Bushfire Hazards and Risk Assessment

Willyama High School

NSW Department of Education

17 July 2025

→ **The Power of Commitment**

School Name:	Willyama High School	Company Name:	GHD Pty Ltd
School ID:	8491	Report Status:	Final
School Address:	300 Murton St, Broken Hill NSW 2880	Report Date:	17/07/2025
School Region:	North Western	Contract Number:	DDWO06379-24

Project name		12645802 - Willyama High School – Upgrade					
Document title		Bushfire Hazards and Risk Assessment | Willyama High School					
Project number		12645802					
File name		12645802 - Bushfire REP - BHRA - Willyama High School - 8491 - GHD - DDWO06379-24 250712 - REV - E.docx					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S4	A	P. Fernandes	M. George	On file	M George	On file	04/02/25
S4	B	B. Jones	P. Fernandes	On file	M George	On file	12/05/25
S4	C	B. Jones	M. George	On file	M George	On file	30/05/25
S4	D	B. Jones	M. George	On file	M George	On file	24/06/25
S4	E	P. Fernandes	M. George	On file	M George	On file	17/07/25

GHD Pty Ltd | ABN 39 008 488 373

133 Castlereagh Street, Level 15

Sydney, New South Wales 2000, Australia

T +61 2 9239 7100 | **E** sydmail@ghd.com | **ghd.com**

Executive Summary

The area subject to this assessment, Willyama High School, comprises of Lot 5858 DP757298, 300 Murton Street Broken Hill 2880 within the Broken Hill City Council local government area (Figure 1). This assessment assumes that all land within the site can be managed as an Asset Protection Zone (APZ) - Inner Protection Area.

The subject site is depicted on the City of Broken Hill Council's Bushfire Prone Land (BFPL) Map as BFPL, with the site is classified as bushfire prone land due to the presence within the northern portion of the site of Vegetation Category 3 (see Figure 3). The application of Planning for Bush Fire Protection (PBP) 2019 and Australian Standard 3959-2018 '*Construction of buildings in bushfire-prone areas*' (AS3959-2018) is therefore triggered for any future development application. The National Construction Code 2022 (NCC; ABCB 2022) was released 1 October 2022, enacted 1 May 2023, and prescribes additional bushfire protection specifications for certain Class 9 buildings located on bushfire prone land which includes schools. Addendum to PBP has been released (RFS 2022, 2025b) to align with the NCC which will apply to future development.

Figure 4 indicates that bushfire hazard occurs within 150 m of the subject site. The vegetation is currently mapped as arid shrubland.

To achieve deemed-to-satisfy acceptable solutions for APZ's and building construction, buildings within the development are positioned such that building can achieve a radiant heat exposure not exceeding 10 kW/m^2 (NSW RFS 2019). BAL assessment of the proposed development shows the habitable buildings are exposed to a lower radiant heat exposure (BAL-LOW, See Table 3 and Figure 6). It is noted that there is a lower risk of bushfires impacting the proposed development for an extended period of time due to the type of vegetation hazard (arid shrubland). The existing road network provides direct access to existing public roads for evacuation of the site if needed, as well as controlled internal access to the north of the site providing for emergency access.

Contents

Table index

Figure index

Appendices

Abbreviations

Abbreviation	Definition
APZ	Asset Protection Zone
AS 3959	Australian Standard AS 3959:2018 *Construction of buildings in bush fire-prone areas*
BAL	Bushfire Attack Level
BFPL	Bushfire Prone Land
BFSA	Bush Fire Safety Authority
BPM	Bushfire Protection Measure
DA	Development Application
EP&A Act	*Environmental Planning and Assessment Act 1979*
FDI	Fire Danger Index
LGA	Local Government Area
LEP	Local Environmental Plan
NCC	National Construction Code
PBP	Planning for Bush Fire Protection
PCT	Plant Community Type
REF	Review of Environmental Factors
RF Act	*Rural Fires Act 1997*
RFS	Rural Fire Service
SFPP	Special Fire Protection Purpose

1. Introduction

1.1 Project Description

This Bushfire Hazards and Risk Assessment has been prepared by GHD on behalf of NSW Department of Education (The Department) (the Proponent) to assess the potential environmental impacts that could arise from at the redevelopment of Willyama High School at 300 Murton St, Broken Hill Lot 5858 DP757298(the site) (Figure 1).

This report has been prepared to identify any likely required bushfire mitigation measures that would be applicable for the design and construction of the redevelopment the site. This report presents a bushfire hazards and risk assessment of a proposal to develop the subject land for a Special Fire Protection Purpose (SFPP) development.

Further assessment may be required if there are significant changes to Bush Fire Prone Land (BFPL) mapping, surrounding land management/vegetation cover, to the development concept, proposed uses and/or in response to NSW Rural Fire Service (RFS) policy or feedback.

This report has been prepared to assess the proposed development against Planning for Bush Fire Protection (PBP) (RFS 2019) and its Addendums (November 2022 and January 2025).

This Bushfire Hazards and Risk Assessment is valid as of the date of issue and is suitable for the purpose for which it was commissioned.

This report accompanies a Review of Environmental Factors (REF) that seeks approval for the redevelopment of Willyama High School, which involves the following works:

- Construction of new three-storey school buildings along the McGowen Lane frontage, including learning hubs, specialist facilities, an administration and library.
- Construction of a multi-purpose hall with frontage to Murton Street.
- Tree removal.
- Construction of car parking, waste storage and loading area.
- Associated site landscaping and open space improvements.
- Public domain works including kiss and drop zone and service connections

For a detailed project description, refer to the Review of Environmental Factors (REF) prepared by EPM Projects.

1.2 Scope and Limitations

This report has been prepared by GHD for NSW Department of Education and may only be used and relied on by NSW Department of Education for the purpose agreed between GHD and NSW Department of Education as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than NSW Department of Education arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions and offsite conditions influencing bushfire hazard may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

