terramatrix

Bushfire Development Report

for the
Bacchus Marsh Grammar Campus at
155 Staughton Vale Road,
Staughton Vale VIC 3340

Report prepared for
Bacchus Marsh Grammar

February 2026

WWW.TERRAMATRIX.COM.AU

Terramatrix project code: BacchusMarshGrammar-2025-01 C9-NCC_Cl1302_BPA_BEMP-Staughton Vale
Report prepared by Terramatrix for Bacchus Marsh Grammar

Cover photo – Looking north over the site of the multipurpose education building.

Terramatrix Pty. Ltd.
ACN: 129 163 373 ABN: 44 129 163 373
PO Box 1391, Collingwood VIC 3066
P: 03 9417 2626
www.terramatrix.com.au

Accountability

Role	Name	Position
Project manager	John Eastwood	Senior Analyst
Site inspection	John Eastwood	Senior Analyst
Analysis and report compilation	John Eastwood	Senior Analyst
Peer review	Jon Boura	Managing Director

Version control

Version	Date	Comments	Distribution
0.1	2025-11-20	Bushfire Development Report to client	Daniel Cooper, Urbis
1.0	2025-11-24	Final Bushfire Development Report to client	Daniel Cooper, Urbis Ewan Wymer, Urbis
1.1	2026-02-16	Minor updates	Daniel Cooper, Urbis

Copyright

Disclaimer

This report may be of assistance to you and has been made with careful consideration and with the best information available to Terramatrix at the time of writing. Before relying on information in this report, users should carefully evaluate the accuracy, completeness and relevance of the information provided for their purposes. Terramatrix Pty Ltd, its directors and employees do not guarantee that it is without flaw or omission of any kind or is wholly appropriate for your particular purposes and therefore disclaim all liability for any error, loss or other consequence that may arise from you relying on any information in this report.

GIS disclaimer

Spatial data was supplied by the State Government of Victoria. Care was taken with the creation of maps used in this report, however the accuracy cannot be guaranteed. Users of the maps should make appropriate enquiries to ascertain the useability of this information.

Contents

1 Introduction

This Bushfire Development Report has been prepared for Bacchus Marsh Grammar, to assess how the ongoing use of the Bacchus Marsh Grammar campus at 155 Staughton Vale Road, Staughton Vale VIC 3340 ('the site') and the expanded use associated with the proposed multipurpose education building as a primary school, can respond to the bushfire risk and the applicable Victorian planning and building controls that relate to bushfire, in particular, the objective and applicable strategies of Clause 13.02-1S *Bushfire planning* in the Planning Policy Framework (PPF) (Clause 13.02-1S, Greater Geelong Planning Scheme).

The site is in the Farming Zone to which a Schedule applies (FZ) and existing Planning Permit (PP-905-2015/A) applies. The use and operation of the site is currently subject to a Bushfire Emergency Management Plan (BEMP) (Terramatrix, 2021) and is classified as a 'Category 4' school, considered to be at some risk of bushfire or grassfire, but is not on the Bushfire At Risk Register (BARR).

The ongoing use of the site (see Figure 7 and Figure 8) comprises day use only, with up to 150 students and 15 staff members on site at any one time, and up to 16 days per calendar year on which 450 students can attend the site for "event days". The current and proposed layouts are shown in A3 format at Appendix A at Section 8.

The existing facilities on the site were assessed against a VCAT order (dated 03-05-2016) and VQRA requirements in 2017 and include:

- 4 classroom buildings.
- Student amenities.
- Staff amenities and canteen.
- Offices and health centre.
- Farm sheds.
- Day observation building (remote from School Zone).
- Minor sheds, water tanks, solar panels, battery housing.
- Access turnaround, hardstands and parking.

The proposed further development (see Figure 8) is a multipurpose education building, which will allow for a permanent primary school on the site. The new development will allow an additional 300 day students and includes:

- A multipurpose education building for sue as a primary school.
- A 25 space car park.
- 3 bus drop off areas directly outside the new building.
- A natural play space playground and open play area directly adjacent to the primary school.

The site is in a designated Bushfire Prone Area (BPA) and partially covered by the Bushfire Management Overlay (BMO). BPAs are those areas subject to or likely to be subject to bushfires, as

determined by the Minister for Planning. Higher hazard land within a BPA that may be subject to extreme bushfire behaviour is covered by the BMO. The existing school buildings and the proposed multipurpose education building school building are well outside the BMO coverage (see Figure 2).

The multipurpose education building will comply with the bushfire performance requirements of the National Construction Code (NCC) NCC 2022, and if considered appropriate by the referral fire authority can be adopted as a Shelter-in-place location.

This report also assesses the bushfire risk and demonstrates how the development can respond to the objective and applicable strategies for bushfire safety at Clause 13.02-1S. It has been prepared in accordance with guidance for the assessment of, and response to, bushfire risk, provided in:

- *Planning Permit Applications Bushfire Management Overlay Technical Guide* DELWP (2017).
- *Bushfire State Planning Policy Amendment VC140*, Planning Advisory Note 68 (DELWP, 2018)
- AS 3959:2018 *Construction of buildings in bushfire prone areas* (Standards Australia, 2020).

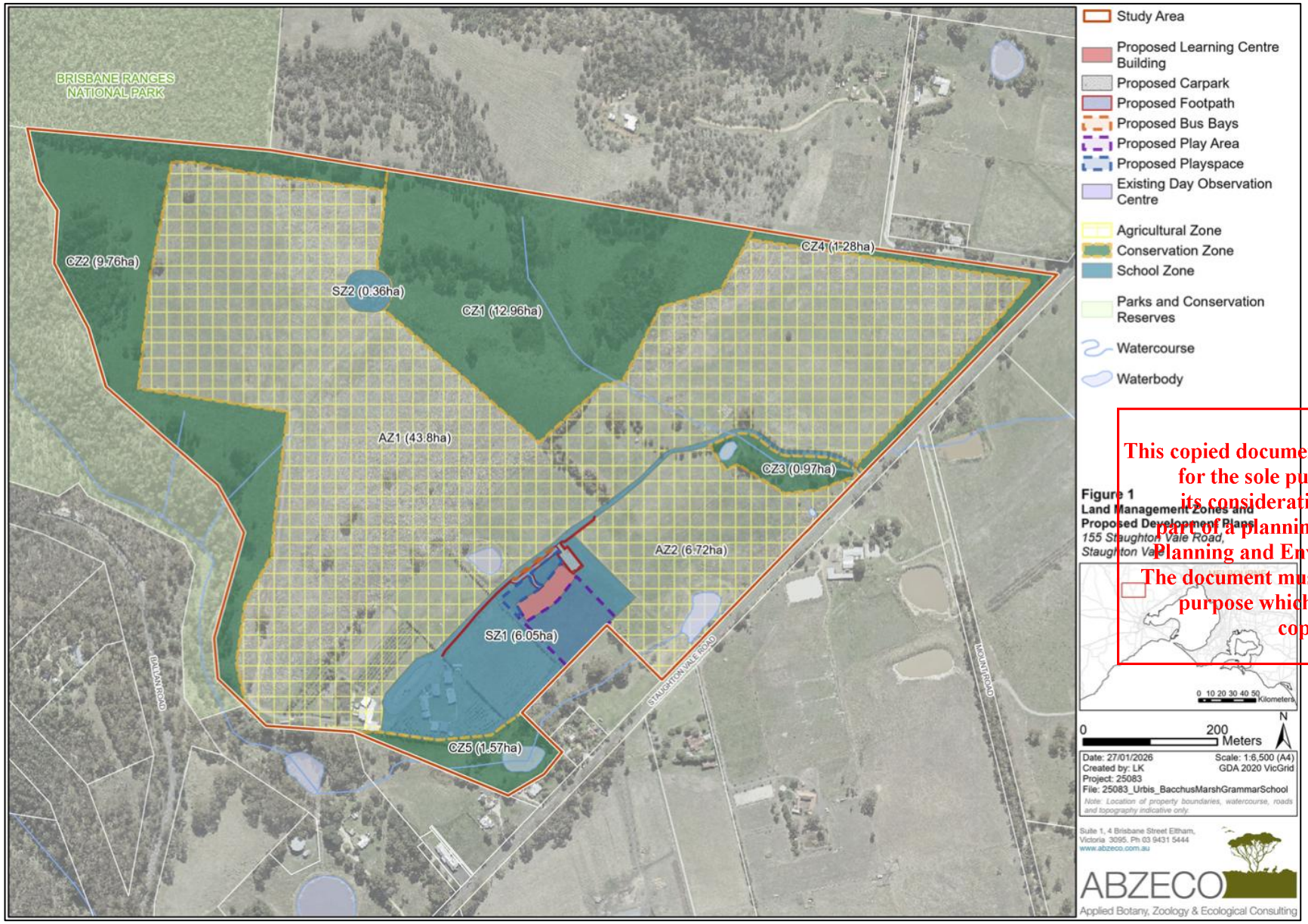


Figure 1 - Land Management Zones and Proposed Development Plans (Abzeco, 2026).

