Premise

TAFE NSW

Bush Fire Assessment

IN SUPPORT OF A DEVELOPMENT APPLICATION

Report No: 220120_BFA
Rev: 001B
22 April 2021

DOCUMENT AUTHORISATION					
Revision	**Revision Date**	**Report Details**			
Draft A	13/04/21	Draft for Client Review			
Draft B	22/04/2021	For Issue			
Prepared By		**Reviewed By**		**Authorised By**	
David Walker		Emily Lawson		David Walker	

CONTENTS

FIGURES

TABLES

APPENDICES

1. INTRODUCTION

Premise has been commissioned by TAFE NSW to prepare a Bushfire Assessment to accompany a Development Application (DA) for a proposed educational establishment (Connected Learning Centre) to be developed on land described as Bayshore Drive, Byron Bay (Lot 12 DP1189646).

The development does not represent a special fire protection purpose (SFPP) by reference Section 100B of the *Rural Fires Act 1997* (RF Act) on the basis it is not a school or child care centre. On the basis the development does not represent a SFPP, a Bush Fire Safety Authority is NOT required to be obtained. For the avoidance of doubt, the project does not propose to provide any form of student accommodation. To be conservative, SFPP standards have been adopted for the development.

Nonetheless, as referenced in Section 6.3 of the *NSW Rural Fire Service Planning for Bush Fire Protection 2019* (PBFP), approval is required pursuant to Section 4.14 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This assessment has been prepared to assist Byron Shire Council in their assessment of the application by reference to the provisions of Section 4.14.

This report has been prepared pursuant to Clause 44 of the *Rural Fires Regulation 2013* (RF Regulation), and the NSW Rural Fire Services' "Submission Requirements", and is set out in the following format:

- **Section 2** provides a description of the site subject to the DA.
- **Section 3** provides a description of significant environmental features at the site.
- **Section 4** provides a Bush Fire Assessment for the proposed development.
- **Section 5** concludes the report.

2. BACKGROUND

2.1 The Site

The subject site is Bayshore Drive, Byron Bay (Lot 12 DP1189646). The site is currently vacant, having previously been cleared of vegetation. The abovementioned host lot has an approximate area of 5.7 hectares. The proposed development is proposed to use an area of approximately 0.5 hectares of the overall lot, located in the south east corner of the site. A portion of the site is identified via the *Byron Bay Local Environmental Plan 2014* (LEP) as a Deferred Matter (DM) however the proposed development does not encroach into this DM area.

