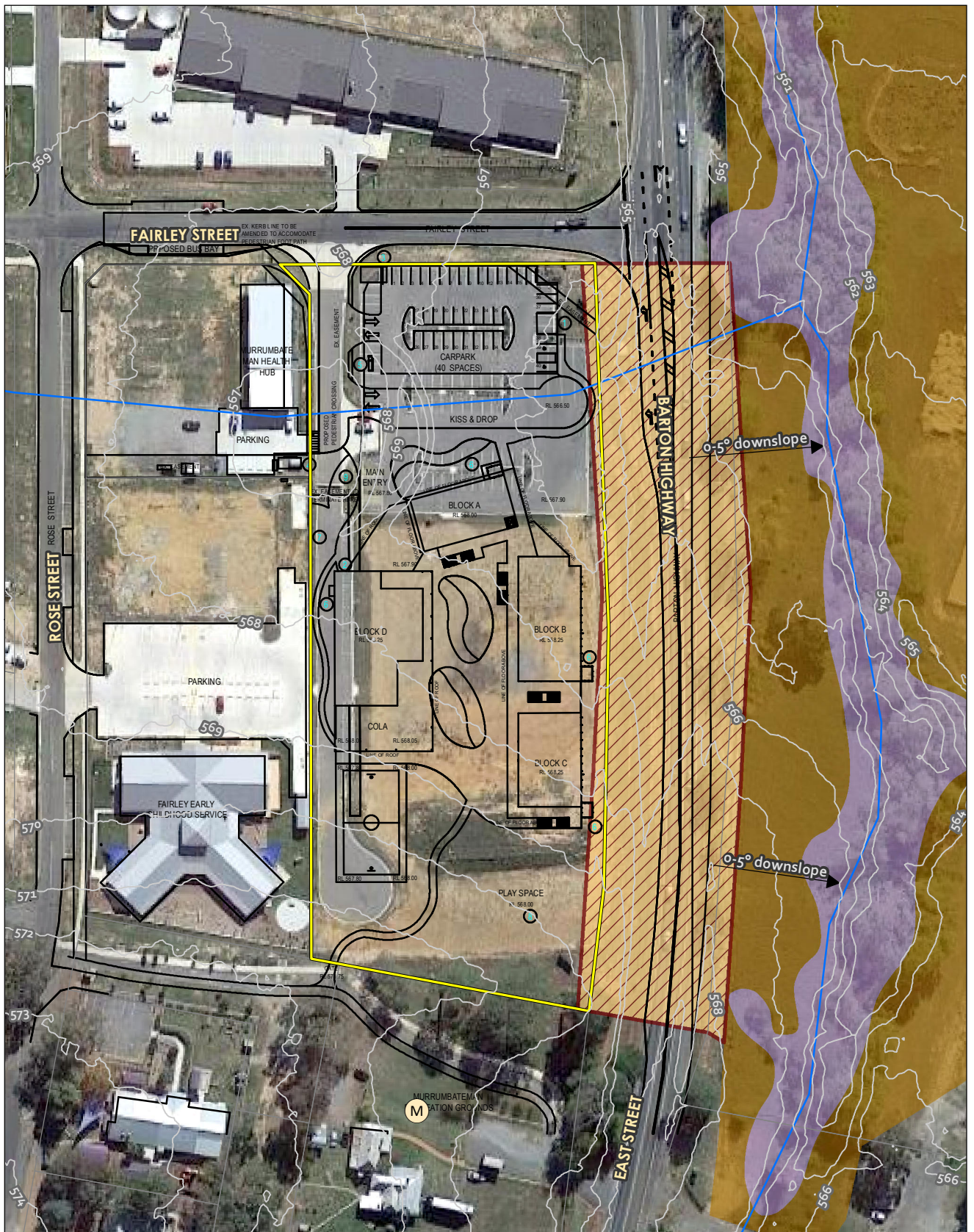


Date: 29/04/2021

0 250 500 1,000
Metres

Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Dept, Customer Service NSW



Legend

- Contour - 1m
- Site Plan
- Watercourse
- Subject Land
- Cadastre
- Asset Protection Zone - 40m

Vegetation Formation

- Grassland
- Low Threat - Exclusion



Date: 30/04/2021

0 12.5 25 50
Metres

Figure 4: Bushfire Hazard Analysis and Asset Protection Zone

Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Google

3 Bushfire protection measures

PBP requires the assessment of a suite of bushfire protection measures that in total provide an adequate level of protection for SFPP development. The measures required to be assessed are listed in Table 1 below and are discussed in detail in the remainder of this section.