2 Site overview

Address:	155 Staughton Vale Road, Staughton Vale VIC 3340
Property size:	83.48 ha
Local Government Area:	Greater Geelong City Council
Zone/s	Farming Zone and Schedule (FZ)
Overlay/s	Bushfire Management Overlay (BMO) (partial coverage) Significant Landscape Overlay – Schedule 5 (SLO5) Vegetation Protection Overlay and Schedule 1 (VPO1) (partial coverage)
Map reference	Vicroads 77 F8

3 Bushfire planning and building controls

This section identifies the applicable planning and building controls that relate to bushfire.

3.1 Clause 13.01-1S Natural hazards and climate change

The objective of this Clause is to minimise the impacts of natural hazards and adapt to the impacts of climate change through risk-based planning. Strategies to achieve the objective are:

- *'Respond to the risks associated with climate change in planning and management decision making processes.*
- *Identify at risk areas using the best available data and climate change science.*
- *Integrate strategic land use planning with emergency management decision making.*
- *Direct population growth and development to low risk locations.*
- *Develop adaptation response strategies for existing settlements in risk areas to accommodate change over time.*
- *Ensure planning controls allow for risk mitigation and climate change adaptation strategies to be implemented.*
- *Site and design development to minimise risk to life, health, property, the natural environment and community infrastructure from natural hazards'* (Clause 13.01-1S, Greater Geelong Planning Scheme).

The Australian and New Zealand Council for fire and emergency services (AFAC) identify that climate change has already influenced the frequency and severity of dangerous bushfires. More dangerous bushfire weather conditions are being experienced, including a longer and more severe fire season, especially in southern and southeastern Australia (AFAC, 2020).

Further, a failure of building codes and land use planning to adequately adapt to climate change is identified as a risk (AFAC, 2018).

The influence of climate change on bushfire varies by region and depends largely on the predominant type of vegetation; but impacts include (CSIRO/BOM, 2024):

- Lengthening of the fire season, e.g. season starting earlier and/or ending later.
- Increased number of days of elevated fire danger, e.g. increase in number of days with a Forest Fire Danger Index above the 90th percentile.
- More days with weather conducive to generating thunderstorms within smoke plumes. Such fire-generated thunderstorms can lead to extreme fire behaviour.
- Changes in the type, amount, and dryness (availability to burn) of vegetation (fuel).
- Changes in the frequency of lightning events, which may result in a bushfire ignition.

Climate change trends associated with the risk of bushfire, support the adoption of a precautionary and conservative approach in identifying and responding to the risk. Climate change in relation to fire weather is discussed further in the hazard assessment in Section 4.5 of this report.

3.2 Clause 13.02-1S Bushfire planning

Clause 13.02-1S has the objective '*To strengthen the resilience of settlements and communities to bushfire through risk based planning that prioritises the protection of human life*' (Clause 13.02-1S, Greater Geelong Planning Scheme). The policy must be applied to all planning and decision making under the Planning and Environment Act 1987, relating to land which is:

- Within a designated BPA.
- Subject to a BMO.
- Proposed to be used or developed in a way that may create a bushfire hazard.

Priority must be given to the protection of human life by:

- *'Prioritising the protection of human life over all other policy considerations.*
- *Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.*
- *Reducing the vulnerability of communities to bushfire through consideration of bushfire risk in decision-making at all stages of the planning process'* (Clause 13.02-1S, Greater Geelong Planning Scheme).

Key strategies are stipulated that require strategic planning documents, planning scheme amendments and development plan approvals to properly assess bushfire risk and include appropriate bushfire protection measures. The '*Use and development control in a Bushfire Prone Area*' strategy applies to planning applications for uses and developments that are:

- Subdivisions of more than 10 lots
- Accommodation
- Child care centre

- Education centre
- Emergency services facility
- Hospital
- Indoor recreation facility
- Major sports and recreation facility
- Place of assembly
- Any application for development that will result in people congregating in large numbers.

As the development comprises accommodation in a BPA, the application should:

- *'Consider the risk of bushfire to people, property and community infrastructure.*
- *Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.*
- *Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts'* (Clause 13.02-1S, Greater Geelong Planning Scheme).

The way the proposed development will respond to the applicable strategies of Clause 13.02-1S is documented in Section 5.4 of this Bushfire Development Report.

3.3 Clause 44.06 Bushfire Management Overlay (BMO)

The site is partially covered by the BMO (see Figure 2). The purposes of the BMO are:

- *'To implement the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire.*
- *To identify areas where the bushfire hazard warrants bushfire protection measures to be implemented.*
- *To ensure development is only permitted where the risk to life and property from bushfire can be reduced to an acceptable level'* (Clause 44.06 Greater Geelong Planning Scheme).

The BMO largely applies to patches of treed vegetation greater than 4 ha in size, where head fire intensity has been modelled to be 30,000 kW/m or more. It also extends over land 150 m around those areas, based on research into house loss from bushfires which has found that 92% of house loss occurs within 150 m of the bushfire hazard (DELWP, 2019).

The BMO requires a planning permit for all subdivision of land, and buildings and works associated with the following uses: accommodation (including a small second dwelling), education centre, hospital, industry, leisure and recreation, office, place of assembly, retail premises, service station, timber production or warehouse. Some exemptions apply.

An application must be accompanied by:

- *A bushfire hazard site assessment, including a plan that describes the bushfire hazard within 150 m of the site in accordance with the site assessment methodology of AS 3959-2009 Construction of buildings in bushfire-prone areas and Clause 44.06.*

- *A bushfire hazard landscape assessment, including a plan that describes the bushfire hazard of the general locality more than 150 m from the site.*
- *A bushfire management statement, detailing how the development responds to the bushfire risk and the requirements and objectives of Clauses 44.06 and 53.02.*

Clause 53.02 *Bushfire Planning* applies to BMO applications and contains:

- ***Objectives:*** *An objective describes the outcome that must be achieved in a completed development.*
- ***Approved measures:*** *An Approved measure meets the objective.*
- ***Alternative measures:*** *An Alternative measure may be considered where the responsible authority is satisfied that the objective can be met. The responsible authority may consider other unspecified alternative measures.*
- ***Decision guidelines:*** *The decision guidelines set out the matters that the responsible authority must consider before deciding on an application, including whether any proposed Alternative measure is appropriate* (Clause 53.02, Greater Geelong Planning Scheme).

The existing buildings and new multipurpose education building are outside of the BMO coverage and do not need to respond to the BMO.

3.4 Bushfire Prone Area (BPA)

The property is in a designated BPA. BPAs are those areas subject to or likely to be subject to bushfire, as determined by the Minister for Planning.

In a BPA, the Building Act 1993 and associated Building Regulations 2018, through application of the National Construction Code 2022 (NCC), require specific design and construction standards for Class 1, 2 and 3[1] buildings, certain Class 9 and 4 buildings[2], and Class 10A buildings[3] or decks adjacent to, or connected with, these classes of buildings.

In Victoria, applicable buildings in a BPA must be constructed to a minimum Bushfire Attack Level (BAL)-12.5. Higher BALs are required where determined by a site assessment, other building requirement, or specified in a planning scheme or planning permit.

Any proposed Class 9b building that is required to meet bushfire performance requirements in the National Construction Code (NCC) 2022. The two applicable bushfire performance requirements in the NCC are VIC G5P1 *Bushfire resistance* and VIC G5P2 *Additional bushfire requirements for certain Class 9 buildings*. The deemed-to-satisfy requirements at Specification 43 of NCC 2022 can only apply to a Class 9b building if the building is located in an area subject to a BAL not exceeding BAL-12.5.

[1] Class 1, 2 and 3 buildings are defined in the NCC and are generally those used for residential accommodation, including houses and other dwellings, apartments, hotels and other buildings with a similar function or use.
[2] Applicable Class 9 buildings are Class 9a health-care buildings, Class 9b early childhood centres, primary and secondary schools, Class 9c residential care buildings, and any Class 4 parts of a building associated with these Class 9 buildings.
[3] Class 10a buildings are defined in the NCC as non-habitable buildings including sheds, carports, and private garages.

As the proposed multipurpose education buildings is a Class 9b school building, it will be required to meet bushfire performance requirement VIC G5P1 in the National Construction Code (NCC) to:

a) *Reduce the risk of ignition from a design bushfire with an annual exceedance probability not more than 1:100 years, or 1:200 years for a Class 9 building.*
b) *Take account of the assessed duration and intensity of fire actions of the design bushfire.*
c) *Be designed to prevent internal ignition of the building and its contents.*
d) *Maintain the structural integrity of the building for the duration of the design bushfire.* (NCC, 2022).

The proposed new multipurpose education building will comply with the bushfire performance requirements of NCC 2022.