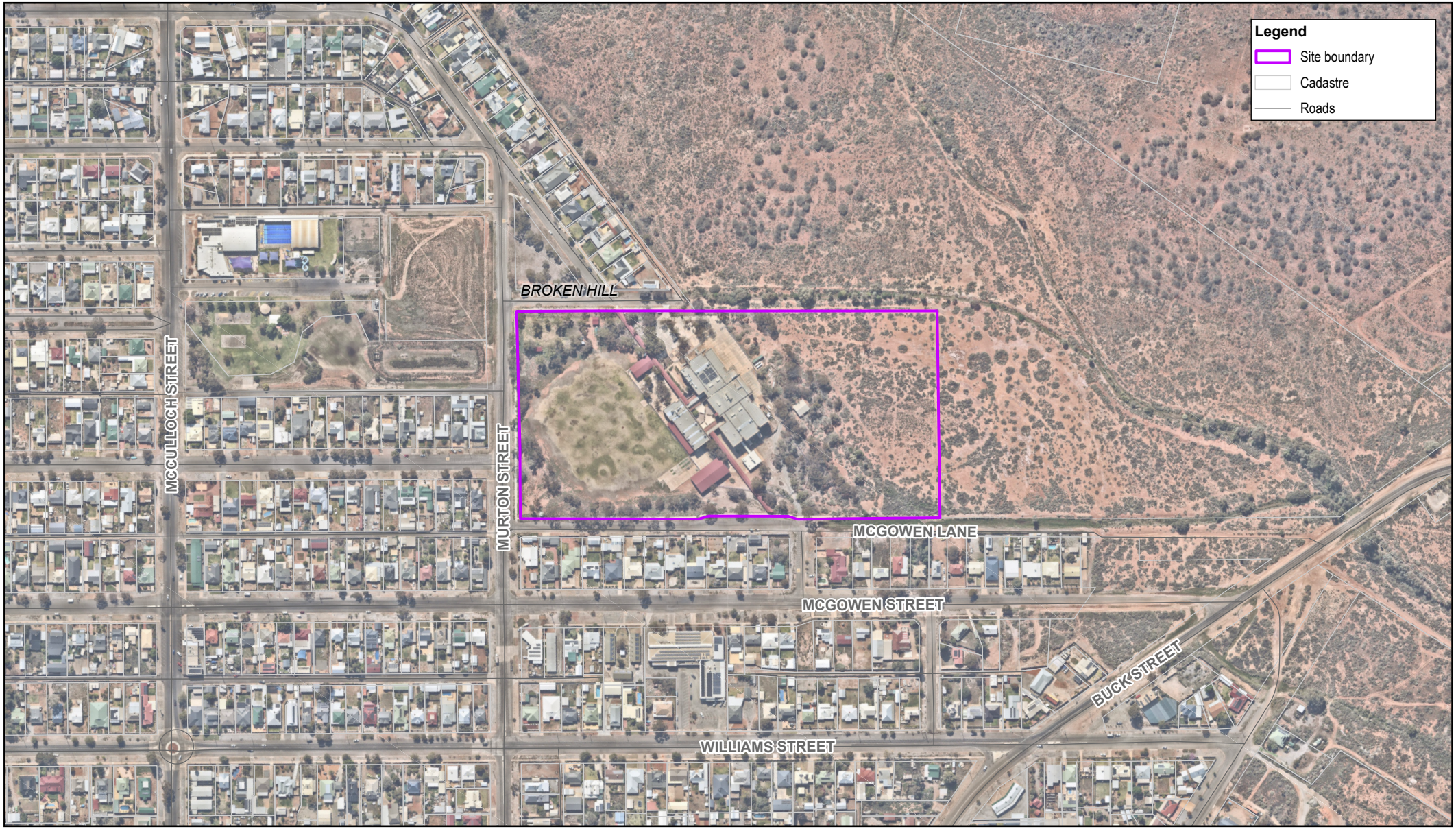
1.3 Assumptions

BFPL has been assessed using the NSW RFS BFPL mapping tool (**Check if you're in bush fire prone land - NSW Rural Fire Service**) and the NSW ePlanner Spatial viewer (**ePlanning Spatial Viewer (nsw.gov.au)**) and has not been independently verified by GHD.

2. Background

2.1 Site Description

The site has frontage to Murton Street (200 metres along south-west), McGown Lane (400m metres along the south), Radium Street (165 metres along the north-west) and the desert to the north-east and east. The site comprises a single allotment, legally described as Lot 5858 in deposited plan (DP) 757298 with an approximate site area of 8.1ha. The site is in the northeastern corner of Broken Hill City, approximately 1.8km from the city centre and 2.4km from the Broken Hill railway station.



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54

Department of Education
DDWO06379/24 - Willyama High School
Bushfire Hazards and Risk Assessment

Project No. **12645802**
Revision No. **D**
Date **26/06/2025**

Site location

FIGURE 1

\\ghdnet\ghd\AU\Sydney\Projects\21\12645802\GIS\Maps\Deliverables\12645802_BHRA_Var.aprx
Print date: 26 Jun 2025 - 11:31

Data source: Imagery - Nearmap: ; General topographic data - NSWSS, 2024; BFPL, SVTM - DPE, 2024.
Created by: pfernandes

RADIUM STREET

EX CARPARK ACCESS

MURTON STREET

MAINTENANCE ACCESS

EX SUB

NEW SW ROOM

OUTDOOR KITCHEN

EXISTING AGRICULTURAL PLOT

EXISTING BUSH TUCKER GARDEN

EX PARKING

EX PARKING

EX PARKING

RELOCATED COLA

TURF ACCESS WAY

SHADE STRUCTURE

FREE PLAY

NEW GEN

SHADE STRUCTURE

SHADE STRUCTURE

SHADE STRUCTURE

SHADE STRUCTURE

LOADING DOCK

WASTE AREA

DELIVERY AREA

PLAYING FIELD

COMMUNITY HUB

EXISTING SHADE STRUCTURE

FIRE TRAIL

RELOCATED CRICKET NETS

NEW SUBSTATION

1:20

1:20

BLOCK C

1:20

1:20

DASHED LINE DENOTES BAL 12.5 EDGE

NEW GAMES COURT

ACTIVE PLAY

EX VET CONST.

ENTRY

STAIR 1

COLA

STAIR 2

STAIR 3

LIFTS

STAIR 4

1:20

1:20

1:20

EXISTING COVERED GAMES COURT

PROPOSED CARPARK

1:14

1:14

BLOCK B

BLOCK A

1:20

1:20

1:20

1:20

WATER METER

FIRE HYD BOOSTER

1:20

1:14

1:14

1:14

BIKE PARKING (60)

SENSORY GARDEN

RELOCATED EXISTING DIGITAL SIGN

PROPOSED PEDESTRIAN CROSSING

NEW RW

EX RW

McGOWEN LANE

PUBLIC ENTRY

ENTRY

ENTRY

EXISTING BUS BAY

CARPARK ACCESS

Figure 2 - Proposed site plan

Recent revision history

#	Status	Description	Date
1		For Coordination	08/05/25
2		For Information	13/05/25
3		For Information	15/05/25
4		For Information	10/06/25
5		Draft Set for SI Review	13/06/25
6		Concept Design Contract Issue	20/06/25

Notes

Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.

Date generated 20/06/2025 6:39:38 PM

LEGEND

- Subject Site Boundary
- BAL Fire Line
- Site Setback
- Neighbouring Boundary
- Existing Building
- Demolition under previous approved REF
- Demolition
- Proposed Relocation
- Proposed Building New Walls
- Proposed Building Metal Sheet Roof
- Earth Battering
- Existing Tree
- Proposed New Tree
- Surrounding Context Tree
- Demolition Under Previous Approved REF Application
- Demolition
- Relocation

Project
Willyama High School

Client
School Infrastructure New South Wales

Issuer
W—B WOODS BAGOT

Project number 122037

Size check 25mm

Checked AJ | Approved GS | Sheet size A1 | Scale As indicated

Sheet title
Overall Arrangement Plans
Proposed Site Plan

Sheet number WHS-WBA-00-00-DR-11-02

Revision 6

Status
CONCEPT DESIGN

2.2 Planning and Legal Framework

2.2.1 PBP requirements

Schools are classified as SFPP and assessed against the bushfire protection measures (BPM) specifications in Chapter 6 of PBP. An addendum to PBP (RFS 2022) aligns with the bushfire protection specifications for specific Class 9 buildings (which includes schools) under the National Construction Code (NCC) 2022. An addendum released January 2025 amends Appendix B of the 2022 Addendum to PBP. This addendum came into effect on 4 April 2025, being the date of amendment to clause 271 of the Environmental Planning and Assessment Regulation 2021 to include the Addendum within the definition of PBP.

Bushfire requirements can be found in:

- Chapter 6 (Tables 6.8a to Table 6.8d) of PBP (https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0005/130667/Planning-for-Bush-Fire-Protection-2019.pdf); and
- Table 2 and Table 4 of PBP Addendum (November 2022): (https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0006/241584/Planning-For-Bush-Fire-Protection.pdf).
- Appendix A of PBP Addendum (January 2025).

  (https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0003/276195/2025-Addendum-to-Planning-for-Bush-Fire-Protection.pdf)

2.2.2 NCC 2022

NCC 2022 was released on 1 October 2022 (enacted 1 May 2023) and prescribes additional bushfire protection provisions for certain Class 9 buildings which includes schools. The transition period for this change was October 2022 to May 2023, with no grace period after this date.

Bushfire specifications for SFPP Class 9 buildings (including NSW variations) can be found in Section G, Part G5 of NCC 2022 (https://ncc.abcb.gov.au/editions/ncc-2022/preview/volume-one/g-ancillary-provisions/part-g5-construction-bushfire-prone-areas) and Specification 43 (https://ncc.abcb.gov.au/editions/ncc-2022/preview/volume-one/g-ancillary-provisions/43-bushfire-protection-certain-class-9-buildings#_805751e5-3585-4bde-a894-f4d52916cffd).

PBP Addendum 2025 alters the requirement of compliance with S43C9 - Internal tenability and S43C14 – Vehicular access for SFPP developments which are primary and/or secondary schools. The amendments are as follows:

S43C9 - Internal tenability does not apply unless:

(a) any part of the building is on land, or is within 100 metres of land, that is categorised as Vegetation Category 1 on a bush fire prone land map certified by the Commissioner of the NSW RFS under section 10.3 of the EP&A Act; and
(b) the area of land categorised as Vegetation Category 1:

i. is greater than 5 hectares in size but is not a corridor with a width of 120 metres or less at its widest point (where 'width' refers to the narrowest dimension of the corridor); or
ii. is within 100 metres in any direction of another area of land categorised as Vegetation Category 1

S43C14 – Vehicular access does not apply if the building is a building that is, or forms part of, a primary and/or secondary school, provided that the performance criteria or acceptable solutions in Table 6.8b of PBP 2019 are complied with.

