Date: 17/10/2024

Our Ref: BR-848324-A

**BUSHFIRE PLANNING & DESIGN**

# BUSH FIRE ASSESSMENT

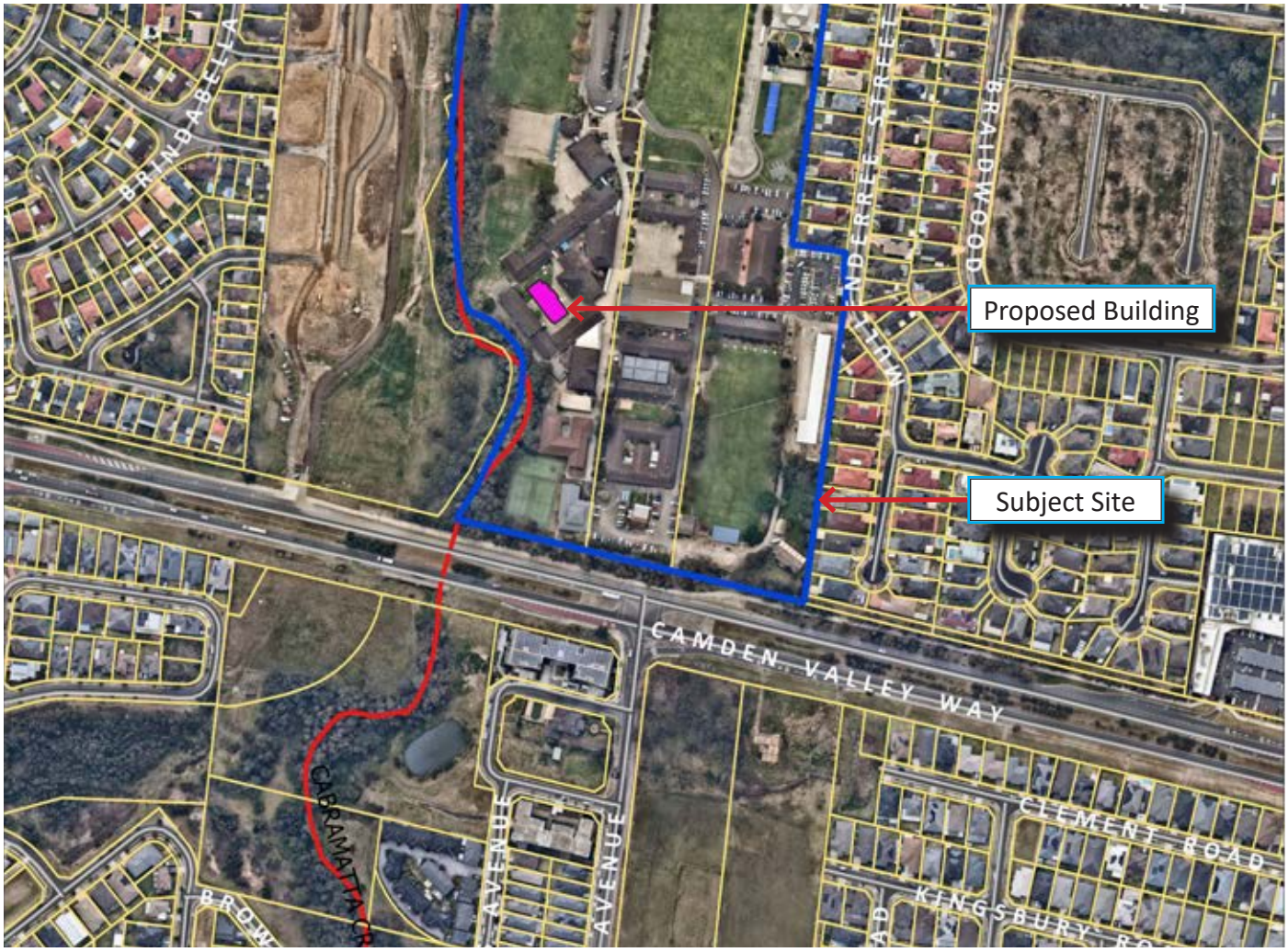
## 38-44 Bumbera Street Prestons 2170

Assessed as: Special Fire Protection Purpose (SFPP)

Prepared by: Matthew Noone | Accreditation NO: BPAD-25584 (BPAD Level 3)

Site Address: 38-44 Bumbera Street Prestons 2170 | Lot / DP: (Lot 50/-/DP1082480)

**Project Description: Proposed Double Story Classroom Building**






REPORT NUMBER
BR-848324-A

| DATE | ISSUED TO | REV. | NOTES |
|---|---|---|---|
| 09.10.2024 | Helping Hands Planning & Design PTY LTD | A (Draft-1) | Issued for comment |
| 17.10.2024 | Helping Hands Planning & Design PTY LTD | A | Issued for Part 5 Approval |

## DISCLAIMER and TERMS OF USE

Bush Fire Planning & Design cannot be held liable for the loss of life or property caused by a Bush Fire event. This report has considered the relevant planning instruments, Bush Fire constructions codes and practices applicable at the time of writing. Should additional information be provided after this report has been issued, we reserve the right to review and if necessary modify our report. Bush Fire Planning and Design has no control over workmanship, buildings degrade over time and vegetation if not managed will regrow. In addition legislation and construction standards are subject to change. Due to significant variance of Bush Fire behaviour, we do not guarantee that the dwelling will withstand the passage of Bush Fire even if this development is constructed to the prescribed standards.

AS3959 (2018) states "*It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a Bush Fire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature of behaviour of fire, and extreme weather conditions*."

This report has been based on our interpretation of Planning for Bush Fire Protection (2019), AS3959 (2018) and the methodology for site specific Bush Fire assessment. Our opinions may differ from the opinions provided by you the Client (or Client Representative), the Council, the RFS or another Bush Fire consultant. Our role is intermediary between our Client (or Client Representative) and the consenting authority. We apply our knowledge of the relevant Bush Fire protection standards to provide the best possible outcome for our Client (or Client Representative), both from a Bush Fire safety and financial perspective. Should the RFS modify our recommendations or reject the proposal to which this report relates to we will not be held liable for any financial losses as a result. By using this document, you the Client (or Client Representative) agree to and acknowledge the above statements.

# TABLE OF CONTENTS

## GLOSSARY

The abbreviations that are commonly used are explained below. Not all are present in this report.

| | |
|---|---|
| APZ | Asset Protection Zone |
| AS3959 | Australian Standard for the Construction of a Building in a Bush fire Prone Area |
| BAL | Bush Fire Attack Level |
| BCA | Building Code of Australia |
| BFPL | Bush Fire Prone Land |
| BFPLM | Map Bush Fire Prone Land Map |
| BFDB | Bush Fire Design Brief |
| BPM | Bush Fire Protection Measure |
| DA | Development Application |
| DCP | Development Control Plan |
| DPIE | Department Of Planning, Industry And Environment |
| DTS | Deemed to Satisfy |
| EPA ACT | Environmental Planning And Assessment Act 1979 |
| FDI | Fire Danger Index |
| FFDI | Forest Fire Danger Index |
| GFDI | Grassland Fire Danger Index |
| IPA | Inner Protection Area |
| LEP | Local Environmental Plan |
| NASH | National Association of Steel Framed Housing |
| NCC | National Construction Code |
| OPA | Outer Protection Area |
| PBP | Planning for Bush Fire Protection |
| RF ACT | Rural Fires Act |
| RF REG | Rural Fires Regulation |
| NSW RFS | New South Wales Rural Fire Service |
| SEPP | State Environmental Planning Policy |
| SFPP | Special Fire Protection Purpose |
| SFR | Short Fire Run |
| SSD | State Significant Development |

# PART A - PROJECT DETAILS

## ASSESSMENT DETAILS

| | | | |
|---|---|---|---|
| Client | | Helping Hands PTY LTD | |
| Location | | 38-44 Bumbera Street Prestons 2170 | |
| Title reference | | (Lot 50/-/DP1082480) | |
| LGA | | Liverpool City Council | |
| Zoning | | R2 Low Density Residential | |
| Development Type | | Double Story Classroom Building | |
| PBP (2019) Assessment Type | | Special Fire Protection Purpose (Chapter 6) | |
| Bushfire Consultancy | | Bushfire Planning and Design - Director Matthew Noone - Accreditation number BPAD-25584 (Level 3) | |
| Report no. | Date of Issue | BR-848324-A | 17/10/2024 |

## SCOPE

The first intended audience is our Client and the Design Team. The recommendations in this report should be adopted integral to design development. Our report addresses the submission requirements for a Bush Fire Safety Authority (PBP 2019, s.A2.1) and provides and assessment against the Acceptable Solutions for Special Fire Protection Purpose development (Chapter 5 PBP 2019). Any deviations from the Acceptable Solutions are being addressed in the Bush Fire Design, Compliance, & Approvals Report prepared by others.

## A.01 BUSH FIRE PRONE LAND

The subject site whether in whole or part is recorded as bush fire affected on a relevant map certified under Section 10.3 (2) of the Environmental Planning and Assessment Act 1979 (Refer figure A.01). The proposed classroom building is located in the buffer to the east of the Category 2 Vegetation.


Source: https://portal.spatial.nsw.gov.au/server/rest/services/Hosted/NSW_Bush_Fire_Prone_Land/FeatureServer/0 (17/10/2024)

| FIGURE A.01 BUSHFIRE PRONE LAND MAP | Plot date:08/10/2024 | Project CRS: EPSG:28356 | A.01 |
|---|---|---|---|
| Buffer 0<br>Category 1<br>Category 2<br>Category 3<br>Subject Site<br>Proposed Classroom Building | 0 60 120 180 240 m<br>Meters | | |
| | **BUSHFIRE PLANNING & DESIGN**<br>bpad.matthew.noone@gmail.com / 0406077222 | | |

## A.02 DEVELOPMENT PROPOSAL

The development relates to the construction of a two storey classroom building having a footprint of 364m$^2$. The proposed classroom building is located in the courtyard surrounded on all sides by existing buildings (Block G to the west, Block E to the south, block D to the east and the existing one story brick building to the north (See concept drawing below).


Concept Drawing.

## A.03 REGULATORY FRAME WORK

The subject site whether in whole or part is recorded as Bush Fire affected on a relevant map certified under Section 10.3 (2) of the Environmental Planning and Assessment Act 1979. The proposed school development is being lodged under Part 5 of the Environmental Planning and Assessment Act 1979 (EPA Act), which requires an environmental assessment to determine the potential impact of the project. While the development is not considered integrated under the Act, it must be referred to the NSW Rural Fire Service (RFS) in accordance with Section 100B of the Rural Fires Act 1997. The following legislative instruments are applicable.

**PRE-DEVELOPMENT CONSENT**

- Part 5 of the Environmental Planning and Assessment Act 1979
- s.100B Rural Fire Act (1997) Bush fire safety authorities.
- s.45 Rural Fire Regulation (2022).
- Planning for Bush Fire Protection (2019).
- Planning for Bushfire Protection (2022) Addendum.
- National Construction Code (2022) Specification 43.

**POST-DEVELOPMENT CONSENT**

- National Construction Code (2022).
- AS3959 (2018) Construction of Buildings in Bush Fire Prone Areas.

The project is assessed as Special Fire Protection Purpose (SFPP) as defined in section 6 (PBP 2019). An

"*SFPP development is one which is occupied by people who are considered to be at-risk members of the community. In a bush fire event, these occupants may be more susceptible to the impacts of bush fire. Evacuating at-risk members of the community is more challenging because they may be physically or psychologically less able to relocate themselves or are unfamiliar with their surroundings. Examples of SFPP developments are schools, hospitals, nursing homes and tourist accommodation*" (PBP 2019, p.49).

