



Bushfire Assessment

**Jordan Springs Public
School**

**14-28 Cullen Avenue,
Jordan Springs**

Group GSA

25 January 2019

(Ref: 18078)

report by
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1 Introduction

Street or property name:	14-28 Cullen Avenue	
Suburb, town or locality:	Jordan Springs	Postcode: 2747
Lot/DP no:	Lot 22 DP 1194338	
Local Government Area:	Penrith City Council	
Type of development:	Primary school	

1.1 Background

Group GSA commissioned Peterson Bushfire to prepare a bushfire assessment of a proposed new primary school at Jordan Springs. The lot is no longer identified as 'bushfire prone land' due to the development of the surrounding Jordan Springs suburb. This bushfire assessment report considers the bushfire hazard based on the current and future bushfire vegetation management arrangements demonstrating how the proposed school 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 and description of subject land

The school site is located within the centre of the Jordan Springs suburb as shown on Figure 1. The subject land fronts Lakeside Parade to the west and Cullen Avenue to the south and shares a common boundary with residential development to the north and a drainage reserve to the east.

1.3 Proposed development

The proposal consists of a new primary school to be constructed within a cleared and vacant lot. The school will be in the form of a series of buildings up to two-storeys, playing areas, car parking and associated infrastructure. The proposed development layout plan is included as Figure 2.

1.4 Secretary's Environmental Assessment Requirements (SEARs)

This assessment has been prepared to inform the preparation of an EIS for the proposed school. Secretary's Environmental Assessment Requirements (SEARs) have been issued under Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* and Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, listing 'bushfire' as a Key Issue at item No. 18.

This technical report addresses Item No. 18 of the SEARs:

SEAR Application Number SSD 9354 (Issued 13 June 2018):

Key Issue No. 18: Bushfire: Address bushfire hazard and, if relevant, prepare a report that addresses the requirements for Special Fire Protection Purpose Development as detailed in Planning for Bushfire Protection 2006 (RFS 2006) guidelines.

The NSW Rural Fire Service (RFS) document *Planning for Bushfire Protection 2006* (referred to as 'PBP' throughout this report) prescribes bushfire protection measures for development proposals on bushfire prone land. Section 4.2 of PBP addresses Special Fire Protection Purpose (SFPP) development and outlines the assessment methodology and protection measures, such as asset protection zones building setbacks from hazards, building construction standards to withstand bushfire attack (i.e. Bushfire Attack Levels – 'BALs'), adequate road access for emergency response and evacuation, the provision of water supply for fire-fighting, and vegetation management.



Legend

 Subject Land



Date: 24/10/2018

0 250 500 1,000
Metres

Figure 1: Location of the Subject Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