Clause S43C9 does not apply for this proposed development as no proposed new buildings is on land, or is within 100 metres of land, categorised as Vegetation Category 1.

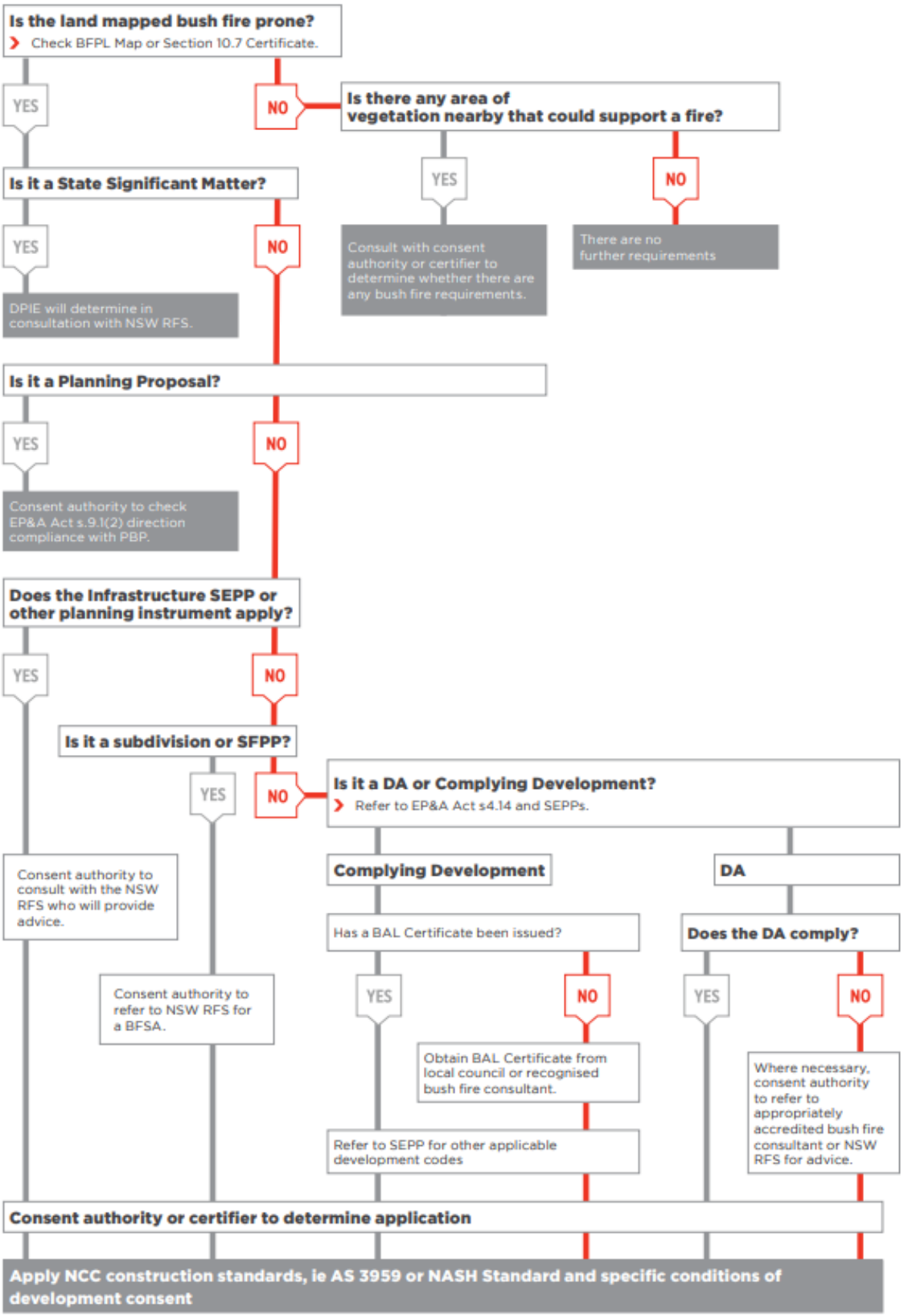


Diagram 1 Assessment process for developments in bush fire prone areas (from PBP 2019)

2.3 Bushfire Prone Land classification

The BFPL Map is a trigger for the consideration of bushfire matters for new development. It is not intended as a detailed measure of risk. The map does not form part of the site assessment process.

BFPL mapping by the City of Broken Hill council classifies the site as BFPL due to the presence of Vegetation Category 3 across the northern extent of the site in addition to Vegetation buffer present within Lot 5858 DP757298 as displayed in Figure 3 (accessed via ePlanning Spatial Viewer, 2025). The BFPL mapping was last updated in 2018.

The application of PBP and Australian Standard 3959-2018 'Construction of buildings in bushfire-prone areas' (AS3959-2018) is therefore triggered for any future development.

2.4 Consultation with Authorities

RFS response dated 20 December 2024 to a pre-DA submission determined a bushfire safety authority (BFSA) (SFPP) under section 100b of the Rural Fires Act 1997 was required due to part of the site being mapped as BFPL. See Appendix A for correspondence with RFS.

2.5 Assessment Process

At the development assessment phase, development in bushfire prone areas (as determined and mapped by the NSW RFS in consultation with Local Government) must comply with PBP. Accordingly, a development application must demonstrate how the development complies with the PBP. A BFSA is required from the NSW RFS for SFPP developments on BFPL. An application for a BFSA must address the extent to which the development complies with PBP.

The proposed development is an upgrade to the existing school infrastructure. The area surrounding the school to the east, south, and west consists of residential dwellings. The area north of the site is an environmental conservation area with arid shrubland vegetation.

This assessment is based on the following information sources:

- Information contained within the masterplan (Urbis Pty Ltd, 2025)
- Geographic information system (GIS) analysis including online spatial resources such as NSW Spatial Services and NSW Planning Portal
- Site inspection 23 and 24 July 2024

Table 1 identifies the bushfire protection measures assessed and whether an acceptable or performance solution is being proposed.