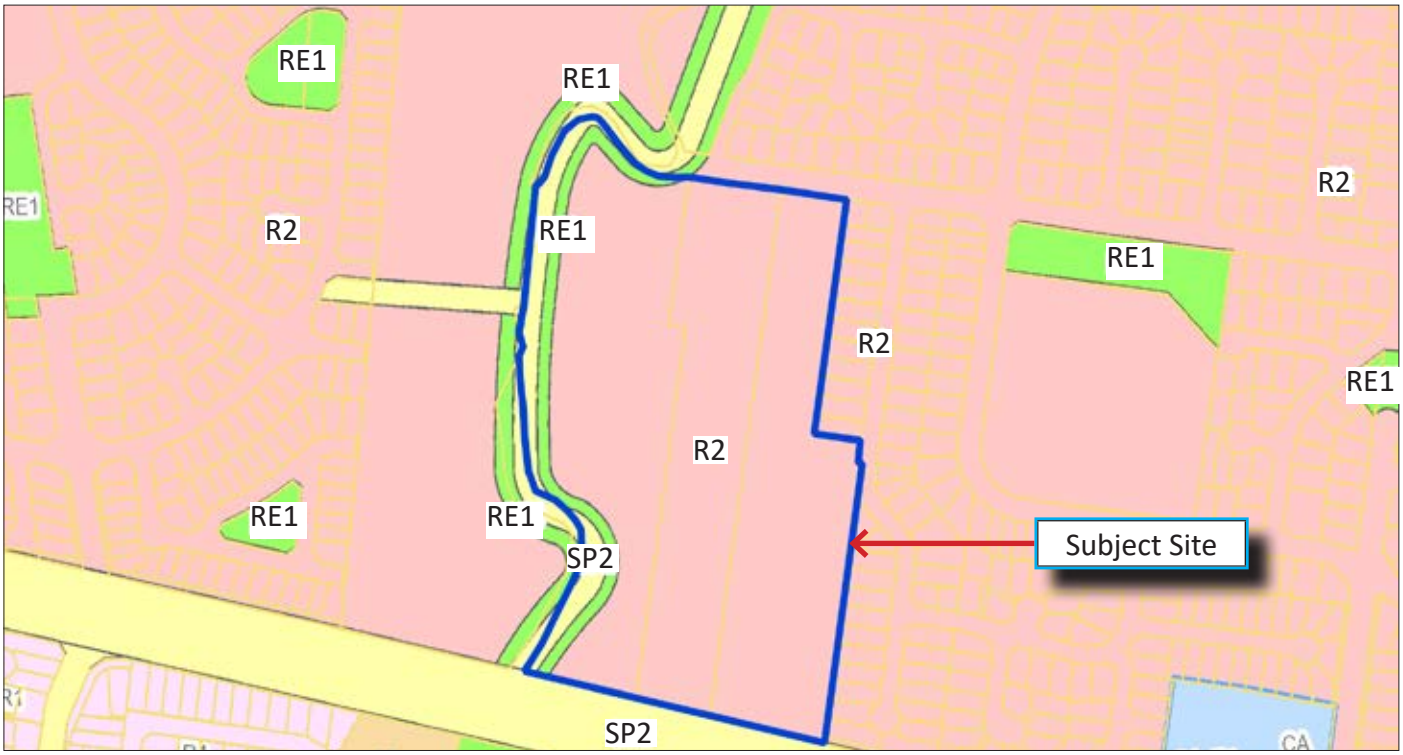
## A.04 SITE LOCATION, DESCRIPTION AND POTENTIAL BUSH FIRE THREATS

The subject site is located in Prestons, within the Liverpool City Local Government Area (LGA). It is occupied by William Carey Christian School, which has been on the site since 1988. The school offers independent co-educational early learning, as well as primary and secondary day schooling. The established school grounds contain various buildings, playing fields, open spaces, and car parks, typical of school infrastructure.

To the west of the site, a narrow vegetation corridor (NVC), identified as a Forested Wetland, surrounds Cabramatta Creek. The entire site is maintained with minimal fuel conditions. The land to the east and south is managed residential land. The riparian corridor is mapped as Vegetation Category 2, which has lower combustibility and/or limited potential fire size due to its shape, size, land geography, and management practices (RFS 2015).

## A.05 LAND USE, ZONING AND PERMISSIBILITY

The subject site is primarily zoned R2 Low Density Residential. A portion of the western boundary is zoned SP2 Infrastructure and RE1 Public Recreation.




Source: NSW Planning Portal Spatial Viewer accessed online at https://www.planningportal.nsw.gov.au/spatialviewer (17/10/2024)

**LAND ZONING LEGEND**

R2 Low Density Residential

SP2 Infrastructure

RE1 Public Recreation

# FIGURE A.04 - LOCATION DWG (CONTEXT)


Image source: Nearmap accessed on line 17/10/2024

| FIGURE A.04 LOCATION DRAWING | Plot date:08/10/2024 | Project CRS: EPSG:28356 | A.04 |
|---|---|---|---|
| Subject Site<br>Proposed Classroom Building<br>NamedWatercourse | 0 40 80 120 160 m<br>Meters | | |
| | **BUSHFIRE PLANNING & DESIGN**<br>bpad.matthew.noone@gmail.com / 0406077222 | | |

## A.06 SIGNIFICANT ENVIRONMENTAL FEATURES

It is our observation that there are no notable environmental features within the site. Cabramatta Creek runs north to south following the western boundary.

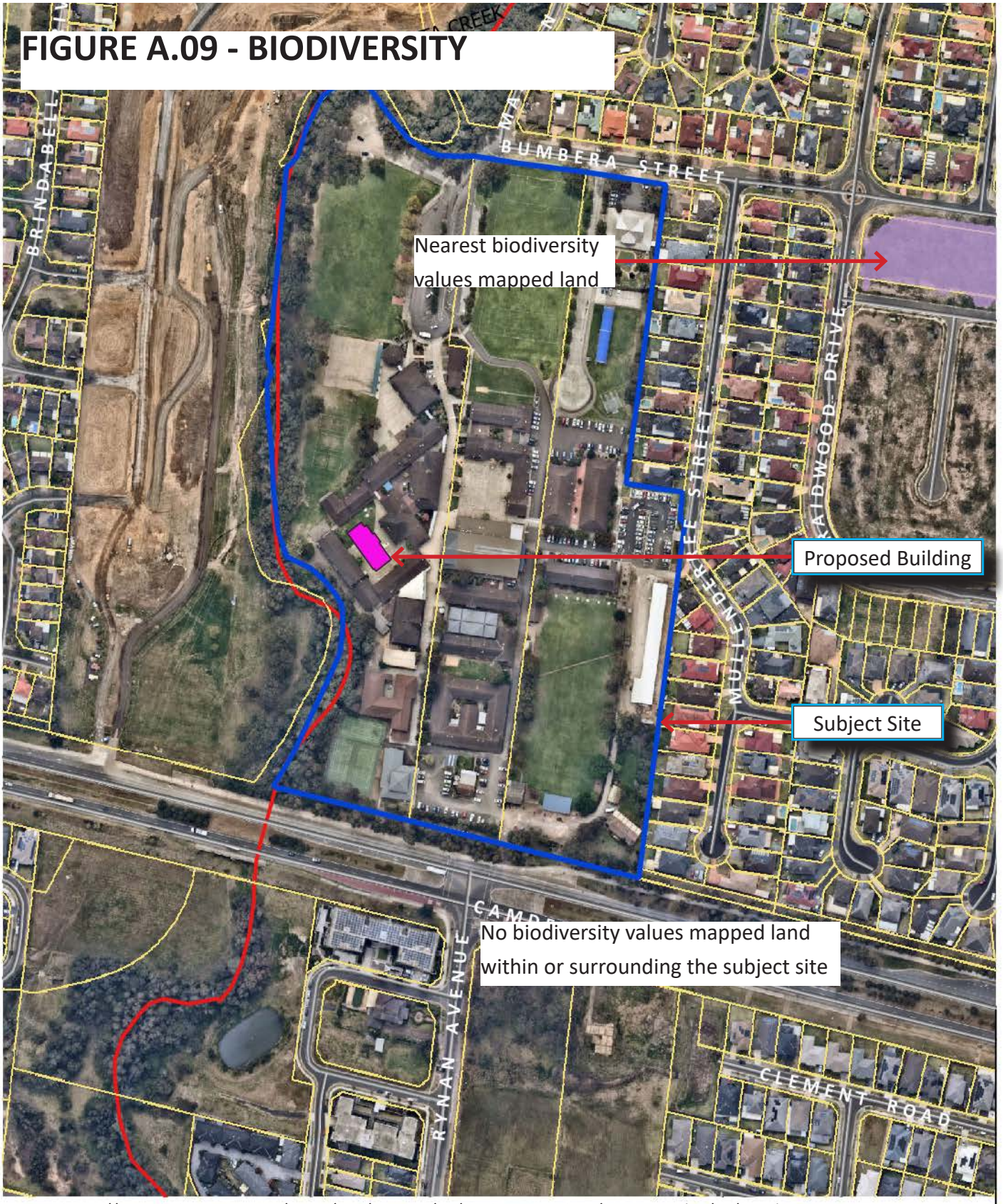
## A.07 DETAILS OF ABORIGINAL HERITAGE

To our knowledge the site is not associated with any items of Aboriginal heritage.

## A.08 THREATENED SPECIES, COMMUNITIES AND CRITICAL HABITATS

The subject site is not mapped by the Department of Planning, Industry and Environment (DPIE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act) as having Biodiversity Values (BV). There is no BV mapped land within the proposed development area. Refer to Figure A.09.

# FIGURE A.09 - BIODIVERSITY




Source: https://www.lmbc.nsw.gov.au/arcgis/rest/services/BV/BiodiversityValues/MapServer(17/10/2024).

| FIGURE A.09 BIODIVERSITY | Plot date:08/10/2024 | CRS: EPSG:28356 | A.09 |
|---|---|---|---|
| BIODIVERSITY VALUES<br>Biodiversity Values<br>Biodiversity Values added in the last 90 days<br>Subject Site<br>Proposed Classroom Building<br>NamedWatercourse<br><br>The BV Map has been prepared by the Department of Planning, Industry and Environment (DPIE) under Part 7 of the Biodiversity Conservation Act 2016 (BC Act). | 0 — 150 m<br>Meters | BUSHFIRE PLANNING & DESIGN<br>bpad.matthew.noone@gmail.com / 0406077222 | |

## A.09 REPORT LIMITATIONS

This report is provided for assessing relevant building bush fire protection and associated land use requirements within the context of PBP (2019). For further information refer to section 1.3 PBP (2019).

This bush fire assessment is developed based on the current accepted standards. The severity of bush fire attack is reliant on many variables. Due to these variables the bush fire attack on any given day could be higher due to the limitations outline below. The bush fire protection measures contained in this document does not guarantee that loss of life, injury or property damage will not occur during a bush fire event.

### Legislative Standards

Recommendations relating to development of bush fire prone land are a directive through the legislative standards applicable at the time of writing. Legislative standards change over time. All recommendations made are based on the current standards. We cannot guarantee that the current standards will be suitable in comparison to future standards.

### Maintenance

After the issuance of an Occupancy Certificate (OC) it is imperative that the bush fire protection recommendations are carried out for the life of the development. Failure to maintain a property in accordance with the RFS standards for Asset Protection Zones could lead to the failure of the building, property and life. We have no control over the extent of how well a property will be maintained post OC.

# PART B - BUSH FIRE ATTACK LEVEL (BAL) ASSESSMENT METHODOLOGY

## B.01 INTRODUCTION

For the purpose of this bush fire assessment, the vegetation is required to be described to a distance of 140m from the boundary and the slope to 100m from boundary. Vegetation type and slope under vegetation are the factors that will significantly affect bush fire behaviour.

'Research has shown that 85% of houses are lost in the first 100m from bushland and that ember attack is a significant form of attack on properties' (RFS 2006).

## B.02 SLOPE DETERMINATION

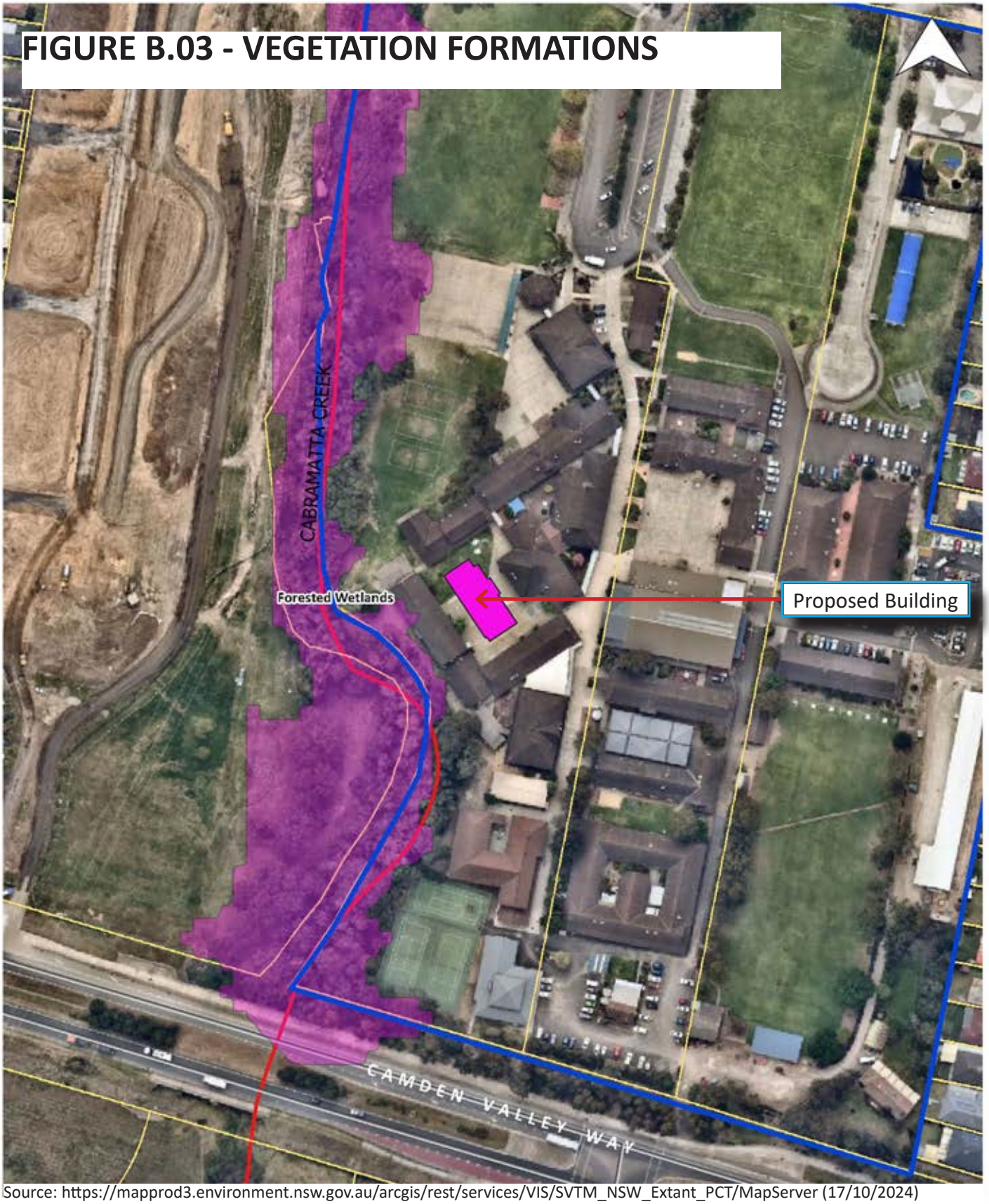
The effective slope has been assessed for a distance of at least 100m from the proposed development. The slope data has been calculated from a 1m LiDAR Digital Elevation Model (DEM). The source data sets have been captured to standards that are generally consistent with the Australian ICSM LiDAR Acquisition Specifications with require a fundamental vertical accuracy of at least 0.30m (95% confidence) and horizontal accuracy of at least 0.80m (95% confidence). The slope arrows indicated in figure A represent the slope calculated across the length of the arrow direct from the digital elevation model. The calculated slope as shown in Figure A has not been manipulated or modified in any way.

