Review of Environmental Factors:

Bushfire Hazard Assessment

Northern Rivers Flood Recovery – Richmond River High Campus Redevelopment

Prepared for: Department of Education

COMMERCIAL IN CONFIDENCE

Project Name	Northern Rivers Flood Recovery - Richmond River High Campus Redevelopment
Report Title	Review of Environmental Factors: Bushfire Hazard Assessment
File Name	Bushfire Hazard Assessment – GeoLINK – DDWO05310/23

School Name	Richmond River High Campus	**Consultancy Name**	GeoLINK
Address	163 & 170 Alexandra Parade, North Lismore	**Report Date:**	17 July 2025
School Region	North Coast	**Contract Number:**	DDWO05310/23

Report Information

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Acronyms and Definitions

Acronym	Definition
APZ	Asset Protection Zone
AS	Australian Standard
BAL	Bushfire Attack Level
EP&A Act	*Environmental Planning and Assessment Act 1979*
FDI	Fire Danger Index
IPA	Inner Protection Area
NASH	National Association of Steel-framed Housing
PBP	Planning for Bushfire Protection 2019
PCT	Plant Community Type
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SI NSW	School Infrastructure NSW

Bushfire Disclaimer

This report in no way suggests or guarantees that a bushfire or grass fire will not occur at the Project Site and/ or impact the proposed activity. Furthermore, the measures recommended in this report do not guarantee that loss of life, injury and/ or property damage will not occur during a bushfire or grass fire event. The severity and impact of a bushfire or grass fire event can be influenced by matters such as vegetation management, human behaviour, and extreme weather conditions.

This report advises on matters published by the NSW Rural Fire Service in the guideline Planning for Bushfire Protection 2019 and other advice available from that organisation. Due consideration has been given to site conditions, the nature of the proposed activity and to appropriate legislation and documentation available at the time of writing. The report is therefore current at the time of writing only.

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EXECUTIVE SUMMARY

This Bushfire Hazard Assessment has been prepared to support a Review of Environmental Factors (REF) for the rebuild of Richmond River High Campus (the activity) (RRHC). The REF has been prepared to support an approval for the RRHC development under Section 68 of the NSW *Reconstruction Authority Act 2022* (RA Act). The proposed school will be located at Lot 1 DP 539012, Lot 2 DP 539012 and Lot 1 DP 376007, 163-170 Alexandra Parade, North Lismore and is identified as a Special Fire Protection Purpose, therefore requiring a Bushfire Safety Authority in accordance with s100B of the *Rural Fires Act 1997*.

The Bushfire Hazard Assessment has taken into consideration the proposed activity layout, the vegetation creating a bushfire hazard, the effective slope and Fire Danger Index for the site in accordance with Planning for Bush Fire Protection 2019 (PBP 2019). The Bushfire Hazard Assessment demonstrates that the recommended bushfire protection measures are available and can be implemented to facilitate the proposed activity in accordance with the requirements of PBP 2019.

The following table provides a summary of the recommendations for each bushfire protection measure outlined in Chapter 6 of PBP 2019.

Bushfire Protection Measure	Recommendation
Asset Protection Zones	■ Asset Protection Zones are to be established and maintained for 38 m to the south-west, west and north-west of the proposed school buildings in accordance with Appendix A4.1.1 of PBP 2019. ■ APZs are to be managed as an Inner Protection Area in accordance with PBP 2019.
Landscaping	■ Landscaping within the development footprint is to comply with Appendix 4 of PBP 2019.
Construction	■ School buildings are to be constructed in accordance with Sections 3 and 6 (BAL-19) of AS 3959:2018, Section 7.5.2 of PBP 2019 and PBP Addendum 2022.
Access	■ Property access is to be in accordance with Table 6.8b of PBP 2019 and PBP Addendum 2022.
Services - Water, Electricity and Gas	■ A firefighting water supply is to be provided in accordance with Table 6.8c of PBP 2019 and PBP Addendum 2022. ■ Electricity and gas services are to comply with Table 6.8c of PBP 2019.
Emergency Management	■ A Bushfire Emergency Management and Evacuation Plan is to be prepared in accordance with the NSW RFS document: *A Guide to Developing a Bushfire Emergency Management and Evacuation Plan* and relevant Australian Standards.

1 INTRODUCTION

1.1 Scope and Purpose

This Bushfire Hazard Assessment has been prepared to support a Review of Environmental Factors (REF) for the rebuild of Richmond River High Campus (the activity) (RRHC). The REF has been prepared to support an approval for the RRHC development under Section 68 of the NSW Reconstruction Authority Act 2022 (RA Act). The purpose of the REF is to assess the potential environmental impacts of the activity.

The activity will be carried out at Dunoon Road, North Lismore, also known as 163 and 170 Alexandra Parade, North Lismore (the site).

The land on which the proposed activity is located is mapped as bushfire prone land.

The purpose of this report is to:

- identify the proposed activity and site characteristics;
- determine and assess the bushfire threat; and
- recommend appropriate bushfire protection measures in accordance with PBP 2019 to minimise the impact of bushfire on the activity.

1.2 Legislative Framework

The assessment contained in this report has been prepared with regard to:

- *Environmental Planning and Assessment Act 1979* (EP&A Act);
- *Reconstruction Authority Act 2022;*
- Environmental Planning and Assessment Regulation 2021;
- *Rural Fires Act 1997;*
- Rural Fires Regulation 2022;
- State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP);
- Australian Standard 3959:2018 'Construction of Buildings in Bushfire Prone Areas';
- National Construction Code; and
- Planning for Bushfire Protection (PBP) 2019.

Chapter 6 of PBP 2019 outlines the bushfire protection measures for Special Fire Protection Purpose (SFPP) developments, which are discussed in **Section 4** of this report.

The Department of Education (the Department) is the landowner, and proponent pursuant to Section 5.1 of the EP&A Act. The activity will be determined by the Reconstruction Authority (RA) under the Ministerial powers in Section 68 of the *NSW Reconstruction Authority Act 2022* (RA Act).

This report does not include an assessment of any threatened species or threatened ecological community under the *Biodiversity Conservation Act 2016*, or any Aboriginal object or place within the meaning of the *National Parks and Wildlife Act 1974*. Refer to the Biodiversity Assessment Report within the REF.

1.2.1 National Construction Code

In addition to the requirements of PBP 2019, buildings in bushfire prone areas are also subject to the requirements of the National Construction Code. This report does not assess compliance with the National Construction Code. In this regard, the Principal Certifying Authority should be consulted to confirm compliance with the requirements of the National Construction Code.

1.2.2 PBP Addendum 2022

NSW Rural Fire Service (RFS) released PBP Addendum 2022 which took effect from 1 May 2023 to coincide with adoption of the National Construction Code 2022. The relevant provisions of PBP Addendum 2022 are included in this report and highlighted accordingly.

1.2.3 PBP Addendum 2025

PBP Addendum 2025 came into effect on 4 April 2025. PBP Addendum 2025 amends Appendix B of PBP Addendum 2022 in relation to vehicular access by removing the applicability of the specific requirements in Table 3 (SFPP Development Access – Specific Requirements); and amends specification S43C9 (internal tenability) and S43C14 (vehicular access) in Specification 43 as referred to in Section G5D4 of the NCC (NSW).