Table 1 Summary of Bush Fire Protection Measures assessed

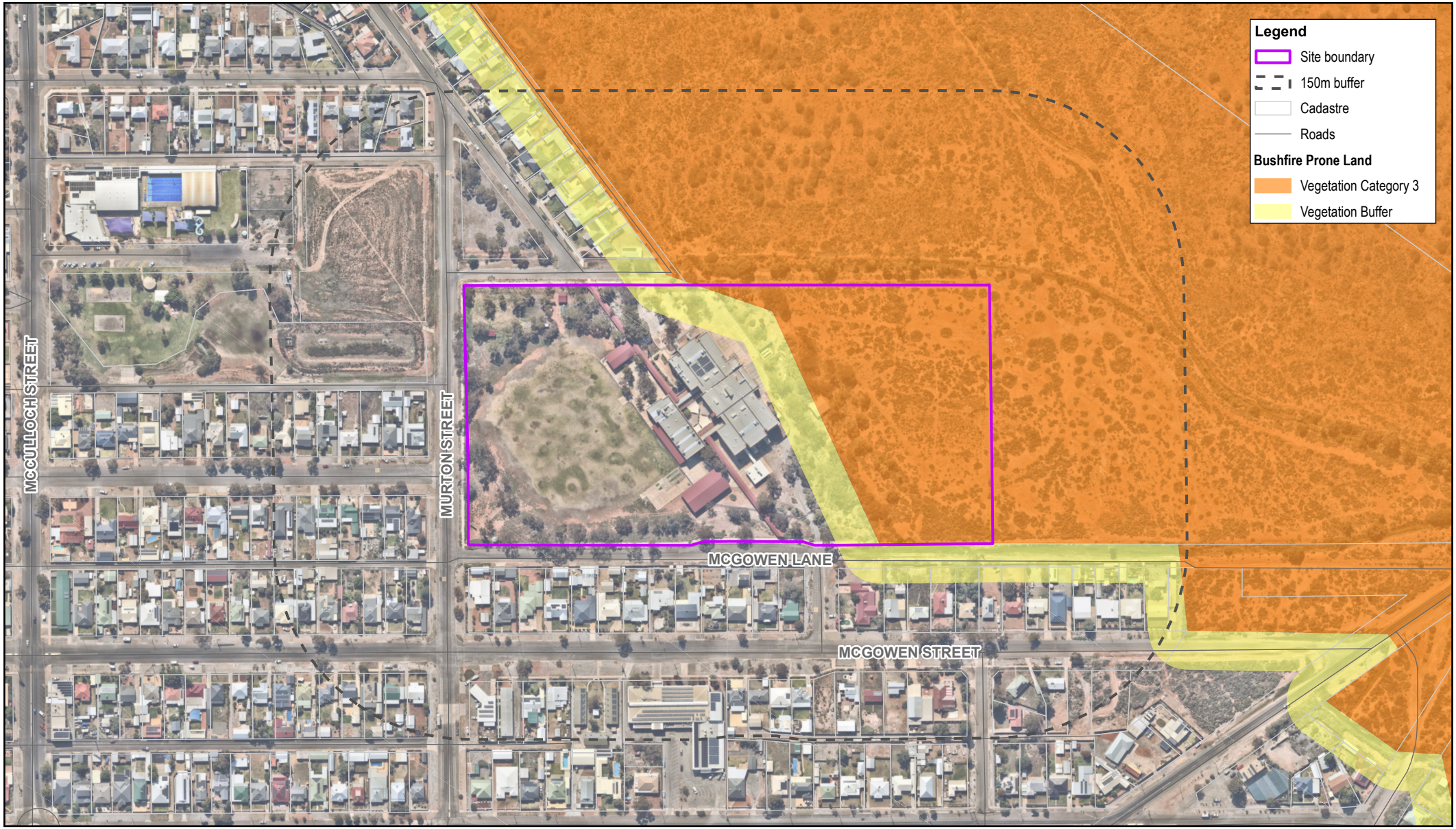
Bushfire Protection Measures	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zone	☑	☑	4.1
Construction	☐	☑	4.2
Landscaping	☑	☑	4.3
Access	☑	☑	4.4
Water Supply	☑	☐	4.5
Electricity Services	☑	☐	4.6
Gas Services	☑	☐	4.7
Emergency Management	☑	☐	4.8

2.6 Significant Environmental Features

This report identifies the impact footprint of the bushfire protection measures, including the APZ. However, this report has not undertaken an assessment of significant environmental features, threatened species, populations or ecological communities under the Biodiversity Conservation Act that may be potentially affected by the proposed bushfire protection measures as it is addressed by other components of the planning approval process. The Department is the proponent and determining authority and will assess any potential environmental issues.

2.7 Aboriginal Cultural Heritage

This report identifies the impact footprint of the bushfire protection measures, including the APZ. However, this report has not undertaken an assessment of any Aboriginal cultural heritage objects under the National Parks and Wildlife Act 1974 that may be potentially affected by the proposed bushfire protection measures as it is addressed by other components of the planning approval process. The Department is the proponent and determining authority and will assess any potential issues.



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54

Department of Education
DDWO06379/24 - Willyama High School
Bushfire Hazards and Risk Assessment

Project No. **12645802**
Revision No. **D**
Date **26/06/2025**

Bushfire prone land

FIGURE 3

\\ghdnet\ghd\AU\Sydney\Projects\21\12645802\GIS\Maps\Deliverables\12645802_BHRA_Var.aprx
Print date: 26 Jun 2025 - 11:43

Data source: Imagery - Nearmap: ; General topographic data - NSWSS, 2024; BFPL, SVTM - DPE, 2024.
Created by: pfernandes

3. Bushfire Hazard Assessment

3.1 Process

The site assessment methodology from Appendix 1 of PBP has been used in this assessment to determine the required bushfire protection measures and construction requirements. Figure 4 shows the predominant vegetation representing the highest bushfire threat potentially posed to the development from the north.

The site falls within The City of Broken Hill LGA within the Far Western region for which Fire Danger Index (FDI) of 80 is applicable for bushfire assessment (NSW RFS, 2019).

3.2 Vegetation

In accordance with PBP, the predominant vegetation is assessed for a distance of at least 140 m from the site in all directions

Vegetation classified as Plant Community Type (PCT) 163: Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (Arid Shrublands (acacia and chenopod) under PBP 2019) is present on the northern portion of the site (Figure 4). The on the southern half of the site is classified as PCT 0 due to development. This vegetation is classified as managed for the purpose of bushfire assessment. The site was assessed as part of a site inspection conducted by GHD on 23 and 24 July 2024, confirming the mapped vegetation types.

3.3 Effective Slope

In accordance with PBP, the slope that would most significantly influence fire behaviour is determined over a distance of 100 m from the boundary of the proposed development under the classified vegetation.

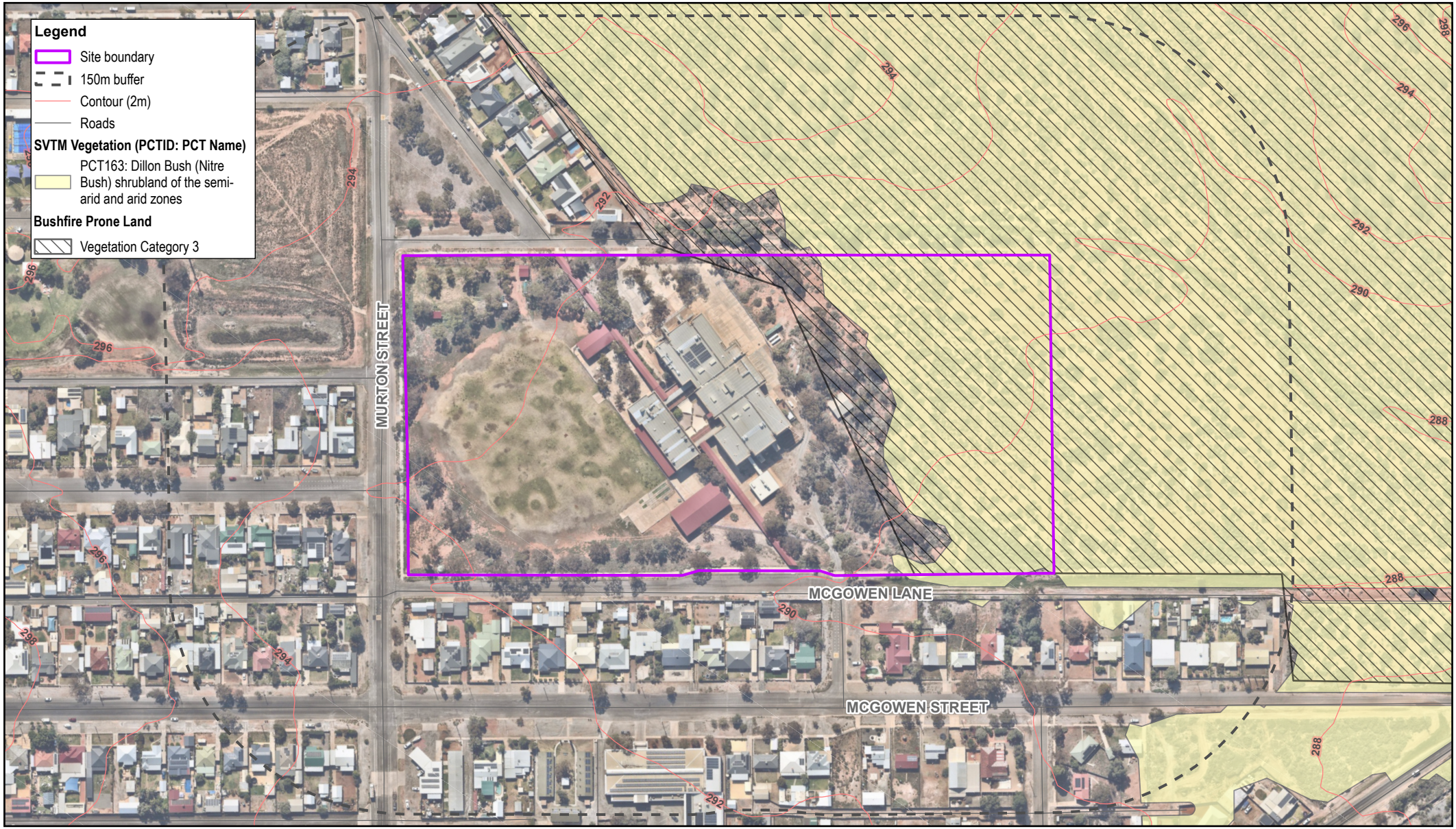
Effective slope was assessed using contour mapping from NSW Spatial Services and confirmed by site assessment conducted 23 and 24 July 2024. [Note this is describing the slope underneath the vegetation, not between the building and the vegetation]. This site can be characterised flat to slightly undulating with vegetation surrounding the proposed site. The slope is classified as upslope – flat to the north-west, and 0 to 5 degrees downslope to the north-east.

