

BUSHFIRE & EVACUATION SOLUTIONS

SYDNEY - ILLAWARRA - SHOALHAVEN



Bush Fire Assessment Report

Planning Proposal – Proposed Rezoning of Land

Wollondilly Anglican College

3000 Remembrance Driveway; 1, 5 and Part of 3 Olive Lane

BARGO NSW

8 August 2018



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Document Certification

This report has been developed based on agreed requirements as understood by Bushfire and Evacuation Solutions at the time of investigation. It applies only to a specific task on the nominated lands.

Any recommendations or findings of this report are based on an honest appraisal of the constraints that existed at the site at the time of investigation, subject to the scope, resources and information available and provided at the time. Within the confines of the above statements and to the best of my knowledge, this report does not contain any incomplete or misleading information.



Principal Consultant

BUSHFIRE & EVACUATION SOLUTIONS

Version Control

Version:	Date/ amendments	Authorised by
1	8 August 2018	KT

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Disclaimer: Any recommendation or advice expressed in this document is made in good faith and in accordance with the relevant legislation for bushfire prone development in NSW. It should be borne in mind that the measures recommended in this report cannot guarantee that a building will survive a bushfire event on every occasion. This is due to the degree of vegetation management, the unpredictable behaviour of bushfires and extreme weather conditions. The author of this report accepts no responsibility for any loss or damage, whether direct or consequential, suffered by any person as the result of or arising from the reliance on the statements, information or recommendations of this document.

Executive Summary

The Anglican Schools Corporation (ASC) seek to rezone land associated with the Wollondilly Anglican College (WAC) in Bargo NSW.

The intent of the planning proposal is to rezone 3000 Remembrance Drive, 1 and 5 Olive Lane and part of 3 Olive Lane being the driveway dissecting land occupied by the college. The current zoning is RU1 (Primary Production) and ASC are seeking to change the zoning to SP2 (Infrastructure) as this is deemed more appropriate in terms of achieving the objectives of the WAC Master Plan.

The subject property is mapped by Wollondilly Shire Council as bushfire prone land, constrained by Category 1 Vegetation. This vegetation (hazard) is located on, and adjacent to, the subject site.

Bushfire assessment of the suitability of the planning proposal is made with reference to the following (relevant) legislation, planning instruments and guidelines:

- *Environmental Planning and Assessment Act 1979 (EP & A Act);*
- *NSW Rural Fires Act 1997 (RF Act);*
- *Wollondilly Local Environmental Plan 2011 (WLEP);*
- *NSW Rural Fire Service planning guideline Planning for Bush Fire Protection 2006 (PBP);*
- *Wollondilly – Wingecarribee Bush Fire Risk Management Plan (WWBFRMP).*

Under PBP the WAC is considered as a Special Fire Protection Purpose (SFPP). This report undertakes an assessment of the bushfire risk relevant to the subject site and details bushfire protection measures prescribed under PBP for a SFPP facility which are designed to mitigate this risk. More specifically, this report details the asset protection zones (APZ's) required under PBP for future (planned) SFPP development on the site and demonstrates that these APZ's can be suitably incorporated in the WAC Master Plan.

This report has determined that based on the characteristics of the subject site (i.e. existing and proposed development on the site in combination with the prescribed bushfire protection and management measures), the proposed rezoning of the subject land is suitable in terms of its intended land use.

Terms/ Abbreviations

Term/ Abbreviation	Meaning
APZ	Asset Protection Zone
AS 2419 - 2005	Australian Standard – Fire hydrant installations
AS 3959 - 2009	Australian Standard – Construction of buildings in bushfire prone areas
BAL	Bushfire Attack Level
BFRMP	Bushfire Risk Management Plan
BPL Map	Bushfire prone land map
BPMs	Bushfire Protection Measures
EP & A Act	Environmental Planning & Assessment Act 1979
FDI	Fire Danger Index
IPA	Inner Protection Area
LGA	Local Government Area
NCC	National Construction Code
NSW RFS	New South Wales Rural Fire Service
OPA	Outer Protection Area
PBP 2006	Planning for Bush Fire Protection 2006
RF Act	Rural Fires Act 1997
WSC	Wollondilly Shire Council

Definitions

Asset Protection Zone:

An area surrounding a development managed to reduce the bushfire hazard to an acceptable level. The width of the required asset protection zone varies with slope, vegetation and Fire Danger Index (FDI). The asset protection zone ensures there is no fire path between the hazard and the building.

