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Bushfire Assessment

New Primary School in Edmondson Park

Richard Crookes Constructions

12 May 2021

(Ref: 21047)

report by

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FPA AUSTRALIA (NO.BPAD18882)
BPAD LEVEL 3 ACCREDITED PRACTITIONER

ABN 28 607 444 833

Contents

1 Introduction

Street or property name:	Lots 1 & 2 Buchan Avenue		
Suburb, town or locality:	Edmondson Park	**Postcode:**	2174
Lot/DP no:	Lots 1 and 2 DP 1257105		
Local Government Area:	Liverpool City Council		
Type of development:	Special Fire Protection Purpose (SFPP) new primary school		

1.1 Background

Richard Crookes Constructions commissioned Peterson Bushfire to prepare a Bushfire Assessment Report to inform and support a proposal for a new primary school located at the above address. The proposal constitutes a State Significant Development (SSD No. 10224). This report presents the assessment and recommendations to ensure that the proposed development will comply with the relevant bushfire protection legislation and policy.

This bushfire assessment has been prepared by a consultant accredited by the Fire Protection Association of Australia's BPAD scheme (Accreditation No. BPD-L3-18882).

1.2 Location of subject land

The subject land is comprised of two lots located to the east of the Edmondson Park train station as shown on Figure 1. The bushfire prone vegetation consists of Cumberland Plain Woodland located to the south beyond the railway line.

1.3 Description of proposal

The SSDA seeks approval for a new core 35 primary school accommodating 1,012 students and a coldshell 40 place pre-school at the site. The works comprise:

- Site preparation and excavation;
- Land use for the purpose of a new primary school and pre-school;
- Construction of new buildings including:
    - A three storey building on the western portion of the site primarily addressing Faulkner Way comprising 36 homebases, 4 special support unit teaching spaces, staff room, administration office at the ground floor and library at the first floor addressing the corner of Buchan Avenue and Faulkner Way, and student amenities;

- A single storey coldshell preschool building for educational programs for children the year before they commence kindergarten, accommodating 40 places. The pre-school building will be connected at the southern end of the three storey building; and
- A single storey building on the eastern portion of the site comprising a communal hall, out of school hours care facility, 8 homebases and covered outdoor learning area.

- Landscaping and public domains works including tree planting, a sports court and creation of various assembly, play and learning zones;
- A drop-off and pick-up zone, and bus zone on Buchan Avenue;
- An at-grade staff carpark in the southern part of the site with ingress and egress provided off Faulkner Way at the south-west corner of the site;
- Primary pedestrian entrance from Buchan Avenue and an additional entrance on Faulkner Way for the ground floor support unit; and
- Other ancillary infrastructure and utilities works and digital signage.

A site plan of the proposal is included at Figure 2.