3.4 Summary of Assessment

A summary of the bushfire hazard assessment is provided in Table 2.

Table 2 Bushfire hazard assessment and APZ requirements

Direction	Nearest BF prone vegetation (existing)	Effective slope class	SFPP required APZ (m)	Distance available for APZ (m)	Comments
North-west	Arid Shrubland	Upslope / flat	24 m	>100m	Proposed design locates carparking and sporting fields within APZ to increase separation of school buildings from the hazard
North-east	Arid Shrubland	0 – 5 degrees downslope	27 m	>100 m	



Paper Size ISO A4

0 25 50 75 100

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54

Department of Education
DDWO06379/24 - Willyama High School
Bushfire Hazards and Risk Assessment

Project No. **12645802**
Revision No. **D**
Date **26/06/2025**

Bushfire hazards

FIGURE 4

\\ghdnet\ghd\AU\Sydney\Projects\21\12645802\GIS\Maps\Deliverables\12645802_BHRA_Var.aprx
Print date: 26 Jun 2025 - 11:43

Data source: Imagery - Nearmap: ; General topographic data - NSWSS, 2024; BFPL, SVTM - DPE, 2024.
Created by: pfernandes

4. Mitigation Measures

School buildings are generally classified as SFPP under the RF Act and assessed against the BPMs in Chapter 6 of PBP that provide mitigation from identified bushfire risk. PBP requires the assessment of a suite of BPM that in total afford an adequate level of protection. The measures required to be assessed for SFPP development cover Asset Protection Zones (APZ), access, utilities, construction standards, landscaping, emergency management and environmental issues; and are discussed in detail in the remainder of this section. Administration buildings (detached from school buildings) are not classified SFPP and residential APZ can apply.

Part G5 of the NCC 2022 sets out additional construction, separation and access requirements for certain buildings on bushfire prone land including Class 2, Class 3, Class 9 and Class 10 buildings that accommodate vulnerable occupants. Class 9 buildings include some SFPP developments that fall under section 100B of the Rural Fires Act 1997 (RF Act), including Class 9b secondary school.

Clause G5D2 of NCC 2022 is a deemed-to-satisfy (DTS) provision applicable to scenarios where the Bushfire Attack Levels BAL at the building does not exceed BAL 12.5. G5D4 of NCC 2022 provides that in a designated bushfire prone area, a Class 9 building that is an SFPP must comply with Specification 43 except as amended by PBP.

Specification 43 sets out BPMs for buildings described in clause G5D4. Aside from the scope provision (S43C1), and S43C2 which does not apply in NSW, twelve provisions of Specification 43 apply in NSW.

Clauses G5P1 and G5P2 of NCC 2022 contain the performance requirements required to be met for certain Class 9 buildings where the BAL at the building exceeds BAL 12.5 or where the DTS requirements cannot be met.

The additional provisions do not apply to the site as in accordance with Appendix A of the Addendum to PBP January 2025, the site is not located on or within 100 m of land that is categorised as vegetation Category 1 on a BFPL map certified by the Commissioner of the NSW RFS under section 10.3 of the EP&A Act (see Figure 3), and the BAL exposure does not exceed BAL 12.5 (see Section 4.1).

4.1 Asset Protection Zones and Bushfire Attack Level Assessment

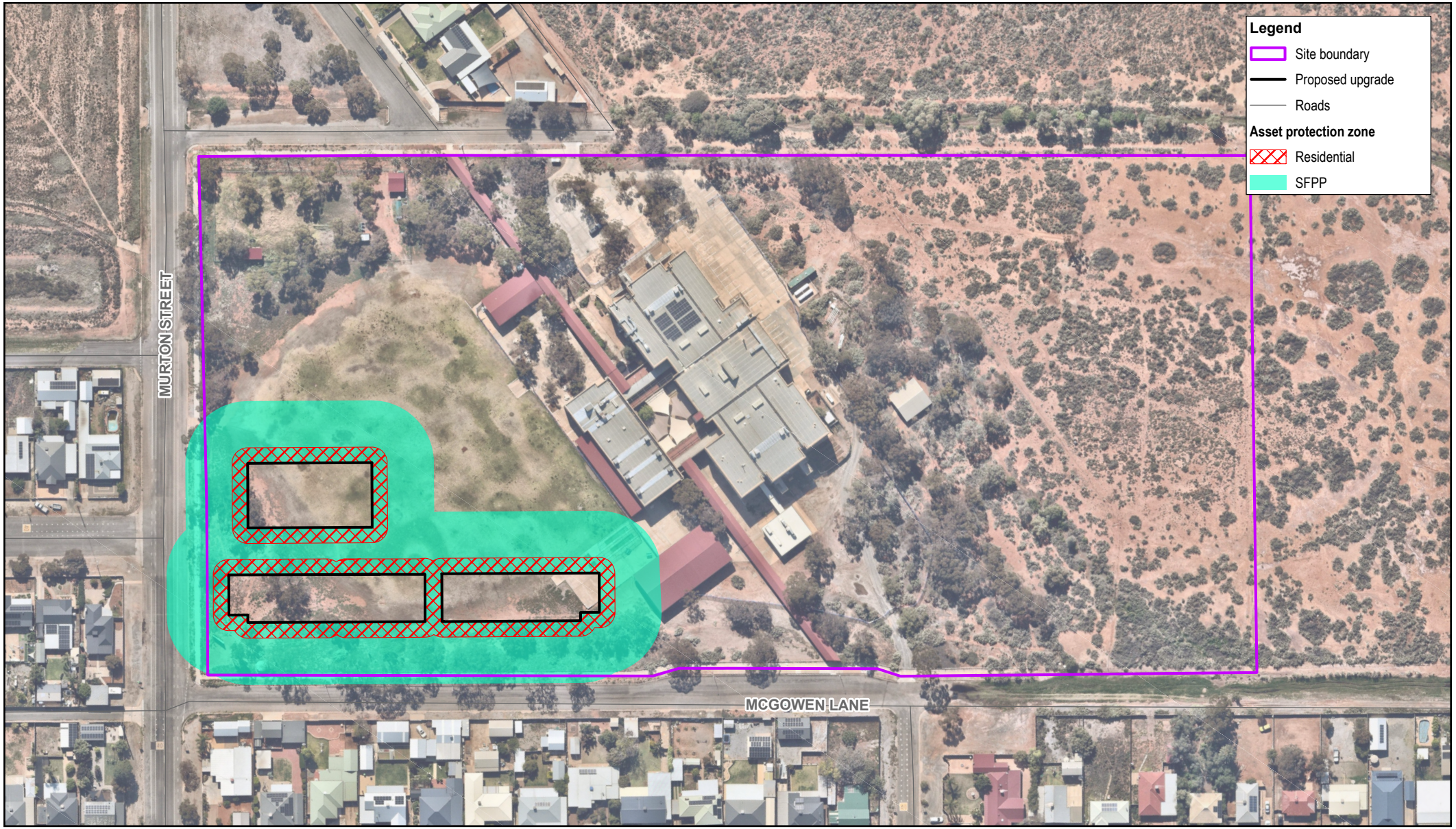
To achieve deemed-to-satisfy acceptable solutions for APZ's and building construction (BALs) for SFPP development, buildings are positioned such that the building can achieve a radiant heat exposure not exceeding 10 kW/m^2. APZs provide protection from exposure, defendable space and hazard separation. APZs have been applied to meet the objectives of PBP. APZs are established between a building and vegetation hazard, and their calculation is based on vegetation and slope in accordance with Appendix 1 of the PBP. Deemed-to-satisfy APZs, determined in accordance Tables A1.12.1 of PBP and BALs for each direction of the proposed site, with results recorded in Table 3, Figure 5, and Figure 6.