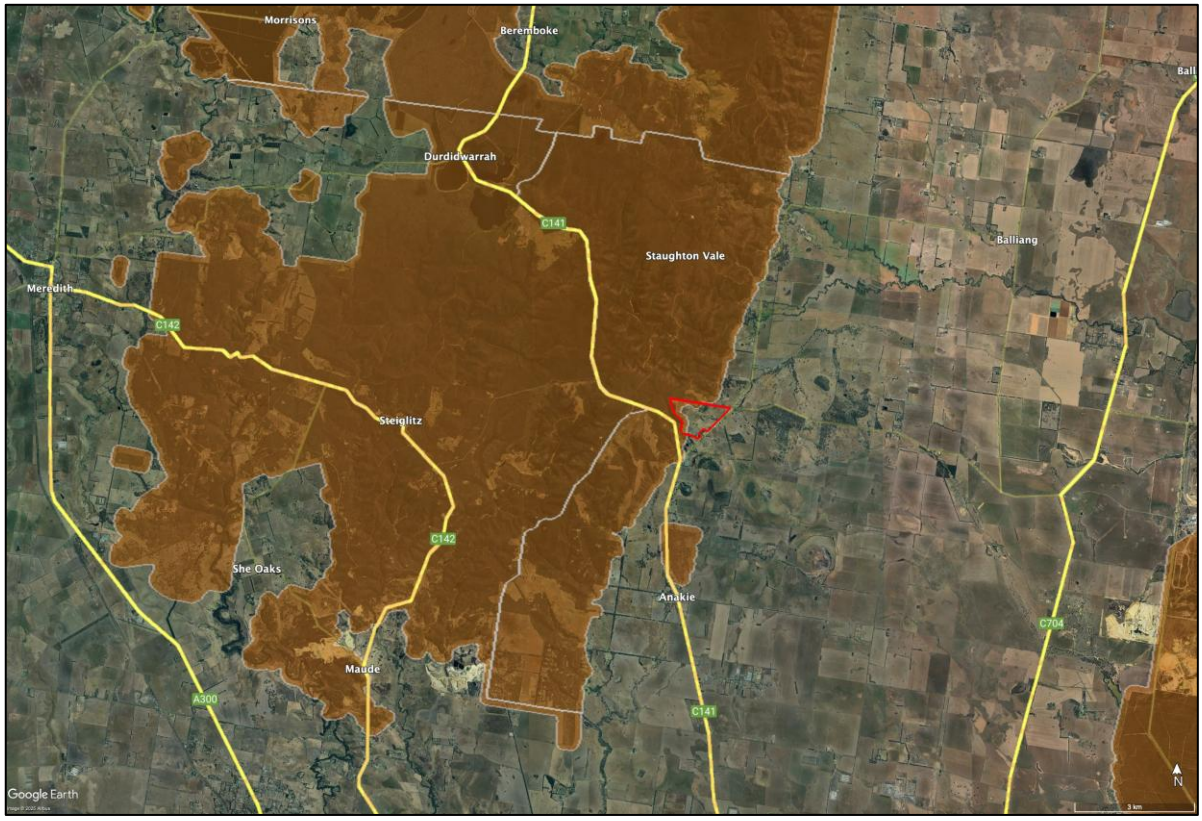


Figure 2 –BMO distribution (brown shading) around 155 Staughton Vale Road (shown with red outline). Entire extent of image is BPA (Google Earth, 2025).

3.4.1 Vulnerable uses

In the BPA, Class 9b early childhood centres, primary and secondary schools, and any associated Class 4 parts of a building are considered to be a 'vulnerable use'.

These buildings must satisfy the applicable bushfire performance requirements of the National Construction Code (NCC) 2022. These include:

VIC G5P1

1) *Reduce the risk of ignition from a design bushfire with an annual exceedance probability not*

more than 1:100 years, or 1:200 years for a Class 9 building.

2) *Take account of the assessed duration and intensity of the fire actions of the design bushfire.*
3) *Be designed to prevent internal ignition of the building and its contents.*
4) *Maintain the structural integrity of the building for the duration of the design bushfire.*

VIC G5P2

1) *Reduce the risk of an untenable indoor environment for occupants during a bushfire event.*
2) *Be provided with vehicular access to the site to enable firefighting and emergency personnel to defend or evacuate the building.*
3) *Have access to a sufficient supply of water for firefighting purposes on the site.*
4) *Provide safe access within the site to the building (including carparking areas), as well as safe egress after the bushfire event.*

Specification 43 applies as a deemed-to-satisfy compliance pathway. The measures include a minimum building setback from hazardous vegetation; Bushfire Attack Level (BAL) construction standard; setback from other buildings, property boundaries and car parks; water supply and emergency service access.

The size of the Staughton Vale Campus makes compliance with some of the required measures of NCC 2022 less problematic than on smaller sites; the location of the proposed multipurpose education building makes BAL-12.5 construction standard possible and thus Specification 43 can apply as a deemed-to-satisfy pathway for compliance with NCC 2022.

3.5 Other controls

3.5.1 Zoning

The existing FZ does not have any intrinsic bushfire safety implications.

3.5.2 Overlays

The site is partially covered by the BMO, with a requirement for development within those areas to comply with Clause 44.06 and the associated Clause 53.02. The BMO coverage arises from the presence of bushland largely outside of the site, and the existing campus buildings and proposed multipurpose education building development area are well away from the bushfire hazard and outside of the BMO coverage. There are no other overlays with implications for bushfire safety.

4 Bushfire hazard assessment

One of the bushfire hazard identification and assessment strategies in Clause 13.02-1S is to use the best available science to identify the hazard posed by vegetation, topographic and climatic conditions. The basis for the hazard assessment should be:

- *'Landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site;*

- *Local conditions - meaning conditions in the area within approximately 1 kilometre from a site;*
- *Neighbourhood conditions - meaning conditions in the area within 400 metres of a site; and,*
- *The site for the development'* (Clause 13.02-1S, Greater Geelong Planning Scheme).

This section includes an assessment of vegetation, topography and climate/weather considerations including, as applicable, at:

- The broader landscape scale, considering conditions beyond 1 km and up to 20 km around the site (Map 1).
- The local and neighbourhood scale up to 1 km around the site (see Map 2).
- The site scale, for 150 m around the School Zone to determine the BAL for the development (see Map 3).

Note that the BPA coverage invokes AS 3959:2018 *Construction of buildings in bushfire prone areas* to determine an applicable BAL(s), which requires assessment of the vegetation and topography up to 100 m around a building or site (Standards Australia, 2020). For vulnerable uses and larger developments in a BPA, a 150 m assessment zone may be required (DELWP, 2018a). Whilst the bushfire risk to the Staughton Vale Campus is relatively low, as a precaution in recognition of the vulnerable use as a school, a 150 m assessment area has been applied at the site scale.

4.1 Landscape assessment

The Staughton Vale Campus is located in the south-eastern fringes of the Brisbane Ranges, on the interface between the treed vegetation of the Range and the pastoral countryside to the east. The site is bordered on three sides by the treed vegetation, which extends 16 km to the north, 8 km to the south-west and 13 km to the west, over rugged terrain. To the east, the pastoral landscape extends to the urban areas of Werribee.

Much of the vegetation to the west comprises EVC 20 – Heathy Dry Forest, which is described as:

> *'Grows on shallow, rocky skeletal soils on a variety of geologies and on a range of landforms from gently undulating hills to exposed aspects on ridge tops and steep slopes at a range of elevations. The overstorey is a low, open eucalypt forest to 20 m tall, poor in form with an open crown cover. The understorey is dominated by a low, sparse to dense layer of ericoid-leaved shrubs including heaths and peas. Graminoids and grasses are frequently present in the ground layer, but do not provide much cover'* (DSE, 2004).

Although the topography of the area is complex and in places steep, it is not extreme, and fuel loads are likely to be at or less than those anticipated for the AS 3959:2018 Forest and Woodland vegetation classifications.

Staughton Vale Road provides access to the wider road network to the north and south. Anakie is the closest fire station. Lara is the closest (27 km) lower threat area outside of the BPA, however the Bacchus Marsh Grammar campus at Bacchus Marsh to the north is a more logical destination if the

school were to be evacuated and is only 3 km further (subject to fire location and anticipated direction of travel).

There is potential for the campus to be impacted by a large bushfire that has developed in the Brisbane Ranges and is driven toward the site by a northerly, westerly or south-westerly wind. The existing buildings and proposed development area of the Staughton Vale Campus are, however, towards the eastern side of the site and outside of the BMO coverage. The site shares the bushfire risk common to most rural areas of Victoria in the BPA, with an increased likelihood of ember attack resulting from the proximity of the site to the bushland to the west.

4.1.1 Fire history

Historically, many large bushfires have occurred within 20 km of the site, with fires burning into the site in 1985 and 2006. Many smaller grassfires have also occurred in the region, as shown on Map 1.

4.1.2 Bushfire scenarios

In Victoria, the most likely bushfire scenarios for a large landscape fire are an approach from those directions typically associated with the direction of the wind on severe, or higher, fire danger days i.e. approach of bushfire from the north, north-west, west or south-west (Long, 2006).

Bushfire can approach the site from the higher risk directions through kilometres of forest over rugged topography in the Brisbane Ranges National Park. However, whilst a bushfire could approach the site through the forested areas of the National Park, the final approach to the existing buildings and proposed development areas of the Staughton Vale Campus would be down an Upslope and though Grassland rather than the higher fuel load Forest. The site could be surrounded by fire if a large landscape bushfire threatened under higher Fire Danger Rating conditions. Site penetration by bushfire, as occurred in 1985 and 2006, is credible, although the topography and vegetation types closest to the managed School Zone shown at Figure 1 and Map 3 would result in a moderation in fire behaviour, as would the management of vegetation within the School Zone.