## B.03 PREDOMINANT VEGETATION FORMATIONS

This assessment considers the vegetation within the site and if relevant, vegetation external to the site boundaries. Where mixes of vegetation formations are located together, the vegetation formation providing the greater hazard (highest radiant heat load) shall be used to determine the BAL and APZ. The combination of vegetation and slope that yields the worst case scenario shall be used (A1.2 PBP 2019). The vegetation mapping provides an overview of the types of vegetation proximal to the site. The vegetation mapping shown in Figure B.04 is not intended to be conclusive.

Based on the above assessment methodology, the predominant bush fire prone vegetation within 140m of the proposed development is Forested Wetland.

# FIGURE B.03 - VEGETATION FORMATIONS




Source: https://mapprod3.environment.nsw.gov.au/arcgis/rest/services/VIS/SVTM_NSW_Extant_PCT/MapServer (17/10/2024)

**FIGURE B.03 - VEGETATION FORMATIONS**

Subject Site | Forested Wetlands | Proposed Classroom Building | NamedWatercourse

| | | |
|---|---|---|
| CRS: EPSG:28356<br>Plot date:08/10/2024 | 0 Meters 100 m | **BUSHFIRE PLANNING & DESIGN**<br>projects@bpad-nsw.com / 0406077222 |

## B.04 BUSH FIRE ATTACK LEVEL (BAL) ASSESSMENT.

Cabramatta Creek is located to the west of the proposed building, closely following the western boundary. The vegetation within and surrounding the Creek is mapped as Forested Wetland (Refer State Vegetation Mapping (Figure B.04). The thin band of Forested Wetland is mapped as Vegetation Category 2. Vegetation Category 2 has lower combustibility and/or limited potential fire size due to the vegetation area shape and size, land geography and management practices (RFS 2015).

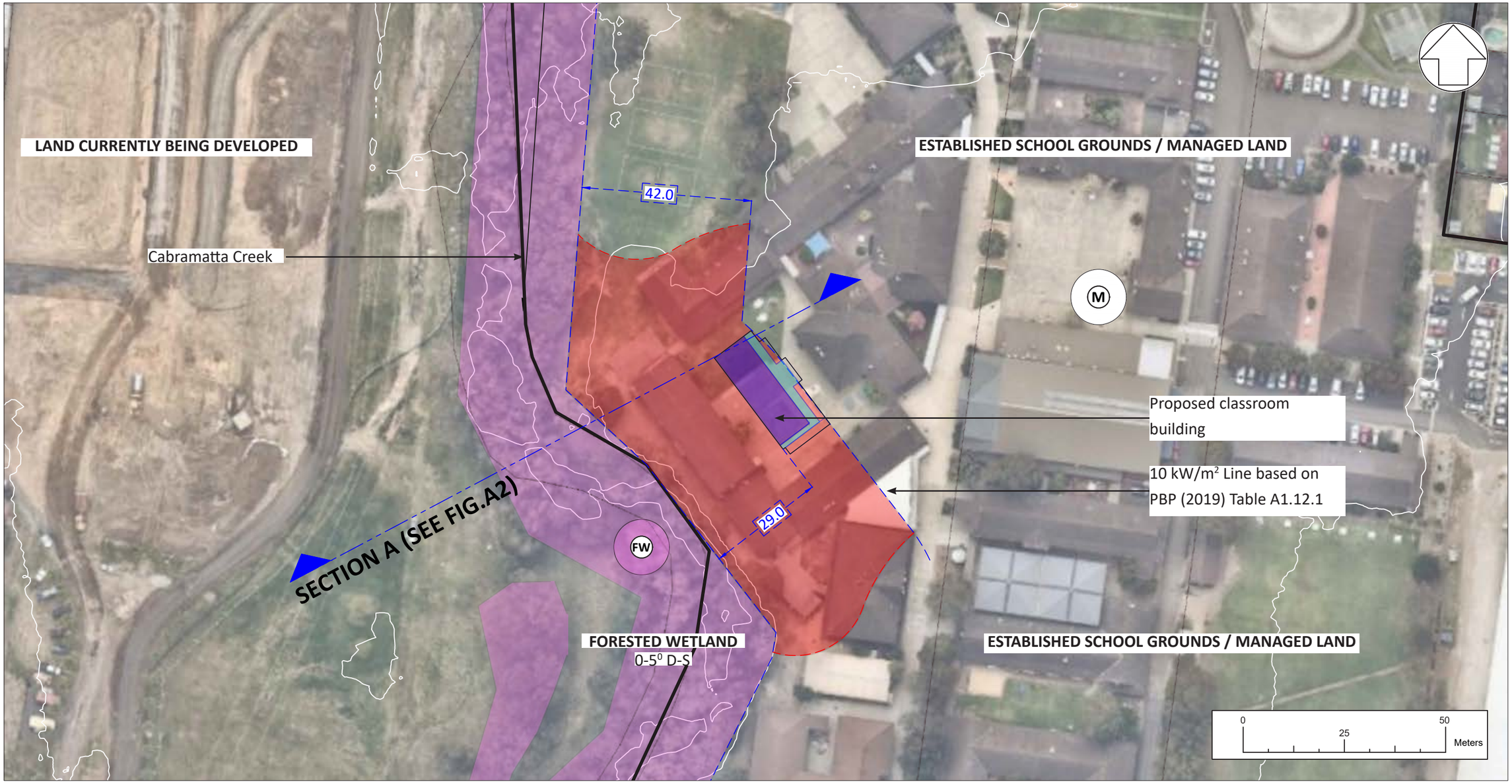
As per the PBP (2019) SFPP development is required to demonstrate that radiant heat levels greater than 10kW/m² (calculated at 1200K) will not be experienced on any part of the building. The 10 kW/m$^2$ cannot be achieved via a deemed to satisfy pathway. The available APZs are shown below in Table 1 and in Figure A1 (page 17).

Figure A2 has been provided as supplementary information. Method 2 (AS3959) modelling indicates the proposed classroom building could experience radiant heat loads up to 14.62 kW/m$^2$ if exposed to bushfire. This calculation does not consider other factors such as shielding by the surrounding buildings or the ability for the creek vegetation to support a fully developed fire. The calculation is therefore considered to be an over estimate.

| **TABLE 1** (To be read in conjunction with Figure A1. | | | | |
|---|---|---|---|---|
| LGA = Liverpool City | | | Fire Danger Index = FDI 100 | |
| ASPECT [1] | Vegetation Class [2] | Max Effective Slope [3] | Required APZ [4] | Achieved APZ |
| W | Forested Wetland [6] | 0-5$^0$ D-S | 42m | 29m |

| Abbreviations | | |
|---|---|---|
| AOD All other directions | EML Extent of managed land | NVC Narrow vegetation corridor |
| D-S Down Slope | | |

| | |
|---|---|
| 1 | *Cardinal direction from each proposed building facade based on grid north.* |
| 2 | *Vegetation Classifications are as described in PBP (2019) A1.2.* |
| 3 | *Site slope is calculated from 1m LiDAR contours.* |
| 4 | *Acceptable Solutions for Infill as presented in Table A1.12.1 PBP (2019).* |
| 5 | *Actual dimensional setback from the face of the building to the assessed vegetation. Achieved Asset Protection Zone (APZ) or extent of managed land (EML).* |




## VEGETATION KEY

M — Managed Land

FW — Forested Wetland

## DRAWING LEGEND

Site Boundary

Proposed Classroom Building

Proposed Stairs and Ramps

DTS APZ required to achieve 10 kW/m2 (PBP 2019 Table A1.12.1)

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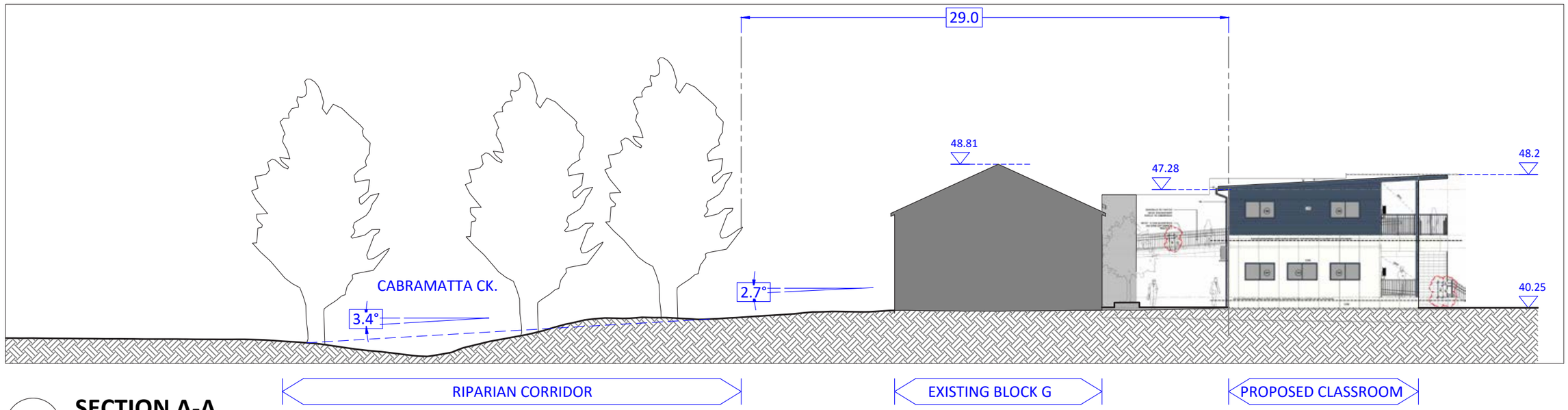
Figure:

**A1**




## SECTION A-A

1:250

### NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

**Print Date:** 12/10/2024 **Assessment Date:** 12/10/2024

**Site Street Address:** William Carey Christian School, Prestons

**Assessor:** Matthew Noone; Bushfire Planning and Design

**Local Government Area:** Liverpool **Alpine Area:** No

**Equations Used**

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
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:** W

**Vegetation Information**

| | | | |
|---|---|---|---|
| **Vegetation Type:** | Forested Wetland (excluding Coastal Swamp Forest) | | |
| **Vegetation Group:** | Forest and Woodland | | |
| **Vegetation Slope:** | 3.4 Degrees | **Vegetation Slope Type:** | Downslope |
| **Surface Fuel Load(t/ha):** | 8.2 | **Overall Fuel Load(t/ha):** | 15.1 |
| **Vegetation Height(m):** | 2 | Only Applicable to Shrub/Scrub and Vesta | |

**Site Information**

| | | | |
|---|---|---|---|
| **Site Slope:** | 2.7 Degrees | **Site Slope Type:** | Downslope |
| **Elevation of Receiver(m):** | Default | **APZ/Separation(m):** | 29 |

**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**

| | | | |
|---|---|---|---|
| **Level of Construction:** | BAL 19 | **Peak Elevation of Receiver(m):** | 3.53 |
| **Radiant Heat(kW/m2):** | 14.62 | **Flame Angle (degrees):** | 82 |
| **Flame Length(m):** | 9.9 | **Maximum View Factor:** | 0.16 |
| **Rate Of Spread (km/h):** | 1.24 | **Inner Protection Area(m):** | 29 |
| **Transmissivity:** | 0.818 | **Outer Protection Area(m):** | 0 |
| **Fire Intensity(kW/m):** | 9707 | | |