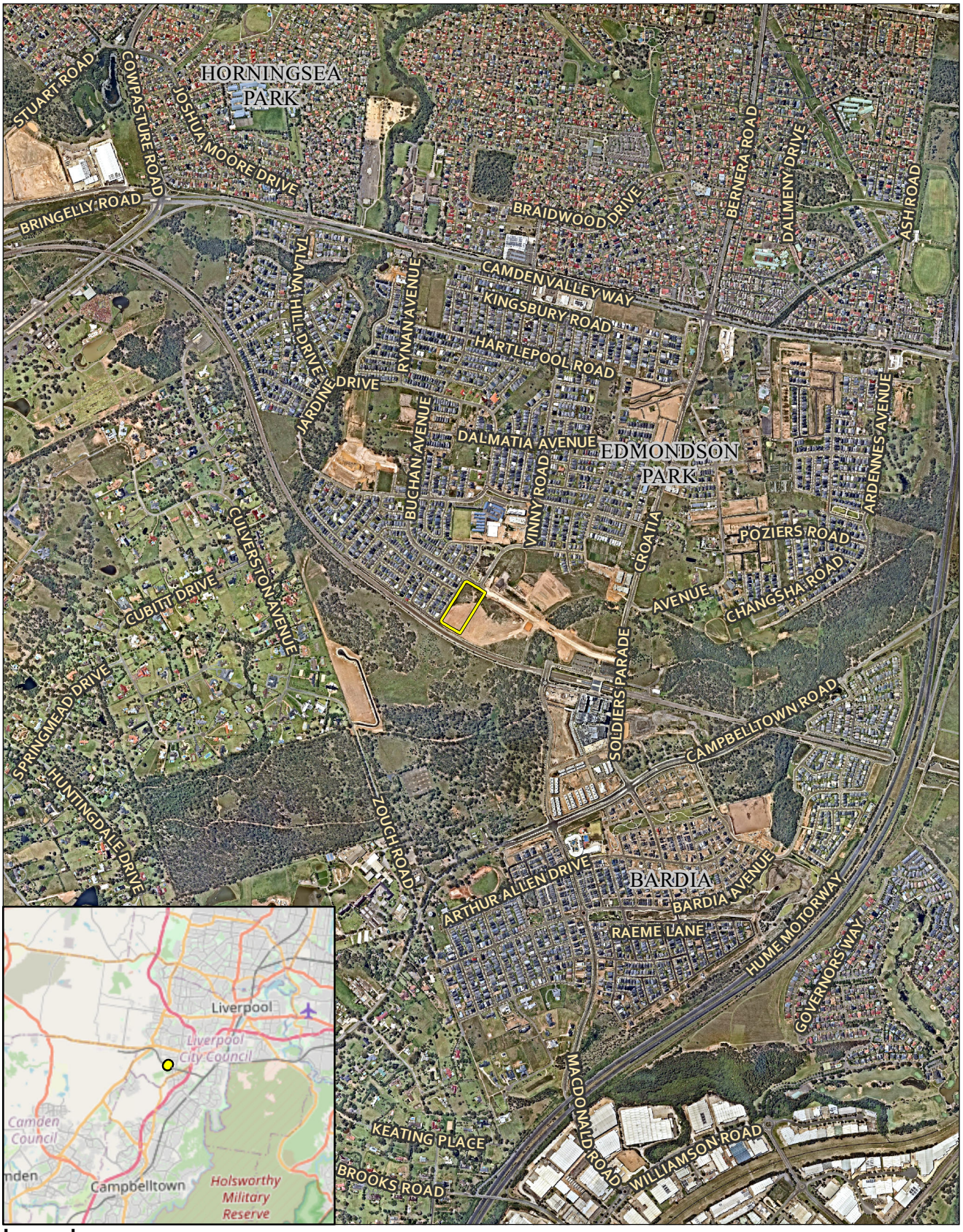
1.4 Assessment requirements

This Bushfire Assessment Report has been prepared to address Key Issue No.21 'Bush fire' of the Planning Secretary's Environmental Assessment Requirements (SEARs) issued 10 December 2020 (SSD 10224). The Key Issue is as follows:

> *Provide a bush fire assessment that details proposed bush fire protection measures and demonstrates compliance with Planning for Bush Fire Protection (NSW RFS, 2019).*

Chapter 6 of Planning for Bush Fire Protection 2019 (referred to as 'PBP' throughout this report) addresses SFPP development 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.

This report has been forwarded by email (refer to Appendix A) to the NSW Rural Fire Service to fulfill the consultation requirements of the SEARs.



