

27 February 2020

Our ref: 19WOL_14158

Sydney Catholic Schools c/- CTPG
Tenth and Eleventh Avenue
Austral NSW 2179

Attention: Greg Carmichael

Dear Greg,

RE: Bushfire Addendum – Proposed Child Care Centre – St Anthony School of Padua

This letter provides an Addendum to the previous Bushfire Protection Assessment (BPA) prepared by Eco Logical Australia (ELA) to support Stage 1 development at St Anthony of Padua Catholic College, Austral (18SUT_9739 Bushfire Protection Assessment: Proposed primary school - St Anthony of Padua Catholic School' dated 18 July 2018).

As requested by Department of Planning, Industry and Environment (dated 29 January 2020), this addendum is provided to address the proposed Child Care Centre development, now included as part of the Development Application for Stage 1 rather than as previously noted Stage 2. For consistency, this letter is provided in accordance with '*Planning for Bush Fire Protection 2006*' in line with the previous Bushfire Protection Assessment (ELA 2018) and the Request for Further Information provided prior to the legislation enacting '*Planning for Bushfire Protection 2019*'.

The proposed plan (drafted by Munns Sly Moore Architects referenced project no. 4032 Revision 15, shown as **Figure 1**) includes a proposed Child Care Centre on the north-east of the current school site.

Being a Special Fire Protection Purpose (SFPP) development, the proposed Child Care Centre was assessed in accord with Section 100B of the *Rural Fires Act 1997* and '*Planning for Bush Fire Protection 2006*' (RFS 2006), herein referred to as PBP.

1. Bushfire Hazard Assessment

Figure 2 shows the effective slope and predominant vegetation on a transect line representing the highest bushfire threat potentially posed to the proposed development site.

As detailed in the Bushfire Protection Assessment (ELA 2018), the vegetation hazard exists to the north of Eleventh Avenue and is classified as 'Woodland' by PBP. The land in all other directions is managed for 140 m.

Figure 2 and **Table 1** show the vegetation and slope information assessed. Where required additional information is provided within **Table 1** on why and how the chosen slope and vegetation has been calculated.

The site is located within the Local Government Area (LGA) of Liverpool City Council and has a Fire Danger Index (FDI) of 100.

2. Asset Protection Zones (APZ)

Table 1 shows the dimensions of the APZ required; and where relevant, information on how the APZ is to be provided is included. The footprint of the required APZ is also shown in **Figure 2**.

SFPP developments are required to achieve the APZ performance criteria of 'radiant heat levels not greater than 10 kW/m² to be experienced by occupants or emergency services workers entering or exiting the building'. This has been achieved using a performance solution with the results included in **Table 1**. The NBC Bushfire Attack Assessor (**Figure 3**) was used to determine the refined APZ in accordance with Appendix B: Detailed Methodology for Determining the Bushfire Attack Level (BAL) – Method 2 of Australian Standard 3959-2009: 'Construction of buildings in bushfire-prone areas' (SA 2009).

This performance solution is that same as that included within the original BPA report.

Table 1: Threat assessment, APZ and category of bushfire attack

Direction from envelope	Slope ¹	Vegetation ²	PBP required APZ (SFPP) ³	Modelled SFPP APZ (<10 kW/m ²) ⁴	Available APZ	AS 3959-2009 Bushfire Attack Level (BAL) ⁵	Comments
North	1.5° downslope	Woodland	50 m	41 m	≥42 m	BAL-12.5	Provided by Eleventh Avenue and within property boundaries

¹ Slope most significantly influencing the fire behaviour of the site having regard to vegetation found. Slope classes are according to PBP.

² Predominant vegetation is identified, according to PBP and "Where a mix of vegetation types exist the type providing the greater hazard is said to be predominate".

³ Assessment according to table A2.6 of PBP (2006).

⁴ Assessment according to Method 2 of Australian Standard 3959: Construction of buildings in bushfire-prone areas' 2009

⁵ Assessment according to table 2.4.2 of Australian Standard 3959: Construction of buildings in bushfire-prone areas' 2009

3. APZ management

The required APZ is provided by Eleventh Avenue to the north, proposed carparks, footpaths and landscaping. Where future landscaping is proposed, it is to be managed to Inner Protection Area standards and landscape standards in Appendix 5 of PBP 2006.