1.2.4 NSW Rural Fire Service

Section 100B of the *Rural Fires Act 1997* establishes that a 'Bush Fire Safety Authority' is required from the NSW RFS for development of bushfire prone land for a SFPP. A SFPP development is one which is occupied by people who are considered to be at-risk members of the community and who may be more susceptible to the impacts of bushfire. SFPP developments include schools.

1.2.5 Agency Consultation

A Bushfire Constraints Assessment was prepared at the concept stage for the proposal. During early stages of the project, comments were sought from RFS who advised that a bushfire assessment that details proposed bushfire protection measures and demonstrates compliance with PBP 2019 is required. This Bushfire Hazard Assessment addresses and demonstrates compliance with PBP 2019, therefore satisfying RFS reporting requirements.

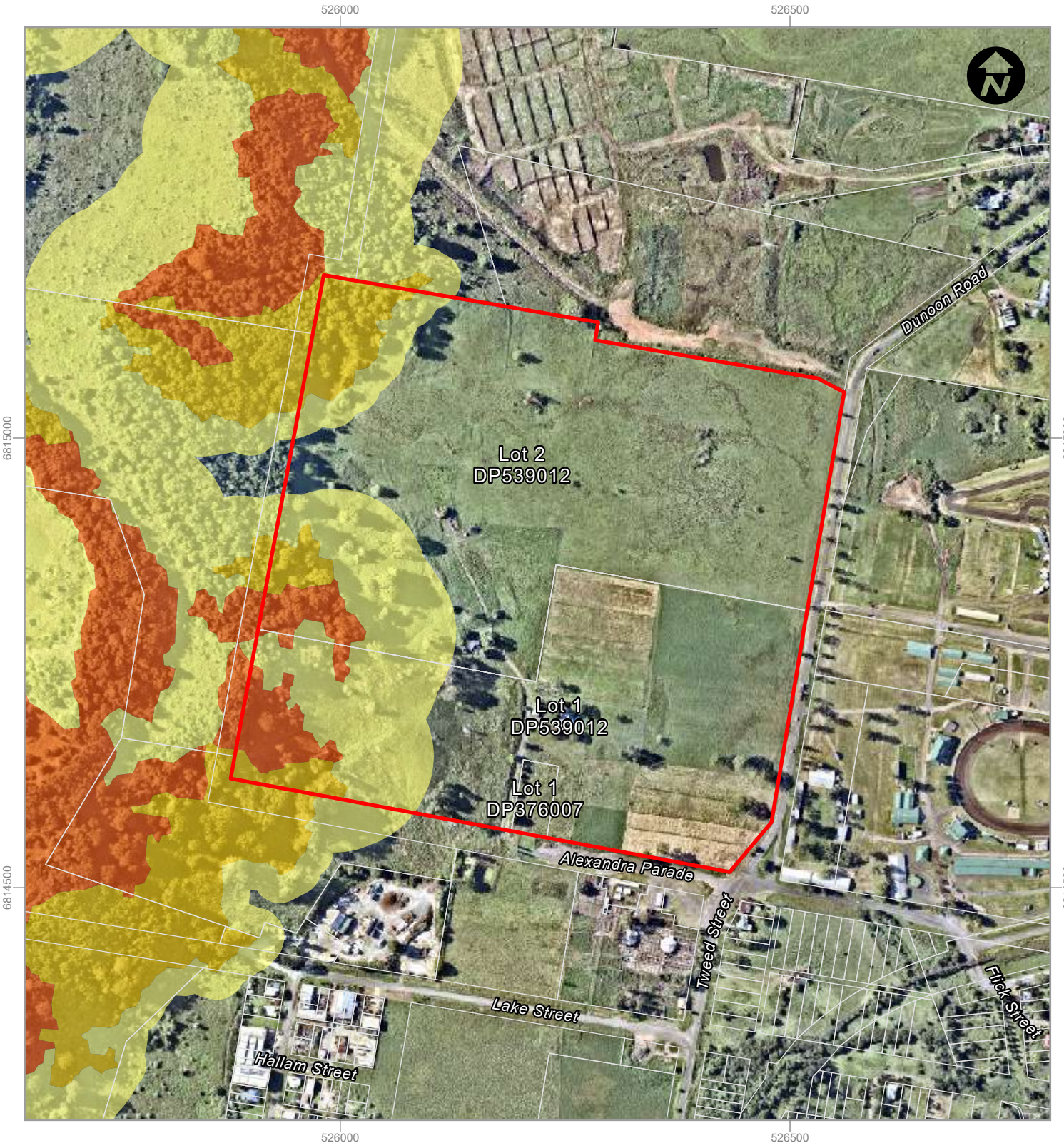
1.3 Bushfire Prone Land

Lismore City Council's bushfire prone land mapping has been prepared as a requirement of Section 10.3 of the EP&A Act and in accordance with the RFS *Guideline to Bushfire Prone Land Mapping*. Lismore City Council's bushfire prone land mapping indicates that the site is partly mapped as bushfire prone land with the north-west corner of the site containing Category 2 Vegetation and Vegetation Buffer and the south-west corner of the site containing Category 1 Vegetation, Category 2 Vegetation and Vegetation Buffer.

The adjacent land to the west, north-west and south-west contains Category 1 Vegetation, Category 2 Vegetation and Vegetation Buffer. Surrounding land to the north, east and south is not mapped as bushfire prone land.

PBP 2019 and the RFS *Guideline to Bushfire Prone Land Mapping* recognise unmanaged grassland as a potential bushfire hazard. Accordingly, surrounding agricultural grassland areas have been assessed as a potential bushfire hazard where they are not mapped as bushfire prone land.

Bushfire prone land mapping for the site and immediate surrounds is shown in **Illustration 1.1**.



LEGEND

- The site
- Cadastre
- Vegetation category 1
- Vegetation category 2
- Vegetation buffer

0 120 Metres

Bushfire Prone Land - Illustration 1.1

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: VJS
Source of base data: Nearmap 17/03/2023
Date: 30/06/2025

2 BACKGROUND

2.1 Location and Description

The site is located at Dunoon Road, North Lismore, also known as 163 and 170 Alexandra Parade, North Lismore. The site comprises of three separate lots, located to the north of Alexandra Parade, with Dunoon Road running parallel to the eastern boundary of the site.

The site is legally described as:

- Lot 1 DP 539012
- Lot 2 DP 539012
- Lot 1 DP 376007.

The site area is approximately 33.53 hectares. The proposed activity will be undertaken mainly within the north-eastern portion of the site. The site is outlined in **Figure 2.1**.

Figure 2.1 Aerial image of the site (source: Nearmap)

Table 2.1 provides a quick reference for the location and description details of the site.