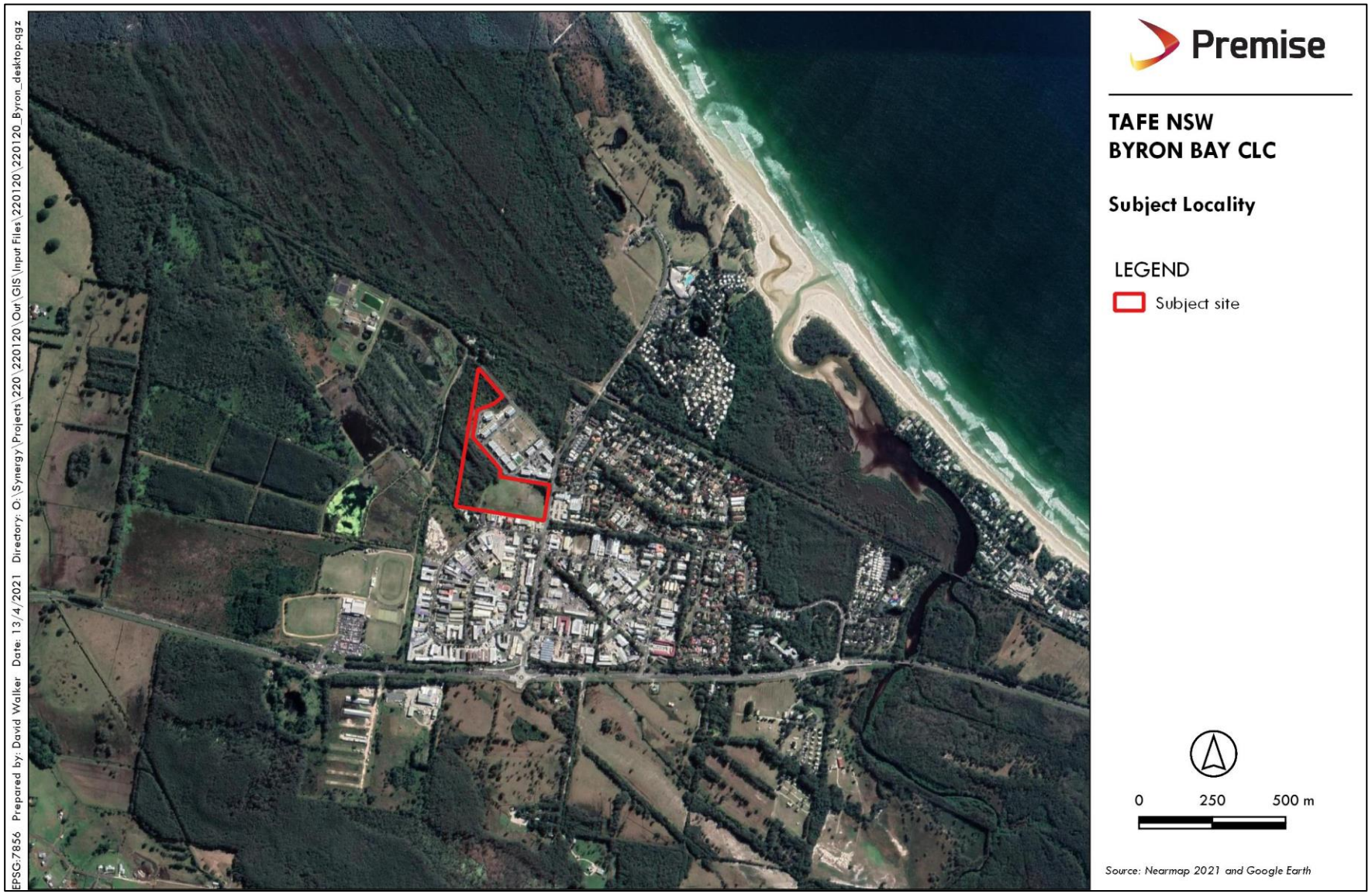
The site has a frontage to Bayshore Drive to the east.

The site is depicted in **Figure 1** and the subject locality is depicted in **Figure 2.**

.

Figure 1 – Subject Site

Figure 2 – Subject Locality (Lot Yellow Outline) (Source: NSW Planning Portal)



3. THE DEVELOPMENT

3.1 Proposed Development and Zoning

The development the subject of this application proposes development of a new educational establishment, being a TAFE NSW Connected Learning Centre (CLC).

The proposal seeks consents for the construction of a Connected Learning Centre by TAFE NSW.

Overall, the development will feature the following:

- Two buildings consisting of:-
  - Maker Space:
    - Mobile Training Unit
    - Maker Space
  - Connected Learning Centre:
    - Group Learning Areas
    - Media Lounge
    - Tech Bar
    - Kitchenette
    - Computer Hubs
    - Print Shop
    - Amenities
  - Outdoor Learning Area;
  - Landscaping;
  - At-grade Carpark

The proposed operation hours are as follows:

- Monday to Friday 8am – 9pm
- Saturday and Sunday 9am – 5pm.

The buildings would accommodate up to two (3) staff member and forty five (45) students at any one time., with the proposed hours of operation not considered to give rise to unreasonable or significant noise impacts to the surrounding receivers.

It is understood at-grade car parking will be constructed which would serve the development. Conceptual plans demonstrate sufficient parking would be provided to accommodate the needs of the proposal.

Any external lighting installed would be installed in accordance with Australian Standard 4282-1997 *Control of the obtrusive effects of outdoor lighting*.