4. Construction Standard

The building construction standard is based on the determination of the Bushfire Attack Level (BAL) in accordance with Method 1 of *Australian Standard AS 3959-2009 'Construction of buildings in bushfire-prone areas'* (SA 2009). The BAL is based on known vegetation type, effective slope, and managed separation distance between the development and the bushfire hazard.

In response to the predicted bushfire attack, the proposed Child Care Centre is exposed to **BAL-12.5** as defined in AS 3959-2009.

It is important that the version of AS 3959-2009 applicable at the time of construction is consulted. Additionally, the NSW variation to AS 3959-2009 as outlined in PBP 2010 Appendix 3 Addendum is to be applied.

5. Access, Water and Utilities

There are no proposed changes to access, water or utilities from those assessed in the original BPA.

6. Conclusion and Recommendations

The proposed development complies with either the acceptable or performance solutions within 'Planning for Bush Fire Protection 2006'. The performance solutions used are substantiated within the sections of this assessment are identified in the previous Bushfire Protection Assessment (ELA 2018).

Modelling using Method 2 of AS 3959-2009 (Standards Australia 2009) demonstrates that the proposal is able to achieve the threshold of <10 kW/m² radiant heat exposure.

Table 2: Summary of bushfire protection measures assessed

Bushfire Measures	Protection	Complies	Requirements	Acceptable Solution	Performance Solution
Asset Protection Zones		<input checked="" type="checkbox"/>	APZ dimensions are detailed in Table 1 and Figure 2.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
APZ Maintenance plan		<input checked="" type="checkbox"/>	Where future landscaping is proposed, it is to be managed to Inner Protection Area standards and landscape standards in Appendix 5 of PBP 2006.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Construction standard		<input checked="" type="checkbox"/>	A maximum of BAL-12.5 is achievable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Access		<input checked="" type="checkbox"/>	As detailed in the previous Bushfire Protection Assessment (ELA 2018).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water supply		<input checked="" type="checkbox"/>	As detailed in the previous Bushfire Protection Assessment (ELA 2018).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Electricity service		<input checked="" type="checkbox"/>	As detailed in the previous Bushfire Protection Assessment (ELA 2018).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Gas service		<input checked="" type="checkbox"/>	As detailed in the previous Bushfire Protection Assessment (ELA 2018).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evacuation / Emergency Response procedures		<input checked="" type="checkbox"/>	As detailed in the previous Bushfire Protection Assessment (ELA 2018).	<input checked="" type="checkbox"/>	<input type="checkbox"/>

It is recommended that the Special Fire Protection Purpose development be issued a Bush Fire Safety Authority.

Regards,



Letara Judd
Bushfire Consultant



Bruce Horkings
Senior Bushfire Consultant
FPAA BPAD-A Certified Practitioner No. BPAD29962-L3