**BAL Thresholds**

| | BAL-40: | BAL-29: | BAL-19: | BAL-12.5: | 10 kw/m2: | Elevation of Receiver: |
|---|---|---|---|---|---|---|
| **Asset Protection Zone(m):** | 8 | 11 | 17 | 24 | 39 | 6 |

---

**Run Description:** W

**Vegetation Information**

| | | | |
|---|---|---|---|
| **Vegetation Type:** | Forested Wetland (excluding Coastal Swamp Forest) | | |
| **Vegetation Group:** | Forest and Woodland | | |
| **Vegetation Slope:** | 3.4 Degrees | **Vegetation Slope Type:** | Downslope |
| **Surface Fuel Load(t/ha):** | 8.2 | **Overall Fuel Load(t/ha):** | 15.1 |
| **Vegetation Height(m):** | 2 | Only Applicable to Shrub/Scrub and Vesta | |

**Site Information**

| | | | |
|---|---|---|---|
| **Site Slope:** | 2.7 Degrees | **Site Slope Type:** | Downslope |
| **Elevation of Receiver(m):** | Default | **APZ/Separation(m):** | 29 |

**Fire Inputs**

| | | | |
|---|---|---|---|
| **Veg./Flame Width(m):** | 100 | **Flame Temp(K):** | 1090 |

**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**

| | | | |
|---|---|---|---|
| **Level of Construction:** | BAL 12.5 | **Peak Elevation of Receiver(m):** | 3.53 |
| **Radiant Heat(kW/m2):** | 9.84 | **Flame Angle (degrees):** | 82 |
| **Flame Length(m):** | 9.9 | **Maximum View Factor:** | 0.16 |
| **Rate Of Spread (km/h):** | 1.24 | **Inner Protection Area(m):** | 29 |
| **Transmissivity:** | 0.809 | **Outer Protection Area(m):** | 0 |
| **Fire Intensity(kW/m):** | 9707 | | |

**BAL Thresholds**

| | BAL-40: | BAL-29: | BAL-19: | BAL-12.5: | 10 kw/m2: | Elevation of Receiver: |
|---|---|---|---|---|---|---|
| **Asset Protection Zone(m):** | 8 | 11 | 17 | 24 | 39 | 6 |

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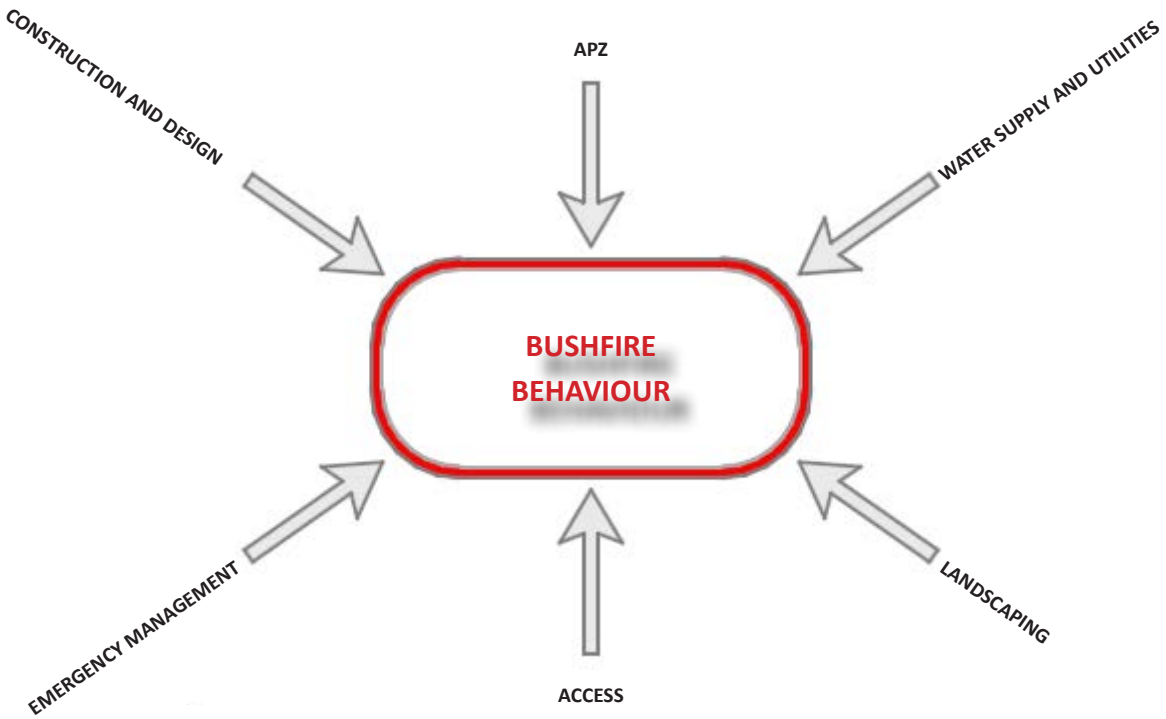
Figure:

**A2**

# PART C BUSHFIRE PROTECTION MEASURES (BPMS)

BPMs can mitigate the impact of bush fire attack on people and assets. The types of protection measures include APZs, access, landscaping, water supply, building design and construction and emergency management arrangements. These measures assist building survival during a bush fire. They also contribute to the safety of firefighters and members of the community occupying buildings during the passage of a bush fire front. There are a range of different BPMs which should be applied in combination based upon the development type and the level of bush fire risk. All requirements for BPMs that relate to the development must be provided, as required by this document.



## C.01 ASSET PROTECTION ZONES (APZs)

We have undertaken an assessment of the development against the acceptable solutions which requires an APZ to be provided to demonstrate radiant heat levels of greater than 10kW/ m² (calculated at 1200K) will not be experienced on any part of the building. Our assessment identifies that a 42m APZ is required to comply with the acceptable solutions. As shown in Figure A2, the achieved APZs do not comply with the Acceptable Solutions. The entire site which is occupied by a number of existing buildings, playing fields, open space, carparks and circulation is managed as an Inner Asset Protection Zone. We recommend the site continue to be managed as an inner APZ. The following guidelines are to be maintained in perpetuity.

**TREE CANOPY TREATMENT**

- Inner APZ tree canopy cover should be less than 15% at maturity;
- Inner APZ trees at maturity should not touch or overhang the building;
- Inner APZ lower limbs should be removed up to a height of 2m above the ground;
- Outer APZ tree canopy cover should be less than 30% at maturity;
- tree canopies should be separated by 2 to 5m; 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 should be provided;
- shrubs should not be located under trees;
- shrubs in the Inner APZ should not form more than 10% groundcover; and
- shrubs in the Outer APZ should not form more than 20% groundcover; 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**

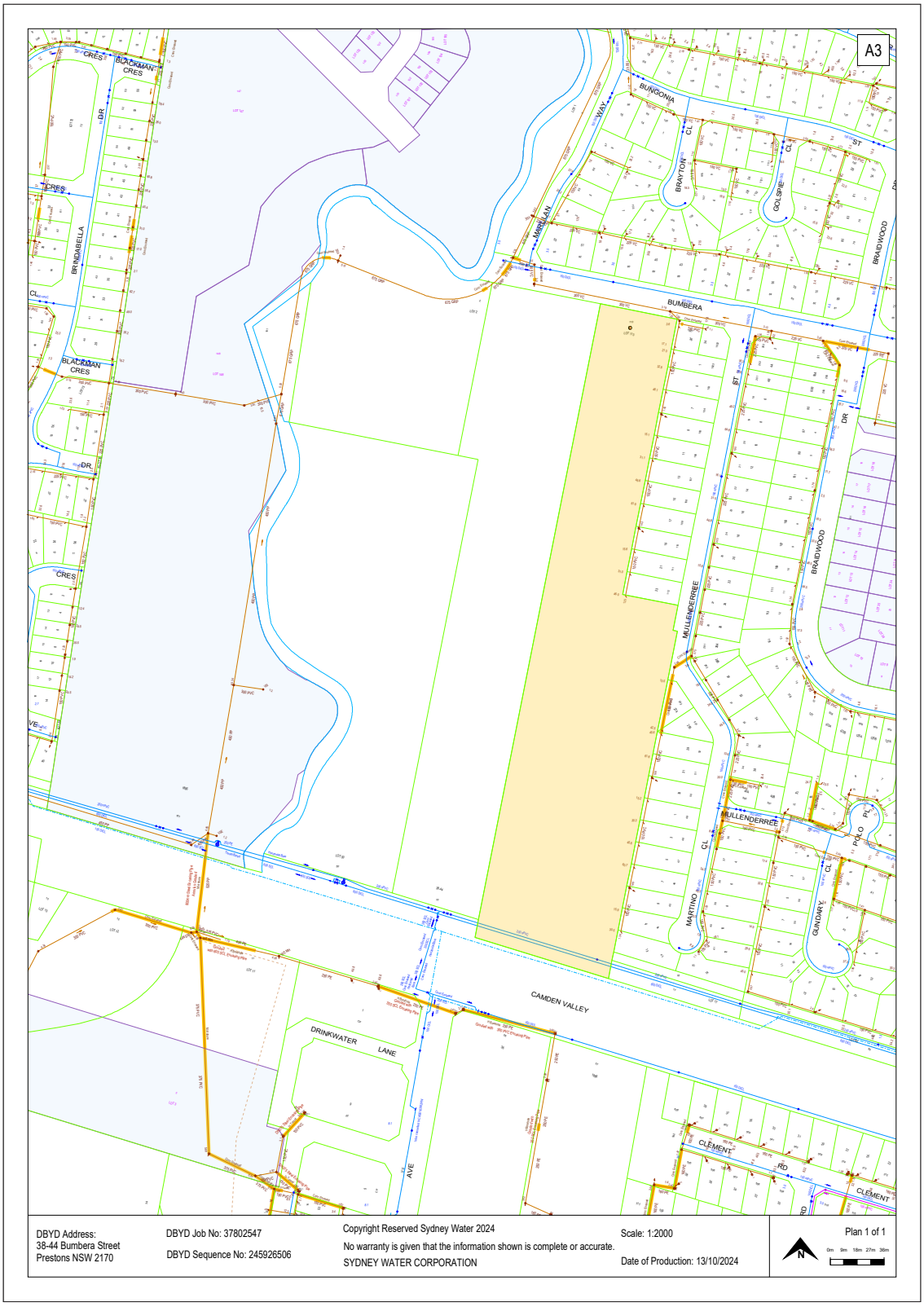
- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

## VEGETATION IMPACT STATEMENT

The subject site is managed to minimal fuel conditions. From a bushfire protection perspective, no trees are required to be removed to satisfy PBP (2019) Appendix 4.

## C.02 WATER

The site is serviced by existing reticulated water infrastructure, with water supply available from Bumbera Street to the north, Mullenenderree Street to the east, and Camden Valley Way to the south (refer to the Sydney Water Map below). While the exact design and location of hydrants within the site are currently unknown, a qualified hydraulic engineer will be engaged to design a suitable firefighting water supply system. This system will be in accordance with the requirements set out in Planning for Bush Fire Protection (PBP) and the National Construction Code (NCC).



## C.03 ACCESS

### ACCESS - PUBLIC ROADS

The public road system consists of two-lane roads, with a nominal carriage width of 8 meters kerb to kerb, providing sufficient capacity for emergency vehicles and evacuations. The surrounding road networks, including access points from Bumbera Street and Mullenderree Street, are not identified as bushfire-affected, ensuring reliable access and egress during a bush fire emergency.

### ACCESS - FIRE TRAILS

It is noted the development site is located in what is essentially an urban area. There are no fire trails on or near the subject site, and as such, there are no nearby public roads linking to a fire trail network. However, the existing road infrastructure, including Bumbera Street to the north and Mullenderree Street to the east, provides two-way access, ensuring efficient vehicle movement in case of an emergency. There are no registered fire trails on the subject site.

### ACCESS - PROPERTY ACCESS

Firefighting vehicles can access the site from Mullenderree Street to the east and Bumbera Street to the north without being impacted by radiant heat loads exceeding 10 $kW/m^2$. Access to the vegetation is available via Camden Valley Way to the south. It is likely the vegetation will be accessible via the new development to the west of Cabramatta Creek which is currently under development. However the details of that development are not confirmed.

## C.04 EMERGENCY MANAGEMENT

In our reporting for the recently approved car park development (**CNR67805 DA-144/2024)** we had recommended the School update their emergency management plan to include a bushfire emergency management plan. The plan is to be consistent with the NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* or, the *NSW RFS Schools Program Guide* or the Australian Standard AS 3745:2010 Planning for emergencies in facilities. None the less, this recommendation is also applicable to this development and the previous bushfire emergency management and evacuation plan may need to be updated to include the proposed classroom development.

## C.05 CONSTRUCTION

Our assessment of the Bushfire Attack Level indicates the proposed classroom building could experience radiant heat loads greater than 10 kW/$m^2$ if exposed to bushfire (based on the Acceptable Solutions and Table A1.12.1 (PBP (2019).

The proposed classroom building is to be constructed to comply with the NCC.

## C.06 SPRINKLER SYSTEMS

To our knowledge, there are no existing or proposed sprinkler systems.