Legend

Subject Land

N

DKGIS

Date: 30/04/2021

0 125 250 500

Metres

Figure 1: The Location of the Subject Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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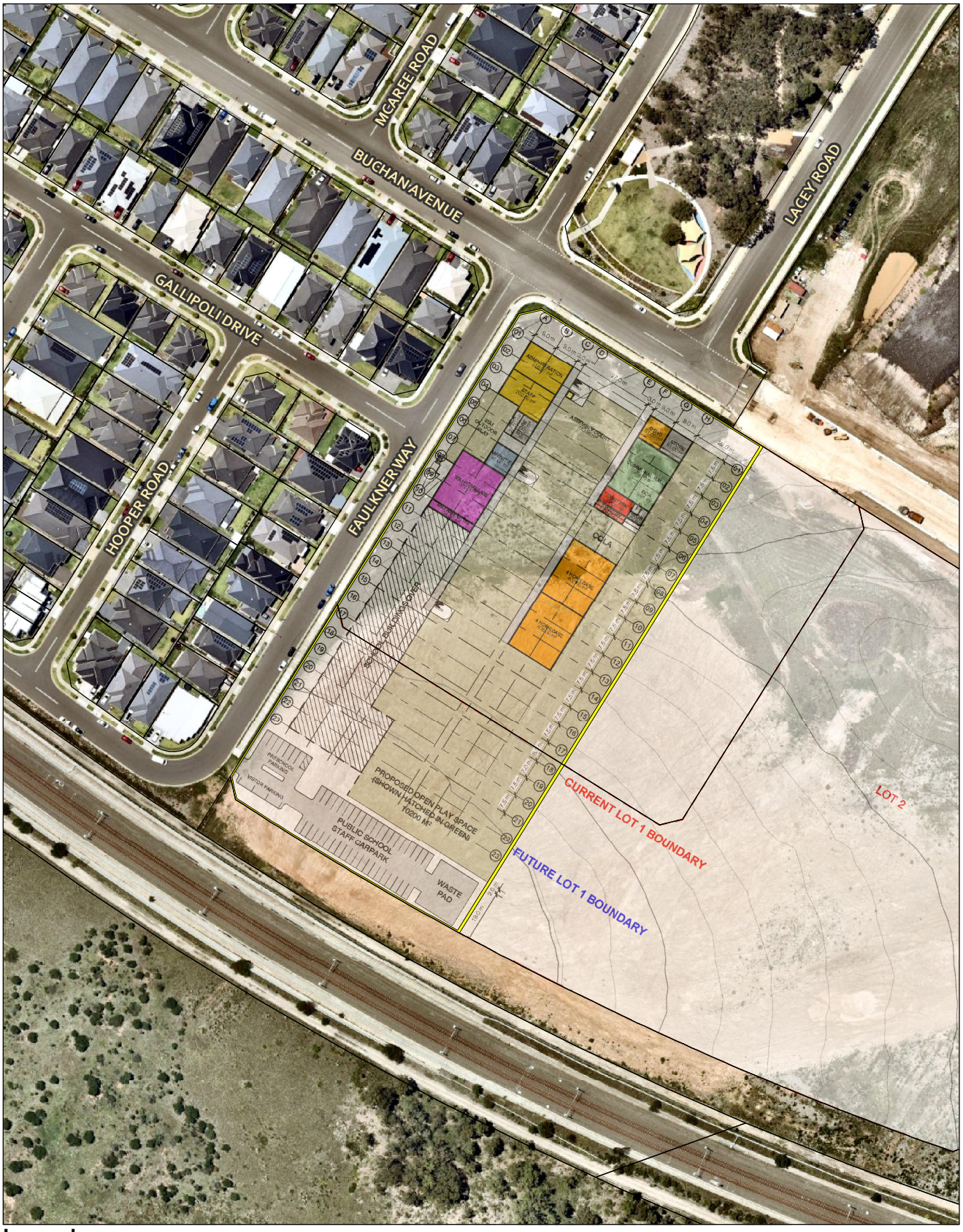

Legend

Cadastre

Subject Land

N

DKGIS

Date: 30/04/2021

0 25 50 100

Metres

Figure 2: The Proposal

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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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 at the site.

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 10th April 2021. Photographs are included at Appendix B.

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 identified as bushfire prone land. The bushfire prone vegetation consists of woodland to the south of the railway line and the potential for undeveloped lots to the east, including the subject land, to present an unmanaged grassland hazard.

Any development proposal within a lot containing mapped bushfire prone land (i.e. bushfire prone property) is to comply with the requirements of PBP. Regardless of the mapping affectation, the SEARs have requested an assessment of the proposal against PBP.