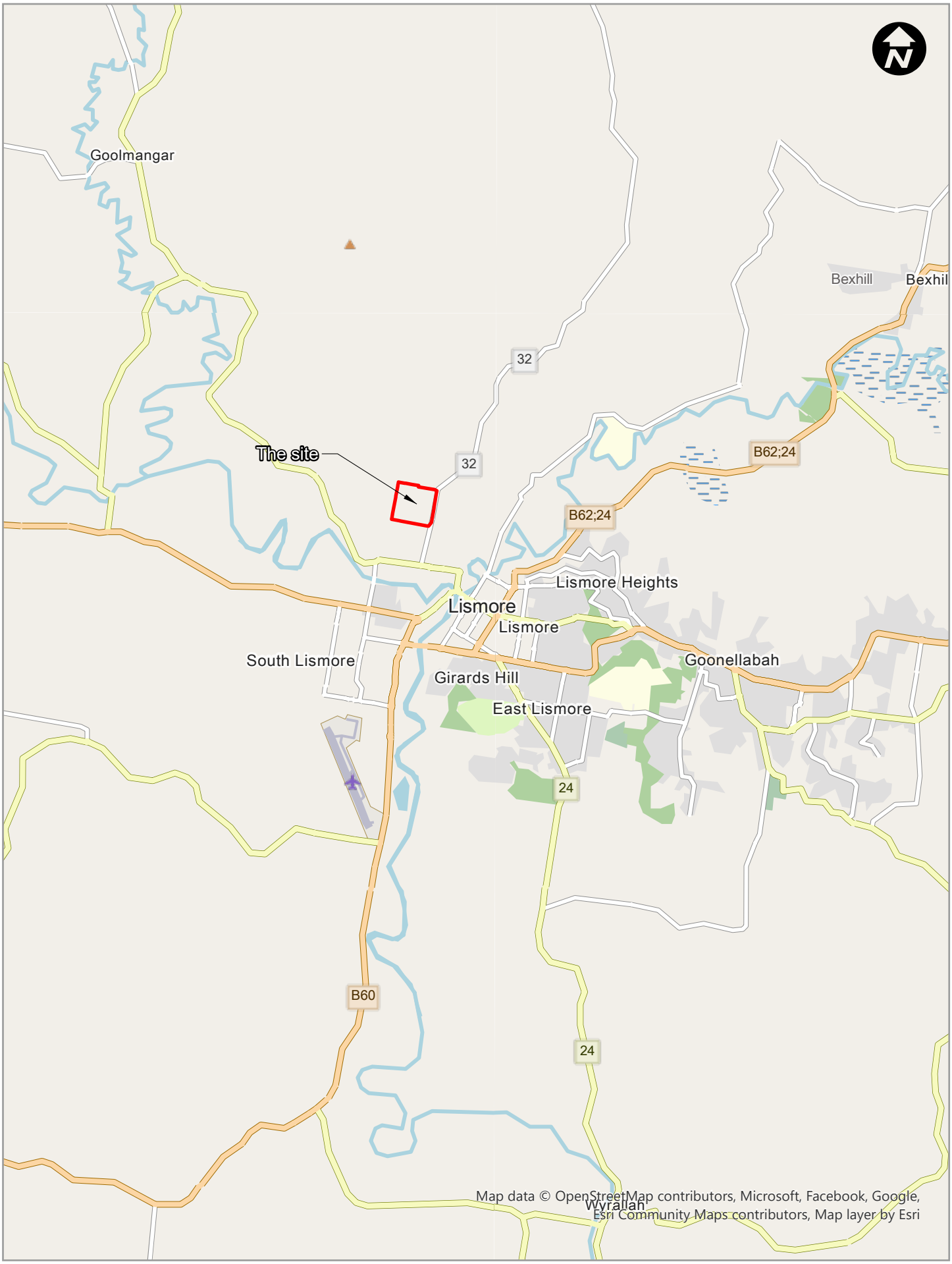
Table 2.1 Site Detail Summary

Site Details	
Lot/ DP	Lot 1 DP 539012 Lot 2 DP 539012 Lot 1 DP 376007
Street Address	163 and 170 Alexandra Parade, North Lismore
Elevation	25 m AHD
Site Area	33.53 ha
Zoning	The site is currently undergoing a rezoning process. Once approved, the site will be zoned SP2 Educational Establishment, C3 Environmental Management and C2 Environmental Conservation.
Fire Weather District	Far North Coast
Fire Danger Index (FDI)	80
Fire Control Centre	Northern Rivers Office, Casino

The site is situated to the north-west of the Lismore CBD on the north-western fringe of Lismore in an area identified for future residential growth (refer to **Illustration 2.1**).

The site has frontage to Dunoon Road along its eastern boundary and Alexandra Parade for the eastern half of the southern boundary (refer to **Illustration 2.2**). Overhead electricity and reticulated water supply services are located along these roads. The site currently contains two dwellings and ancillary agricultural buildings and infrastructure.

The site consists of relatively flat grassland in the east towards Dunoon Road, rising towards the western boundary. The western most portion of the site is characterised by steep hillsides. The north-west and south-west corners of the site contain treed areas of predominantly Camphor Laurel with regenerating dry rainforest. There is a minor, unnamed drainage line traversing the northern portion of the site, flowing generally from west to east.



0 1.5 km

Site Locality - Illustration 2.1

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: VJS
Source of base data: Open Street Map
Date: 30/06/2025

LEGEND

- The site
- Cadastre

Lismore Vegetation Mapping 2019 (Keith Class)

- Coastal Valley Grassy Woodlands
- Dry Rainforests
- Rainforests - derived

- Contours at 2m intervals
- Watercourse

0 120 Metres

Site Analysis - Illustration 2.2

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: VJS
Source of base data: Nearmap 17/03/2023
Date: 30/06/2025

2.2 Land Use

The site currently contains two dwellings with associated outbuildings, agricultural land used for grazing, and cattle yards. The site is currently surrounded by rural land with forested hill slopes to the west, grazing land to the north, Lismore Showground and Lismore Kart Club to the east and a mixture of cattle saleyards, grazing land and industrial uses such as Boral Concrete to the south (refer to **Plates 2.1** to **2.4**).

Plate 2.1 View north from Alexandra Parade

Plate 2.2 Cattle yards south of Alexandra Parade

Plate 2.3 View west to the rainforest/ exotic vegetation in the north-west corner of the site

Plate 2.4 View north-east along the northern boundary of the site

2.3 Proposed Activity Description

The proposed activity comprises the relocation and rebuild of the Richmond River High Campus from its existing temporary location alongside The Rivers Secondary College Lismore High Campus at East Lismore to the proposed site at 163 and 170 Alexandra Parade, North Lismore. The school proposal will be delivered in one stage.

A detailed description of the proposal is as follows:

1. Demolition of existing features including existing buildings, cattle drinking well, cattle sheds, and wire fencing, and tree removal to accommodate the school development.
2. Construction of new three storey buildings on the south-eastern portion of the site for the proposed public secondary school including:
    a. General and Specialise Learning Spaces and Workshops
    b. Administration and Staff facilities
    c. Library, Hall and Movement Studio
    d. Construction, Hospitality and Agricultural Learning Facilities
    e. Amenity, Plant, Circulation and Storage Areas
    f. Outdoor Learning Spaces and play spaces.
3. Landscaping including tree planting.
4. Public domain works comprising:
    - Access road off Dunoon Road, comprising a separate shared bicycle/pedestrian pathway, and internal access roundabout.
    - Kiss and ride drop-off and pick up zones.
    - Bus transport arrangements with a separate bus zone.
5. Outdoor spaces including assembly zones, agricultural spaces, sports fields, games courts, dancing circles, yarning and dancing circles, seating and shade structures.
6. On-site car parking, including accessible spaces and provision for EV charging spaces.

Figure 2.2 shows the scope of works.