## PART C ASSESSMENT AGAINST PBP (2019) SFPP S.6.4 OBJECTIVES

| PBP Objectives for Existing SFPP Development | BPAD Comments | Compliance |
|---|---|---|
| provide an appropriate defendable space; | The proposed classroom building is located in the courtyard surrounded on all sides by existing buildings (Block G to the west, Block E to the south, block D to the east and the existing one story brick building to the north. Defendable Space is provided. | Yes |
| site the building in a location which ensures appropriate separation from the hazard to minimise potential for material ignition; | As above. | Yes |
| provide a better bush fire protection outcome for existing buildings; | With regard to the existing buildings surrounding the proposed classroom (Eg. Block G, E and un-named building to the north), we recommend improving the facades facing the creek only with regard to ember protection. | Yes |
| new buildings should be located as far from the hazard as possible and should not be extended towards or situated closer to the hazard than the existing buildings (unless they can comply with section 6.8); | The proposed classroom building does not extend closer to the hazard than existing buildings. Block G sits between the proposed building and Forested Wetland. | Yes |
| ensure there is no increase in bush fire management and maintenance responsibility on adjoining land owners without their written confirmation; | There is no additional bush fire management and maintenance responsibility on adjoining land owners. | Yes |
| ensure building design and construction enhances the chances of occupant and building survival; and | The building will be constructed to the specified requirements. | Yes |
| provide for safe emergency evacuation procedures including capacity of existing infrastructure (such as roads). | Addressed in our reporting for the previous carpark development (ref: BL-700023-B-2 dated 21/05/2024). | Yes |

# PART D RURAL FIRE REGULATION CLAUSE 45 (G) REVIEW

| CLAUSE 45 ASSESSMENT REQUIREMENTS / ITEMS TO BE ADDRESSED | | | REFER |
|---|---|---|---|
| *2(a)* | *a description, including the address, of the property on which the development the subject of the application is proposed to be carried* | | A.04 |
| *2(b)* | *a classification of the vegetation on and surrounding the property, out to a distance of 140 metres from the boundaries of the property, in accordance with the system for classification of vegetation contained in Planning for Bush Fire Protection,* | | B.03 |
| *2(c)* | *an assessment of the slope of the land on and surrounding the property, out to a distance of 100 metres from the boundaries of the property,* | | B.02 |
| *2(d)* | *identification of significant environmental features on the property,* | | A.06 |
| *2(e)* | *the details of a threatened species or threatened ecological community under the Biodiversity Conservation Act 2016 that the applicant knows to exist on the property,* | | A.08<br>A.09 |
| *2(f)* | *the details and location of an Aboriginal object or place, within the meaning of the National Parks and Wildlife Act 1974, that the applicant knows to be situated on the property,* | | A.07 |
| *2(g)* | *a bush fire assessment for the proposed development, including the methodology used in the assessment, that addresses the following matters—* | | |
| | *(i)* | *the extent to which the development is to provide for setbacks, including asset protection zones,* | B.04<br>C.01 |
| | *(ii)* | *the siting and adequacy of water supplies for fire fighting,* | C.02 |
| | *(iii)* | *the capacity of nearby public roads to handle increased volumes of traffic when a bush fire emergency occurs,* | C.03 |
| | *(iv)* | *whether or not nearby public roads that link with the fire trail network have two-way access,* | C.03 |
| | *(v)* | *the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response,* | C.03 |
| | *(vi)* | *the adequacy of bush fire maintenance plans and fire emergency procedures for the development site,* | C.04 |
| | *(vii)* | *the construction standards to be used for building elements in the development,* | C.05 |
| | *(viii)* | *the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development,* | C.06 |
| | *(ix)* | *registered fire trails on the property,* | C.03 |

# PART E RECOMMENDATIONS

Based on the above assessment, it is recommended that a performance based design in accordance with the International fire Engineering Guidelines (2005) and the Australian Fire Engineering Guidelines (2021) be developed to address the following issues;

- APZs to achieve 10 kW/$m^2$ and,
- Construction BAL-rating.
- NCC Specification 43.

## PART F SUMMARY

The development relates to the construction of a two storey classroom building having a footprint of 364m$^2$. The proposed classroom building is located in the courtyard surrounded on all sides by existing buildings (Block G to the west, Block E to the south, block D to the east and the existing one story brick building to the north (See concept drawing below).

The proposed school development is being lodged under Part 5 of the Environmental Planning and Assessment Act 1979 (EPA Act), which requires an environmental assessment to determine the potential impact of the project. While the development is not considered integrated under the Act, it must be referred to the NSW Rural Fire Service (RFS) in accordance with Section 100B of the Rural Fires Act 1997. Our bushfire report has addressed the requirements for the submission of a bushfire safety authority as listed in Clause 45 of the Rural Fires Regulation 2022.

The subject site is located in Prestons, within the Liverpool City Local Government Area (LGA). It is occupied by William Carey Christian School, which has been on the site since 1988. The school offers independent co-educational early learning, as well as primary and secondary day schooling. The established school grounds contain various buildings, playing fields, open spaces, and car parks, typical of school infrastructure.

To the west of the site, a narrow vegetation corridor (NVC), identified as a Forested Wetland, surrounds Cabramatta Creek. The entire site is maintained with minimal fuel conditions. The land to the east and south is managed residential land. The riparian corridor is mapped as Vegetation Category 2, which has lower combustibility and/or limited potential fire size due to its shape, size, land geography, and management practices (RFS 2015).

We have undertaken an assessment of the development against the acceptable solutions which requires an APZ to be provided to demonstrate radiant heat levels of greater than 10kW/ m² (calculated at 1200K) will not be experienced on any part of the building. Our assessment identifies that a 42m APZ is required to comply with the acceptable solutions. As shown in Figure A1, the achieved / proposed APZs do not comply with the acceptable solutions. The entire site which is occupied by a number of existing buildings, playing fields, open space, carparks and circulation is managed as an Inner Asset Protection Zone. We recommend the site continue to be managed as an inner APZ.

Firefighting vehicles can access the site from Mullenderree Street to the east and Bumbera Street to the north without being impacted by radiant heat loads exceeding 10 kW/m². Access to the vegetation is available via Camden Valley Way to the south. It is likely the vegetation will be accessible via the new development to the west of Cabramatta Creek which is currently under development. However the details of that development are not confirmed.

The site is serviced by existing reticulated water infrastructure, with water supply available from Bumbera Street to the north, Mullenenderree Street to the east, and Camden Valley Way to the south (refer to the Sydney Water Map below). While the exact design and location of hydrants within the site are currently unknown, a qualified hydraulic engineer will be engaged to design a suitable firefighting water supply system. This system will be in accordance with the requirements set out in Planning for Bush Fire Protection (PBP) and the National Construction Code (NCC).

The construction of the building is to comply with the NCC. The Bushfire Attack Level specification is being addressed in the Bush Fire Design Brief prepared by others.

A Bush Fire emergency management and evacuation plan is to be prepared in accordance with the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan. The emergency management plan is to be prepared as a condition of consent and to be completed prior to the release of the Occupancy Certificate.

Based on our assessment of the proposed development, it is recommended that a performance based design in accordance with the International fire Engineering Guidelines (2005) and the Australian Fire Engineering Guidelines (2021) be developed to address the items that demonstrate compliance via a performance pathway eg., APZs, Construction and in part, NCC Specification 43.

| | | |
|---|---|---|
| Report prepared by: | **Bushfire Planning and Design**<br>Matthew Noone | |
| |  |  |

## F.01 REFERENCES

| | |
|---|---|
| AS3959 (2018) | Australian Standard, Construction of buildings in Bush Fire-prone areas, AS 3959, Third edition 2018 Standards Australia International Ltd, Sydney. |
| BCA (2019) | Building Code of Australia 2019, Building Code of Australia, Australian Building Codes Board, Canberra 2019. |
| EPA Act (1979) | Environmental Planning and Assessment Act 1979, NSW Government, NSW, legislation found at www.legislation.nsw.gov.au |
| Keith (2004) | Keith, D.A. (2004), Ocean shores to desert dunes: The Native Vegetation of New South Wales and the ACT. NSW Department of Environment and Conservation (2004). |
| PBP (2019) | Planning for Bush Fire Protection, a Guide for Councils,Planners, Fire Authorities, Developers and Home Owners. Rural Fire Service 2019, Australian Government Publishing Service, Canberra. |
| RFS (2015) | Rural Fire Service, Guide For Bush Fire Prone Land Mapping, Version 5b. |

## F.02 APPENDICES

Appendix A - Architectural Drawings.

Appendix B - Assessment Against Prescriptive Provisions - PBP (2019) Chapter 6.

Appendix C - Method 2 Calculations

# APPENDIX A -
## ARCHITECTURAL DRAWINGS


- ACC. WC
- AMB WC
- CIRCULATION
- COMMS
- EDB
- EXTERNAL DECK
- GLA
- GLA 1
- GLA 2
- GLA 3
- GLA 4
- GLA 5
- RAMP
- SCIENCE LAB 1
- SCIENCE LAB 2
- STORAGE
- WC

**GENERAL NOTES**

| | |
|---|---|
| NOTE 01 | FINAL POSITION OF THE MODULAR BUILDING IS DEPENDANT ON THE SITE SURVEY PROVIDED TO MARATHON BY A REGISTERED SURVEYOR. ANY LOCATION PLANS PROVIDED BY MARATHON ARE FOR REFERENCE ONLY. |
| NOTE 02 | REFER THE STRUCTURAL ENGINEER DESIGN SET FOR DETAILS ON THE STRUCTURAL STEEL WORKS. |
| NOTE 03 | ALL GPO'S TO BE 300MM ABOVE FINISHED FLOOR LEVEL UNLESS OTHERWISE NOTED. |
| NOTE 04 | ALL LIGHT SWITCHES ARE TO BE INSTALLED BETWEEN 900MM AND 1000MM ABOVE FINISHED FLOOR LEVEL. |
| NOTE 05 | COLOUR & FINISHES MAY BE ALTERED DEPENDING ON FINAL SELECTIONS AND AVAILABILITY. MARATHON WILL ENDEAVOR TO SWAP FINISHES FOR SIMILAR WHEREVER POSSIBLE. |
| NOTE 06 | THE ARCHITECTURAL SERVICES LAYOUT DRAWING AND PRODUCT SPECIFICATION OUTLINE IS PRODUCED TO CONVEY THE INTENT ONLY. FIXTURES AND FITTINGS MAY VARY DEPENDING ON AVAILABILITY. |
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| NOTE 08 | PROVIDED RENDER OR SKETCH 3D IN THIS DOCUMENTATION PACKAGE MAY NOT ACCURATELY REPRESENT THE FINAL PRODUCT. |
| NOTE 09 | THE CLIENT IS RESPONSIBLE FOR PAYMENT OF RELEVANT AUTHORITY FEES AND APPLICATIONS TO COMPLETE THE WORKS UNLESS OTHERWISE AGREED. |
| NOTE 10 | EXTENT OF THE SITE SERVICES CONNECTS IS AS PER THE SPECIFICATIONS. |

**DOOR SCHEDULE**

| Type Mark | WIDTH | HEAD HEIGHT | COUNT |
|---|---|---|---|
| D01 | 750 | 2200 | 1 |
| D02 | 720 | 2040 | 5 |
| D03 | 920 | 2040 | 10 |
| D04 | 820 | 2040 | 2 |
| Grand total: 18 | | | 18 |

**WINDOW SCHEDULE**

| WINDOW TYPE | WIDTH | HEIGHT | SILL HEIGHT | HEAD HEIGHT | COUNT |
|---|---|---|---|---|---|
| W01 | 1810 | 1030 | 1000 | 2030 | 10 |
| W02 | 2650 | 1030 | 1000 | 2030 | 20 |
| W03 | 610 | 1030 | 1000 | 2030 | 1 |
| W04 | 1450 | 1030 | 1000 | 2030 | 4 |
| Grand total: 35 | | | | | 35 |

1 GROUND FLOOR PLAN
SCALE 1 : 100

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Rev

| Issue | Date | Description |
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| C | 29.08.24 | CLIENT & CONSULTANT ISSUE |
| E | 04.09.24 | CLIENT ACCEPTANCE |
| F | 05.09.24 | CLIENT ACCEPTANCE |