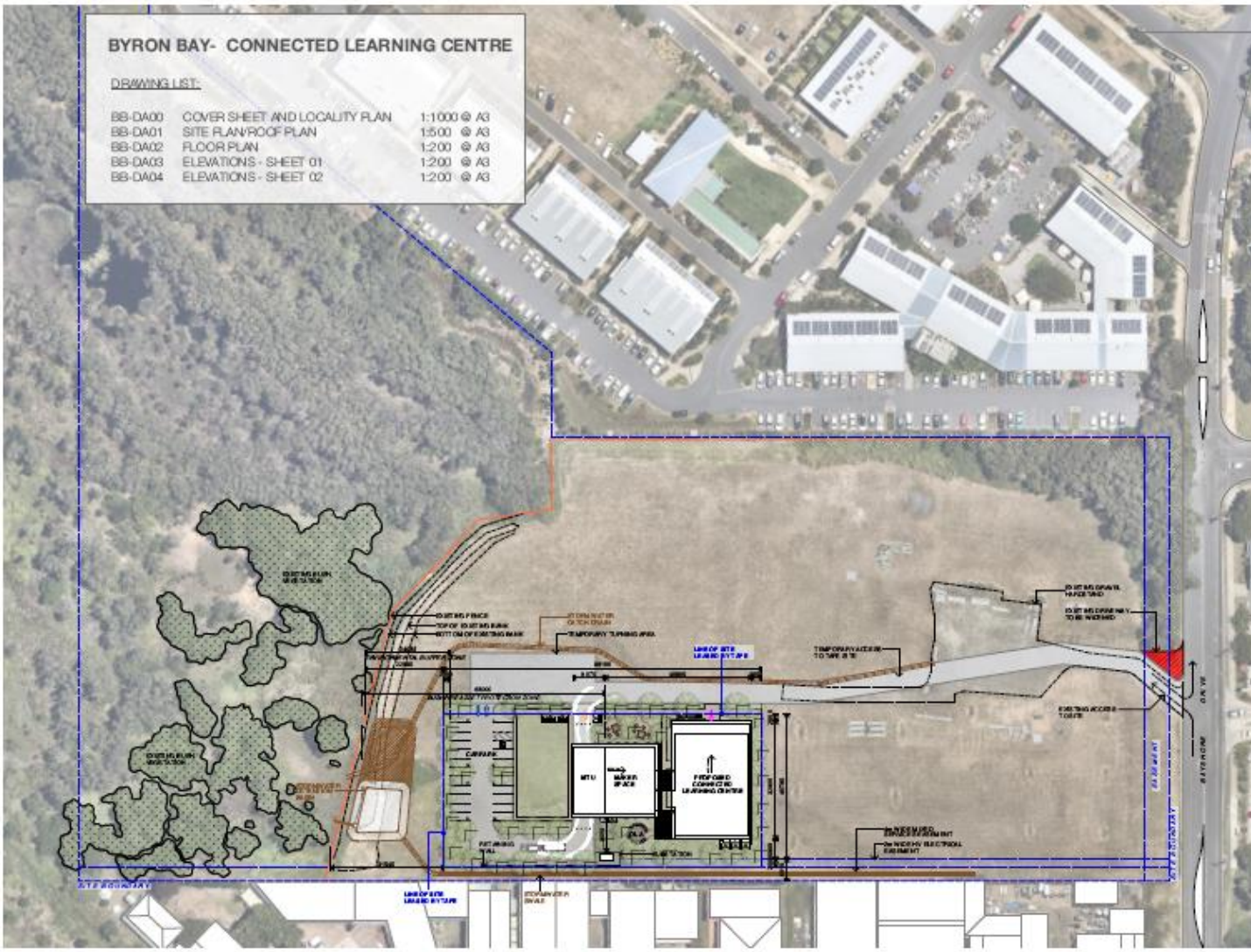
3.2 Vegetation

A site visit was completed by Premise Senior Town Planner on the 4 February 2021. Photographs of the vegetation structure taken during the site visit are provided in **Appendix A**.

Vegetation has been identified by a review of state mapping, liaison with Council's appointed consultant ecologist and Council's Natural Resource Planner.

It is agreed the vegetation structure to the west and north-west of the proposed CLC site is characterised as Coastal Swamp Forest. All other land surrounding the proposed CLC site is mapped as managed land.

Figure 3 – Proposed Layout



3.3 Slope

Slopes were determined by reference to a review of site survey (provided by Council) and a review of commercially available LiDAR from the ICSM – Elevation and Depth – Foundation Spatial Data (ELVIS).