4.1.3 BMO landscape risk typologies

To assist in assessing landscape risk, four 'broader landscape types', representing different landscape risk levels, are described in the BMO technical guide *Planning Applications Bushfire Management Overlay*. These are intended to streamline decision-making and support more consistent decisions based on the landscape risk (DELWP, 2017). Whilst the existing buildings and proposed development areas itself is not covered by the BMO, the landscape types provide a commonly employed description of landscape risk.

The four types range from low risk landscapes, where there is little hazardous vegetation beyond 150 m and extreme bushfire behaviour is not credible, to extreme risk landscapes with limited or no evacuation options and where fire behaviour could exceed BMO/AS 3959 assumptions (see Table 2).

The landscape risk matches 'Broader Landscape Type 3'. Note the risk is somewhat more moderate in the local landscape, as the forested areas to the west transition into lower hazard, mostly cleared, agricultural land comprising Grassland within the site.

Table 2 - Landscape risk typologies (from DELWP, 2017).

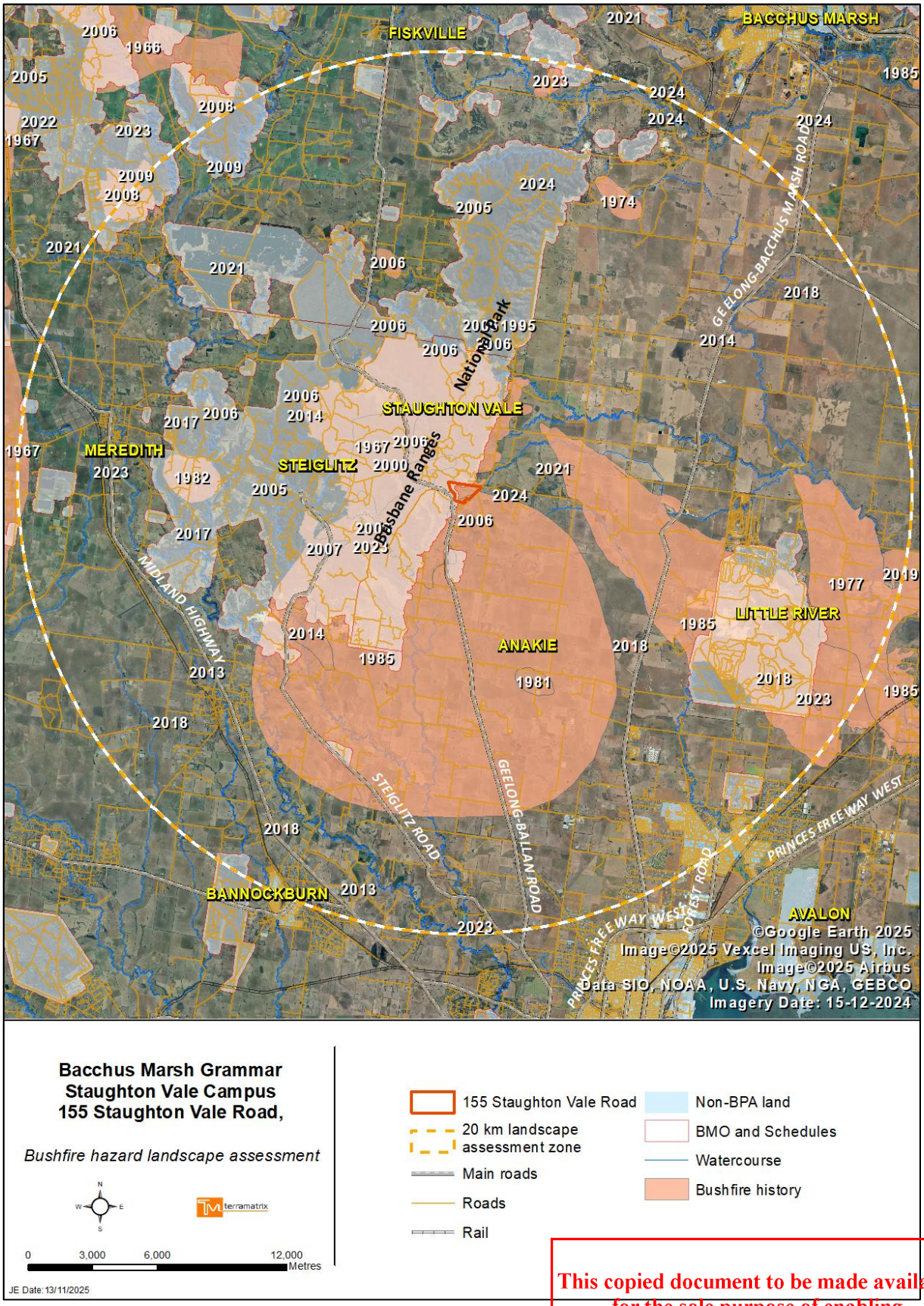
Broader Landscape Type 1	Broader Landscape Type 2	Broader Landscape Type 3	Broader Landscape Type 4
• *There is little vegetation beyond 150 metres of the site (except grasslands and low-threat vegetation).* • *Extreme bushfire behaviour is not possible.* • *The type and extent of vegetation is unlikely to result in neighbourhood-scale destruction of property.* • *Immediate access is available to a place that provides shelter from bushfire.*	• *The type and extent of vegetation located more than 150 metres from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to a site.* • *Bushfire can only approach from one aspect and the site is located in a suburban, township or urban area managed in a minimum fuel condition.* • *Access is readily available to a place that provides shelter from bushfire. This will often be the surrounding developed area.*	• *The type and extent of vegetation located more than 150 metres from the site may result in neighbourhood-scale destruction as it interacts with the bushfire hazard on and close to a site.* • *Bushfire can approach from more than one aspect.* • *The site is located in an area that is not managed in a minimum fuel condition.* • *Access to an appropriate place that provides shelter from bushfire is not certain.*	• *The broader landscape presents an extreme risk.* • *Fires have hours or days to grow and develop before impacting.* • *Evacuation options are limited or not available.*
I N C R E A S I N G R I S K			

4.1.4 Local – to 1 km

Within the 1 km local assessment zone, the landscape consists predominantly of unmanaged grass/pasture to the east and Forest in the Brisbane Ranges National Park to the west (see Map 2), reflecting the vegetation distribution of the wider landscape. A larger proportion than in the 20 km assessment zone (although still a minor factor) of the 1 km assessment zone can be considered to comprise lower threat areas as the presence of nearby residential properties is more noticeable.

4.1.5 Neighbourhood – to 400 m

Within the 400 m neighbourhood assessment area the bushfire risk is largely consistent with that for 1 km (see Map 2).



Map 1 – Bushfire hazard landscape assessment.

Map 2 – Bushfire hazard local and neighbourhood assessment.

4.2 Site assessment

Vegetation within the 150 m assessment zone around the existing buildings and proposed development areas has been classified in accordance with the AS 3959/BMO methodology. Classified vegetation is vegetation that is deemed hazardous from a bushfire perspective.

The classification system is not directly analogous to Ecological Vegetation Classes (EVCs) but uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas: No. 7 - Native Vegetation) classification system. The classification is largely based on the structural characteristics of the vegetation at maturity, but the key determinant should be the likely fire behaviour that it will generate.

4.2.1 Forest

Treed vegetation to the west of and within 150 m of the School Zone has been classified in the Forest group of AS 3959:2018. Forest vegetation comprises areas with trees to 30 m high or taller at maturity, typically dominated by eucalypts, with 30–70% foliage cover (may include understorey ranging from rainforest species and tree ferns to sclerophyllous low trees or shrubs) (Standards Australia, 2020).

4.2.2 Woodland

Small areas of treed vegetation within the site and on neighbouring land best accords with the Woodland group of AS 3959:2018. Woodland vegetation comprises areas with trees up to 30 m tall, 10% - 30% foliage cover dominated by eucalypts (and/or callitris) with a prominent grassy understorey, may contain isolated shrubs (Standards Australia, 2020).

4.2.3 Grassland

Paddocks within the site and neighbouring properties align with a Grassland classification, which is defined as all forms of vegetation (except Tussock Moorlands) including pasture and cropland and areas with shrubs and trees, if overstorey foliage cover is less than 10% (Standards Australia, 2020).

Grassland vegetation is hazardous and therefore classifiable, when it is not managed in a minimal fuel condition. Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (e.g. short-cropped grass, to a nominal height of 100 mm) (Standards Australia, 2020). Grassland areas are assumed to be unmanaged and classifiable unless there is 'reasonable assurance' that they will be managed in perpetuity in a low threat state.

4.3 Excluded vegetation and non-vegetated areas

Areas of low threat vegetation and non-vegetated areas can be excluded from classification in accordance with Section 2.2.3.2 of AS 3959:2018, if they meet one or more of the following criteria:

(a) 'Vegetation of any type that is more than 100 m from the site.