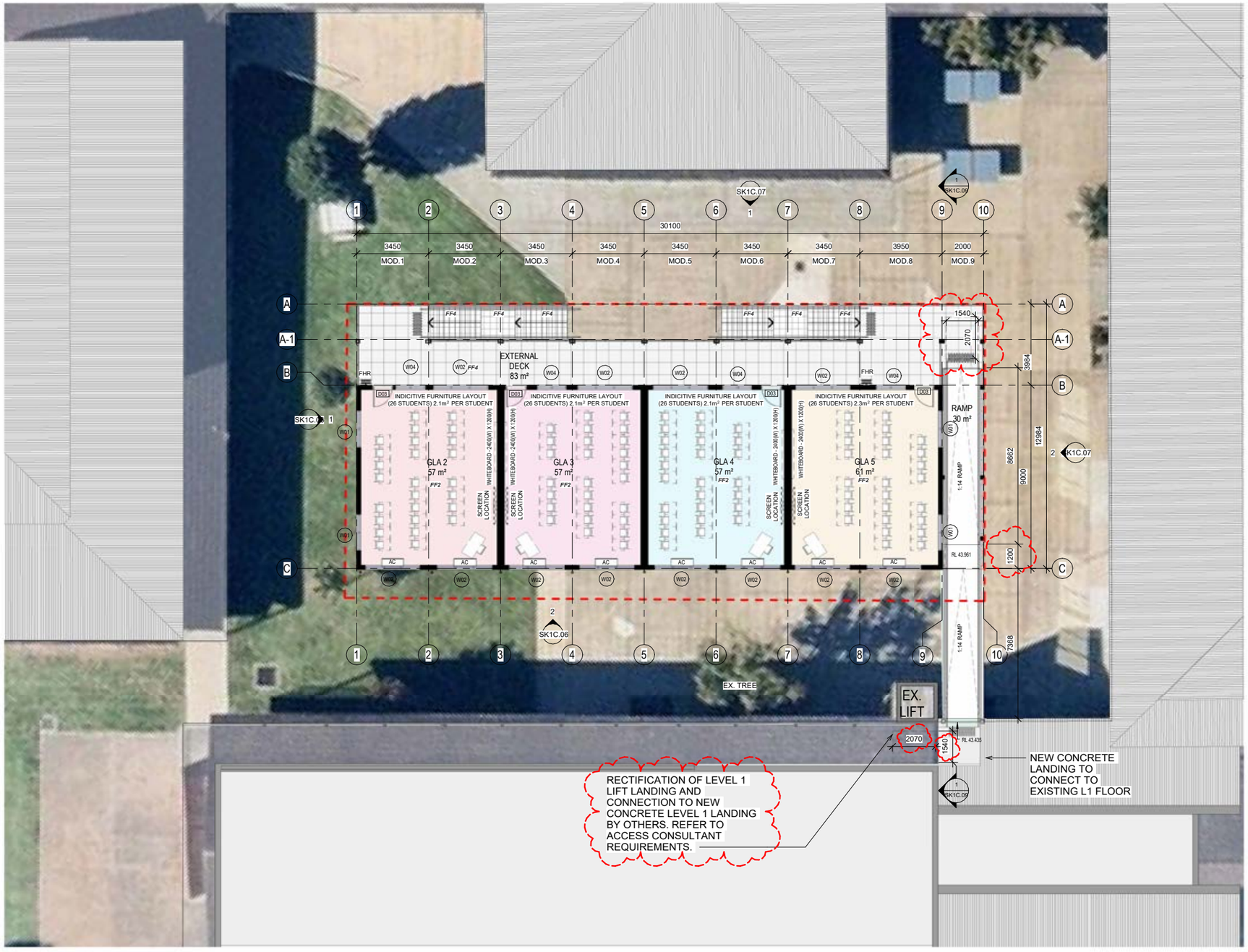
Client: Marathon Modular

Project: William Carey Christian School
38-44 Bumbera Street
Prestons NSW 2170

Drawing: GROUND FLOOR PLAN

North | Scale: As indicated @ A1 | Date: 03/25/20 | Project No.: 2408 | Drawing No.: SK1C.03 G

Issued for: PRELIMINARY




- ACC. WC
- AMB WC
- CIRCULATION
- COMMS
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| D01 | 750 | 2200 | 1 |
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| D03 | 920 | 2040 | 10 |
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| Grand total: 18 | | | 18 |

**WINDOW SCHEDULE**

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|---|---|---|---|---|---|
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| W02 | 2650 | 1030 | 1000 | 2030 | 20 |
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| Grand total: 35 | | | | | 35 |

## 1 | FIRST FLOOR PLAN
SCALE 1 : 100

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| G | 09.09.24 | CONSULTANT ISSUE |

Client: Marathon Modular

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38-44 Bumbera Street
Prestons NSW 2170

Drawing: FIRST FLOOR PLAN

North | Scale: As indicated @ A1 | Date: 03/25/20 | Project No.: 2408 | Drawing No.: SK1C.04 G

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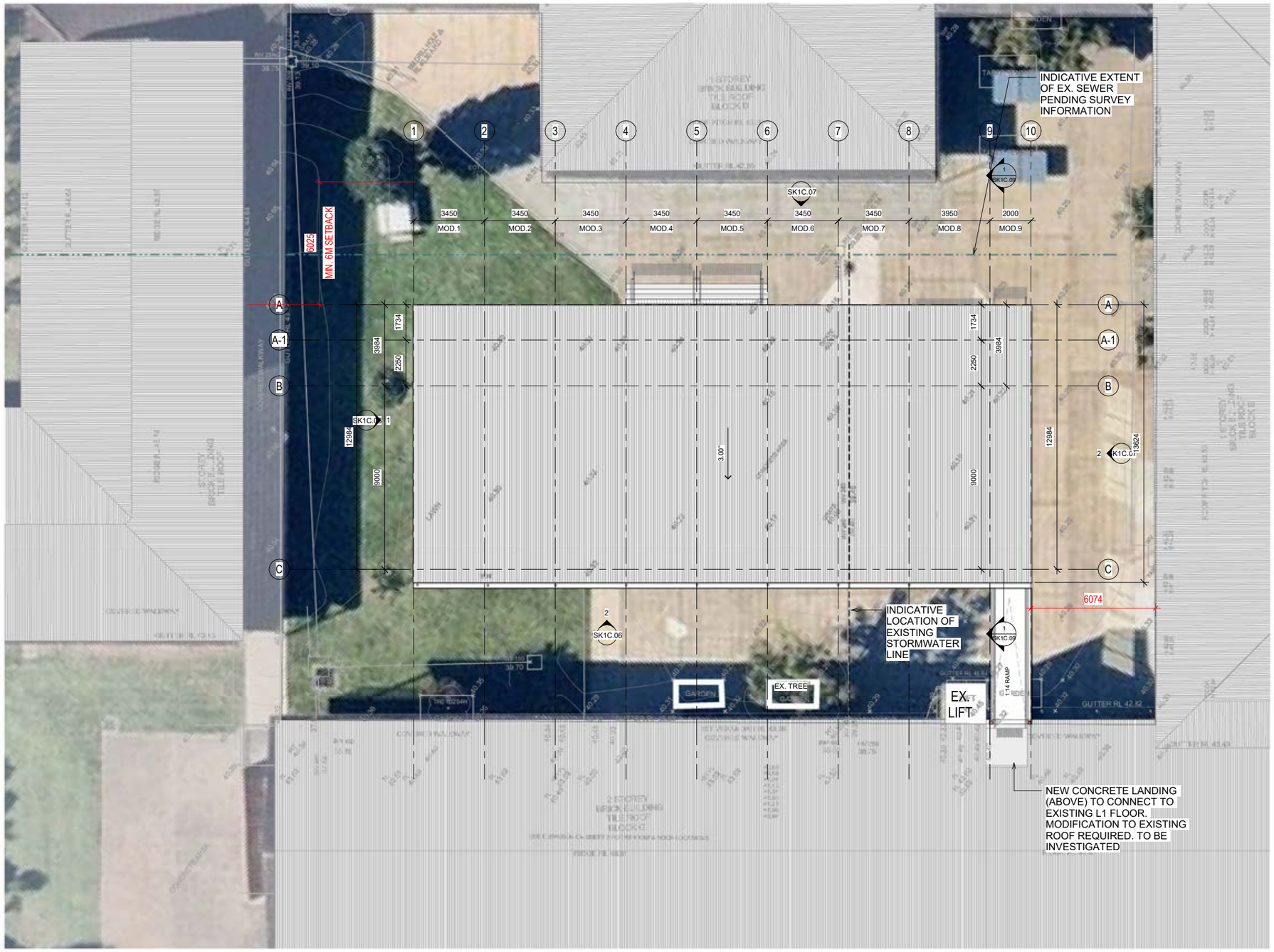


1 | ROOF PLAN
SCALE 1 : 100

| Code | Type | Marathon Proposal |
|---|---|---|
| FF1 | Vinyl Slip Retardant Flooring | Armstring Flooring: Accolade Plus - Camden Grey |
| FF2 | Carpet tile | Interface Carpets: Works Facet Colour: Earthern |
| FF3 | Ground Floor External Verandah | Modwood: 137 x 23mm Blackbean Brushed |
| FF4 | First Floor External Verandah & Stairs to First Floor | Ceramic Tile Colour/Range : Positano Cenere |
| WC1 | Exterior cladding | Colorbond Custom Orb - Horizontal Colour: Deep Ocean |
| WC2 | Exterior cladding | CFC Cladding 1200 x 2400mm Colour: Shale Grey |
| IF1 | Internal Plasterboard Lining Wall & Ceiling Plasterboard | Paint Colour: Dulux Lexicon Qtr |
| RF | Trimclad Roof Sheeting | Colour: Surf Mist |
| GT | Halfround Gutter - Size to be Specified by Hyd. Engineer | Colorbond Colour: Deep Ocean |
| DP | PVC painted downpipes - Size to be Specified by Hyd. Engineer | Colorbond Colour: Deep Ocean |
| | Fascia | Colour: Deep Ocean |
| CS | Soffit Lined with CFC cladding | Paint Colour: Dulux Lexicon Qtr |
| W(0X) As per Windows schedule | Windows Frames | Colour: Deep Ocean |
| D(0X) As per Windows schedule | Door Frames | Colour: Deep Ocean |
| | Timber Door Leaves | Colour: Dulux Tin Cat |
| | External Structural Posts - CFC Cladding | Colour: Deep Ocean |

| Insulation - Section J Report Requirements | | |
|---|---|---|
| Roof Insulation | R1.3 | Bradford Anticon R1.3 - Or Similar to meet Section J requirement |
| Ceiling Insulation | R3.5 | Bradford Gold Ceiling R3.5 - Or Similar to meet Section J requirement |
| Wall Insulation | R2.2 | Bradford Gold HP R2.2 - Or Similar to meet Section J requirement |
| Subfloor Insulation | R2.5 | Bradford Optimo R2.5 - Or Similar to meet Section J requirement |

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Client
Marathon Modular

Project
William Carey Christian School

38-44 Bumbera Street
Prestons NSW 2170

Drawing
ROOF PLAN

North

| Scale | Date | Project No. | Drawing No. |
|---|---|---|---|
| As indicated @ A1 | 03/25/20 | 2408 | SK1C.05 G |

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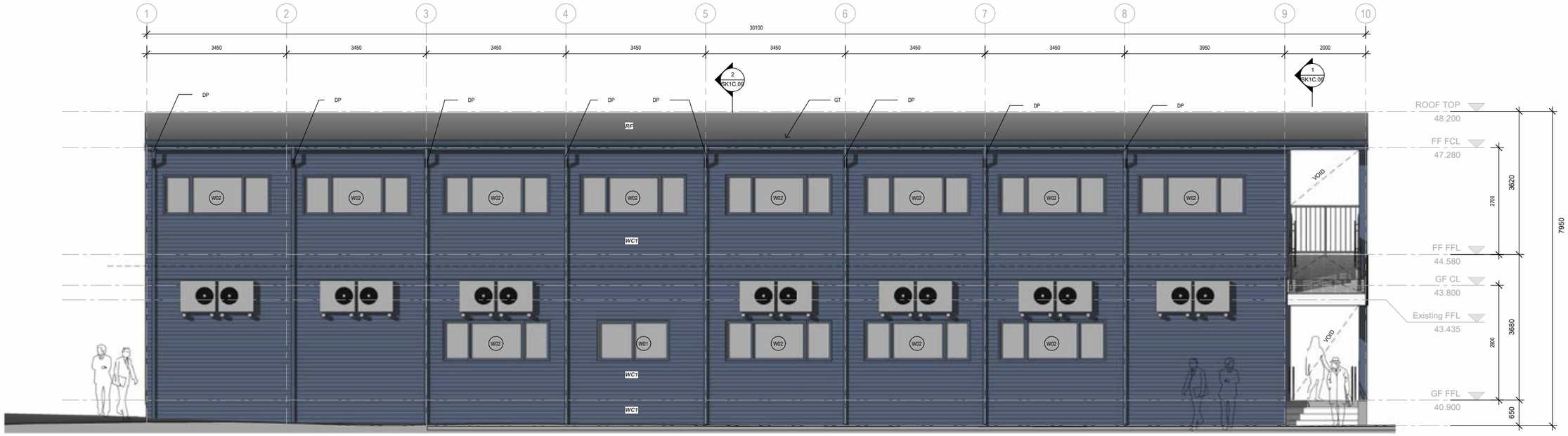
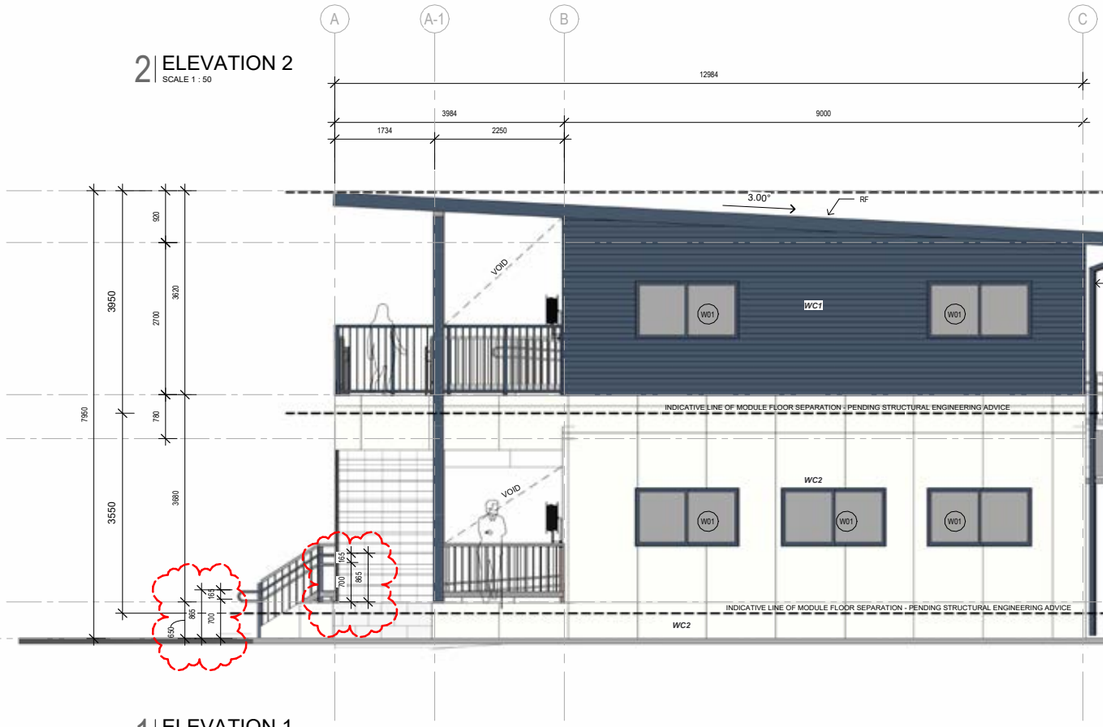