AS 3959-2009 Construction of buildings in bushfire-prone areas:

The relevant Australian Standard for bushfire prone construction detailing the deemed to satisfy construction provisions for building development in NSW assessed as BAL-12.5 to BAL-40.

Bushfire Attack:

Attack by burning embers, radiant heat or flame generated by a bushfire, which might result in ignition and subsequent damage to, or destruction of a building.

Bushfire Prone Land:

An area that is subject to, or likely to be subject to bushfire attack. In general, a bushfire prone area is an area mapped for a local government area that identifies the vegetation types and associated buffer zones. Bushfire prone land maps are prepared by local councils and certified by the Commissioner of the NSW RFS.

Bushfire Attack Level (BAL):

A means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact using increments of radiant heat expressed in kilowatts per metre squared (kW/m²), and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.

Bush Fire Safety Authority

An approval of the Commissioner of the NSW RFS required for subdivision for residential or rural residential purpose or for a special fire protection purpose listed under section 100B (6) of the *Rural Fires Act*. This form of development is considered to be integrated development.

Fire Danger Index:

An index providing a determination of the chance of a fire starting, its rate of spread, its intensity and the difficulty of its suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long and short-term drought effects.

Planning for Bush Fire Protection 2006:

Legislative planning guideline produced by the NSW Rural Fire Service detailing the specifications and requirements for bushfire prone development in NSW.

Special Fire Protection Purpose Development (SFPP):

These developments are required to obtain a Bush Fire Safety Authority from the NSW RFS under section 100B of the *Rural Fires Act 1979* and are considered as 'integrated development' under section 91 of the *EP & A Act*.

The nature of SFPPs means that occupants may be more vulnerable to bushfire attack due to their special needs. This may result in the need for assisted evacuation by emergency services personnel. APZ requirements are therefore maximised based on potential radiant heat exposure to emergency services.

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PART 1. INTRODUCTION

1.1 *General Introduction*

The following report has been commissioned by The Anglican Schools Corporation (ASC) to provide a bushfire assessment report for the proposed rezoning of land at Wollondilly Anglican College in Bargo NSW (herein the 'subject property').

This assessment considers the proposed rezoning based on the following;

- A review of the *Wollondilly Anglican College Master Plan* (Concept Option 4 – A04; dated 1/02/2017);
- A site-specific inspection undertaken on 16 July 2018 of the subject property and study area;
- A review of the *Wollondilly – Wingecarribee Bush Fire Risk Management Plan* (WBFMRP);
- A review of the *Wollondilly Anglican College Fire Management Plan* (AVK Environmental Management; Revision 1; dated August 2004).
- A review of the *Wollondilly Anglican College Bushfire Safety and Evacuation Plan* (AVK Environmental Management; dated February 2008).

The subject property has been identified as being within (and bounded by), bushfire prone land. In this regard, the NSW legislative requirements for rezoning and development on bushfire prone lands is applicable. The proposed rezoning is considered against the statutory requirements of the Environmental Planning and Assessment Act 1979 (EP & A Act) and specifically, the aim and objectives (specifications and requirements) provided within the NSW Rural Fire Service document 'Planning for Bushfire Protection, 2006' (PBP).

1.2 *Aim and Objectives*

This report seeks to address the objectives applying under section 117(2) (Direction 4.4) of the EP & A Act relating to rezoning of land mapped as bushfire prone land.