(b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.

(c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other, or of other areas of vegetation being classified vegetation.

(d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.

(e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

(f) Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition[4], mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks' (Standards Australia, 2020).

Low-threat areas excluded from classification include the managed vegetation within the School Zone. Non-vegetated areas include the driveway and car parking areas and the existing and proposed buildings (see Map 3).

4.4 Topography

The site assessment process requires that the 'effective slope' be identified. This is the slope of the land under the classified vegetation[5] that will most significantly influence the bushfire attack on a building. Two broad types apply:

- Flat and/or Upslope - land that is flat or on which a bushfire will be burning downhill in relation to the development. Fires burning downhill (i.e. on an upslope) will generally be moving more slowly with a reduced intensity.
- Downslope - land under the classified vegetation on which a bushfire will be burning uphill in relation to the development. As the rate of spread of a bushfire burning on a downslope (i.e. burning uphill towards a development) is significantly influenced by increases in slope, downslopes are grouped into five classes in 5˚ increments from 0˚ up to 20˚.

155 Staughton Vale Road forms part of the eastern foothills of the Brisbane Ranges, with the eastern part of the site part of the generally flat or undulating pastoral areas that stretch to the Werribee River. The site and surrounding properties rise to the west, away from Staughton Vale Road, meaning the Forest is largely on upslopes in relation to the developed areas of the property.

[5] The slope of the land between the classified vegetation and the building is called the site slope, which in the Method 1 procedure of AS 3959 is assumed to be the same as the effective slope.

The southern areas of the site, closer to Staughton Vale Road and the less elevated, flatter areas of the eastern part of the site contain slopes in the 'All Upslopes and flat land' slope category (see Map 3).

The area of Forest to the southwest is on undulating land created by a minor creek gully. There is a short downslope associated with the gully that is not considered a significant influence on the rate of spread or flame length of a bushfire. However, as part of the precautionary approach, this area has been classified in the 'Downslope >0˚ to 5˚' slope category.

The land under the Grassland and Woodland to the south-east of the proposed new multipurpose education building rises from the minor creek running parallel to Stoughton Vale Road in the 'Downslope >5˚ to 10˚' slope category. This is a short run of slope under a small patch of classified vegetation.

The small area of Woodland in the minor gully within the northern Conservation Zone (CZ1) of the site (see Figure 1), close to the day observation building to the north of the School Zone, is on a slope in the 'Downslope >5˚ to 10˚' slope category.

4.5 Climate and weather

The Forest Fire Danger Index (FFDI) and the Grassland Fire Danger Index (GFDI) represent the level of bushfire threat based on weather (and fuel) conditions. An FFDI 100/GFDI 130 is applied in non-alpine areas of Victoria by the building and planning system, as one of the inputs applied for calculating defendable space/development setback distances for BALs, to ensure development (buildings) is setback an appropriate distance from classified vegetation such that radiant heat flux (RHF) will not exceed acceptable levels.

The FFDI and GFDI can also be used for predicting fire behaviour, the difficulty of suppression and were used for forecasting daily Fire Danger Ratings (FDRs). The FFDI/GFDI were replaced by the Fire Behaviour Index (FBI) for the Australian Fire Danger Rating System (AFDRS) that was adopted by all jurisdictions on 1st September 2022. Table 1 displays the FDRs, their FBI range, the anticipated fire behaviour and recommended actions for each FDR.

The AFDRS and FBIs do not correlate directly with the FFDI/GFFDI indices that are still applied in the planning and building system. However, the benchmark FFDI 100 used to represent a 'one size fits all' model of extreme fire weather conditions (and the threshold for the previous 'Code Red' FDR), is considered analogous to the new FBI 100 'Catastrophic' FDR.

Note that these extreme conditions have been exceeded during significant fire events, including at some locations in Victoria on 'Black Saturday' 2009 and are not necessarily the *worst-case* conditions for any particular location.

Additionally, as identified in Section 3.1, in southern and eastern Australia, since the 1950s there has been an increase in the length of the fire season and an increase in extreme fire weather days and this trend of is projected to continue (CSIRO/BOM, 2024).

The latest climate projections for the Southern Slopes (Vic West) cluster, which the site is in, state that there is high confidence that climate change will result in a harsher fire-weather climate in the region. Annual mean rainfall is projected to decrease, but the intensity of extreme rainfall events is projected with high confidence, to increase. Average temperatures, with very high confidence, are projected to increase in all seasons, (CSIRO/BOM, 2025).

Climate change trends associated with the risk of bushfire, support the adoption of a precautionary and conservative approach in identifying and responding to the risk. However, as CFA and DTP have no published policy on FFDI recurrence intervals. there is no compelling reason to apply a different FFDI/GFDI from the FFDI 100/GFDI 130 threshold used throughout non-Alpine areas of Victoria in the planning and building system[6].

Table 1 - Fire Danger Ratings (source: Victoria State Government; BoM 2022).

Forest Behaviour Index	Fire Danger Rating (FDR)	Fire Behaviour	Action
>=100	Catastrophic	If a fire starts and takes hold, lives are likely to be lost.	○ These are the most dangerous conditions for a fire. ○ Your life may depend on the decisions on you make, even before there is a fire. ○ For your survival, do not be in bushfire risk areas. ○ Stay safe by going to a safer location early in the morning or the night before. ○ If a fire starts and takes hold, lives and properties are likely to be lost. ○ Homes cannot withstand fires in these conditions. You may not be able to leave and help may not be available.
50-99	Extreme	Fires will spread quickly and be extremely dangerous.	○ These are dangerous fire conditions. ○ Check your bushfire plan and that your property is fire ready. ○ If a fire starts, take immediate action. If you and your property are not prepared to the highest level, go to a safer location well before the fire impacts. ○ Reconsider travel through bushfire risk areas. ○ Expect hot, dry and windy conditions. ○ Leaving bushfire risk areas early in the day is your safest option.
24-49	High	Fires can be dangerous.	○ There is a heightened risk. Be alert for fires in your area. ○ Decide what you will do if a fire starts. ○ If a fire starts, your life and property may be at risk. The safest option is to avoid bushfire risk areas.
12-23	Moderate	Most fires can be controlled.	○ Stay up to date and be ready to act if there is a fire.

[6] In Alpine areas of Victoria an FFDI 50 applies for determining BALs using Method 1 of AS 3959:2018.

Map 3 – Bushfire hazard site assessment.

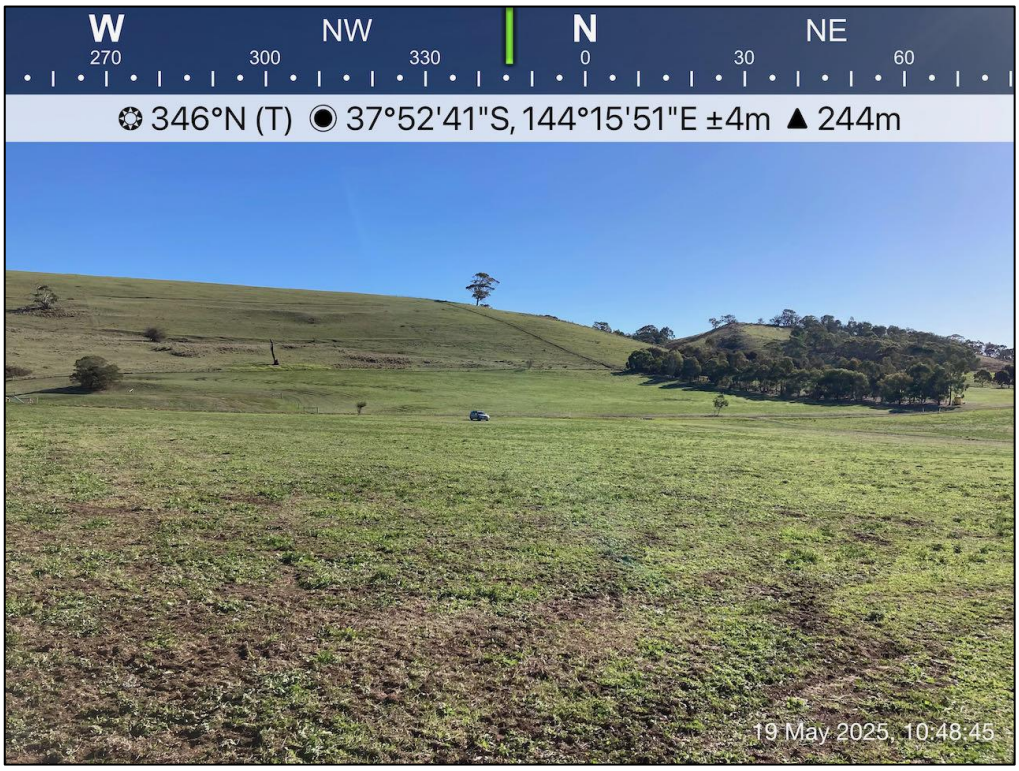


Figure 3 – Looking north across the location of the proposed multipurpose education building at low threat vegetation in all directions within 100 m.