## 2 | ELEVATION 2
SCALE 1 : 50




## 1 | ELEVATION 1
SCALE 1 : 50

| Code | Type | Marathon Proposal |
|---|---|---|
| FF1 | Vinyl Slip Retardant Flooring | Armstring Flooring: Accolade Plus - Camden Grey |
| FF2 | Carpet tile | Interface Carpets: Works Facet Colour: Earthern |
| FF3 | Ground Floor External Verandah | Modwood: 137 x 23mm Blackbean Brushed |
| FF4 | First Floor External Verandah & Stairs to First Floor | Ceramic Tile Colour/Range : Positano Cenere |
| WC1 | Exterior cladding | Colorbond Custom Orb - Horizontal Colour: Deep Ocean |
| WC2 | Exterior cladding | CFC Cladding 1200 x 2400mm Colour: Shale Grey |
| IF1 | Internal Plasterboard Lining Wall & Ceiling Plasterboard | Paint Colour: Dulux Lexicon Qtr |
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| GT | Halfround Gutter - Size to be Specified by Hyd. Engineer | Colorbond Colour: Deep Ocean |
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| D(0X) As per Windows schedule | Door Frames | Colour: Deep Ocean |
| | Timber Door Leaves | Colour: Dulux Tin Cat |
| | External Structural Posts - CFC Cladding | Colour: Deep Ocean |

**WINDOW SCHEDULE**

| WINDOW TYPE | WIDTH | HEIGHT | SILL HEIGHT | HEAD HEIGHT | COUNT |
|---|---|---|---|---|---|
| W01 | 1810 | 1030 | 1000 | 2030 | 10 |
| W02 | 2650 | 1030 | 1000 | 2030 | 20 |
| W03 | 610 | 1030 | 1000 | 2030 | 1 |
| W04 | 1450 | 1030 | 1000 | 2030 | 4 |
| Grand total: 35 | | | | | 35 |

**DOOR SCHEDULE**

| Type Mark | WIDTH | HEAD HEIGHT | COUNT |
|---|---|---|---|
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| Insulation - Section J Report Requirements | | |
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Client
Marathon Modular

Project
William Carey Christian School

38-44 Bumbera Street
Prestons NSW 2170

Drawing
ELEVATION 1

North

Scale
1 : 50 @ A1

Date
03/25/20

Project No.
2408

Drawing No.
SK1C.06 G

Issued for
PRELIMINARY


1 | ELEVATION 3
SCALE 1 : 50


2 | ELEVATION 4
SCALE 1 : 50

| Code | Type | Marathon Proposal |
|---|---|---|
| FF1 | Vinyl Slip Retardant Flooring | Armstring Flooring: Accolade Plus - Camden Grey |
| FF2 | Carpet tile | Interface Carpets: Works Facet Colour: Earthern |
| FF3 | Ground Floor External Verandah | Modwood: 137 x 23mm Blackbean Brushed |
| FF4 | First Floor External Verandah & Stairs to First Floor | Ceramic Tile Colour/Range : Positano Cenere |
| WC1 | Exterior cladding | Colorbond Custom Orb - Horizontal Colour: Deep Ocean |
| WC2 | Exterior cladding | CFC Cladding 1200 x 2400mm Colour: Shale Grey |
| IF1 | Internal Plasterboard Lining Wall & Ceiling Plasterboard | Paint Colour: Dulux Lexicon Qtr |
| RF | Trimclad Roof Sheeting | Colour: Surf Mist |
| GT | Halfround Gutter - Size to be Specified by Hyd. Engineer | Colorbond Colour: Deep Ocean |
| DP | PVC painted downpipes - Size to be Specified by Hyd. Engineer | Colorbond Colour: Deep Ocean |
| | Fascia | Colour: Deep Ocean |
| CS | Soffit Lined with CFC cladding | Paint Colour: Dulux Lexicon Qtr |
| W(0X) As per Windows schedule | Windows Frames | Colour: Deep Ocean |
| D(0X) As per Windows schedule | Door Frames | Colour: Deep Ocean |
| | Timber Door Leaves | Colour: Dulux Tin Cat |
| | External Structural Posts - CFC Cladding | Colour: Deep Ocean |

NOTE: LEVELS ARE INDICATIVE. PENDING SURVEY INFORMATION FROM REGISTERED SURVEYOR.
NOT FOR CONSTRUCTION

**DOOR SCHEDULE**

| Type Mark | WIDTH | HEAD HEIGHT | COUNT |
|---|---|---|---|
| D01 | 750 | 2200 | 1 |
| D02 | 720 | 2040 | 5 |
| D03 | 920 | 2040 | 10 |
| D04 | 820 | 2040 | 2 |
| Grand total: 18 | | | 18 |

**WINDOW SCHEDULE**

| WINDOW TYPE | WIDTH | HEIGHT | SILL HEIGHT | HEAD HEIGHT | COUNT |
|---|---|---|---|---|---|
| W01 | 1810 | 1030 | 1000 | 2030 | 10 |
| W02 | 2650 | 1030 | 1000 | 2030 | 20 |
| W03 | 610 | 1030 | 1000 | 2030 | 1 |
| W04 | 1450 | 1030 | 1000 | 2030 | 4 |
| Grand total: 35 | | | | | 35 |

| Insulation - Section J Report Requirements | | |
|---|---|---|
| Roof Insulation | R1.3 | Bradford Anticon R1.3 - Or Similar to meet Section J requirement |
| Ceiling Insulation | R3.5 | Bradford Gold Ceiling R3.5 - Or Similar to meet Section J requirement |
| Wall Insulation | R2.2 | Bradford Gold HP R2.2 - Or Similar to meet Section J requirement |
| Subfloor Insulation | R2.5 | Bradford Optimo R2.5 - Or Similar to meet Section J requirement |

marathon MODULAR

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Rev

| Issue | Date | Description |
|---|---|---|
| A | 22.08.24 | ISSUE FOR INFORMATION |
| B | 26.08.24 | REVISED TOILET MODULE LOCATION MIRRORED |
| C | 29.08.24 | CLIENT & CONSULTANT ISSUE |
| E | 04.09.24 | CLIENT ACCEPTANCE |
| F | 05.09.24 | CLIENT ACCEPTANCE |

Client
Marathon Modular

Project
William Carey Christian School

38-44 Bumbera Street
Prestons NSW 2170

Drawing
ELEVATION 2

| North | Scale | Date | Project No. | Drawing No. |
|---|---|---|---|---|
| | 1 : 50 @ A1 | 03/25/20 | 2408 | SK1C.07 F |

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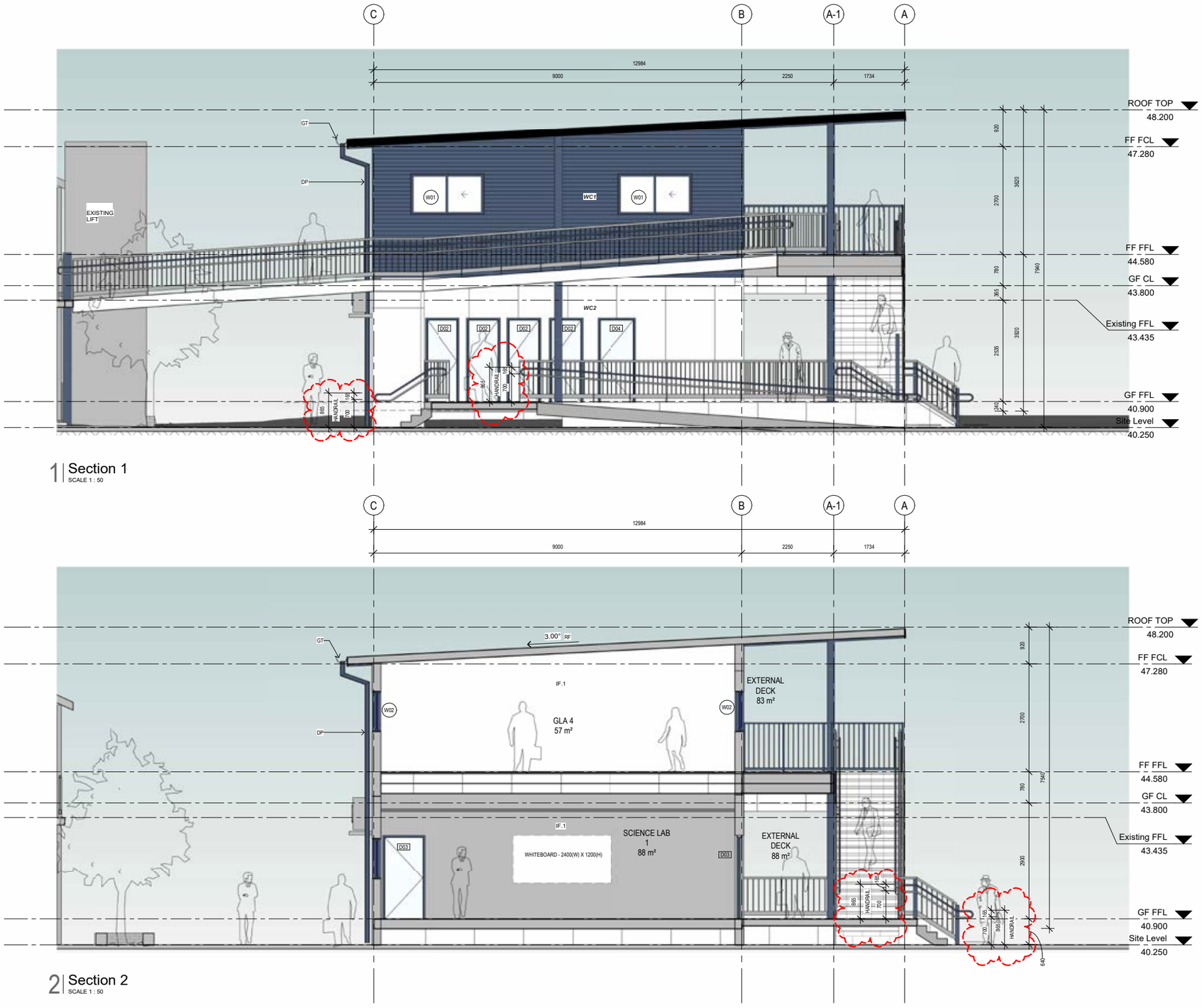
PRELIMINARY




1 | Section 1
SCALE 1 : 50

2 | Section 2
SCALE 1 : 50

| Code | Type | Marathon Proposal |
|---|---|---|
| FF1 | Vinyl Slip Retardant Flooring | Armstring Flooring: Accolade Plus - Camden Grey |
| FF2 | Carpet tile | Interface Carpets: Works Facet Colour: Earthern |
| FF3 | Ground Floor External Verandah | Modwood: 137 x 23mm Blackbean Brushed |
| FF4 | First Floor External Verandah & Stairs to First Floor | Ceramic Tile Colour/Range : Positano Cenere |
| WC1 | Exterior cladding | Colorbond Custom Orb - Horizontal Colour: Deep Ocean |
| WC2 | Exterior cladding | CFC Cladding 1200 x 2400mm Colour: Shale Grey |
| IF1 | Internal Plasterboard Lining Wall & Ceiling Plasterboard | Paint Colour: Dulux Lexicon Qtr |
| RF | Trimclad Roof Sheeting | Colour: Surf Mist |
| GT | Halfround Gutter - Size to be Specified by Hyd. Engineer | Colorbond Colour: Deep Ocean |
| DP | PVC painted downpipes - Size to be Specified by Hyd. Engineer | Colorbond Colour: Deep Ocean |
| | Fascia | Colour: Deep Ocean |
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| Subfloor Insulation | R2.5 | Bradford Optimo R2.5 - Or Similar to meet Section J requirement |