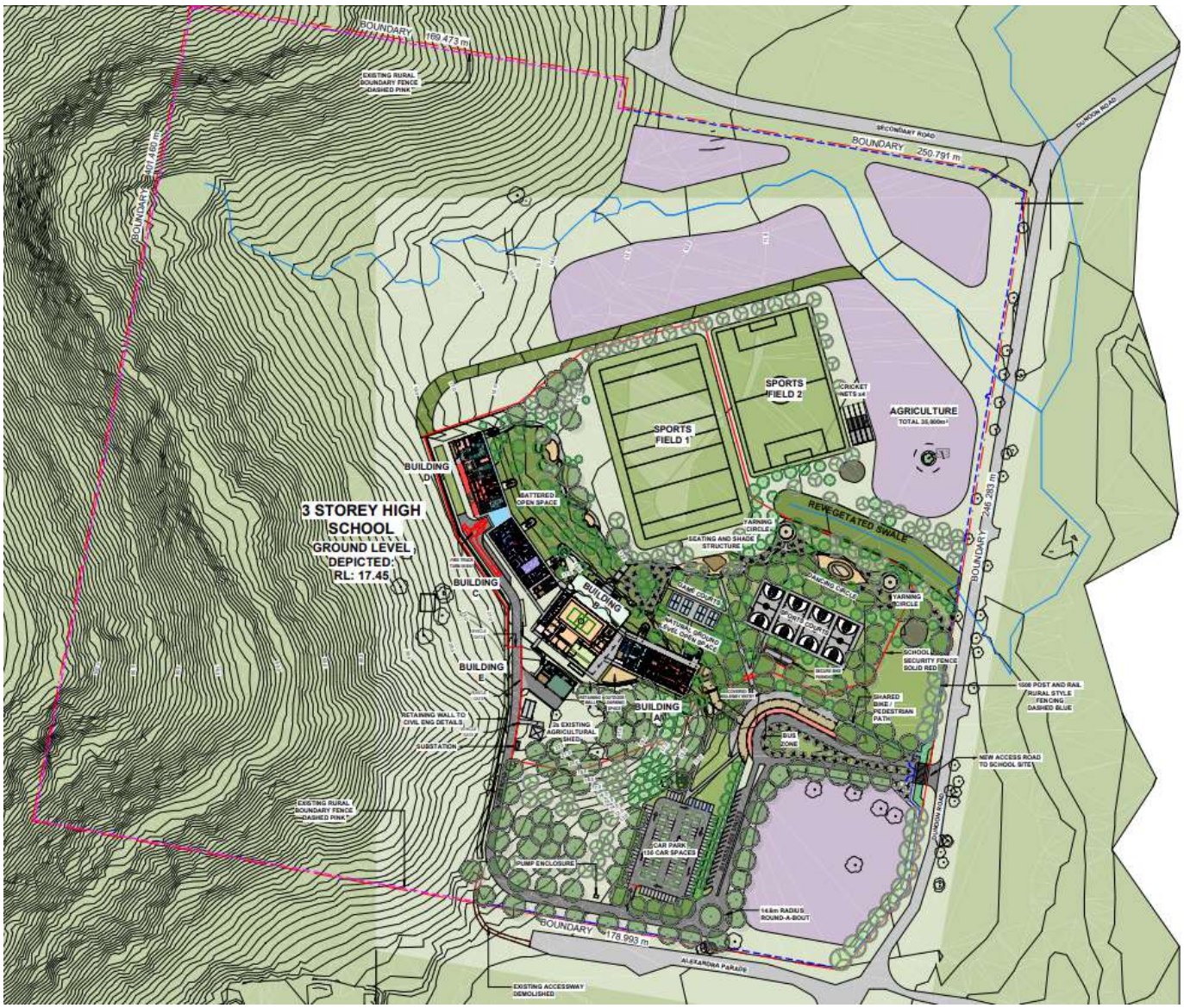


Figure 2.2 Overall Site Context Plan (Source: EJE Architecture)

3 BUSHFIRE HAZARD ASSESSMENT

The following subsections were informed by a site visit undertaken by GeoLINK on 29 January 2024.

3.1 Vegetation

Vegetation classifications for the purpose of assessing bushfire hazard are based on vegetation formations and fuel loads outlined in PBP 2019. Vegetation surrounding the proposed school buildings has been assessed in terms of potential bushfire hazard over a distance of 140 m, using the formation classes provided within Figure A1.2 of PBP 2019. The dominant vegetation formation in each relevant direction is outlined in **Table 3.1**.

Vegetation along the western portion of the site (including north-west and south-western corners) comprise dry rainforest with a high proportion of exotic vegetation (Camphor Laurel and Privet). In accordance with Table A1.9 of PBP 2019, exotic vegetation (Camphor Laurel, Privet) or woody weeds (such as Lantana) with a canopy cover >70% can be assessed as equivalent to Rainforest.

The remainder of the site contains Grassland that is currently managed by cattle grazing. It is assumed that the area east of the proposed access road will be kept in managed condition, including within the curtilage of proposed buildings, sports fields and agricultural areas.

Table 3.1 Vegetation Formation

Direction	Predominant Vegetation Formation
North	Managed Land
East	Managed Land
South-east	Managed Land
South	Managed Land
South-west	Rainforest
West	Rainforest
North-west	Rainforest

3.2 Slope

The effective slope is the slope of the land beneath the vegetation assessed as being a hazard that will have the greatest influence on bushfire behaviour in relation to the activity. The effective slope has been assessed over 100 m in each relevant direction. The effective slope in relation to the activity is outlined in **Table 3.2**.

Table 3.2 Effective Slope

Direction	Effective Slope
North	N/A
East	N/A
South-east	N/A
South	N/A
South-west	Upslope/ flat
West	Upslope/ flat
North-west	Upslope/ flat

3.3 Fire Weather District

Lismore City Council local government area is located within the 'Far North Coast' fire weather district, with a Fire Danger Index (FDI) of 80.

4 BUSHFIRE PROTECTION MEASURES

4.1 Asset Protection Zones

PBP 2019 describes an asset protection zone (APZ) as a fuel reduced area surrounding a built asset or structure which provides a buffer zone between a bushfire hazard and the asset.

The APZ provides:

- an area of reduced bushfire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

The minimum required APZs for SFPP developments are based on a radiant heat threshold of 10 kW/m^2 (flame temperature of 1200 K). The minimum APZs have been determined in accordance with Table A1.12.1 and the methodology outlined in Appendix A1.1 of PBP 2019, using the relevant vegetation formation, effective slope and FDI.