Legend

Subject Land



Date: 25/01/2019

0 10 20 40
Metres

Figure 2: The Proposal

Coordinate System: GDA 1994 MGA Zone 56

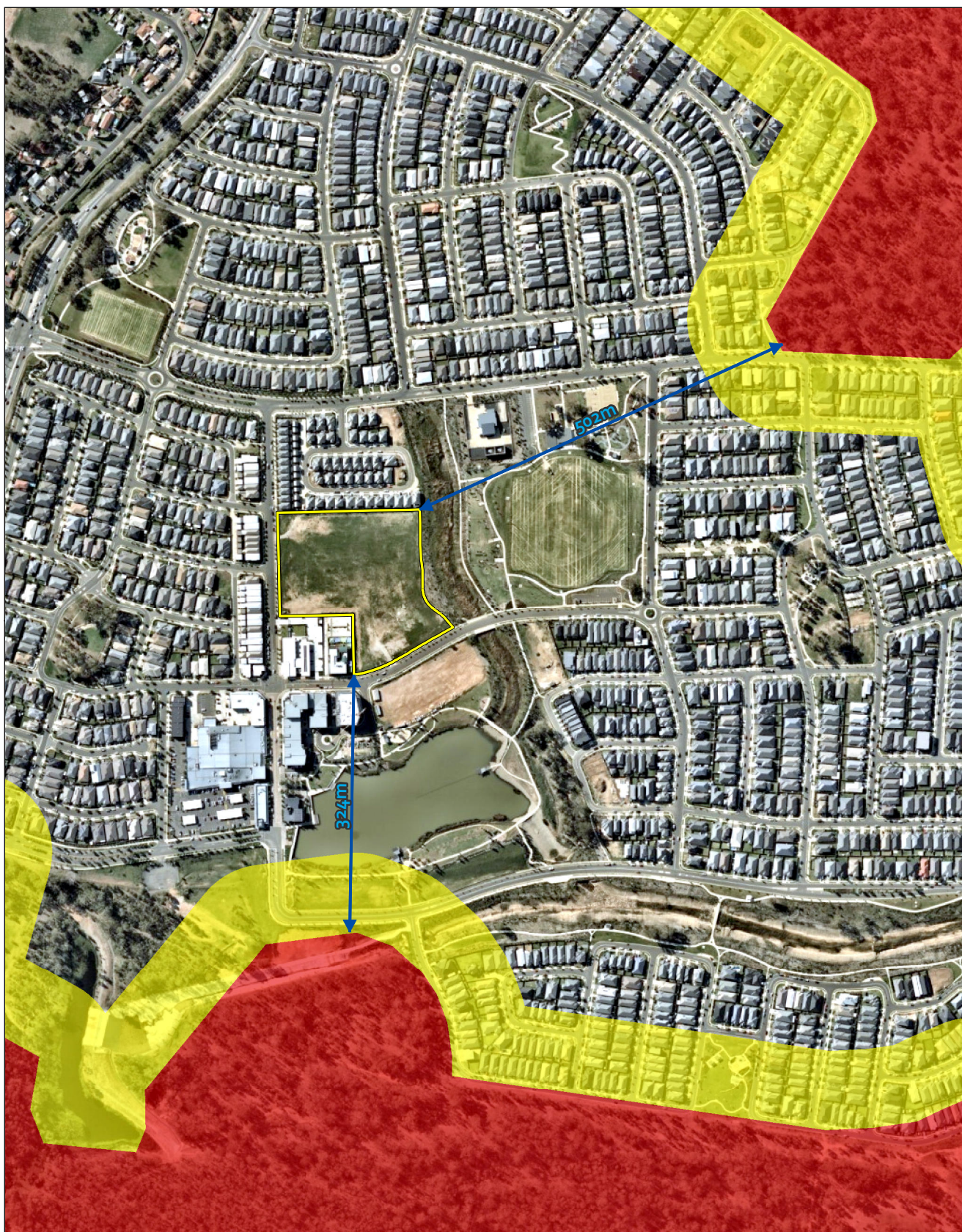
Imagery: © Nearmap

2 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 within proximity (i.e. typically 100 m). The maps are a planning tool used to trigger further detailed assessment against the provisions of PBP and other legislative requirements.

The subject land is not identified as containing 'bushfire prone land' as shown on Figure 3. The nearest bushfire hazard is located greater than 500 m to the north-east and 320 m to the south. Developed lands, residential streets and parkland provides a large buffer between the subject land and these bushfire hazards.

A development proposal for a school at the subject land therefore does not constitute integrated development under Section 4.46 and 4.47 of the *Environmental Protection and Assessment Act 1979*, meaning Section 100B of the *Rural Fires Act 1997* or PBP do not apply.



Legend

	Subject Land	Bush Fire Prone Land		Vegetation Category 3
				Vegetation Category 1
				Vegetation Buffer
				Vegetation Category 2



Date: 24/10/2018

0 125 250 500
Metres

Figure 3: Bushfire Prone Land

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

3 Bushfire hazard

An assessment of the bushfire hazard is necessary to determine the application of bushfire protection measures such as Asset Protection Zones (APZs) and Bushfire Attack Levels (BALs). This section provides a detailed account of the vegetation communities (bushfire fuels) and the topography (effective slope) surrounding the subject land.