Table 1: PBP bushfire protection measures

Bushfire protection measures	Considerations
Asset Protection Zones (APZ)	Location and dimension of APZ building setbacks from identified hazards including prescriptions of vegetation management.
Bushfire Attack Levels (BALs)	Mapping of BALs across the site to highlight affected buildings.
Access	Assessment to include access to and within the site, perimeter access, and design standards of any internal roads.
Water supply and other utilities	List requirements for reticulated water supply and hydrant provisions, and any static water supplies for fire-fighting.
Emergency and evacuation management	Preparation of a 'Bushfire Emergency Management and Evacuation Plan'.

3.1 Asset Protection Zones (APZ)

Using the hazard parameters of vegetation and slope discussed in Section 2, the required Asset Protection Zone (APZ) between the proposed development and the bushfire hazard has been determined using Table A1.12.1 of PBP. Table 2 on the following page lists the APZ results.

Table 2 shows that the available APZ achieves the minimum requirements therefore compliance is achieved. The required APZ to the grassland to the east is provided by the building setback within the subject land and the managed portion of the Barton Highway corridor up to the fence.

Table 2: Determination of APZ and BAL

Direction ¹	Vegetation ²	Slope ³	PBP APZ ⁴	Available APZ ⁵	Bushfire Attack Level (BAL) ⁶
East	Grassland	Downslope 0-5°	40 m	40 m	BAL-12.5
	Low threat - exclusion	N/A	N/A	>60 m	BAL-LOW
Remaining	Managed	N/A	N/A	>100 m	BAL-LOW

¹ Direction of assessment from development.

² Predominant vegetation classification over 140 m from boundary of subject land.

³ Effective slope assessed over 100 m from boundary of subject land where the bushfire hazard occurs.

⁴ Minimum APZ required by PBP Acceptable Solution for SFPP development.

⁵ APZ proposed to be established and/or provided by existing management arrangements.

⁶ Bushfire Attack Level (BAL) corresponding to AS 3959-2018 'Construction of buildings in bushfire-prone areas'.

3.2 Bushfire Attack Level (BAL)

Buildings are required to be designed and constructed in accordance with the relevant Bushfire Attack Level (BAL). The BAL relates to a suite of construction specifications listed within Australian Standard AS 3959-2018 *Construction of buildings in bushfire-prone areas* (AS 3959).