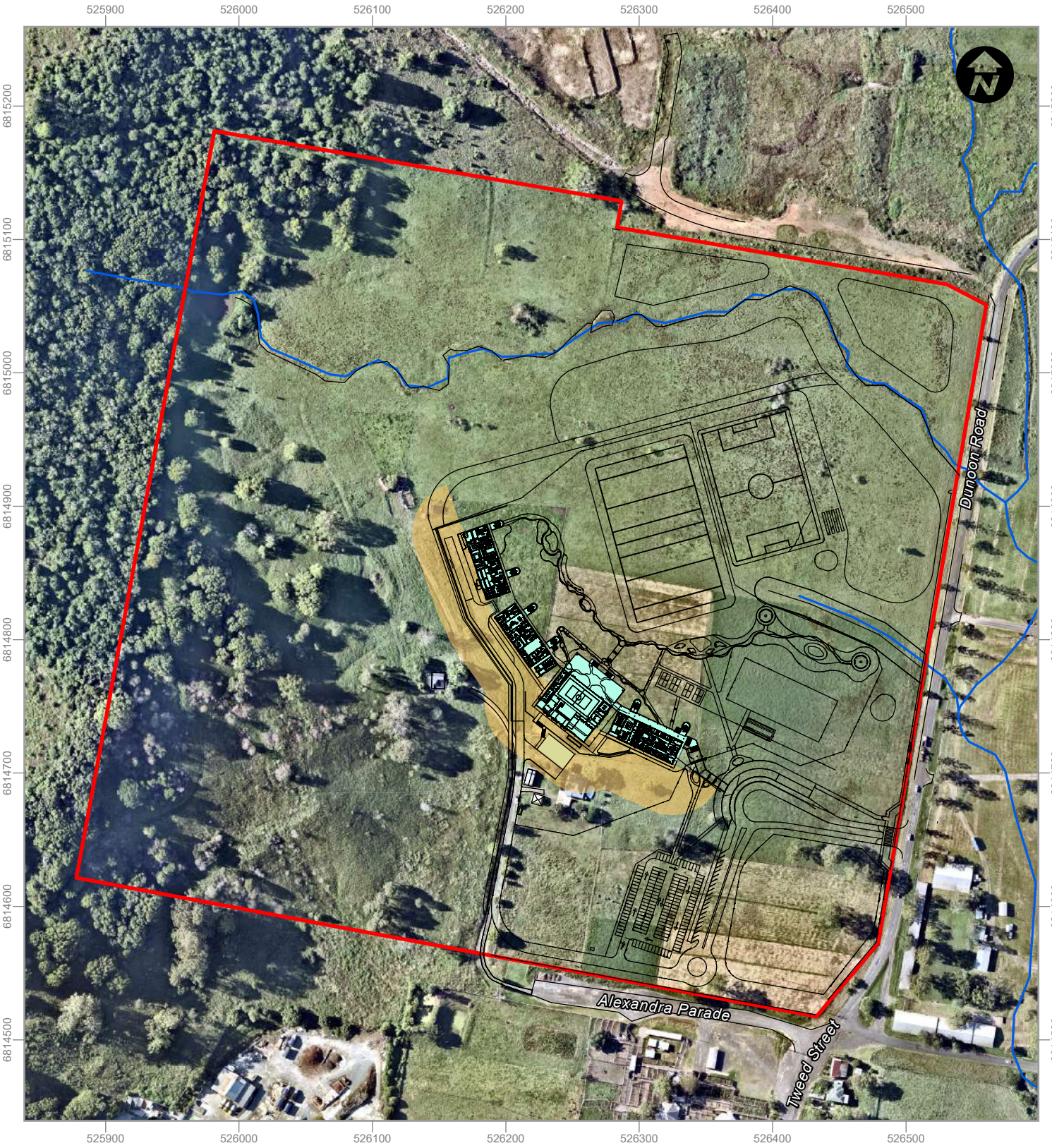
Table 4.1 outlines the minimum required APZ around the proposed school buildings.

Table 4.1 Minimum Asset Protection Zones

Direction	Vegetation Formation	Effective Slope	Minimum APZ
North	Managed Land	N/A	N/A
East	Managed Land	N/A	N/A
South-east	Managed Land	N/A	N/A
South	Managed Land	N/A	N/A
South-west	Rainforest	Upslope/ flat	38 m
West	Rainforest	Upslope/ flat	38 m
North-west	Rainforest	Upslope/ flat	38 m

Illustration 4.1 shows the minimum APZs required to comply with a radiant heat threshold of 10 kW/m^2.

The APZ should be established and managed as an Inner Protection Area (IPA) in accordance with Appendix A4.1.1 of PBP 2019 and should consist of open areas with minimal fuel at ground level that could be set alight by bushfire. Some trees and shrubs are permissible within the APZ, provided crown separation can be achieved, and vegetation does not overhang buildings. No combustible materials should be stored in the APZ.



LEGEND

- The site
- Building envelope
- 38 m asset protection zone
- Watercourse
- Site plan

0 80 Metres

Asset Protection Zones - Illustration 4.1

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: VJS
Source of base data: Nearmap 17/03/2023
Date: 1/07/2025

Table 4.2 outlines the extent to which the proposed APZs comply with the performance criteria and acceptable solution requirements of Table 6.8a of PBP 2019.

Table 4.2 APZ Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Radiant heat levels of greater than 10 kW/m² (calculated at 1200 K) will not be experienced on any part of the building.	The building is provided with an APZ in accordance with Table A1.12.1.	APZs have been determined in accordance with Table A1.12.1 of PBP 2019 (refer to **Table 4.1** of this report).
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZ are located on lands with a slope less than 18 degrees.	APZs are located on land with a slope less than 18 degrees.
APZs are managed and maintained to prevent the spread of a fire towards the building.	The APZ is managed in accordance with the requirements of Appendix 4 and is wholly within the boundaries of the development site.	APZs are located wholly within the site and are to be managed in accordance with Appendix 4 of PBP 2019.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	APZs are located wholly within the boundaries of the site.
	Other structures located within the APZ need to be located further than 6 m from the refuge building.	No structures are proposed within the APZ.

4.2 Landscaping

Landscaping is required to comply with PBP 2019 Appendix 4.

Table 4.3 assesses compliance with the acceptable solutions of Table 6.8a of PBP 2019 relating to landscaping.

Table 4.3 Landscaping Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
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.	Can comply. Landscaping is to comply with Appendix 4 of PBP 2019.
	Fencing is constructed in accordance with Section 7.6 of PBP 2019.	Can comply. Any fencing within 6 m of the school buildings is to be constructed of non-combustible materials; otherwise, hardwood or non-combustible materials.

4.3 Construction

The standard of building construction required to provide bushfire protection is based on the Bushfire Attack Level (BAL). The BAL is used to describe the level of potential bushfire attack on a property (ember attack, radiant heat and direct flame contact) and is based on radiant heat flux exposure thresholds (expressed in kilowatts per metre squared – kW/m^2), as described in Table A1.7 of PBP 2019.

4.3.1 PBP Addendum 2022

BALs are prescribed in PBP Addendum 2022 for certain SFPP developments on bushfire prone land, with a construction level of BAL-19 under AS3959 and Section 7.5 of PBP to be applied to schools. The relevant construction requirements are contained in Australian Standard AS3959-2018 'Construction of buildings in bushfire prone areas'.

Accordingly, new construction is required to comply with **BAL-19**.

4.3.2 National Construction Code

The proposed activity has been assessed as a collection of Class 9b buildings. In addition to the requirements of PBP 2019, Class 9b buildings in bushfire prone areas are also subject to the requirements of the National Construction Code (Building Code of Australia – Volume One). This report does not assess compliance with the National Construction Code (NCC). Refer to BCA Report prepared by Group DLA for assessment against NCC and Specification 43.

4.3.3 Additional Construction Requirements

Section 7.5.2 of PBP 2019 (as amended by PBP Addendum 2022) adopts additional measures over and above the construction requirements of AS3959-2018. These additional measures apply to construction of the proposed school.

4.3.4 Assessment of Construction Compliance

Table 4.4 assesses compliance against the acceptable solutions of Table 6.8a PBP 2019 (as amended by PBP Addendum 2022) relating to construction.

Table 4.4 Construction Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
The proposed building can withstand bushfire attack in the form of wind, smoke, embers, radiant heat and flame contact.	A construction level of BAL-19 or greater under AS 3959 and section 7.5 of PBP is applied.	Can comply. The proposed school is to be constructed to comply with **BAL-19**.