2.2 Predominant vegetation

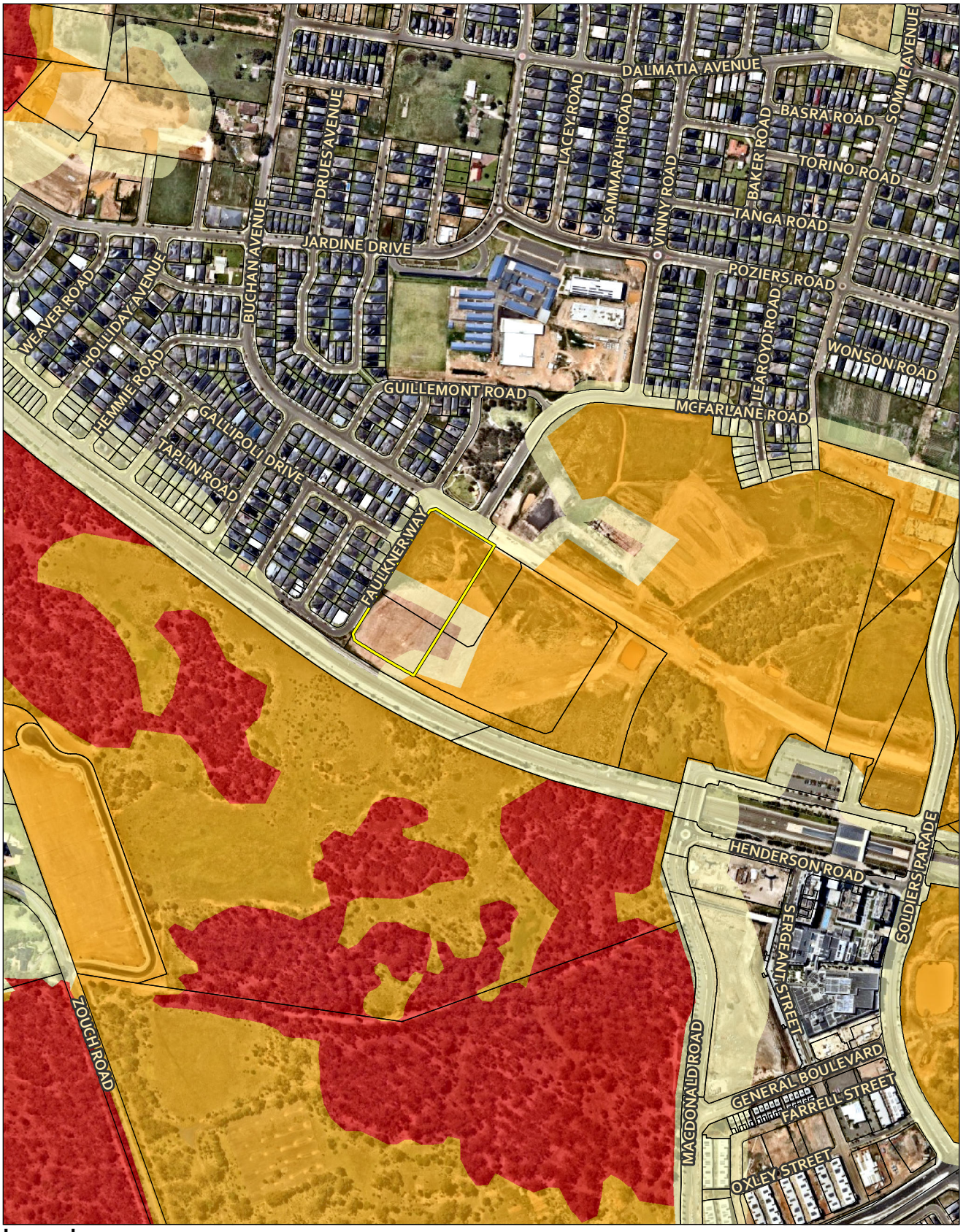
The bushfire hazard within the 140 m assessment area consists of patchy and regenerating grassy woodland to the south of the railway corridor as mapped on Figure 4. The vegetation community is 'Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion' and is classified as 'woodland' in accordance with PBP for the determination of Asset Protection Zones (APZ) and Bushfire Attack Levels (BAL).

To the north of Buchan Avenue in Clermont Park is a small remnant of the same woodland vegetation community that has been retained and conserved within the park. The remnant is less than half a hectare and separated from any other Category 1 or 2 hazards for distances well exceeding 100 m. The remnant is therefore classified 'low threat vegetation – exclusion' in accordance with Section A1.10 (dot point 1) of PBP. The remnant is not considered a bushfire hazard and consideration of APZ and BAL is not required.

The lands to the west consist of managed and developed residential properties, and the land to the north and east consists of vacant lots currently under development and undergoing earthworks. These lands do not present a bushfire hazard to the proposed development.

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 woodland hazard to the south 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 2 m contour intervals shown on Figure 4.



Legend

Subject Land
Cadastre

Bushfire Prone Land

Vegetation Category 1
Vegetation Category 2
Vegetation Category 3
Vegetation Buffer

N

DKGIS

Date: 30/04/2021

0 75 150 300

Metres

Figure 3: Bushfire Prone Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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Legend

Contour - 2m
Watercourse
Subject Land
Cadastre
Asset Protection Zone - 50m

N

DKGIS

Date: 30/04/2021

0 25 50 100

Metres

Figure 4: Bushfire Hazard Analysis and Asset Protection Zone

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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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.
Building construction standards (BALs)	Mapping and application 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 below lists the APZ results.

Table 2 shows that the available APZ exceeds the minimum requirements therefore compliance is achieved. The required APZ to the woodland to the south is provided by the railway corridor, the access handle of existing Lot 3 (to be a future road) and the proposed school car park.