There is currently no mapped 'bushfire prone vegetation' within the subject land or within 100 m of its boundary. The nearest unmanaged vegetation that would be classified a bushfire hazard is Shale Plains Woodland located within Wianamatta Regional Park greater than 500 m to the north-east and 320 m to the south.

The subject land is surrounded by developed lands with exception to the east where it adjoins a drainage reserve approximately 1.5 hectares in size and 50 m wide. The reserve does not feature fully structured native vegetation and is not mapped 'bushfire prone vegetation'. As shown by the photographs in Appendix 1, the drainage corridor features predominantly a flat channel supporting reeds flanked by narrow batters with sporadic tree planting over grasses.

The vegetation within the reserve is not considered a bushfire hazard due to its insignificant size, separation from the bushfire hazards within Wianamatta Regional Park, and lack of hazardous vegetation. Assessment of such low risk sites are undertaken on a case-by-case basis usually involving analysis of bushfire risk and expert judgement as demonstrated below:

1. The available fuels consist of channel reeds and batter grasses with few scattered overstorey trees. At worst, the vegetation would act as a grassland hazard.
2. The drainage reserve is only 1.5 hectares in size as shown on Figure 3.
3. The spatial orientation of the reserve to the subject land is such that direct fire attack is limited to less than 50 m. This length of fire run is not long enough to enable fire development to produce radiant heat and embers to threaten development. Fire spread along the length of the corridor parallel to development also limits direct fire attack.
4. The reserve is located on the eastern side of the subject land which is 'downwind' of the approach of fire weather and typical spread of fires (i.e. west to east) during the bushfire season.
5. The slope of the corridor from channel to edges is very gentle therefore not significantly contributing to rate of fire spread towards the subject land, and therefore fire intensity of a head-fire.
6. Fire cannot spread from surrounding areas into the corridor therefore preventing widespread fire and intense fire fronts.
7. Ignition would need to occur within the corridor by point ignition (e.g. lightning strike) from which the fire's development would be constrained by the available area and minimal fuels, limiting spread and intensity. Fire spread would be constrained by the

corridor boundaries or intervention by fire-fighters, as normally is the case in small reserves amongst a highly urbanised environment.

To summarise, the only vegetation proximate to the subject land consists of a drainage reserve that contains low fuels within a narrow corridor that will not pose a threat to the subject land significant enough to warrant the application of specific APZs or BALs for bushfire protection purposes.

4 Bushfire protection measures

PBP requires the assessment of a suite of bushfire protection measures that in total provide an adequate level of protection for development that may be at threat from a bushfire hazard. The measures required to be assessed are listed in Table 1 below and are discussed 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 within the APZ.
Building construction standards (BALs)	Mapping and application of BALs across the site to highlight affected areas or buildings.
Access	Assessment to include access and egress in and out of a developable area, perimeter access and design standards of internal roads.
Water supply	List requirements for reticulated water supply for fire-fighting.

4.1 Asset protection zones

Section 2 and 3 provides evidence that the subject land is not bushfire prone or adjacent a classified hazard. Therefore, a specific APZ is not required.

Given the unmanaged status of the drainage corridor, a 'defendable space' of 10 m is recommended between school buildings and the eastern boundary of the subject land (refer to Figure 4). A defendable space is an area which can be accessed to undertake maintenance or property protection should there be a nuisance fire (such as a grassfire) at the boundary.

The defendable space can consist of lawns, playground, car parking and access ways. Any proposed landscaping within the 10 m defendable space is to comply with an Inner Protection Area (IPA) standard as described by PBP.

4.2 Building construction standards

Buildings within 100 m of a classified hazard are required to comply with a building construction standard specified by a Bushfire Attack Level (BAL) determined in accordance with PBP and Australian Standard AS 3959-2009 *Construction of buildings in bushfire-prone areas*.