4.4 Access

The site has public road frontage to Dunoon Road along its eastern boundary and Alexandra Parade for the eastern half of the southern boundary. Public access to the site is not available from Alexandra Parade, this is for emergency vehicles only. A new access road to the school site is proposed directly from Dunoon Road to the east. This road will include a separate shared bicycle/pedestrian pathway, internal access roundabout, 20 kiss and ride drop-off spaces and pick up zone, 130 space carpark and bus transport arrangements with a separate bus zone. A perimeter access road will extend along the southern site boundary from the internal roundabout to the western extent of the school development. The access road traverses along the western side of the proposed school buildings between the bushfire hazard upslope and will terminate in a Type C vehicle turning head (or B99 vehicle circle manoeuvre swept path) at the northern end of Building C. Access to the northern end of Building D is provided via reinforced turf.

Dunoon Road provides egress south towards Lismore, where it connects to Tweed Street. The local road network linking to Dunoon Road/ Tweed Street includes Lake Street and Alexandra Parade. Dunoon Road also provides egress to the north and links with Cusack Road and Woodlawn Road. Given the short distance to Lismore, the multiple routes available and the routes do not pass through forest vegetation, it is considered that the existing local road network is sufficient to cope with evacuating traffic from both the school and the urban release area.

Table 4.5 outlines the extent to which access to the proposed school complies with the relevant acceptable solution requirements of Table 6.8b of PBP 2019.

Table 4.5 Access Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Access		
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation	SFPP access roads are two-wheel drive, all-weather roads.	Can comply. The proposed property access road will be suitable for two-wheel drive vehicles in all-weather conditions.
	Access is provided to all structures.	The proposed property access road will provide access to the western side of the proposed school buildings.
	Traffic management devices are constructed to not prohibit access by emergency services vehicles.	Can comply. No traffic management devices will be installed that prohibit access by emergency services vehicles.
	Access roads must provide suitable turning areas in accordance with Appendix 3.	Can comply. A Type C vehicle turning head (or B99 vehicle circle manoeuvre swept path) is proposed at the northern end of Building C.
	One way only public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	N/A No one-way public access roads are proposed.
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),	Can comply.
	Bridges and causeways are to clearly indicate load rating.	N/A No bridges or causeways are proposed.
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.	Can comply. Hydrants will be located outside of parking reserves and road carriageways.
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021.	Can comply. Hydrants will comply with AS 2419.1:2021.
	There is suitable access for a Category 1 fire appliances to within 4 m of the static water supply where no reticulated supply is available.	Can comply. Reticulated water supply is available to the site.

Performance Criteria	Acceptable Solution	Application
Perimeter Roads		
Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Are two-way sealed roads.	N/A No perimeter roads are proposed.
	Minimum 8 m carriageway width kerb to kerb.	
	Parking is provided outside of the carriageway width.	
	Hydrants are located clear of parking areas.	
	Are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	
	Curves of roads have a minimum inner radius of 6 m.	
	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 4 m to any overhanging obstructions, including tree branches, is provided.	
Non-perimeter Roads		
Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating.	Minimum 5.5 m width kerb to kerb.	Can comply. The proposed access road is more than 5.5 m wide.
	Parking is provided outside of the carriageway width.	Can comply. A dedicated car parking area with 130 car spaces and 20 kiss and ride spaces will be provided in the southern portion of the site.
	Hydrants are located clear of parking areas.	Can comply. 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 500 m.	The existing southern driveway from Alexandra Parade will be retained to connect with the internal access road. This access will include a locked gate to ensure the southern driveway is only available in emergency situations.
	Curves of roads have a minimum inner radius of 6 m.	Can comply.

Performance Criteria	Acceptable Solution	Application
	The maximum grade road is 15° and average grade is 10°.	Can comply.
	The road crossfall does not exceed 3°.	Can comply.
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	Can comply.

4.5 Services – Water, Electricity and Gas

Reticulated water supply is available along Alexandra Parade and Dunoon Road. As part of the proposed activity, the water main along Dunoon Road will be upgraded to provide 20 L/sec to the site. A pump will be provided to boost discharge pressure to 700 kPa at the most hydraulically disadvantaged hydrants.

Overhead electricity lines are located along Alexandra Parade and through the site to the existing dwelling from the corner of Alexandra Parade and Dunoon Road. The overhead lines are proposed to be extended to a substation located on the eastern side of the access road on the western side of the site. Underground connection will be provided from the substation to the school buildings.

Table 4.6 outlines the extent to which the water, electricity and gas services comply with the relevant acceptable solution requirements of Table 6.8c of PBP 2019. The requirements of PBP Addendum 2022 also apply to schools and are included in **Table 4.6**.

Table 4.6 Water, Electricity and Gas Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Water Supplies		
An adequate water supply for firefighting purposes is installed and maintained.	Reticulated water is to be provided to the development, where available.	Can comply. Reticulated water supply will be connected to the site.
	A 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.	N/A Reticulated water supply will be connected to the site.
	PBP Addendum 2022 ■ Reticulated water is to be provided to the development, where available; and	Can comply. Reticulated water supply will be connected to the site.
	■ 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	Can comply. A fire hydrant system is to be provided in accordance with the requirements of AS2419.1.

Performance Criteria	Acceptable Solution	Application
	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.	
Water supplies are located at regular intervals; and the water supply is accessible and reliable for firefighting operations.	Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2021;	Can comply. A fire hydrant system is to be provided in accordance with the requirements of AS2419.1.
	Hydrants are not located within any road carriageway; and	Can comply. Hydrants are to be located outside of the road carriageway. It is recommended that an access bay be provided adjacent to each hydrant so that firefighting vehicles do not obstruct traffic flow.
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	N/A The proposed school is not an urban subdivision.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.	Can comply. A fire hydrant system is to be provided in accordance with the requirements of AS2419.1.
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.	Can comply.
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 65 mm Storz outlet with a ball valve is fitted to the outlet.	N/A Reticulated water supply is available to the site.
	Ball valve and pipes are adequate for water flow and are metal;	N/A
	Supply pipes from tank to ball valve have the same bore size to ensure flow volume;	N/A
	Underground tanks have an access hole of 200 mm to allow tankers to refill direct from the tank;	N/A No underground tanks are proposed.
	A hardened ground surface for truck access is supplied within 4 m of the access hole;	N/A

Performance Criteria	Acceptable Solution	Application
	Above-ground tanks are manufactured from concrete or metal;	N/A
	Raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959);	N/A No raised tanks are proposed.
	Unobstructed access is provided at all times;	N/A
	Tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters;	N/A
	Underground tanks are clearly marked	N/A No underground tanks are proposed.
	All exposed water pipes external to the building are metal, including any fittings;	N/A
	Where pumps are provided, they are a minimum 5 hp or 3 kW petrol or diesel-powered pump, and are shielded against bush fire attack; Any hose and reel for firefighting connected to the pump shall be 19 mm internal diameter; and	Can comply (if required).
	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 2441:2005 Installation of fire hose reels.	Can comply.
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	Complies. The existing overhead electricity lines within the site will be extended to a proposed substation adjacent to the access road on the western side of the site. Underground connection will be provided from the substation to the school buildings.
	Where overhead, electrical transmission lines are proposed as follows: Lines are installed with short pole spacing (30 m), 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.	

Performance Criteria	Acceptable Solution	Application
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, the requirements of relevant authorities, and metal piping is used;	Can comply. Reticulated gas is not available to the site. Any proposed bottled gas is to comply with these requirements.
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m 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 2 m away from any combustible material, so they do not act as a catalyst to combustion:	
	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.	