Figure 4 – Looking south across the location of the proposed multipurpose education building, with small areas of bushland beyond the 100 m site assessment zone in background.

Figure 5 – Looking south-southeast at the main group of buildings showing Grassland and low threat vegetation on flat or Upslope land (2018 image).

Figure 6 – Looking northwest at Forest in the minor gully in the northern part of the site (2018 image).

5 Planning and design response

This section identifies how the proposed ongoing use of the campus and the expanded use associated with the proposed new multipurpose education building can respond to the bushfire risk.

5.1 Vegetation management

The 155 Staughton Vale Road site comprises three management areas (see Figure 1):

- School Zone – (SZ) to be managed in a low threat state.
- Agricultural Zones – (AZ1, AZ2, AZ3) managed so as to retain the current pastoral characteristics.
- Conservation Zones – (CZ1, CZ2, CZ3, CZ4, CZ5) – CZ1-4 will be managed to preserve the conservation and biodiversity values of those areas. CZ5 will be managed to minimise the effects of bushfire, with mown grass and clumps of unmanaged trees and understorey separated from the School Zone.

5.2 School Zone vegetation management

Specific buildings within the School Zone are subject to existing planning permit conditions and those built since 2017 (the period within which the site was subject to previous assessment and VCAT order dated 03-05-2016) are built to a BAL-12.5 construction standard and provided with defendable space. This defendable space has been amalgamated into the single wider School Zone management area – which includes the site of the new multipurpose education building – which is managed in a low threat state.

Future buildings within the School Zone will need to comply with NCC 2022, which will likely result in future development being located further away from any bushfire hazard. The proposed new multipurpose education building will comply with the bushfire performance requirements of NCC 2022 and is sited so that it can achieve a BAL-12.5 construction standard when assessed under AS 3959:2018 methodology. Specification 43 of NCC 2022 will result in the building being constructed to an enhanced BAL-19 construction standard.

The retention of the Agricultural Zones pastoral land comprising classified Grassland, and the Conservation Zones comprising higher fuel load vegetation types, does not compromise the bushfire protection measures provided within the School Zone.

The School Zone is currently managed in a low threat state. This management forms part of an permit condition of Planning Permit (PP-905-2015/A). If not, the vegetation management in this area could be subject to future permit conditions that require management to the defendable space conditions that apply in the BMO as specified at Table 6 to Clause 53.02 of the Greater Geelong Planning Scheme, which are:

- *Grass must be short cropped and maintained during the declared fire danger period.*
- *All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.*
- *Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.*
- *Plants greater than 10 centimetres in height must not be placed within 3 metres of a window or glass feature of the building.*
- *Shrubs must not be located under the canopy of trees.*
- *Individual and clumps of shrubs must not exceed 5 square metres in area and must be separated by at least 5 metres.*
- *Trees must not overhang or touch any elements of the building.*
- *The canopy of trees must be separated by at least 5 metres.*
- *There must be a clearance of at least 2 metres between the lowest tree branches and ground level.*

The School Zone is currently managed in a condition that is consistent with these requirements and the AS 3959:2018 exclusion criteria (which identify the orchard/horticultural areas as low threat).

5.3 Emergency management planning

The use and operation of the site is currently subject to an endorsed Bushfire Emergency Management Plan (BEMP) (Terramatrix, 2021). This plan will be updated to the current AFDRS and to include new or proposed structures and uses. Note that the use of the Campus is subject to the Department of Education and Training (DET) Category 4 requirements which call for closure on days of Catastrophic FDR; this is reflected in the closure controls of the BEMP.

The BEMP will include:

(a) Site details

- Describe property and business details.
- Identify the purpose of the BEMP stating that the plan outlines procedures for:
  - i Closure of campus on any day with a Catastrophic FDR.
  - ii Evacuation (evacuation from the campus to a designated safer off-site location).
  - iii Shelter-in-place (remaining on-site in a designated building – if approved, the proposed multipurpose education building is suggested).

(b) Review of the BEMP

- Outline that the plan must be reviewed and updated annually prior to the commencement of the declared Fire Danger Period.
- Include a version control table.

(c) Roles and responsibilities

- Detail the staff responsibilities for implementing the emergency procedures in the event of a bushfire. This must include assigning responsibility for the:
  - Management and oversight of emergency procedures.
  - Training of employees in emergency procedures.

- Accounting for all persons during the emergency procedures.

(d) Emergency contact details

- Outline organisation/position/contact details for emergency services personnel.

(e) Bushfire monitoring procedures

- Details the use of radio, internet and social networks that will assist in monitoring potential threats during the bushfire danger period.
- Describe and show (include a map) the area to be monitored for potential bushfire activity (i.e. within 20 km of the site).

(f) Action Statements – trigger points for action

- Prior to the Fire Danger Period
  - Describe on-site training sessions and fire equipment checks.
  - Identify maintenance of bushfire mitigation measures such as vegetation management (including implementation of mitigation measures required by any planning permit).
- Closure of the campus on days forecast Catastrophic FDR.
  - Outline parent notification procedures and details of campus closure (including timing of closure).
- Evacuation
  - Identify triggers for evacuation from site. For example, when evacuation is recommended by emergency services.
  - Details of the location/s of the offsite emergency assembly location.
  - Transport arrangements for staff and pupils including details such as:
    - Number of vehicles required.
    - Name of company providing transportation.
    - Contact phone number for transport company.
    - Time required before transportation is likely to be available.
    - Estimated travel time to destination.
  - Actions after the bushfire emergency.
- Shelter-in-place
  - Show the location and describe the type of shelter-in-place.
  - Triggers for commencing to shelter-in-place.
  - Procedures for emergency assembly in the shelter-in-place building.
  - Procedures for protection of the building.

5.4 Clause 13.02-1S Bushfire planning

The applicable strategies of Clause 13.02-1S are detailed in the following sub-sections, and a summary response is provided about how the proposed development responds to the strategies.

5.4.1 Protection of human life strategies

Clause 13.02-1S requires that the priority be given to protection of human life.

Prioritising the protection of human life over all other policy considerations

As identified in Section 4.1, the site is in a high bushfire risk location. The protection of human life is prioritised by:

- Maintaining the current low threat School Zone around existing buildings.
- Updating the existing BEMP to the current AFDRS and potentially incorporating the new multipurpose educational building as a shelter-in-place location.
- Ensuring future buildings are located where a BAL-12.5 construction standard can be achieved (i.e. providing setbacks for future buildings from unmanaged vegetation, such that radiant heat impacting upon the buildings can be expected to be below 12.5 kW/m^2).
- New buildings will respond to bushfire building controls of NCC 2022 as appropriate to building type.
- Maintaining appropriate emergency management arrangements.
- Providing access and water supplies for fire fighting.

Existing and proposed buildings are separated from the higher threat vegetation around the property and new structures can readily meet the requirements of NCC 2022, with multiple areas within the site that can achieve separation from hazardous vegetation such that radiant heat impacting upon the buildings can be expected to be below 12.5 kW/m^2 or less.

The site is serviced by reticulated water supply, and the driveway provides access to Staughton Vale Road and the wider road network to the north or south.

Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.

If future buildings are setback sufficiently from any hazardous vegetation such that they achieve a BAL-12.5 rating, or lower, the risk can be deemed to be acceptably mitigated. Lara is the closest (27 km) lower threat area outside of the BPA, however the Bacchus Marsh Grammar campus at Bacchus Marsh to the north is a more logical destination and is only 3 km further (subject to fire location and anticipated direction of travel) (see Figure 2 and Map 2). Geelong also provides an accessible large low threat area.

Reducing the vulnerability of communities to bushfire through consideration of bushfire risk in decision-making at all stages of the planning process

This report provides the basis for incorporating bushfire risk into decision making associated with planning for development of the campus.

It is considered that development at the Staughton Vale Campus can appropriately implement the strategies in Clause 13.02-1S that aim to prioritise protection of human life.

5.4.2 Bushfire hazard identification and assessment strategies

Clause 13.02-1S requires that the bushfire hazard be identified, and appropriate risk assessments be undertaken.

Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard

This report identifies the hazard in accordance with the commonly accepted methodologies of AS 3959:2018 and, as appropriate, additional guidance provided in *Planning Practice Note 64 Local planning for bushfire protection* (DELWP, 2015), *Planning Advisory Note 68 Bushfire State Planning Policy Amendment VC140* (DELWP, 2018) and *Planning Permit Applications – Bushfire Management Overlay,* Technical Guide (DELWP, 2017).

The type and extent of (hazardous) vegetation within and around the site has been identified. Classification is based on the anticipated long-term state of the vegetation, EVC mapping, aerial imagery, site assessment, published guidance on vegetation assessment for bushfire purposes and experience with the fuel hazard posed by the vegetation types that occur within the region.

Publicly available contour data for the area was accessed which, along with the site assessment, determined that the immediate topography is benign from a bushfire perspective.

In relation to climatic conditions and fire weather, the AS 3959:2018 default FFDI 100/GFDI 130 benchmark used in the Victorian planning and building system, has been applied.

Considering the best available information about bushfire hazard including the map of designated bushfire prone areas prepared under the Building Act 1993 or regulations made under that Act.