The site is considered to be flat in all directions towards the bush fire threat.

A contour plan is provided at **Figure 4**.

3.4 Bushfire Prone Land

Category 1 bushfire prone land is predominantly located in areas of denser and connective vegetation throughout the site, with a vegetation buffer tracking through areas near the centre of the site. The northern extent of the site is mapped as Category 2 bushfire prone land - refer to **Figure 5**. It is noted the site is located within an area with a Forest Fire Danger Index (FFDI) of 80.

3.5 Summary

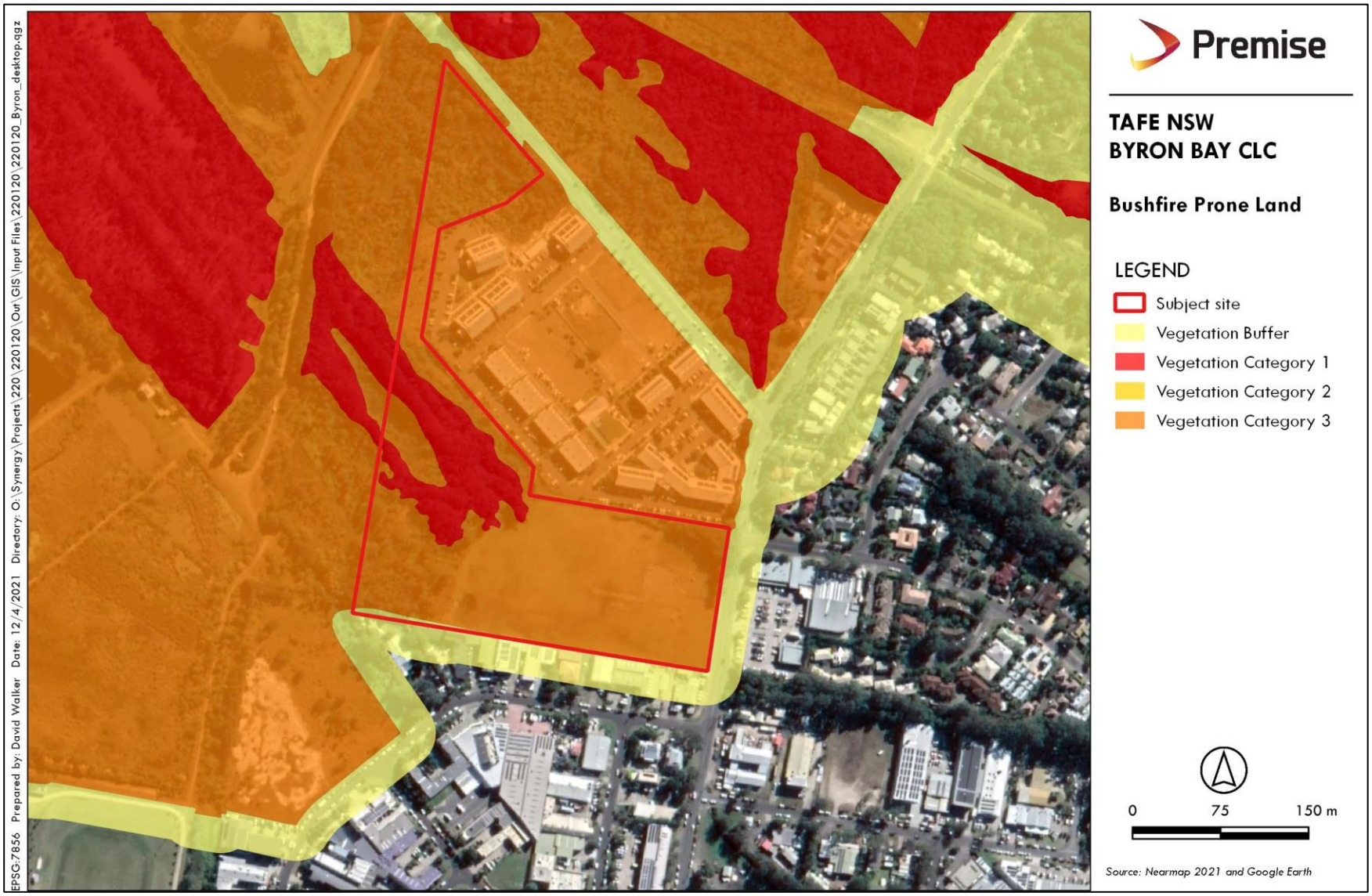
A summary of key features of the site are provided in **Table 1.**