4.6 Emergency Management Planning

PBP 2019 notes that SFPP developments are identified as being more vulnerable to the effects of bushfire. This is because the occupants may have a mental or physical impairment, may experience language difficulties, may be unaware of their surroundings or the bushfire risk and may be unable to self-evacuate. Due to their vulnerability, a higher degree of planning and emphasis on emergency management is required for all SFPP developments.

The school should have a Bushfire Emergency Management and Evacuation Plan that provides guidance in planning, preparing, responding and recovery in the event of a bushfire emergency situation originating from or impacting on the school.

In accordance with the requirements of PBP 2019 – Table 6.8d, it is recommended that a Bushfire Emergency Management and Evacuation Plan be prepared to include bushfire emergency management and evacuation protocols in accordance with the RFS document '*A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan'* and AS 3745:2010 'Planning for emergencies in facilities'. The protocols for bushfire emergency management should include planning for the early relocation of students/ staff on days with forecast catastrophic fire weather conditions. The plan should be regularly monitored and amended when required. Details of its contents should be included during the induction of students and teaching staff to the site. Detailed plans of emergency assembly areas including on-site and off-site arrangements as stated in AS 3745:2010 should be clearly displayed and an annual trial emergency evacuation conducted.

Table 4.7 outlines the extent to which the proposed emergency management planning complies with the performance criteria and acceptable solution requirements of Table 6.8d of PBP 2019.

Table 4.7 PBP 2019 Emergency Management Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
A Bushfire Emergency Management and Evacuation Plan is prepared.	Bushfire Emergency Management and Evacuation Plan is prepared consistent with the: – The NSW RFS document: *A Guide to Developing a Bushfire 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).	Can comply. A Bushfire Emergency Management and Evacuation Plan is to be prepared in accordance with the NSW RFS document: *A Guide to Developing a Bushfire Emergency Management and Evacuation Plan* and relevant Australian Standards.
	The Bushfire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants.	Can comply.
	A copy of the Bushfire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.	Can comply.
Appropriate and adequate management arrangements are established for consultation and implementation of the Bushfire Emergency Management and Evacuation 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.	Can comply.
	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 emergency evacuation is conducted.	Can comply.

5 EVALUATION OF ENVIRONMENTAL IMPACTS

5.1 Cumulative Impact Assessment

An assessment of potential cumulative impacts on the environment relevant to each bushfire protection measure is detailed in **Table 5.1**.

Table 5.1 Cumulative Impact Assessment

Bushfire Protection Measure	Potential Cumulative Impact	Application
Asset Protection Zone	Vegetation removal and management to APZ standards is required for the proposed school.	The proposed APZ will be established within an area that predominantly comprises exotic grassland. No removal of native trees is required to facilitate the proposed APZ.
Landscaping	Landscaping will be established and maintained to APZ standards.	Landscaping within the site is to be managed in accordance with Appendix 4 of PBP 2019.
Construction	Cumulative impacts associated with construction include resource consumption, greenhouse gas emissions from operation of vehicles and equipment.	BAL-19 construction is required to protect occupants from the potential impacts of bushfire.
Access	Road construction would contribute to cumulative environmental impacts.	The broader local road network is sufficient to support increased volumes of traffic in the event of a bushfire emergency.
Services	Demand on the reticulated water network, particularly in regard to water pressure if multiple firefighting appliances are being used at the same time within the proposed school and urban release area.	Water pressure can be compromised in bushfire situations when there are multiple demands on the reticulated water supply. The hydrant system and firefighting water supply will be designed accordingly.
Emergency Management Planning	There is a potential cumulative impact regarding the capacity of the local road network to support increased volumes of traffic in the event of a bushfire emergency. Traffic will be generated from the proposed school and from the urban release area.	The broader local road network is sufficient to support increased volumes of traffic in the event of a bushfire emergency.

5.2 Mitigation Measures

Table 5.2 lists mitigation measures for the proposed activity.

Table 5.2 Mitigation Measures

Mitigation Number	Aspect/ Section	Mitigation Measure	Reason for Mitigation Measure
1	Approvals	Section 100B BFSA is required from RFS for a school on bushfire prone land.	Gain appropriate approval from relevant authority to confirm that the proposal meets the requirements to protect persons, property or the environment from danger that may arise from a bushfire.
2	Section 4.1 Asset Protection Zones	Asset protection zones are to be established and maintained around the proposed buildings in accordance with Appendix A4.1.1 of PBP 2019, as follows: ■ South-west for 38 m; ■ West for 38 m; ■ North-west for 38 m.	APZs are managed and maintained to prevent the spread of fire to the building. To ensure that radiant heat levels of greater than 10 kW/m^2 (calculated at 1200 K) are not experienced on any part of the building.
3	Section 4.2 Landscaping	Landscaping is to comply with Appendix 4 of PBP 2019.	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause ignitions
4	Section 4.2 Landscaping	Fencing is to comply with Section 7.6 of PBP 2019, i.e. made of either hardwood or non-combustible material. If the fence is within 6 m of a building, it must be made of non-combustible material only.	
5	Section 4.3 Construction	The school is to be constructed in accordance with Sections 3 and 6 (BAL-19) of AS 3959:2018, Section 7.5.2 of PBP 2019 and PBP Addendum 2022.	The proposed buildings can withstand bushfire attack in the form of wind, embers, radiant heat and flame contact.
6	Section 4.4 Access	Property access is to be in accordance with Table 6.8b of PBP 2019.	Fire fighting vehicles are provided with safe, all weather access to structures and hazard vegetation.
7	Section 4.5 Services	A firefighting water supply is to be provided in accordance with Table 6.8c of PBP 2019 and PBP Addendum 2022.	An adequate water supply for fire fighting is installed and maintained. Electricity services limit the possibility of ignition of

Mitigation Number	Aspect/ Section	Mitigation Measure	Reason for Mitigation Measure
8	Section 4.5 Services	Electricity and gas services are to comply with Table 6.8c of PBP 2019.	surrounding bushland or the fabric of buildings.
9	Section 4.6 Emergency Management Planning	Prior to the operation of the school, a Bushfire Emergency Management and Evacuation Plan is to be prepared in accordance with Table 6.8d of Planning for Bushfire Protection 2019.	Appropriate and adequate management arrangements are established for staff and occupants.

5.3 Evaluation of Environmental Impacts

It is not expected that the recommended bushfire protection measures would result in a significant effect on the environment.

6 RECOMMENDATIONS AND CONCLUSIONS

6.1 Recommendations

It is recommended that the following bushfire protection measures are applied to the proposed activity.

- Asset protection zones are to be established and maintained around the proposed buildings in accordance with Appendix A4.1.1 of PBP 2019, as follows:
    - South-west for 38 m;
    - West for 38 m;
    - North-west for 38 m.
- APZs are to be managed as an Inner Protection Area in accordance with PBP 2019.
- Landscaping is to comply with Appendix 4 of PBP 2019.
- The school is to be constructed in accordance with Sections 3 and 6 (BAL-19) of AS 3959:2018, Section 7.5.2 of PBP 2019 and PBP Addendum 2022.
- Property access is to be in accordance with Table 6.8b of PBP 2019.
- A firefighting water supply is to be provided in accordance with Table 6.8c of PBP 2019 and PBP Addendum 2022.
- Electricity and gas services are to comply with Table 6.8c of PBP 2019.
- A Bushfire Emergency Management and Evacuation Plan is to be prepared in accordance with the NSW RFS document: *A Guide to Developing a Bushfire Emergency Management and Evacuation Plan* and relevant Australian Standards.