Table 2: Determination of APZ and BAL

Direction[1]	Vegetation[2]	Slope[3]	PBP APZ[4]	Available APZ[5]	Bushfire Attack Level (BAL) [6]
North	Low threat - exclusion	N/A	N/A	>70 m	BAL-LOW
South	Woodland	Downslope 0-5º	50 m	90 m	BAL-12.5
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 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.

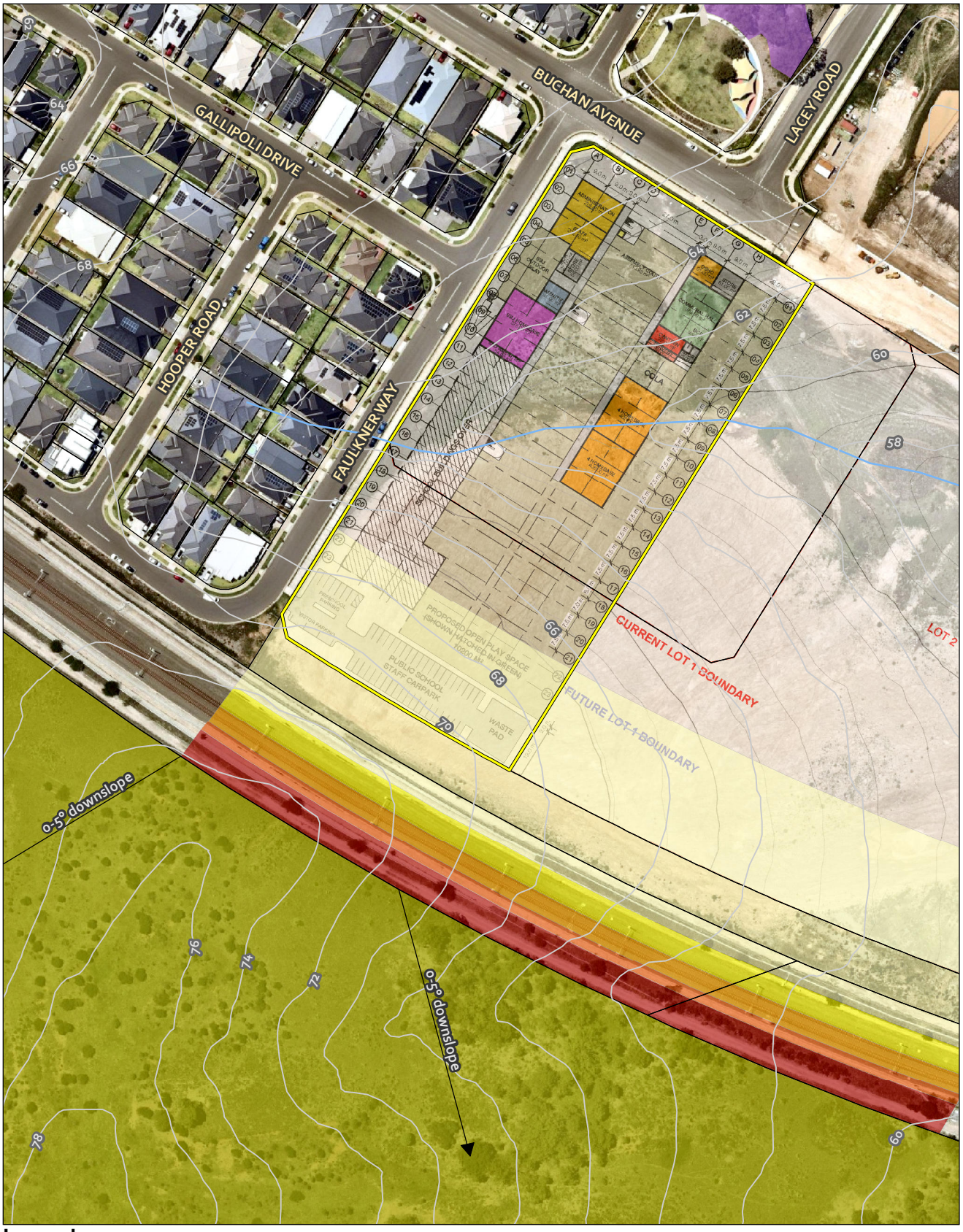
Landscaping proposed across the school property is also to achieve the performance objectives of an IPA. The following principles have been adhered to in the development of the landscape plan to ensure compliance is achieved whilst allowing for the introduction of a functional tree cover, landscape screens 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 100mm in height);
    - Leaves and vegetation debris should be regularly removed;
    - Organic mulch is not to be used within 1 m of a building.