Table 1 – Key Features of the Site

Element	North	East	South	West
Vegetation	Managed land	Managed land	Managed land	Coastal Swamp Forest
Effective slope	Flat	Flat	Flat	Flat
FDI	80	80	80	80

Figure 4 – Contour Plan

Figure 5 – Bush Fire Prone Land Map



4. SIGNIFICANT ENVIRONMENTAL FEATURES

4.1 Ecology

The proposed location of the development is cleared of substantial vegetation. Aerial imaging identifies the clearing of the Site occurred previously between 2015 and 2017. The area proposed for the development is managed grassland and a constructed stormwater basin. No impacts to significant flora and fauna are predicted as a result of the development.

More than 0.5 ha of clearing of native vegetation is not proposed and therefore a Biodiversity Assessment Report is not required. Given the cleared nature of the Site, significant impacts to native flora and fauna communities are not predicted.

The site is not mapped via the biodiversity values map. The Site would be landscaped as an element of the project as outlined on the attached Landscaping Drawings.

On balance the proposal does not result in a significant impact and is therefore considered to be acceptable in the context of the BC Act and the Vegetation SEPP.

4.2 Indigenous Heritage

A search of the subject site (including a 200 m buffer) of the Aboriginal Heritage Information Management System (AHIMS) did not identify any recorded Aboriginal sites or places.

No Aboriginal places were identified on or near the site in the Office of Environment and Heritage's NSW Atlas of Aboriginal Places. No Aboriginal places or objects were identified on or near the site in the State Heritage Register (SHR).

A search of the National Native Title database, Native Title Vision, was undertaken for native title land applications, determinations or Indigenous Land Use Agreements (ILUAs) relevant to the property. The database and mapping showed no registered National Native Title claim within or near the site.

4.3 Vulnerable Lands

A review of available mapping does not identify any vulnerable lands, such as steeply sloping lands or highly erodible soils. The site is mapped as containing class 3 acid sulfate soils.

4.4 Extractive Resources

A review of the MinView DIGS database confirms no current exploration or mining leases (or applications) cover the subject site.

4.5 Contamination

A review of available database information, including the EPA contaminated land record and the List of NSW Contaminated Sites Notified to EPA as of 8 March 2021 (both accessed on 9/4/21) confirms the site is not known or likely to contain instances of contamination would require remediation.

5. BUSHFIRE ASSESSMENT

5.1 Introduction

The proposal entails the development of a tertiary educational establishment on the land. It does not entail the delivery of any form of student accommodation.

The development does not represent a special fire protection purpose on the basis the development is not a school. Nonetheless, tertiary establishments can still accommodate a range of people with various physical capabilities. For the sake of a conservative assessment, the proposal is treated as an SFPP development, however a bush fire safety authority is not required for the proposed works.

5.2 Asset Protection Zones

5.2.1 DEFINITIONS

An Asset Protection Zone (APZ) is:

> *An APZ is a buffer zone between a bush fire hazard and buildings. The APZ is managed to minimise fuel loads and reduce potential radiant heat levels, flame, localised smoke and ember attack. The appropriate APZ distance is based on vegetation type, slope and the nature of the development (NSW RFS 2019).*

APZs consist of:

- Inner Protection Area (IPA): The component of an APZ which is closest to the asset (measured from unmanaged vegetation). It consists of an area maintained to minimal fuel loads so a fire path is not created between the hazard and the building.

- Outer Protection Area (OPA): located between the IPA and the unmanaged vegetation The outer component of an APZ, where fuel loads are maintained at a level where the intensity of an approaching bush fire would be significantly reduced.
- A defendable space: an area within the Inner Protection Area (IPA) of an APZ adjoining a building. This space provides a safe working environment in which efforts can be undertaken to defend the structure, before and after the passage of a bush fire (NSW RFS 2019).