6.2 Conclusion

This Bushfire Hazard Assessment (Review of Environmental Factors) has taken into consideration the proposed activity, existing vegetation, effective slope and FDI detailed within PBP 2019. Adequate and appropriate bushfire protection measures are available and can be implemented to facilitate the proposed new school at 163 and 170 Alexandra Parade (Lot 1 DP 539012, Lot 2 DP 539012 and Lot 1 DP 376007). The proposal conforms with the standards, performance criteria and intent of measures outlined in PBP 2019 and complies with Section 100B of the *Rural Fires Act 1997*.

It is therefore recommended that the proposed activity is approved and conditioned in accordance with the recommendations and mitigation measures provided within this assessment.

V. Silver

Veronica Silver
Senior Bushfire Consultant

BPAD L2 (16289)

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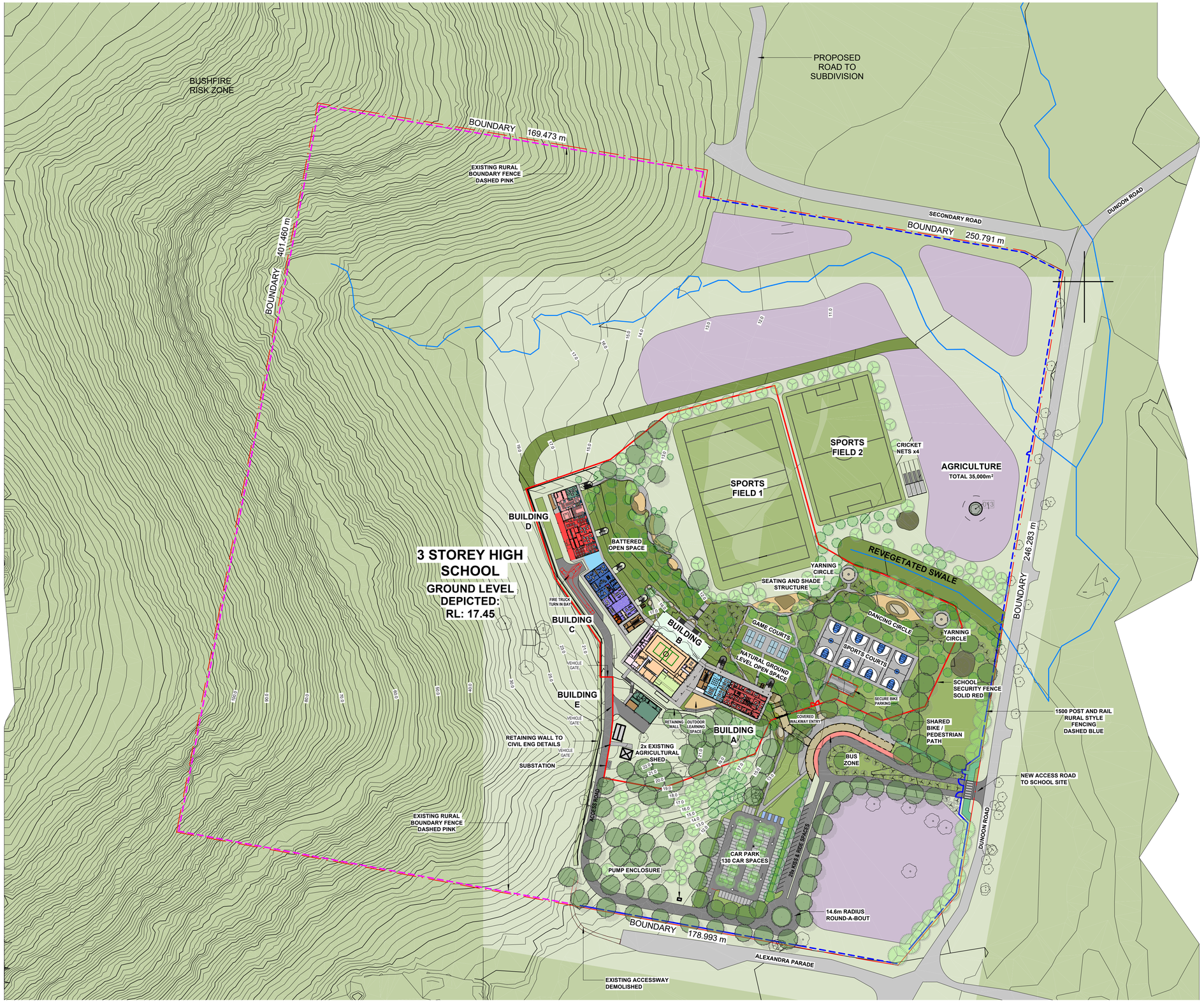
Appendix A. Proposed Plans



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A	11/02/2024	FOR REVIEW	MM	KG	
B	13/02/2025	FOR INFORMATION	MM	KG	
C	28/02/2025	UPDATED ARCHITECTURE DRAWINGS	MM	KG	
D	02/04/2025	FOR REVIEW	MM	KG	
E	13/05/2025	PRELIMINARY ISSUE FOR REF	MM	KG	
F	19/06/2025	ISSUE FOR REF	MM	KG	
G	23/06/2025	ISSUE FOR REF	MM	KG	

PROJECT : **RICHMOND RIVER HIGH CAMPUS**

SITE : **DUNOON ROAD, NORTH LISMORE**

CLIENT : **SINSW**

DRAWING : **OVERALL SITE CONTEXT PLAN**

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

Autodesk Docs://Richmond River - Flood Recovery/RRHC-EJE-00-ZZ-M3-A-0001.rvt

PROJECT No :	DRAWN :	DATE :	SCALES :
14931	MM	23/06/2025	1 : 1500 @ A1 1 : 3000 @ A3

PHASE :	BUILDING ID:	Level No:	SEQUENTIAL No:	REV :
SD	00	ZZ	A-DA0010	G

FILE NAMNG No. (IN ACCORDANCE TO SINSW - MIDP)

RRHC- EJE- 00- ZZ-DR- A-DA0010

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E	27/09/2024	25% SCHEMATIC DESIGN	MM	KG	
F	1/11/2024	50% SCHEMATIC ISSUE	MG	KG	
G	06/12/2024	90% SCHEMATIC ISSUE	SE	KG	
H	18/12/2024	100% SCHEMATIC ISSUE	SE	KG	
J	11/02/2024	FOR REVIEW	MM	KG	
K	13/02/2025	FOR INFORMATION	MM	KG	
L	21/02/2025	FOR INFORMATION	MM	KG	
M	24/02/2025	FOR REVIEW	MM	KG	
N	28/02/2025	UPDATED ARCHITECTURE DRAWINGS	MM	KG	
P	13/05/2025	PRELIMINARY ISSUE FOR REF	MM	KG	
Q	23/06/2025	ISSUE FOR REF	MM	KG	

PROJECT : **RICHMOND RIVER HIGH CAMPUS**

SITE : **DUNOON ROAD, NORTH LISMORE**

CLIENT : **SINSW**

DRAWING : **OVERALL GROUND FLOOR PLAN**

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

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PROJECT No :	DRAWN :	DATE :	SCALES :
14931	MM	23/06/2025	1 : 500 @ A1 1 : 1000 @ A3

PHASE :	BUILDING ID:	Level No:	SEQUENTIAL No:	REV :
SD	00	ZZ	A-DA0011	Q

FILE NAMNG No. (IN ACCORDANCE TO SINSW - MIDP)

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