With reference to the statutory requirements of the EP & A Act and proposed WAC Master Plan, this report seeks to:

- Determine whether future development of the site is capable of compliance with the *NSW Rural Fires Act 1997* (RF Act) and *Planning for Bush Fire Protection 2006*, specifically in relation to the aim and objectives (specifications and requirements) for a Special Fire Protection Purpose (SFPP) facility;
- Assess the subject site in accordance with the site assessment methodology detailed in Appendix 2 and Addendum: Appendix 3 of PBP;

- Assess and identify the bushfire hazard and bushfire risk relevant to future/ proposed development of the site;
 - Identify the potential bushfire risk and risk mitigation measures (either already in place, or required for future development) to achieve compliance with PBP;
 - Prepare a Bush Fire Assessment Report which gives due consideration to the ecological and biodiversity values of the site;
 - Determine whether the proposed rezoning is suitable in terms of meeting the statutory and planning requirements for future SFPP development on the subject property.
-

PART 2. COMPLIANCE WITH THE RELEVANT LEGISLATION & PLANNING POLICIES

The legislation and statutory planning documents relevant to the proposed rezoning of the subject land for the purpose of SFPP development include the following:

2.1 *Environmental Planning and Assessment Act (EP & A Act) 1979.*

Section 117 Direction (2): 4.4 Planning for Bushfire Protection

Section 117 directions apply to planning proposals for the rezoning of land. Under direction 4.4 of section 117, a council must consult with the Commissioner of the NSW RFS during the preparation of a draft LEP and take into account any comments made. The draft LEP shall have regard to PBP and should address the following objectives:

- To protect life, property and the environment from bush fire hazards by discouraging the establishment of incompatible land uses in bush fire prone areas, and
- To encourage sound management of bush fire prone areas.

As part of the consultation process with the NSW RFS, a bush fire assessment is required to be submitted to demonstrate compliance with section 117 Directions and PBP. The general requirements for rezoning for the purpose of SFPP development include:

- An indicative development layout;
- Demonstrate that the required asset protection zones (APZ's) prescribed in PBP can be met on the development site;
- Provision for two-way access roads which links to perimeter roads and/or to fire trail networks and demonstrate that the road network can support the indicative occupant numbers in the event of an emergency;
- Provision for adequate water supply for firefighting purposes can be incorporated.

A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Director General of Planning (or an officer of the Department nominated by the Director-General) that Council has obtained written advice from the Commissioner of the NSW Rural Fire Service, to the effect that, notwithstanding the non-compliance, the NSW Rural Fire Service does not object to the progression of the planning proposal.

Section 117 directions require due regard to PBP. This document provides for a holistic approach to bushfire protection including strategic planning and bushfire protection measures (APZs, building construction standards, utilities, access/egress, emergency and evacuation planning).

Specific assessment of the sites ability (given its proposed rezoning) to comply with PBP is included in Section 4.0 and Section 5.0 of this report.

2.2 Compliance with NSW Rural Fires Act 1997

Key legislation relating to 'Bush Fire Prone Land' and 'Development Assessment' is contained within Appendix 1 of PBP. Relevant legislation contained within the 'Rural Fires Act 1997' (and associated regulations 'Rural Fires Regulation 2008') could be summarised as relating to the issue of a '**Bush Fire Safety Authority**' for development upon bushfire prone lands, that would include:

- Residential or rural residential subdivision proposals;
- Development for 'special fire protection purpose' (SFPP) including schools and child care facilities; tourist accommodation; retirement villages etc.

As the rezoning of the site will allow for SFPP development, any future development application will require the issue of a '**Bush Fire Safety Authority**' and will be subject to the provisions of *section 100B Rural Fires Act 1997*. Specific assessment of the sites ability (given its proposed rezoning) to comply with these provisions is included in Section 4.0 and Section 5.0 of this report.

2.3 Compliance with Planning for Bush Fire Protection 2006

PBP is the principal planning guideline relevant to bushfire planning for the development of bushfire prone land within NSW. It is referenced in the *Environmental Planning and Assessment Act 1979*, the *Ministerial Direction No. 4.4* (above) and the *Rural Fires Act 1997*.