5.2.2 OBJECTIVES

The specific objectives for SFPP developments are to:

minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting;

provide an appropriate operational environment for emergency service personnel during firefighting and emergency management;

ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and

ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.

Through application of the applicable performance criteria and acceptable solutions outlined in

Table 6.8a of PBFP identify the performance criteria and acceptable solution applicable for determining appropriate APZ's for SFPP developments. These are summarised and addressed in **Table 2**.

Table 2 – APZs and building construction

Performance Criteria	Acceptable Solutions	Assessment
Radiant heat levels of greater than 10kW/ m² (calculated at 1200K) will not be experienced on any part of the building.	the building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1.	This would be achieved.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.	This would be achieved.
APZs are managed and maintained to prevent the spread of fire to the building.	The APZ is managed in accordance with the requirements of Appendix 4 of this	This would be achieved.

	document, and is wholly within the boundaries of the development site;	
The APZ is provided in perpetuity.	APZ are wholly within the boundaries of the development site; and	This would be achieved.
	Other structures located within the APZ need to be located further than 6m from the refuge building	This would be achieved.

5.2.3 REQUIRED SETBACKS

By reference to the assessment of vegetation, slope and FDI, an APZ of 67 metres between the development and the vegetation to the west is required. An APZ of 68 metres has been provided. All land in other directions is managed land, and thus APZ's in these directions are not required. In any event, this land is developed (or will be developed in the future) and thus ongoing APZ management by TAFE is not required.

5.3 LANDSCAPING

Table 3 provides the applicable standards for landscaping with respect to PBFP buildings.

Table 3 – Landscaping

Performance Criteria	Acceptable Solutions	Assessment
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;	This would be achieved.
	and fencing is constructed in accordance with section 7.6.	This would be achieved

5.4 CONSTRUCTION STANDARDS

Part G5 of the Building Code of Australia applies to Class 2, 3 and 10a building is constructed in a *designated bushfire prone area* must comply with Australian Standard (AS) 3959.

As the building is a class 9 building, compliance with this standard is not required.

The MTU building to the west of the main building is a class 10a building and thus AS3959 applies.

As the building is located greater than 42 metres from the forest vegetation to the west; the western elevation of the MTU must be constructed to achieve a bushfire attack level (BAL) of 12.5.

5.5 Access

PBFP provides control in relation to site access in relation to new roads, property access and fire trails. As no new roads or fire trails are required or proposed, the focus of this element of the assessment is property access.

Table 4 outlines the performance criteria and acceptable solutions for property access. The table also outlines how the proposed development achieves the requirements.

Table 4 – Property Access

Performance Criteria	Acceptable Solutions	Comments
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	SFPP access roads are two-wheel drive, all-weather roads;	This would be achieved
	access is provided to all structures;	This would be achieved
	traffic management devices are constructed to not prohibit access by emergency services vehicles;	This would be achieved
	access roads must provide suitable turning areas in accordance with Appendix 3; and	This would be achieved
	one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression	This would be achieved
The capacity of access roads is adequate for firefighting vehicles.	The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/ causeways are to clearly indicate load rating.	Roads would be constructed to support fully loaded firefighting vehicles (up to 23 tonnes).

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;	This would be achieved.
	Hydrants are provided in accordance with the relevant clauses of as 2419.1:2005 - fire hydrant installations system design, installation and commissioning; and	This would be achieved.
	There is suitable access for a category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	This would be achieved.
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.	There are two-way sealed roads;	No perimeter roads are proposed
	Minimum 8m carriageway width kerb to kerb;	As above
	Parking is provided outside of the carriageway width;	As above
	Hydrants are located clear of parking areas;	As above
	Are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	As above
	Curves of roads have a minimum inner radius of 6m;	As above
	The maximum grade road is 15 degrees and average grade of not more than 10 degrees;	As above
	The road crossfall does not exceed 3 degrees; and	As above
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	As above
Non perimeter access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5m carriageway width kerb to kerb;	Carriageways would achieve the 5.5m minimum.
	Parking is provided outside of the carriageway width;	This would be achieved.
	Hydrants are located clear of parking areas;	This would be achieved.