Existing buildings and structures on the north-east of the campus for VET Construction and the southern multi sports courts are proposed to be retained without any modifications. This falls within the identified SFPP compliant APZ (Figure 5) however, as no major construction works are proposed, this building is excluded from consideration as it is classed as a minor development of existing SFPP as per PBP Section 6.5. An existing shed in the agricultural plot, north-west of the school site will also be retained and does not require an APZ as it is not a habitable building.

Table 3 Determination of BALs for proposed site/buildings

Design Option/ Direction	Nearest BF prone vegetation	Effective slope class	Required SFPP (10kW/m^2 1200K) APZ[1]	Required Residential (29kW/m^2 1090K) APZ[2]	Distance of design to existing hazard interface	Likely worst-case BAL for all buildings (including existing)	Comments
North-west	Arid Shrubland	Upslope / flat	24 m	6 m	170 m	BAL LOW	Proposed design locates carparking and sporting fields within APZ to increase separation of school buildings from the hazard
North-east	Arid Shrubland	0 – 5 degrees downslope	27 m	7 m	18 m	BAL 12.5 (existing); BAL LOW (new)	

[1] Based on Table A1.12.1 of PBP
[2] Based on Table A1.12.3 of PBP



Paper Size ISO A4

0 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54

Department of Education
DDWO06379/24 - Willyama High School
Bushfire Hazards and Risk Assessment

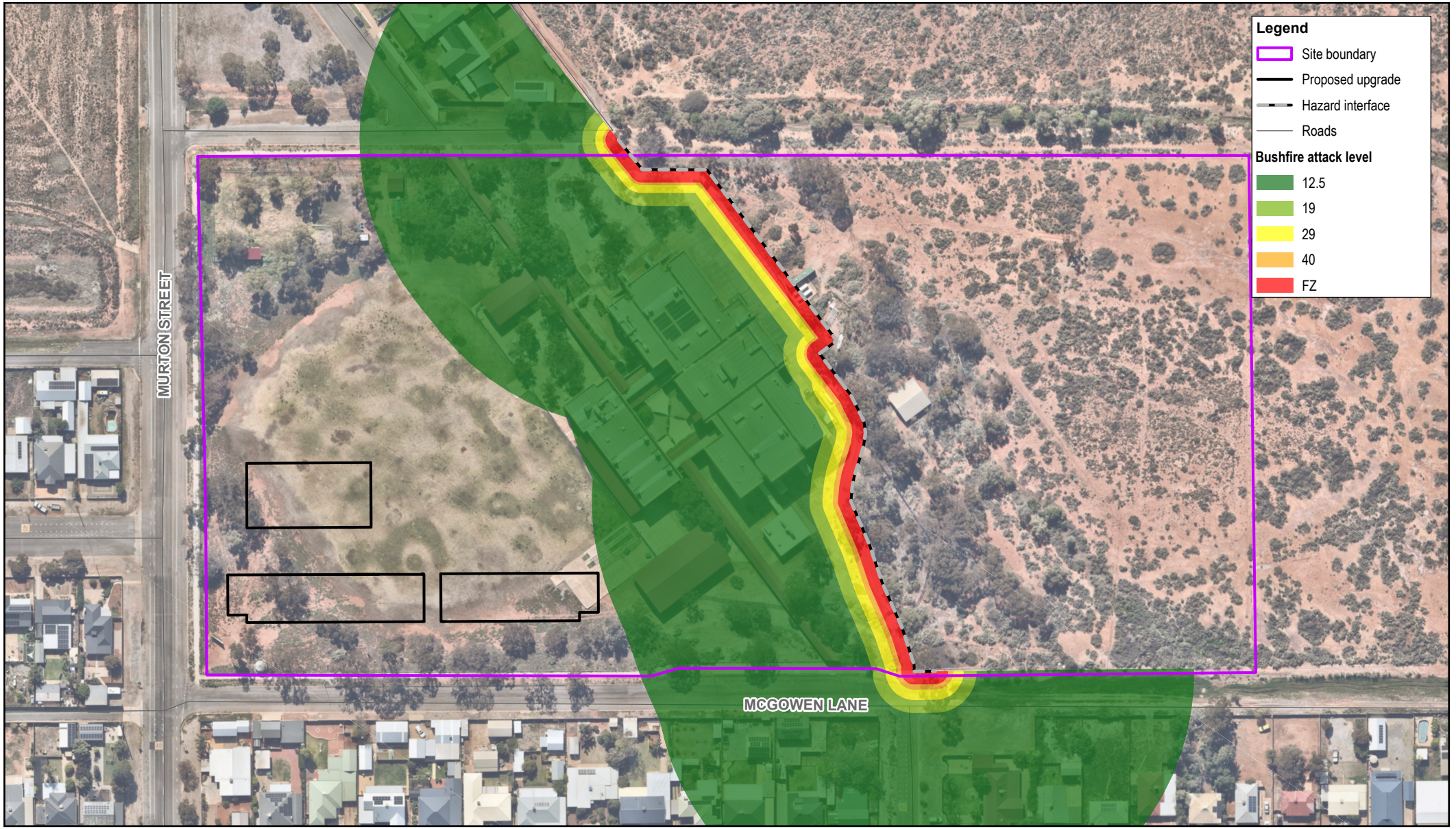
Project No. **12645802**
Revision No. **D**
Date **26/06/2025**

Asset protection zone

FIGURE 5

\\ghdnet\ghd\AU\Sydney\Projects\21\12645802\GIS\Maps\Deliverables\12645802_BHRA_Var.aprx
Print date: 26 Jun 2025 - 11:52

Data source: Imagery - Nearmap: ; General topographic data - NSWSS, 2024; BFPL, SVTM - DPE, 2024.
Created by: pfernandes



Paper Size ISO A4

0 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 54

GHD

Department of Education
DDWO06379/24 - Willyama High School
Bushfire Hazards and Risk Assessment

Project No. **12645802**
Revision No. **D**
Date **26/06/2025**

Bushfire attack level

FIGURE 6

\\ghdnet\ghd\AU\Sydney\Projects\21\12645802\GIS\Maps\Deliverables\12645802_BHRA_Var.aprx
Print date: 26 Jun 2025 - 11:51

Data source: Imagery - Nearmap: ; General topographic data - NSWSS, 2024; BFPL, SVTM - DPE, 2024.
Created by: pfernandes

Based on the results recorded in Table 3 and Figure 5, a minimum SFPP development APZ of 24 m for the north-west, and 27 m for the north-east is required due to the presence of arid shrubland vegetation. The design for the school ensures that school buildings have being placed within BAL LOW exposure (Table 3, Figure 6), effectively providing an APZ that well exceeds the requirements. Landscaping in APZs is to be maintained to the standard in Section 4.3.

Table 4 APZs and construction for SFPP development (adapted from Table 6.8a of PBP).

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
ASSET PROTECTION ZONES (APZ)	radiant heat levels of greater than 10kW/m² (calculated at 1200K) will not be experienced on any part of the building	the building is provided with an APZ in accordance with table A1.12.1 in Appendix 1.	**Complies** APZ provided in accordance with Table A1.12.1 as shown in Table 3
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	the APZ is located on lands with a slope less than 18 degrees.	**Complies** APZs are not located on slopes greater than 18°
	APZs are managed and maintained to prevent the spread of fire to the building. the APZ is provided in perpetuity.	the APZ is managed in accordance with the requirements of Appendix 4 of this document and is wholly within the boundaries of the development site. APZ are wholly within the boundaries of the development site; and Other structures located within the APZ need to be located further than 6m from the refuge building.	**Complies** APZ to be managed in accordance with PBP. **Complies** APZ located wholly within development site.
All APZ modelling for the purposes of SFPP development is based on flame temperature of 1200 Kelvin (K).			