3.3 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 southern end of the proposed school buildings fronting Faulkner Way are impacted by BAL-12.5 as mapped on Figure 5. The BAL-12.5 area affects 10 m of the building. The buildings located wholly or partially within the BAL-12.5 area 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.



Legend

- Contour - 2m
- Watercourse
- Subject Land
- Cadastre

Vegetation Formation

- Low Threat - Exclusion
- Woodland

Bushfire Attack Level

- BAL Flame Zone
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5

N

DKGIS

Date: 30/04/2021

0 12.5 25 50

Metres

Figure 5: Bushfire Attack Level

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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3.4 Access

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. The roads were designed and constructed to comply with the PBP Acceptable Solutions for public access.

Access to buildings will be gained via the main entry point off Buchan Avenue to the north and the secondary access point off Faulkner Way to the west. The hydrant booster will be located fronting Buchan Avenue near the intersection with Faulkner Way.

Internal access roads are not proposed, other than the driveway to access the staff carpark on the southern boundary. Fire appliances will not need to enter the staff carpark. Additional access provisions are therefore not required.

3.5 Water supply and utilities

Water supply

Faulkner Way and Buchan Avenues have hydrants installed to ensure adjoining residential lots comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419). The placement of these hydrants will not be adequate for all proposed school buildings. Therefore, fire hydrants are to be installed within the school property to ensure compliance with AS 2419 and hence PBP.

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 in Edmondson Park against the specifications and requirements of *Planning for Bush Fire Protection 2019* (PBP).

The available APZ greatly exceeds the minimum requirements such that only the southern 10m of the school development is impacted by BAL-12.5. The existing access and proposed supply of utilities also comply.

The assessment demonstrates that the proposal, together with the recommendations (see Section 4.2 below), complies with *Planning for Bush Fire Protection 2019* and therefore addresses Key Issue No. 21 'Bush fire' of the SEARs (SSD 10224).

4.2 Recommendations

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

1. Landscaping proposed across the school property is to achieve the performance objectives of an Inner Protection Area (IPA) as described within Appendix 4 of *Planning for Bush Fire Protection 2019*. The following principles are to be achieved:
    a. Trees
        i. Trees at maturity should not touch or overhang the building;
        ii. Tree canopies should not be connected when at maturity. Gaps are to be maintained between crowns at distances of 2 to 5m.
    b. Shrubs
        i. Ensure gaps in the vegetation, such as between garden beds, to prevent the spread of fire towards a building;
        ii. Shrubs should be separated from glazing and doors by a distance of at least twice the height of the vegetation at maturity.
    c. Groundcovers
        i. Grass should be kept mown (as a guide, grass should be kept to no more than 100mm in height);
        ii. Leaves and vegetation debris should be regularly removed;
        iii. Organic mulch is not to be used within 1 m of a building.

2. Buildings located wholly or partially within the BAL-12.5 area affecting the southern 10m of the proposed school buildings fronting Faulkner Way 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. 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).

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

5. 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

NSW Rural Fire Service (RFS). 2014. *A Guide to Developing a Bushfire Emergency Management and Evacuation Plan*. State of New South Wales through the NSW Rural Fire Service.

NSW Rural Fire Service (RFS). 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities and Developers*. State of New South Wales through the NSW Rural Fire Service.

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 – RFS consultation

Request for Pre-DA consultation - New primary school in Edmondson Park (SSD 10224) Liverpool LGA

ME Me <"David Peterson" <david@petersonbushfire.com.au>>
Wed, 12 May 2021 9:26:57 AM +1000
To "records" <records@rfs.nsw.gov.au>
Tags

Hi Kalpana,

The SEARs (10224) issued regarding a new primary school in Edmondson Park require consultation with RFS regarding compliance with 'Planning for Bush Fire Protection 2019' (PBP).

I have attached the Bushfire Assessment Report prepared by Peterson Bushfire demonstrating how the proposal will comply with PBP.

There are no specific issues for discussion. The proposal achieves compliance.

Could RFS review the report and issue a statement regarding compliance?

Regards
David

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1 Attachment

21047 Bushfire Assessment - New Primary School in Edmondson Park 210512.pdf

1/1

Appendix B - Photographs

Photograph 1: View of subject land (view from west to east)

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Photograph 2: View of woodland hazard to the south of the railway line (view south-east)

Photograph 3: View of woodland hazard to the south of the railway line (view south-west)

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Photograph 4: Low threat vegetation located within Clermont Park to the north

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