The extent of BPA coverage has been considered (see Section 3.4). This is based on the most recent BPA mapping for the state.

Applying the Bushfire Management Overlay in planning schemes to areas where the extent of vegetation can create an extreme bushfire hazard.

BMO coverage reflects BMO mapping introduced into the Greater Geelong Planning Scheme. The site is partially covered by the BMO, although the existing buildings and proposed development areas are well removed from that coverage (see Section 3.3 and Figure 2).

Considering and assessing the bushfire hazard on the basis of:

- ***Landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site;***
- ***Local conditions - meaning conditions in the area within approximately 1 kilometre from a site;***
- ***Neighbourhood conditions - meaning conditions in the area within 400 metres of a site; and***
- ***The site for the development.***

The hazard has been assessed and described at the landscape and local, neighbourhood and site scales (see Section 4).

At the site scale, the assessment classified vegetation and topography within a 150 m assessment zone around the site.

At the landscape scale a 20 km radius of the site has been applied (see Map 1) in accordance with guidance about assessing risk for planning scheme amendments provided in the Planning Advisory Note 68 (DELWP, 2018) and Planning Practice Note 64 (DELWP, 2015).

Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.

The site is in the CFA operational area. CFA has not been consulted on the development of this report, and it is not known if they were consulted in 2017 following the submission of a previous report. It is recommended that CFA is provided with this report, which can provide the basis for engagement.

Ensuring that strategic planning documents, planning scheme amendments, planning permit applications and development plan approvals properly assess bushfire risk and include appropriate bushfire protection measures.

DTP and CFA advisory and practice notes, Clause 13.02-1S and the building regulations invoked by the BPA coverage, specify the general requirements and standards for assessing the risk. These have been used in this report as appropriate and bushfire protection measures have been identified commensurate with the risk.

Not approving development where a landowner or proponent has not satisfactorily demonstrated that the relevant policies have been addressed, performance measures satisfied or bushfire protection measures can be adequately implemented.

The risk can be deemed to be acceptably mitigated such that development can proceed if the objectives and strategies of Clause 13.02-1S are successfully implemented as identified in this report.

5.4.3 Settlement planning strategies

As no planning scheme amendment or strategic planning document is proposed and the zoning of the site allows the proposed use, the Settlement Planning strategies of Clause 13.02-1S are not applicable.

5.4.4 Areas of high biodiversity conservation value

Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are of high biodiversity conservation value

The site has a history of pastoral use. Much of the site is not identified with an EVC, and the small area of EVC *20 Heathy Dry Forest* (DEECA, 2025/DSE, 2004) has a Bioregional Conservation Status of 'Least Concern' and a Geographic Occurrence of 'Common'.

There are no apparent biodiversity impacts associated with the findings of this bushfire assessment.

5.4.5 Use and development control in a Bushfire Prone Area

Clause 13.02-1S requires that '*In a bushfire prone area designated in accordance with regulations made under the Building Act 1993, bushfire risk should be considered when assessing planning applications for the following uses and development:*

- *Subdivisions of more than 10 lots*
- *Accommodation*
- *Child care centre*
- *Education centre*
- *Emergency services facility*
- *Hospital*
- *Indoor recreation facility*
- *Major sports and recreation facility*
- *Place of assembly*
- *Any application for development that will result in people congregating in large numbers'* (Clause 13.02-1S, Greater Geelong Planning Scheme).

It further states that:
'When assessing a planning permit application for the above uses and development:

- *Consider the risk of bushfire to people, property and community infrastructure.*
- *Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.*
- *Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts'* (Clause 13.02-1S, Greater Geelong Planning Scheme).

This report shows how the risk has been considered and responded to. The expansion of the Bacchus Marsh Grammar Staughton Vale Campus will result in an intensification of use of the site and people being present in a BPA.

The bushfire risk to people, property and community infrastructure at 155 Staughton Vale Road is high, but the site provides ample lower threat areas where existing facilities and development are

exposed to lower bushfire risk. These areas are well removed from BMO coverage and subject to the School Zone vegetation management regime.

Appropriate bushfire protection measures to address the identified bushfire risk in the form of setbacks from the hazard to result in radiant heat flux of less than 12.5 k/Wm^2 and a commensurate BAL-12.5 construction standard (or enhanced BAL-19 as required by NCC 2022) for all buildings requiring a BAL and ensuring a water supply for fire fighting purposes is provided and adequate access and egress will be implemented.

No biodiversity impacts arising from these measures has been identified.

6 Conclusion

This report has assessed the bushfire hazard in and around 155 Staughton Vale Road, Staughton Vale VIC 3340 in accordance with Clause 13.02-1S in the Greater Geelong Planning Scheme. Additional guidance has been incorporated where appropriate, as provided in *Planning Practice Note 64 Local planning for bushfire protection* (DEWLP, 2015), *Planning Advisory Note 68 Bushfire State Planning Policy Amendment VC140* (DEWLP, 2018) and the DELWP technical guide *Planning Permit Applications Bushfire Management Overlay* (DELWP, 2017).

The broader site is a designated BPA and partially covered by the BMO, with the School Zone containing the school buildings well outside of the BMO coverage. The bushfire risk is high in the broader landscape, particularly to the west. Localised moderating factors, including topography, vegetation and vegetation management, reduce the risk to the site.

The existing use of the site allows for 150 students and 15 staff to be present at any time, with provision for up to 450 people on 16 days of the year. The proposed multipurpose education building for use as a primary school will see an intensification of use of the site with 300 extra people present.

The existing buildings and proposed development area in the School Zone are in a designated BPA but not covered by the BMO. The School Zone is currently managed in a low threat state; the ongoing management of this zone as an area of low threat vegetation forms a large part of the bushfire protections measures for the site. Additionally, the proposed multipurpose education building will meet the requirements of NCC 2022 and, if considered appropriate, will be adopted as a shelter-in-place location.

Another key bushfire protection measure is a Bushfire Emergency Management Plan to the satisfaction of the City of Greater Geelong and CFA. The existing Bushfire Emergency Management Plan (Terramatrix, 2017) will be updated to incorporate the proposed new development. It will be altered to provide for a shelter-in-place capacity in the proposed multipurpose education building if the site cannot be safely evacuated.

Access for emergency management vehicles to the development area will be provided via the existing roads, and a water supply for fire fighting is available via the existing reticulated system and hydrant on site. There is egress to lower threat areas via the existing driveway and main roads leading to both the north and south, allowing for a flexible response to the presence of bushfire.

There are no apparent biodiversity impacts associated with the findings of this bushfire assessment.

The continuation of the existing use and further development of the Staughton Vale campus can satisfy the objective and relevant strategies of Clause 13.02-1S, which aim to prioritise protection of human life.

7 References

ABCB (2022) *National Construction Code (NCC) 2022, Volume 1,* Australian Building Codes Board (ABCB). Available at <https://ncc.abcb.gov.au/editions/ncc-2022>.

Abzeco (2026) *Land Management Zones and Proposed Development Plans*. Abzeco, Eltham. Client supplied.

AFAC (2018) *Fire and emergency services and climate change.* Position Paper v1.0. Australasian Fire and Emergency Service Authorities Council (AFAC), Available at <https://knowledge.aidr.org.au/resources/emergency-management-and-climate-change/>.

AFAC (2020) *AFAC Climate Change and Disasters*, Key Messages and Resources. Australasian Fire and Emergency Service Authorities Council (AFAC). Available at <https://knowledge.aidr.org.au/resources/emergency-management-and-climate-change/>.

BOM (2022) *AFDRS Fire Danger Ratings Table Bureau of Meteorology product guide*. Downloaded from National Council for Fire and Emergency Management Services (AFAC) website at <https://www.afac.com.au/initiative/afdrs/article/bom-product-guides>.

CSIRO/BOM (2024) *State of the Climate 2024,* CSIRO and The Bureau of Meteorology (BOM), Commonwealth of Australia. Available at <https://www.csiro.au/en/research/environmental-impacts/climate-change/state-of-the-climate>.

CSIRO/BOM (2025) *Climate Change in Australia, Projections for Australia's NRM Regions* Online tool at <https://www.climatechangeinaustralia.gov.au/en/projections-tools/regional-climate-change-explorer/sub-clusters/>.

DELWP (2017) *Planning Permit Applications Bushfire Management Overlay* Technical Guide. Department of Environment, Land, Water and Planning, Melbourne. Available at

<https://www.planning.vic.gov.au/guides-and-resources/guides/all-guides/building-in-the-bushfire-management-overlay>.

DELWP (2018) *Bushfire State Planning Policy Amendment VC140,* Planning Advisory Note 68, Department of Environment, Land, Water and Planning, Melbourne. Available at <https://www.planning.vic.gov.au/resource-library/planning-advisory-notes>.

DSE (2004) *EVC/Bioregion Benchmark for Vegetation Quality Assessment Central Victorian Uplands bioregion EVC 20 – Heathy Dry Forest.* Department of Sustainability and Environment. Available at <https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks>.

Go Design (2025) *Site plan – Overall Campus*. Go Design Drafting & Project Management, Bacchus Marsh.