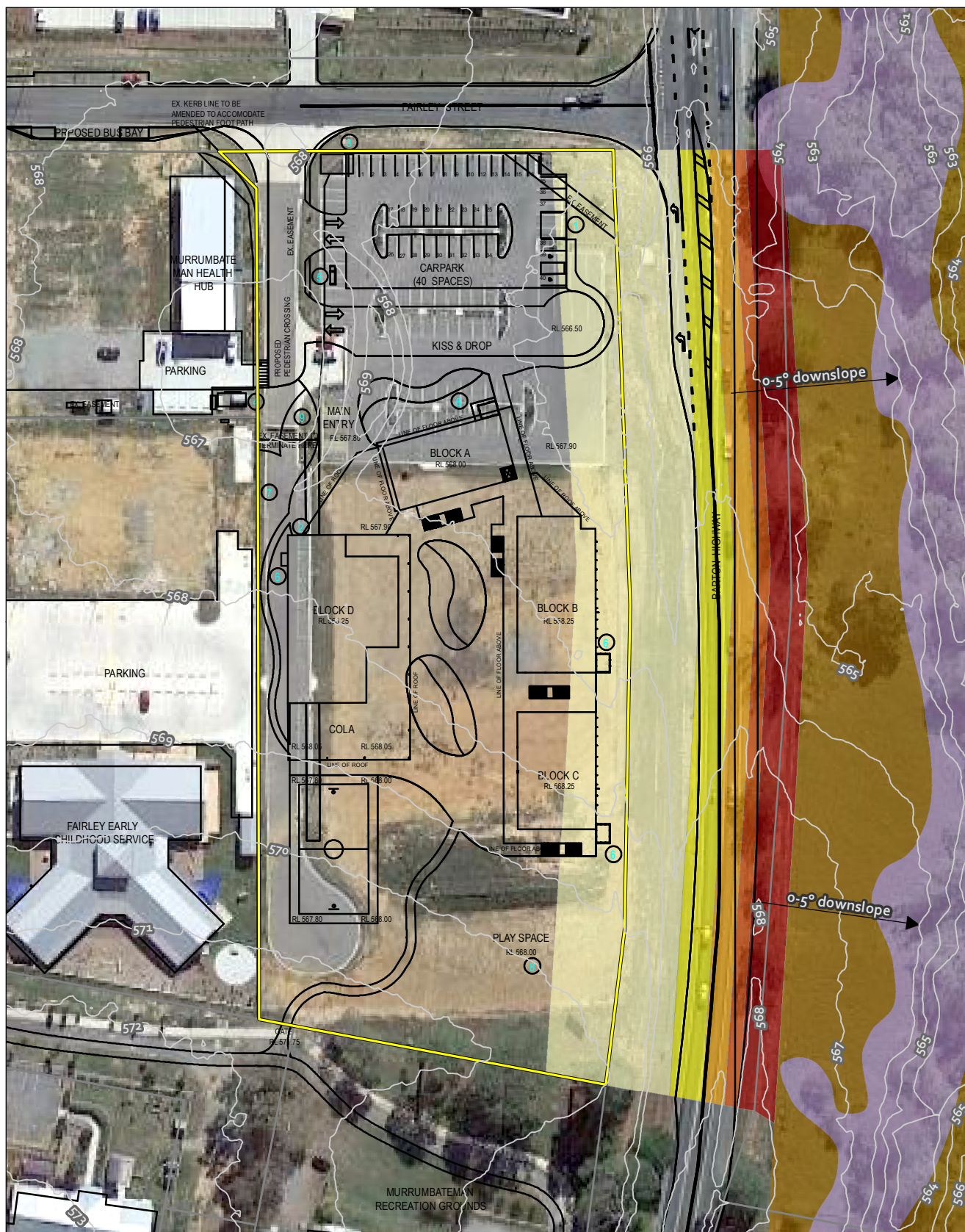
The BAL has been determined in accordance with Table A1.12.5 of PBP. The BAL result is shown in Table 2 and on Figure 5. Blocks B and C and the connecting roof are impacted by BAL-12.5 as mapped on Figure 5. These structures are to be designed and constructed to comply with BAL-12.5. The NSW variation to AS 3959 is also to be applied to the BAL requirements. The variation is found at Section 7.5.2 of PBP.

3.3 Landscaping

Earthworks and construction of the school will ensure the subject land complies with the performance objectives of an Inner Protection Area (IPA) as described within Appendix 4 of PBP.

Landscaping proposed across the school property is also to achieve the performance objectives of an IPA. The following principles have been adhered to in the development of the landscape plan to ensure compliance is achieved whilst allowing for the introduction of a functional tree cover, landscape screens and garden beds.

- Trees
 - Trees at maturity should not touch or overhang the building;
 - Tree canopies should not be connected when at maturity. Gaps are to be maintained between crowns at distances of 2 to 5m.
- Shrubs
 - Ensure gaps in the vegetation, such as between garden beds, to prevent the spread of fire towards a building;
 - Shrubs should be separated from glazing and doors by a distance of at least twice the height of the vegetation at maturity.
- Groundcovers
 - Grass should be kept mown (as a guide, grass should be kept to no more than 100 mm in height);
 - Leaves and vegetation debris should be regularly removed;
 - Organic mulch is not to be used within 1 m of a building.



Legend

	Contour - 1m	Vegetation Formation	Bushfire Attack Level		BAL 29
	Site Plan				BAL 19
	Subject Land				BAL 12.5
	Cadastral				



Date: 30/04/2021

0 10 20 40
Metres

Figure 5: Bushfire Attack Level

Coordinate System: GDA 1994 MGA Zone 55

Imagery: © Google

3.4 Access

Adequacy of access and egress

PBP requires an access design that enables safe evacuation whilst facilitating adequate emergency and operational response. All bushfire prone areas should have an alternate access or egress option depending on the bushfire risk, the density of the development, and the chances of the road being cut by fire for a prolonged period.

The surrounding public roads provide satisfactory alternate access for evacuation and emergency response. Barton Highway to the east and Rose Street to the west provides access in the north and south directions, whilst Fairley Street provides access east to Barton Highway and west into Murrumbateman.