4.2 Construction

The current acceptable solution is for construction to comply with specifications to BAL-19 post May 2023, being the enactment date of NCC 2022 and the related PBP addendum and in accordance with Australian Standard (AS) 3959:2018 or the National Association of Steel-Framed Housing (NASH) Standard 'Steel Framed Construction in Bushfire Areas' (NASH 2021).

The proposed development is assessed under Part 5 of the EP&A Act via REF. The proposed development is exempt from Clause S43C10 with a BFSA under G5D4(c). BAL determination using Table A1.12.6 of PBP classifies the proposed buildings as being within BAL-LOW, being located greater than 100 m from the bushfire hazard. As the proposed development is sited away from the bushfire hazard, construction to BAL-19 standards is not applicable. Due to the type of hazard vegetation (arid shrubland), there is a low risk of bushfires impacting the site for an extended timeframe.

Table 5 SFPP Development construction standards and compliance (adapted from Table 2 in Appendix B of Addendum to PBP, 2022).

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
CONSTRUCTION	the proposed building can withstand bush fire attack in the form of wind, embers, radiant heat, and flame contact	a construction level of BAL-19 under AS 3959 and section 7.5 is applied.	**Not applicable** BAL determined using Table A1.12.6 of PBP. BAL is determined as Low through the siting of the proposed buildings away from the bushfire hazard.

4.3 Landscaping

Future landscaping design can comply with PBP and NCC requirements

Vegetation management, including landscaping, within the site that has BAL exposure (Figure 6) is to achieve the specifications of an Inner Protection Area (IPA) as described by PBP and outlined below:

Trees

– canopy cover should be less than 15% (at maturity);
– trees (at maturity) should not touch or overhang the building;
– lower limbs should be removed up to a height of 2 m above ground;
– canopies should be separated by 2 to 5 m; and
– preference should be given to smooth barked and evergreen trees.

Shrubs

– create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings;
– shrubs should not be located under trees;
– shrubs should not form more than 10% ground cover; and
– clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

– should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and
– leaves and vegetation debris should be removed.

It is proposed that within the portion of the site impacted by BAL (Figure 6), a canopy coverage at maturity of less than or equal to 15% and meeting the specifications for shrub and grass covers as detailed above will be maintained. The landscaping beyond the BAL exposure (i.e. in BAL Low) will include a total canopy coverage of greater than 15% to ensure sufficient shade for occupants of the site, including within the APZ (Figure 5). This approach ensures that a low hazard is maintained on the parts of the site that are exposed to BAL affectation, while providing shade and amenity for students in a low risk part of the site.

Table 6 Landscaping requirements for SFPP development (adapted from Table 6.8a of PBP).

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
LANDSCAPING	landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions	landscaping is in accordance with Appendix 4; and fencing is constructed in accordance with section 7.6.	**Can comply** BALaffected parts of the site to be managed in accordance with PBP

4.4 Access

The proposed development complies with access requirements under PBP (Table 6.8b). The site has existing access off Radium Street, Murton Street, and McGowen Lane. Existing all weather internal access from Radium Street to the north-west to McGowen Lane to the north-east will be maintained to provide an internal road system at an interval less than 500m. Controlled access will be provided on the site through the carpark to the northern end of Radium Street.

Addendum to PBP (RFS, 2025b) states that S43C14 does not apply provided that the performance criteria or acceptable solutions in Table 6.8b of PBP 2019 are complied with.

Table 7 Performance criteria and acceptable solutions for access for SFPP development (adapted from Table 6.8b of PBP).

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
FIREFIGHTING VEHICLES	firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation	SFPP access roads are two-wheel drive, all-weather roads, and access is provided to all structures. traffic management devices are constructed to not prohibit access by emergency services vehicles access roads must provide suitable turning areas in accordance with Appendix 3; and one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	**Complies** The site has existing access off Radium Street, Murton Street and McGowen Lane with existing internal access from Radium Street on the north-west to McGowen Land to the north-east. Existing access arrangements will be maintained for the site, with controlled access arrangements in place for the internal access.
ACCESS ROAD CAPACITY	the capacity of access roads is adequate for firefighting vehicles	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	**Complies** No bridges in place.

ACCESS TO WATER	there is appropriate access to water supply	hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression, and hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005; and there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available	**Can comply** Hydrant points located on external road reserve on Radium Street and Murton Street, with additional hydrant points located to the north and south of the existing building on the school site.
NON-PERIMETER ROADS	Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating	minimum 5.5m 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 500m. curves of roads have a minimum inner radius of 6m. the maximum grade road is 15° and average grade of not more than 10°. the road crossfall does not exceed 3°. a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	**Complies** Existing access arrangements will be maintained for the site, with controlled access arrangements in place for the internal access.

4.5 Utilities – Water supplies

The proposed development can comply with PBP and NCC requirements as the site is serviced by reticulated water with hydrant points available within the site and in the existing road network. Relocation of hydrants may be required for the south of the site and must be compliant with AS 2419.1: 2021 'Fire hydrant installations – System design, installation and commissioning' in accordance with E1D2 of NCC 2022.

Table 8 Performance criteria and acceptable solutions for water services for SFPP development (Adapted from Table 6.8c of PBP and Table 4 from Appendix B of Addendum to PBP, 2022)

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
WATER SUPPLY	An adequate water supply for firefighting purposes is installed and maintained.	reticulated water is to be provided to the development, where available, or a 10,000 litres minimum static water supply dedicated for firefighting purposes is provided for each occupied building where no reticulated water is available.	**Complies** Proposal serviced by a reticulated water.
	water supplies are located at regular intervals the water supply is accessible and reliable for firefighting operations	fire hydrant spacing, design and sizing comply with the relevant clauses of Australian Standard AS2419.1:2021. hydrants are not located within any road carriageway; and reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads; and	**Can comply** The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards, and table 6.8b and table 6.8c of PBP if internal
	flows and pressure are appropriate	fire hydrant flows and pressures comply with the relevant clauses AS2419:2021,	

the integrity of the water supply is maintained	all above-ground water service pipes external to the building are metal, including and up to any taps;	hydrants are to be relocated to accommodate new design.
water supplies are adequate in areas where reticulated water is not available	a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; a 65mm Storz outlet with a ball valve is fitted to the outlet. ball valve and pipes are adequate for water flow and are metal. supply pipes from tank to ball valve have the same bore size to ensure flow volume; and underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank; and a hardened ground surface for truck access is supplied within 4m of the access hole; and above-ground tanks are manufactured from concrete or metal. raised tanks have their stands constructed from non-combustible materials on bush fires-resisting timber (see Appendix F AS 3959). unobstructed access is provided at all times unobstructed access is provided at all times tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters and; underground tanks are clearly marked all exposed water pipes external to the building are metal, including any fittings; and where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack; any hose and reel for firefighting connected to the pump shall be 19mm internal diameter; and fire hose reels are constructed in accordance with AS/NZS 1221:1997 *Fire hose reels* and installed in accordance with the relevant clauses of AS 2441:2021 *Installation of fire hose reels*.	**Not applicable** Proposal serviced by a reticulated water.

4.6 Utilities – Electrical services

There is existing power supply to the school site from overhead powerlines into a sub-station on Radium Street. Electricity connection to new buildings will be underground in compliance with PBP.

Table 9 ***Performance criteria and acceptable solutions for electricity services for SFPP development (Adapted from Table 6.8c of PBP)***

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
ELECTRICITY SERVICES	location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings	where practicable, electrical transmission lines are underground, and where overhead, electrical transmission lines are proposed as follows: lines are installed with short pole spacing (30m), unless crossing gullies, gorges, or riparian areas; and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 *Guideline for Managing Vegetation Near Power Lines*	**Complies** Electricity services to the site are located underground via a substation located on Radium Street

4.7 Utilities – Gas Services

Reticulated/bottled gas supplies to be designed/installed in accord with the relevant LPG or natural gas standards including the requirement for all above-ground gas service pipes to be metal, including and up to any outlets. The gas services for the proposed development can comply with Table 6.8c of PBP.

Table 10 ***Performance criteria and acceptable solutions for gas services for SFPP development (Adapted from Table 6.8c of PBP)***

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
GAS SERVICES	location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used; and all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; and connections to and from gas cylinders are metal; and if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion; and polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not used; and above-ground gas service pipes external to the building are metal, including and up to any outlets.	**Can comply** The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards, and table 6.8c of PBP. All above ground gas services to be metal, including and up to any outlets.