**WINDOW SCHEDULE**

| WINDOW TYPE | WIDTH | HEIGHT | SILL HEIGHT | HEAD HEIGHT | COUNT |
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**DOOR SCHEDULE**

| Type Mark | WIDTH | HEAD HEIGHT | COUNT |
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| Grand total: 18 | | | 18 |

NOTE: LEVELS ARE INDICATIVE. PENDING SURVEY INFORMATION FROM REGISTERED SURVEYOR.
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Client
Marathon Modular

Project
William Carey Christian School

38-44 Bumbera Street
Prestons NSW 2170

Drawing
SECTIONS

| North | Scale | Date | Project No. | Drawing No. |
|---|---|---|---|---|
| | 1 : 50 @ A1 | 02/15/18 | 2408 | SK1C.09 F |

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VIEW TOWARDS ENTRANCE

VIEW FROM BLOCK D

VIEW OF BRIDGE CONNECTION

BIRD'S-EYE VIEW OF NORTH ELEVATION

IMAGES FOR ILLUSTRATION PURPOSES ONLY

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Rev

| Issue | Date | Description |
|---|---|---|
| C | 29.08.24 | CLIENT & CONSULTANT ISSUE |
| E | 04.09.24 | CLIENT ACCEPTANCE |
| F | 05.09.24 | CLIENT ACCEPTANCE |

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Prestons NSW 2170

Drawing
3D PERSPECTIVES

North

| Scale | Date | Project No. | Drawing No. |
|---|---|---|---|
| @ A1 | 02/15/18 | 2408 | SK1C.10 F |

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# APPENDIX B -

## ASSESSMENT AGAINST PRESCRIPTIVE PROVISIONS - PBP (2019) CHAPTER 6.

## ASSESSMENT AGAINST PBP (2019) PRESCRIPTIVE PROVISIONS

The following tables provide a review of the development design in comparison to the acceptable solutions PBP (2019) tables 6.8.2a, 6.8.2b, 6.8.2c, 6.8.2d.

| | ACCEPTABLE SOLUTIONS | BPAD COMMENTS | COMPLIANCE * |
|---|---|---|---|
| ASSET PROTECTION ZONES | *the building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1.* | An APZ that complies with Table A1.12.1 cannot be provided. | N |
| | *APZs are located on lands with a slope less than 18 degrees.* | A review of the site slope based on LiDAR data indicates the maximum cross fall is less than $5^0$. | Y |
| | *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;* | The APZ is to be maintained in accordance with Appendix 4. APZs to comply with PBP (2019) Appendix 4. | TBS |
| | *APZ are wholly within the boundaries of the development site; and* | The APZ is solely within the subject site. An off site APZ is not proposed. | Y |
| | *other structures located within the APZ need to be located further than 6m from the refuge building.* | No refuge building proposed (or existing) | N/A |
| | | | |
| LANDSCAPING | *landscaping is in accordance with Appendix 4; and* | No landscape drawings provided for review. Landscape drawings to comply with PBP (2019) Appendix 4. | TBS |
| | *fencing is constructed in accordance with section 7.6.* | No fencing proposed. Fencing to comply with PBP (2019) s.7.6 if required. | TBS |

* (Y = Yes), (N=No), (TBS=To be Specified), (N/A= Not Applicable).

| CONSTRUCTION (Includes PBP (2022) Addendum) | ACCEPTABLE SOLUTIONS | BPAD COMMENTS | COMPLIANCE * |
|---|---|---|---|
| | *A construction level of BAL-19 or greater under AS 3959 and section 7.5 of PBP is applied* | Requirement noted. The construction requirements for the building are to comply with the NCC. The construction specifications for the building are addressed in the Bush Fire Design, Compliance, & Approvals Report prepared by others. | TBS |

* (Y = Yes), (N=No), (TBS=To be Specified), (N/A= Not Applicable).

| | ACCEPTABLE SOLUTIONS | BPAD COMMENTS | COMPLIANCE * |
|---|---|---|---|
| ACCESS (Includes PBP (2022) Addendum) | *Vehicular access must be capable of providing continuous access for emergency vehicles to enable travel in a forward direction from a public road around the entire building; and* | Vehicular access is not provided around the entire building. | N |
| | *Must have a minimum unobstructed width of 6m with no part of its furthest boundary more than 18m from the building and in no part of the 6m width be built upon or used for any purpose other than vehicular or pedestrian movement; and* | xx | Y |
| | *Must provide reasonable pedestrian access from the vehicular access to the building; and* | Safe access is provided from the public road system to the building. A large portion of the site is not bushfire affected. | Y |
| | *Must have a load bearing capacity and unobstructed height to permit the operation and passage of fire fighting vehicles; and* | None proposed. | N/A |
| | *Must be wholly within the allotment except that a public road complying with above may serve as the vehicular access or part thereof.* | No new access ways proposed within the site. | N/A |
| | *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.* | No new access ways proposed within the site. | N/A |
| | *hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;* | No new hydrants proposed. Suitable water provisions are being addressed in the Bush Fire Design, Compliance, & Approvals Report prepared by others. | TBS |
| | *hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005; and* | | |
| | *there is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available* | | |

* (Y = Yes), (N=No), (TBS=To be Specified), (N/A= Not Applicable).

| | ACCEPTABLE SOLUTIONS | BPAD COMMENTS | COMPLIANCE * |
|---|---|---|---|
| PERIMETER ROADS | *there are two-way sealed roads;* | Perimeter road not proposed. | N/A |
| | *minimum 8m carriageway width kerb to kerb;* | | |
| | *parking is provided outside of the carriageway width;* | | |
| | *hydrants are to be 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 degrees and average grade of not more than 10 degrees;* | | |
| | *the road crossfall does not exceed 3 degrees;* | | |
| | *a minimum vertical clearance of 4m to any overhanging obstructions, including tree ranches, is provided.* | | |

* (Y = Yes), (N=No), (TBS=To be Specified), (N/A= Not Applicable).

| | ACCEPTABLE SOLUTIONS | BPAD COMMENTS | COMPLIANCE * |
|---|---|---|---|
| NON PERIMETER ROADS | *minimum 5.5m carriageway width kerb to kerb* | No internal road systems proposed. The development will rely on existing infrastructure (currently being constructed). | N/A |
| | *parking is provided outside of the carriageway width; hydrants are located clear of parking areas;* | | |
| | *hydrants are to be 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 degrees and average grade of not more than 10 degrees;* | | |
| | *the road crossfall does not exceed 3 degrees; and* | | |
| | *a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches is to be provided.* | | |

* (Y = Yes), (N=No), (TBS=To be Specified), (N/A= Not Applicable).

| | ACCEPTABLE SOLUTIONS | BPAD COMMENTS | COMPLIANCE * |
|---|---|---|---|
| WATER (Includes PBP (2022) Addendum) | *Reticulated water is to be provided to the development, where available; and* | No new hydrants proposed. Suitable water provisions are being addressed in the Bush Fire Design, Compliance, & Approvals Report prepared by others. | TBS |
| | *Water for firefighting purposes must be made available and consist of –* | | |
| | *A fire hydrant system installed in accordance with AS2419.1; or* | | |
| | *Where no reticulated water is available, a static water supply consisting of tanks, swimming pools, dams or the like, or a combination of these, together with suitable pumps, hoses and fittings, determined in consultation with NSW RFS that –* | | |
| | *is capable of providing the required flow rate for a period of not less than 4 hours or* | | |
| | *has a volume of 10,000 litres for each occupied building* | | |
| | | | |
| ELECTRICITY | *where practicable, electrical transmission lines are underground;* | Electrical design not yet finalised. | TBS |
| | *where overhead, electrical transmission lines are proposed as follow:*<br>• *lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian area.*<br>• *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.* | Electrical design not yet finalised. | TBS |
| | | | |

* (Y = Yes), (N=No), (TBS=To be Specified), (N/A= Not Applicable).

| | | | |
|---|---|---|---|
| GAS | *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;* | | |
| | *all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;* | | |
| | *connections to and from gas cylinders are metal;* | | |
| | 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; | Hydraulic design not yet finalised. | TBS |
| | polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and | | |
| | above-ground gas service pipes external to the building are metal, including and up to any outlets. | | |

* (Y = Yes), (N=No), (TBS=To be Specified), (N/A= Not Applicable).

| | | | |
|---|---|---|---|
| EMERGENCY MANAGEMENT | Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the:<br>• The NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan;<br>• NSW RFS Schools Program Guide;<br>• Australian Standard AS 3745:2010 Planning for emergencies in facilities; and<br>• Australian Standard AS 4083:2010 Planning for emergencies– Health care facilities (where applicable). | Requirement noted. | TBS |
| | • the Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants | Requirement noted. | TBS |
| | Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development. | Requirement noted. | TBS |

* (Y = Yes), (N=No), (TBS=To be Specified), (N/A= Not Applicable).

# APPENDIX C -
## METHOD 2 CALCULATIONS

# NBC Bushfire Attack Assessment Report V4.1

**AS3959 (2018) Appendix B - Detailed Method 2**

**Print Date:** 12/10/2024 **Assessment Date:** 12/10/2024

**Site Street Address:** William Carey Christian School, Prestons

**Assessor:** Matthew Noone; Bushfire Planning and Design

**Local Government Area:** Liverpool **Alpine Area:** No

**Equations Used**

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
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:** W

## Vegetation Information

**Vegetation Type:** Forested Wetland (excluding Coastal Swamp Forest)

**Vegetation Group:** Forest and Woodland

**Vegetation Slope:** 3.4 Degrees **Vegetation Slope Type:** Downslope

**Surface Fuel Load(t/ha):** 8.2 **Overall Fuel Load(t/ha):** 15.1

**Vegetation Height(m):** 2 Only Applicable to Shrub/Scrub and Vesta

## Site Information

**Site Slope:** 2.7 Degrees **Site Slope Type:** Downslope

**Elevation of Receiver(m):** Default **APZ/Separation(m):** 29

## 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

**Level of Construction:** BAL 19 **Peak Elevation of Receiver(m):** 3.53

**Radiant Heat(kW/m2):** 14.62 **Flame Angle (degrees):** 82

**Flame Length(m):** 9.9 **Maximum View Factor:** 0.16

**Rate Of Spread (km/h):** 1.24 **Inner Protection Area(m):** 29

**Transmissivity:** 0.818 **Outer Protection Area(m):** 0

**Fire Intensity(kW/m):** 9707

## BAL Thresholds

| | BAL-40: | BAL-29: | BAL-19: | BAL-12.5: | 10 kw/m2: | Elevation of Receiver: |
|---|---|---|---|---|---|---|
| **Asset Protection Zone(m):** | 12 | 16 | 23 | 33 | 39 | 6 |

| | |
|---|---|
| **Run Description:** | W |

## Vegetation Information

| | | | |
|---|---|---|---|
| **Vegetation Type:** | Forested Wetland (excluding Coastal Swamp Forest) | | |
| **Vegetation Group:** | Forest and Woodland | | |
| **Vegetation Slope:** | 3.4 Degrees | **Vegetation Slope Type:** | Downslope |
| **Surface Fuel Load(t/ha):** | 8.2 | **Overall Fuel Load(t/ha):** | 15.1 |
| **Vegetation Height(m):** | 2 | Only Applicable to Shrub/Scrub and Vesta | |

## Site Information

| | | | |
|---|---|---|---|
| **Site Slope:** | 2.7 Degrees | **Site Slope Type:** | Downslope |
| **Elevation of Receiver(m):** | Default | **APZ/Separation(m):** | 29 |

## Fire Inputs

| | | | |
|---|---|---|---|
| **Veg./Flame Width(m):** | 100 | **Flame Temp(K):** | 1090 |

## 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

| | | | |
|---|---|---|---|
| **Level of Construction:** | BAL 12.5 | **Peak Elevation of Receiver(m):** | 3.53 |
| **Radiant Heat(kW/m2):** | 9.84 | **Flame Angle (degrees):** | 82 |
| **Flame Length(m):** | 9.9 | **Maximum View Factor:** | 0.16 |
| **Rate Of Spread (km/h):** | 1.24 | **Inner Protection Area(m):** | 29 |
| **Transmissivity:** | 0.809 | **Outer Protection Area(m):** | 0 |
| **Fire Intensity(kW/m):** | 9707 | | |

## BAL Thresholds

| | BAL-40: | BAL-29: | BAL-19: | BAL-12.5: | 10 kw/m2: | Elevation of Receiver: |
|---|---|---|---|---|---|---|
| **Asset Protection Zone(m):** | 8 | 11 | 17 | 24 | 39 | 6 |