Design of internal roads

Access to the school grounds and the buildings will be gained via an access drive off Fairley Street to the north. The access drive will be approximately 100 m long and will culminate in a turning facility. The access drive is to be designed to comply with the Acceptable Solutions of PBP (Table 6.4b) as listed below.

PBP Acceptable Solution design standards for internal roads servicing SFPP developments:

- *SFPP access roads are two-wheel drive, all weather roads.*
- *Access is provided to all structures.*
- *Traffic management devices are constructed to not prohibit access by emergency service vehicles.*
- *Access roads must provide suitable turning areas in accordance with Appendix 3 of PBP.*
- *One way only public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.*
- *The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); Bridges and causeways are to clearly indicate load rating.*
- *Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.*
- *Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005.*
- *There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.*

- *Non-perimeter roads are:*
 - *Minimum 5.5 m carriageway width kerb to kerb;*
 - *parking is provided outside of the carriageway width;*
 - *hydrants are located clear of parking areas;*
 - *there are through roads, and these are linked to the internal road system at an interval of no greater than 500 m;*
 - *curves of roads have a minimum inner radius of 6 m;*
 - *the maximum road grade is 15° and average grade of not more than 10°;*
 - *the road crossfall does not exceed 3°;*
 - *a minimum vertical clearance of 4 m to any overhanging obstruction, including tree branches, is provided.*

3.5 Water supply and utilities

Water supply

Hydrants are to be installed to comply with AS 2419.1 – 2005 *Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).

Electricity supply

Electrical supply will be provided underground and therefore complies with PBP.

Gas supply

Any gas services are to be installed and maintained in accordance with AS/NZS 1596-2014 *The storage and handling of LP gas*.

3.6 Emergency management and evacuation

PBP and the RFS require the preparation of a 'Bushfire Emergency Management and Evacuation Plan' prior to occupation of new schools. A Plan is to be prepared in accordance with the NSW Rural Fire Service document 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan' (RFS 2014).

4 Conclusion and recommendations

4.1 Conclusive summary

This report presents an assessment of a new primary school at Murrumbateman against the specifications and requirements of *Planning for Bush Fire Protection 2019* (PBP).

The available APZ to the grassland hazard to the east achieves the minimum distance requirements resulting in two of the four buildings requiring compliance with BAL-12.5. The existing public road access is adequate for the development of a school. The proposed access drive and installation of utilities are to comply.

The assessment demonstrates that the proposal, together with the recommendations (see Section 4.2 below), complies with *Planning for Bush Fire Protection 2019*.

4.2 Recommendations

The recommendations made within Section 3 of this assessment are repeated below:

1. Any proposed landscaping is to satisfy the standard of an Inner Protection Area (IPA) as listed within Appendix A4.1.1 of *Planning for Bush Fire Protection 2019*.
2. Buildings B and C and the connecting roof are to be designed and constructed to comply with BAL-12.5. The NSW variation to AS 3959 is also to be applied to the BAL requirements. The variation is found at Section 7.5.2 of PBP.
3. The access drive is to be designed to comply with the Acceptable Solutions of PBP (Table 6.4b).
4. Fire hydrants are to be installed to ensure compliance with PBP and AS 2419.1 – 2005 *Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).
5. Any gas services are to be installed and maintained in accordance with AS/NZS 1596-2014 *The storage and handling of LP gas*.
6. PBP and the RFS require the preparation of a 'Bushfire Emergency Management and Evacuation Plan' prior to occupation of new schools. A Plan is to be prepared in accordance with the NSW Rural Fire Service document 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan' (RFS 2014).



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References

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Standards Australia. 2005. *Fire hydrant installations - System design, installation and commissioning*, AS2419.1, Fourth edition 2005, Standards Australia International Ltd, Sydney.

Standards Australia. 2014. *The storage and handling of LP Gas*, AS/NZS 1596-2014, Standards Australia International Ltd, Sydney.

Standards Australia. 2018. *Construction of buildings in bushfire-prone areas*, AS 3959, Standards Australia International Ltd, Sydney.

Appendix A - Photographs



Photograph 1: View of subject land (view from north to south)



Photograph 2: Managed road reserve of Barton Highway to the east of the subject land



Photograph 3: Grassland hazard on downslope east of Barton Highway



Photograph 4: Low threat vegetation located along drainage line to the east of grassland hazard