4.8 Emergency Management

No bushfire emergency evacuation plans have been provided however, existing emergency management plans are to be updated for the new buildings and can comply with Section 6.8.4 of PBP.

Table 11 Performance criteria and acceptable solutions for emergency management plans for SFPP development (adapted from Table 6.8d of PBP)

Performance Criteria		Acceptable Solutions	Compliance notes
The intent may be achieved where:			
EMERGENCY MANAGEMENT	A Bush Fire Emergency and Evacuation management plan is prepared	bush fire emergency management and evacuation plan are prepared consistent with the: The NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan*; *NSW RFS Schools Program guide*; *Australian Standard AS 3745:2010 Planning for emergencies in facilities*; and *Australian Standard AS 4083:2010 Planning for emergencies – Health care facilities* (where applicable). The bushfire emergency and evacuation management plan should include a mechanism for the early relocation of occupants. Note: A copy of the bush fire emergency management plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.	**Can comply** Existing emergency management plans to be updated for new buildings before the school site is operational
	Appropriate and adequate management arrangements are established for consultation and implementation of the bush fire emergency and evacuation management plan.	an Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual; and detailed plans of all emergency assembly areas including 'on-site,' and 'off-site' arrangements as stated in AS 3745:2010 are clearly displayed, and an annual (as a minimum) emergency evacuation is conducted.	**Can comply** Existing emergency management arrangements to be updated for new buildings before the school site is operational

5. Conclusions

The aim of PBP in respect of development on bushfire prone land is “to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to the development potential, site characteristics and protection of the environment.”

The objectives of PBP (Section 1.1) are:

- Afford buildings and their occupants protection from exposure to bushfire;
- Provide for a defendable space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to the buildings;
- Ensure that appropriate operational access and egress for emergency service personnel and occupants is available;
- Provide for ongoing management and maintenance of bushfire prevention measures; and
- Ensure that utility services are adequate to meet the needs of firefighters.

In accordance with the RFS pre-DA submission response dated 20 December 2024, a BFSA (SFPP) under section 100b of the Rural Fires Act 1997 will be required due to part of the site being mapped as BFPL.

The aims and objectives of PBP can be met for the proposed development based on the conditions of the site and immediately adjoining areas as summarised in Table 12.

Table 12 Proposed bushfire mitigation measure solutions and recommendations

Bushfire Protection/Mitigation Measures	Recommendations	Acceptable Solution	Performance Solution	Report Section
Asset protection zones	APZ dimensions are shown in Figure 5 and Table 3	☑	☑	4.1
Construction	Bushfire specific construction standards are not applicable or required due to the proposed development being in BAL-LOW as outlined in Section 4.1. Fences within 6 m of the buildings shall be of non-combustible material.	☐	☑	4.2
Landscaping	Addressing performance criteria or achieving acceptable solutions is recommended for landscaping within the site to achieve bushfire design principles.	☑	☑	4.3
Access	The site has existing access off Radium Street, Murton Street and McGowen Lane with existing internal access from Radium Street on the north-west to McGowen Land to the north-east. Existing access arrangements will be maintained for the site, with controlled access arrangements in place for the internal access.	☑	☑	4.4
Water supplies	The site is serviced by a reticulated water supply.	☑	☐	4.5
Electrical services	Electricity supply located underground.	☑	☐	4.6
Gas services	Certification of design and installation for gas services are to be undertaken by a suitably qualified professional and in compliance with Section 6.8.3 of PBP.	☑	☐	4.7
Emergency management	Emergency management plans will be created before the school site is operational.	☑	☐	4.8

6. References

Australian Building Codes Board (2022). National Construction Code Volume One – Building Code of Australia. ABCB

Australian Standard (AS) AS3959:2018 – Construction of buildings in bushfire prone areas. Standards Australia.

Nearmap (2025). Aerial Imagery.

New South Wales Rural Fire Service (2019). Planning for Bushfire Protection – A guide for councils, planners, fire authorities and developers. NSW Government.

New South Wales Rural Fire Service (2022). Planning for Bushfire Protection – A guide for councils, planners, fire authorities and developers – Addendum 2022. NSW Government.

New South Wales Rural Fire Service (2023). Check if you're in bush fire prone land. NSW Government. **https://www.rfs.nsw.gov.au/plan-and-prepare/building-in-a-bush-fire-area/planning-for-bush-fire-protection/bush-fire-prone-land/check-bfpl**

New South Wales Rural Fire Service (2025a). Development and Construction of Class 9 Buildings That Are Special Fire Protection Purpose Development on Bush Fire Prone Land – Guidance Document March 2025. NSW Government.

New South Wales Rural Fire Service (2025b). Planning for Bushfire Protection – A guide for councils, planners, fire authorities and developers – Addendum January 2025. NSW Government.

New South Wales Government (2021). ePlanning Spatial Viewer. NSW Government. **https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address**

Appendix A

RFS Agency Advice

NSW RURAL FIRE SERVICE

PRE-DA ADVICE SUMMARY

Applicant: M George, GHD on behalf of School Infrastructure NSW

Subject: Radium St Broken Hill
(Note: Opportunities and Constraints Assessments refers to the site as 300 Murton St Broken Hill)
RFS Ref. PRE-DA20241112000275

Details of the Proposal

☑ SFPP — *Demolition and construction of Willyama High School at an existing site in Broken Hill*

☐ Residential subdivision

☐ Other

Bush Fire Protection Issues Discussed

☐ Application and/or Interpretation of sections of Planning for Bush Fire Protection

Seeking clarification that RFS approval does not apply to the site given the proposed footprint does not fall on BFPL

☐ Performance Based Solutions
- ☐ Qualitative Analysis
- ☐ Quantitative Analysis
- ☐ Proposed Redundancies

☐ Strategic Bush Fire Study

☐ Non compliances in relation to Bush Fire Protection Measures
- ☐ Hazard Assessment
- ☐ Asset Protection Zones
- ☐ Access
- ☐ Construction Standards
- ☐ Services
- ☐ Emergency and Evacuation Planning

Documentation

☑ Preliminary Bush Fire Risk Assessment	Bushfire Due Diligence – Opportunities and Constraints Assessment prepared by GHD dated 15 August 2024
☐ Concept/Detailed Drawings	
☐ Other Documents	

Pre DA Advice

- Schools are classified as special fire protection purpose (SFPP) development and require the issue of a bush fire safety authority (SFPP) under section 100b of the *Rural Fires Act 1997*, if the site is partially or entirely mapped as bush fire prone land regardless of the location of the proposed buildings, in line with the current business practice. The proposal needs to address the requirements of chapter 6 and the Addendum to *Planning for Bush Fire Protection 2019*.

- Please note that the pre DA advice is not intended to provide pre approval of bush fire risk assessment to support a development application. The aim of the service is to identify any potential issues in relation to bush fire risk assessment before a formal development application is lodged. The advice issued is preliminary in nature and no detailed assessment of the site or development is undertaken at this stage. The service is not to be used for the purpose of submitting revised information/bush fire engineering brief for further review of the original advice.

Disclaimer

RFS advice is based on information provided and policy and legislative requirements applicable at the time. The advice should be copied into, or referenced in, any subsequent development application.

All efforts are made to identify issues of relevance and likely concern with the preliminary proposal. However, the comments and views in this document are based only on the plans and information submitted for preliminary assessment and discussion at the pre-DA meeting. You are advised that: -

- The views expressed may vary once detailed plans and information are submitted and formally assessed in the development application process, or as a result of issues contained in submissions by interested parties;
- Given the complexity of issues often involved and the limited time for full assessment, no guarantee is given that every issue of relevance will be identified;
- Amending any aspect of the proposal could result in changes which would create a different set of impacts from the original plans and therefore make this advice invalid; and,
- The Pre-DA advice given does not bind Council officers, the elected Council members, or other parties to the DA process.

Submitted by:	Approved by:
Kalpana Varghese A/Manager Planning and Environment Services (East) Built and Natural Environment	Rohini Belapurkar A/Supervisor, Development Assessment and Planning Planning and Environment Services (East) Built and Natural Environment

Date: 20 December 2024

ghd.com

→ The Power of Commitment