	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	The access road is not a through road.
	Curves of roads have a minimum inner radius of 6m;	This would be achieved.
	The road crossfall does not exceed 3 degrees; and	This would be achieved.
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	This would be achieved.

5.6 SERVICES

All proposed lots have adequate access to required services, as demonstrated in the submitted Architectural Drawings.

The intent of the measures for services, including water, electricity and gas is:

to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building. (NSW RFS 2019:47).

Table 5 outlines the performance criteria and acceptable solutions for services.

Table 5 – Services

Performance Criteria	Acceptable Solutions	Comments
Adequate water supplies is provided for firefighting purposes.	Reticulated water is to be provided to the development where available; or	The site is located in an area with existing reticulated water availability.
	a 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.	Reticulated water would be provided.

• Water supplies are located at regular intervals; and • The water supply is accessible and reliable for firefighting operations	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian standard as 2419.1:2005;	This would be achieved.
	Hydrants are not located within any road carriageway; and	This would be achieved.
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	This would be achieved.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses Of as 2419.1:2005.	This would be achieved.
The integrity of the water supply is maintained.	All above-ground water service pipes are metal, including and up to any taps; and	This would be achieved.
	Above-ground water storage tanks shall be of concrete or metal.	This would be achieved.
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;	This would be achieved.
	Where overhead, electrical transmission lines are proposed as follows: – Lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas; and – No part of a tree is closer to a power line than the distance set out in ISSC3 Guideline for Managing Vegetation Near Power Lines.	No overhead power lines ae proposed.
Location and design of gas services will not lead to ignition of	Reticulated or bottled gas is installed and maintained in accordance with as/nzs 1596:2014 - the storage and handling of lp gas, the	This would be achieved.

surrounding bushland or the fabric of buildings.	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;	Gas cylinders are not proposed.
	Connections to and from gas cylinders are metal;	Gas cylinders are not proposed.
	Polymer-sheathed flexible gas supply lines are not used; and	This would be achieved.
	Above-ground gas service pipes are metal, including and up to any outlets.	This would be achieved

5.7 ON-GOING MANAGEMENT

On-going maintenance of the APZs is required to ensure regrowth and fuel load replacement does not occur. This will be the responsibility of the property owners and would be required as a condition of consent for the development and (it is expected) imposed as a restriction to user on the land title.

A Bushfire Emergency and Evacuation Plan (BEEP) would be prepared for the development. The BEEP would be prepared consistent with the NSW Rural Fire Service guidelines.

6. CONCLUSION

As the subject site has been identified as being bushfire prone, an assessment of the site has been undertaken in accordance with PBFP (NSW RFS 2019). The results of this assessment are outlined in this report along with recommendations to enable the proposed development to comply with relevant legislative requirements. In summary these recommendations include:

- Implementation and maintenance of a 67 metre APZ to the western face of the building;
- Design of the western elevation of the MTU to BAL 12.5 construction standard as per the applicable construction standard requirements of AS3959-2018;
- Services to be installed in accordance with the requirements of Section 5.3.3 of PBFP; and
- Property access driveways to be constructed to PBFP standards as applicable.

In addition to the above, a Bushfire Emergency and Evacuation Plan (BEEP) would be prepared for the development. The BEEP would be prepared consistent with the NSW Rural Fire Service guidelines.

7. REFERENCES

Table 6 – References

NSW Department of Planning and Environment (DoPE), n.d. NSW Planning Portal. [ONLINE] Available at: https://www.planningportal.nsw.gov.au/ [Accessed 9 April 2021}
NSW Office of Environment and Heritage (OEH), n.d. *Aboriginal Heritage Information Management System (AHIMS)*. [ONLINE] Available at: http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformation ManagementSystem.htm [Accessed 13 April 2020]
Rural Fire Service, 2019 *Planning for Bush Fire Protection*, RFS, Sydney.
Standards Australia, 2018. *Australian Standard: Construction of buildings in bushfire-prone areas (AS 3959-2018)*.

APPENDIX A

SITE PHOTOGRAPHS

Figure 6 – Vegetation to the west

Figure 7 – Vegetation east

Figure 8 – Vegetation north-west

Premise