As there are no classified bushfire hazards within 100 m of the subject land, the entire property is rated BAL-LOW. There is insufficient bushfire risk to warrant the application of specific construction measures for bushfire protection of buildings rated BAL-LOW.

4.3 Access

Alternate access and egress

PBP requires an access design that enables safe evacuation whilst facilitating adequate emergency and operational response. The site has direct street frontage to two existing public roads providing access in multiple directions allowing a safe alternative for any evacuation that may be required. Surrounding roads lead away from the bushfire threat located within Wianamatta Regional Park to the north-east and south.

Perimeter access

The recommended defensible space (refer to Section 4.1) will provide any perimeter access that may be required between a future school and the drainage reserve.

Design and construction standards

The surrounding public roads provide the access to the subject land. All roads have been designed and constructed to comply with PBP as part of previous Jordan Springs subdivision approvals.

4.4 Installation of utilities

Water supply

The locations of existing hydrants along the adjacent streets are shown on Figure 4. Additional hydrants are to be installed to comply with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419) so that all sides of a building are within 70 m of a hydrant by lay of the hose (or 90 m with a tanker parked in-line maximum 20 m from the hydrant). This is a requirement regardless of bushfire prone land affectation.

Electricity supply

Electricity supply to the site is provided underground, and therefore complies with PBP.

Gas supply

Any gas services are to be installed and maintained in accordance with *AS/NZS 1596-2008 The storage and handling of LP gas*.

5 Conclusion and recommendations

5.1 Conclusive summary

The proposal consists of a new primary school on a lot not identified as bushfire prone. The nearest hazard is located within Wianamatta Regional Park over 500 m to the north-east and 320 m to the south. As such, bushfire protection measures such as Asset Protection Zones (APZ) and Bushfire Attack Levels (BAL) do not apply to the development. A narrow drainage reserve containing minimal fuels adjacent the eastern boundary presents a low threat to the subject land. A nominal 10 m 'defendable space' between the boundary and school buildings will provide access for maintenance and suppression if required. In addition, the surrounding infrastructure such as roads also comply with 'Planning for Bushfire Protection 2006'.

This assessment concludes that, with the adoption of the recommendations (see Section 5.2 below), the proposal complies with the provisions of *Planning for Bushfire Protection 2006*. As such, this assessment demonstrates compliance with the Secretary's Environmental Assessment Requirements (SEARs) Item No. 18 "*Bushfire: Address bushfire hazard and, if relevant, prepare a report that addresses the requirements for Special Fire Protection Purpose Development as detailed in Planning for Bushfire Protection 2006 (RFS 2006) guidelines.*"

5.2 Recommendations

The recommendations made within this assessment are repeated below:

1. A 'defendable space' of 10 m is recommended between school buildings and the eastern boundary of the subject land. A defendable space is an area which can be accessed to undertake maintenance or property protection should there be a nuisance fire (such as a grassfire) at the boundary. The defendable space can consist of lawns, playground, car parking and access ways. Any proposed landscaping within the 10 m defendable space is to comply with an Inner Protection Area (IPA) standard as described by PBP.
2. Hydrants are to be installed to achieve compliance with *AS 2419.1 – 2005 Fire Hydrant Installations - System Design, Installation and Commissioning* (AS 2419).
3. Any gas services are to be installed and maintained in accordance with *AS/NZS 1596-2008 The storage and handling of LP gas* (Standards Australia, 2008).



David Peterson



References

NSW Rural Fire Service (RFS). 2006. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. Australian Government Publishing Service, Canberra.

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

Standards Australia. 2008. *The storage and handling of LP Gas*, AS/NZS 1596-2008, Fourth edition 2005, Standards Australia International Ltd, Sydney.

Standards Australia. 2009 (Amendment 3). *Construction of buildings in bushfire-prone areas*, AS 3959, Third edition 2009, Standards Australia International Ltd, Sydney.

Appendix 1 – Site photographs



Photograph 1: View from southern end of subject land north-east over drainage reserve



Photograph 2: View from southern end of drainage reserve looking north over reedy channel