Greater Geelong Planning Scheme *Clause 13.02-1S Bushfire Planning*. Available at <https://planning-schemes.app.planning.vic.gov.au/Greater%20Geelong/ordinance/13.02-1S>.

Greater Geelong Planning Scheme *Clause 44.06 Bushfire Planning*. Available at <https://planning-schemes.app.planning.vic.gov.au/Greater%20Geelong/ordinance/44.06>.

Greater Geelong Planning Scheme *Clause 53.02 Bushfire Planning*. Available at <https://planning-schemes.app.planning.vic.gov.au/Greater%20Geelong/ordinance/53.02>.

Head & Humphreys (2025) *85 & 155 Staughton Vale Road, Staughton Vale, Site Plan - existing conditions, V03*. Head & Humphreys Land Consultant, Balckburn. Client supplied.

Standards Australia (2020) *AS 3959:2018 Construction of buildings in bushfire-prone areas*. Incorporating Amendment No.2, Standards Australia, North Sydney, New South Wales.

Terramatrix (2021) *Bacchus Marsh Grammar Farm Campus Bushfire Emergency Management Plan*. Terramatrix, Abbotsford.

Vicplan (2025). *Interactive map*. Available at <https://mapshare.vic.gov.au/vicplan/>.

8 Appendix A

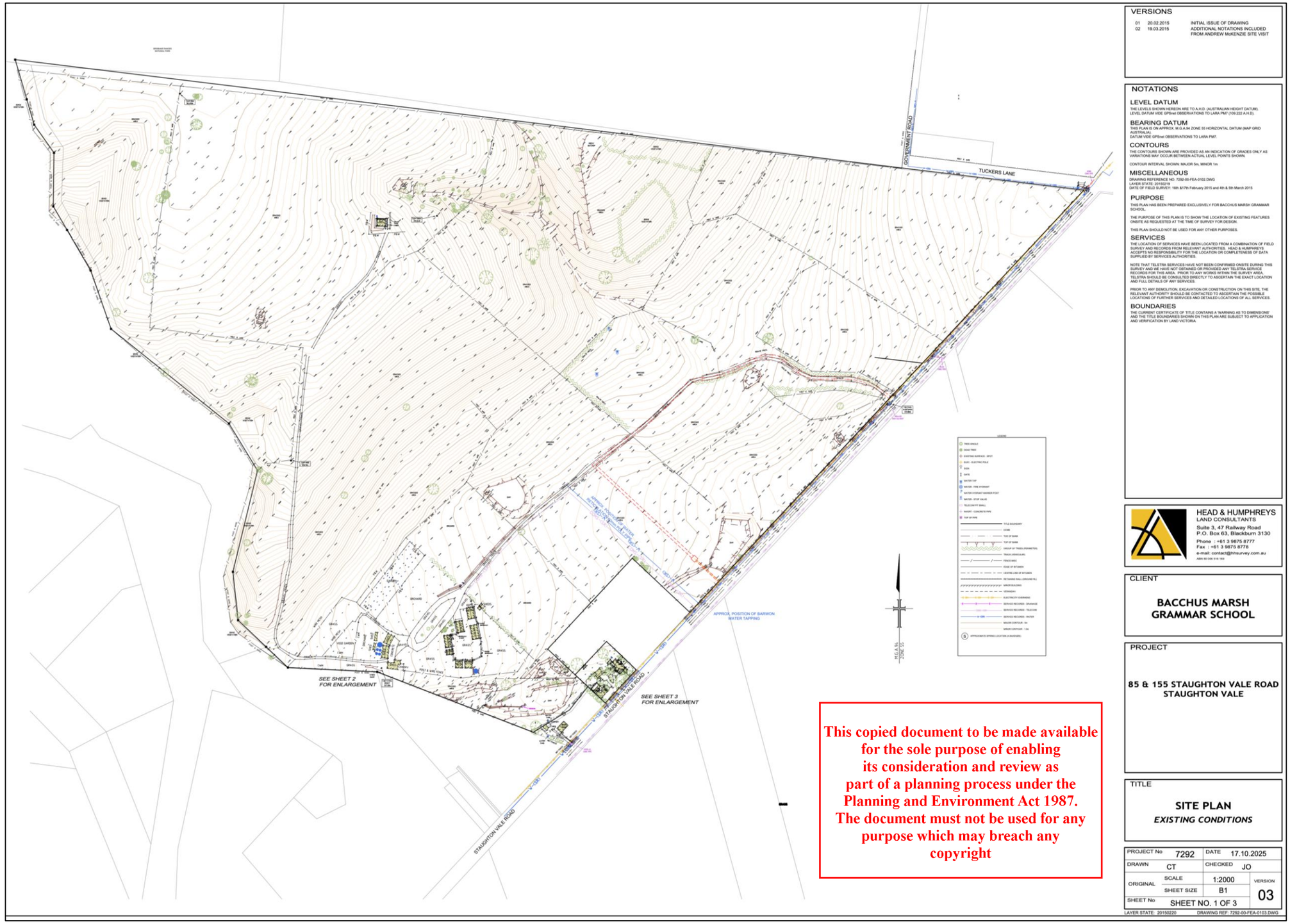


Figure 7 – Site plan – existing conditions (Head & Humphreys, 2025).

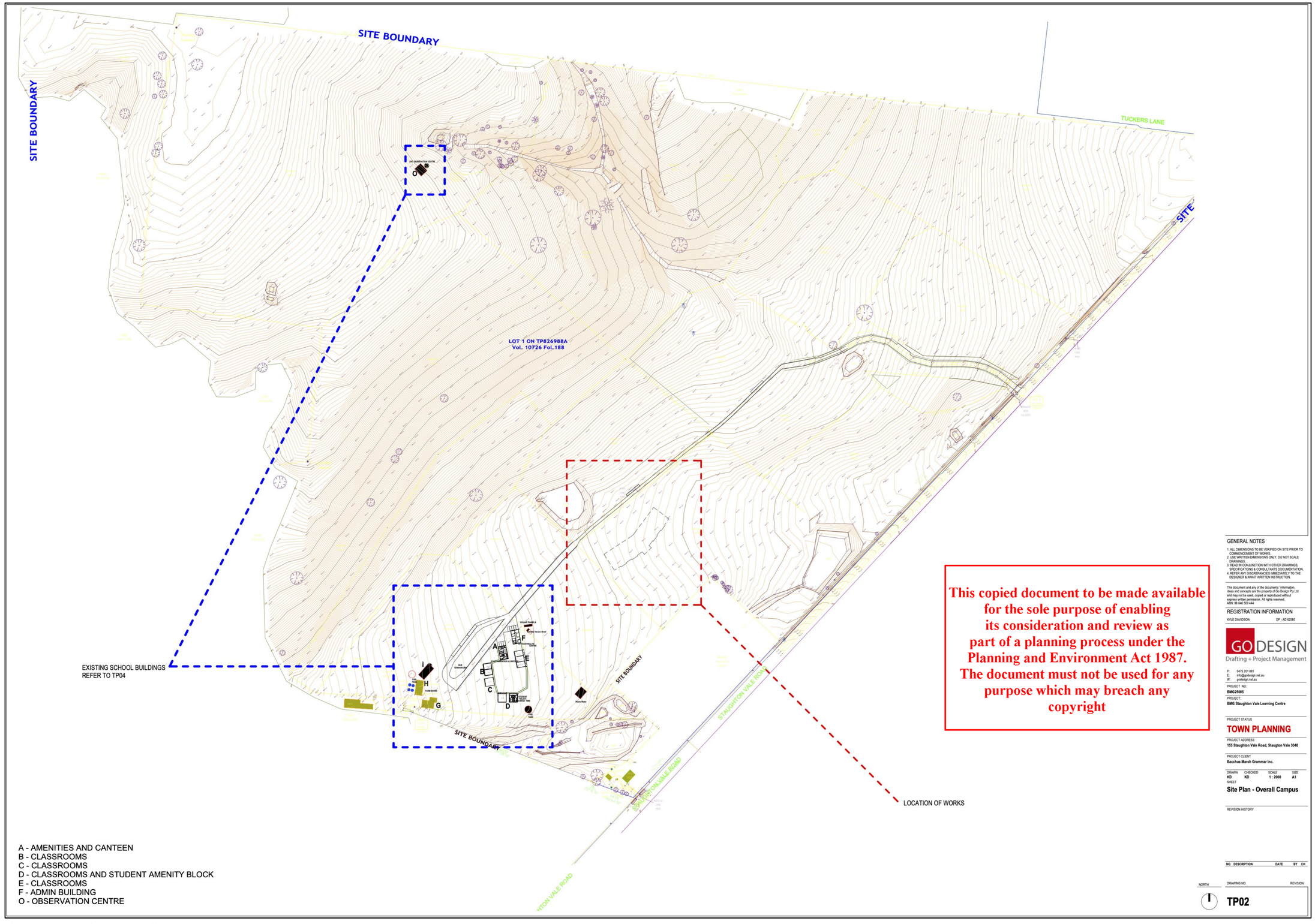


Figure 8 – Site plan – Overall Campus (Go Design, 2025).