Appendix A

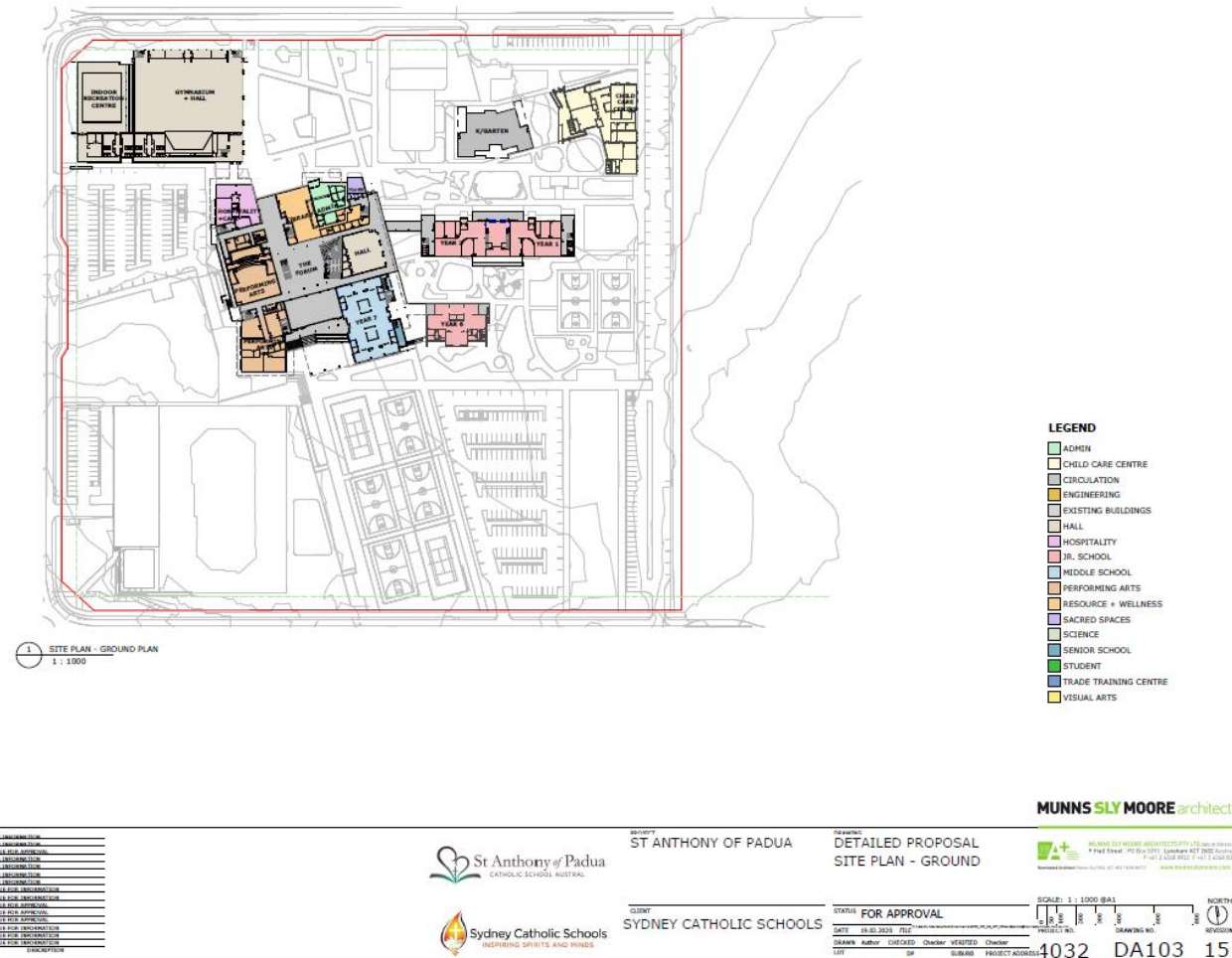


Figure 1: Proposed Plan

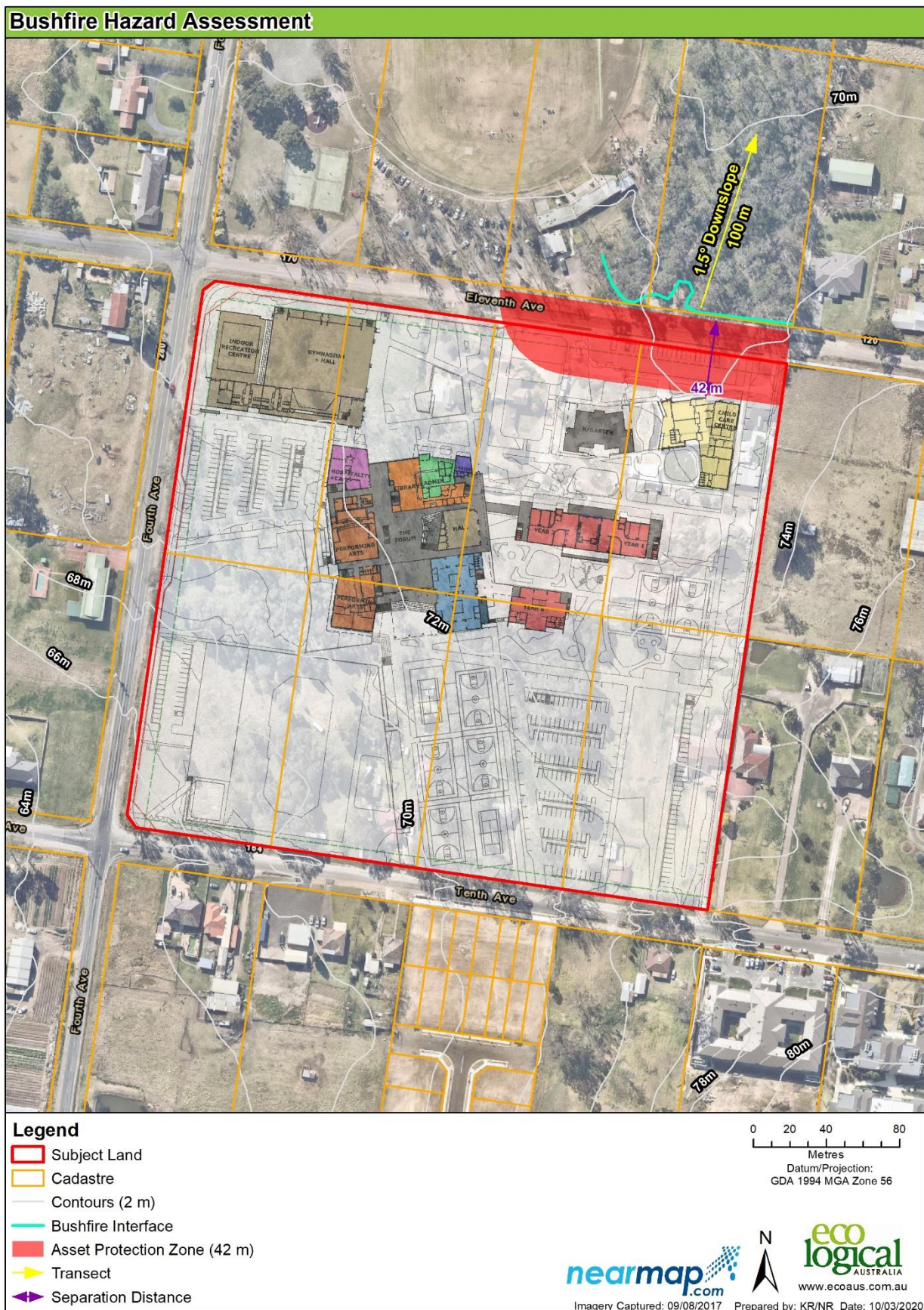


Figure 2: Bushfire Hazard Assessment and Asset Protection Zone (APZ)

NBC Bushfire Attack Assessment Report V2.1

AS3959 (2009) Appendix B - Detailed Method 2

Printed: 26/06/2018 Assessment Date: 26/06/2018



Site Street Address: 140-170 Eleventh Avenue [St Anthony of Padua Catholic School], Austral

Assessor: Bruce Horkings; Ecological Australia

Local Government Area: Liverpool

Alpine Area: No

Equations Used

Transmissivity: Fuss and Hammins, 2002

Flame Length: RFS PBP, 2001

Rate of Fire Spread: Noble et al., 1980

Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005

Peak Elevation of Receiver: Tan et al., 2005

Peak Flame Angle: Tan et al., 2005

Run Description: T1 - North

Vegetation Information

Vegetation Type: Woodland

Vegetation Group: Forest and Woodland

Vegetation Slope: 1.5 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 10

Overall Fuel Load(t/ha): 15

Site Information

Site Slope 0 Degrees

Site Slope Type: Level

Elevation of Receiver(m) Default

APZ/Separation(m): 41

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K) 1200

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Category of Attack: LOW

Peak Elevation of Receiver(m): 5.16

Level of Construction: BAL 12.5

Fire Intensity(kW/m): 10314

Radiant Heat(kW/m2): 9.93

Flame Angle (degrees): 81

Flame Length(m): 10.45

Maximum View Factor: 0.112

Rate Of Spread (km/h): 1.33

Inner Protection Area(m): 41

Transmissivity: 0.794

Outer Protection Area(m): 0

Figure 3: Bushfire Attack Assessment Report