An assessment incorporating the relevant guidelines of PBP and using the WAC Masterplan as a key indicator as to how the site may be developed in the future (subject to rezoning) would give a clear indication as to the sites ability to achieve compliance with the relevant provisions of PBP.

The aim of PBP is '*to use the NSW development assessment system to provide for the protection of human life (including firefighters) and to minimize impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment*'

More specifically, the broad 'Objectives' of PBP are stated as follows:

- I) Afford occupants of any building adequate protection from exposure to a bush fire;
- II) Provide for adequate defendable space to be located around buildings;
- III) Provide appropriate separation between a hazard and buildings, which in combination with other measures, prevent direct flame contact and material ignition;

- IV) Ensure that safe operational access and egress for emergency services personnel and residents is available.
- V) Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the APZ areas; and
- VI) Ensure that utility services are adequate to meet the needs of fire-fighters (and others assisting in bush fire-fighting).

Specific assessment of the sites ability (given its proposed rezoning) to comply with the provisions of PBP is included in Section 4.0 and Section 5.0 of this report.

2.4 Strategic Planning Guidelines

Council's responsibilities include the mapping of 'bushfire prone land' (i.e. required under section 146 of the EP & A Act). Council is also required to suitably address bushfire requirements during the preparation of any LEP or DCP (under Ministerial Direction 4.4).

The subject lands have already been mapped as 'bushfire prone land' (refer Section 4.1 – Bushfire Prone land map). Any future DA (beyond the rezoning application) will be subject to the standard development application process for development on bushfire prone land, including referral for SFPP development to the NSW RFS under Section 100B of the RF Act.

With reference to the WAC Master Plan, it is noted that the proposed rezoning of land, (from 'RU1 Primary Production' to 'SP2 Infrastructure'), to allow for SFPP development, does not constitute an unacceptable development type within a bushfire prone area (i.e. as specified in Chapter 3 PBP 2006, Bushfire Protection Measures).

2.5 Wollondilly Local Environmental Plan 2011

The objectives of Zone SP2 Infrastructure as specified under WLEP 2011 are:

- To provide for infrastructure and related uses;
- To prevent development that is not compatible with or that may detract from the provisions of infrastructure.

Specific assessment of the sites ability (given its proposed rezoning) to satisfy these objectives (in terms of future/ proposed development on bushfire prone land) is included in Section 4.0 and Section 5.0 of this report.

PART 3. DESCRIPTION OF THE PROPERTY

3.1 Property Details

3.1.1 *Lot and deposited plan (DP) number of the subject property*

Lots 4 and part of Lot 3 DP 1010127

Lot 2 DP 877585

Lot 12 DP 1122904

3.1.2 *Street address and locality map*

3000 Remembrance Driveway, 1 and 5 Olive Lane and part of 3 Olive Lane being the driveway dissecting land occupied by the college

3.1.3 *Zoning of the subject land and any adjoining lands*

The subject property and adjacent land to the north and south is currently zoned RU1 (Primary Production) under the Wollondilly Shire Council Local Environmental Plan (2011). Land adjoining the subject site is currently zoned as follows:

- RU2 (Rural Landscape) applying to the Glencore mine site (to the east);
- E2 (Environmental Conservation) applying to the Bargo River corridor to the west;
- SP2 (Infrastructure) applying to Remembrance Driveway.

3.1.4 *Description of the Subject Site*

Wollondilly Anglican College is a Pre-Kindergarten to Year 12 co-educational college which opened in 2004. The college is located on the western side of Remembrance Driveway (Old Hume Highway), midway between the townships of Bargo and Tahmoor within the Wollondilly LGA.

The subject site covers an area of approximately 32 hectares and adjoins a poultry farm (to the south), rural-residential land (to the north), the Tahmoor coal mine site (to the east) and Bargo River (to the west). A large portion of the site is covered by native bushland. This area of vegetation forms a direct linkage to extensive tracts of bushland on adjacent land to the southwest, west and northwest of the site.

Figures 1 and 2 (over page) depict the location of the College property and WAC Master Plan (showing existing and proposed development on the property).

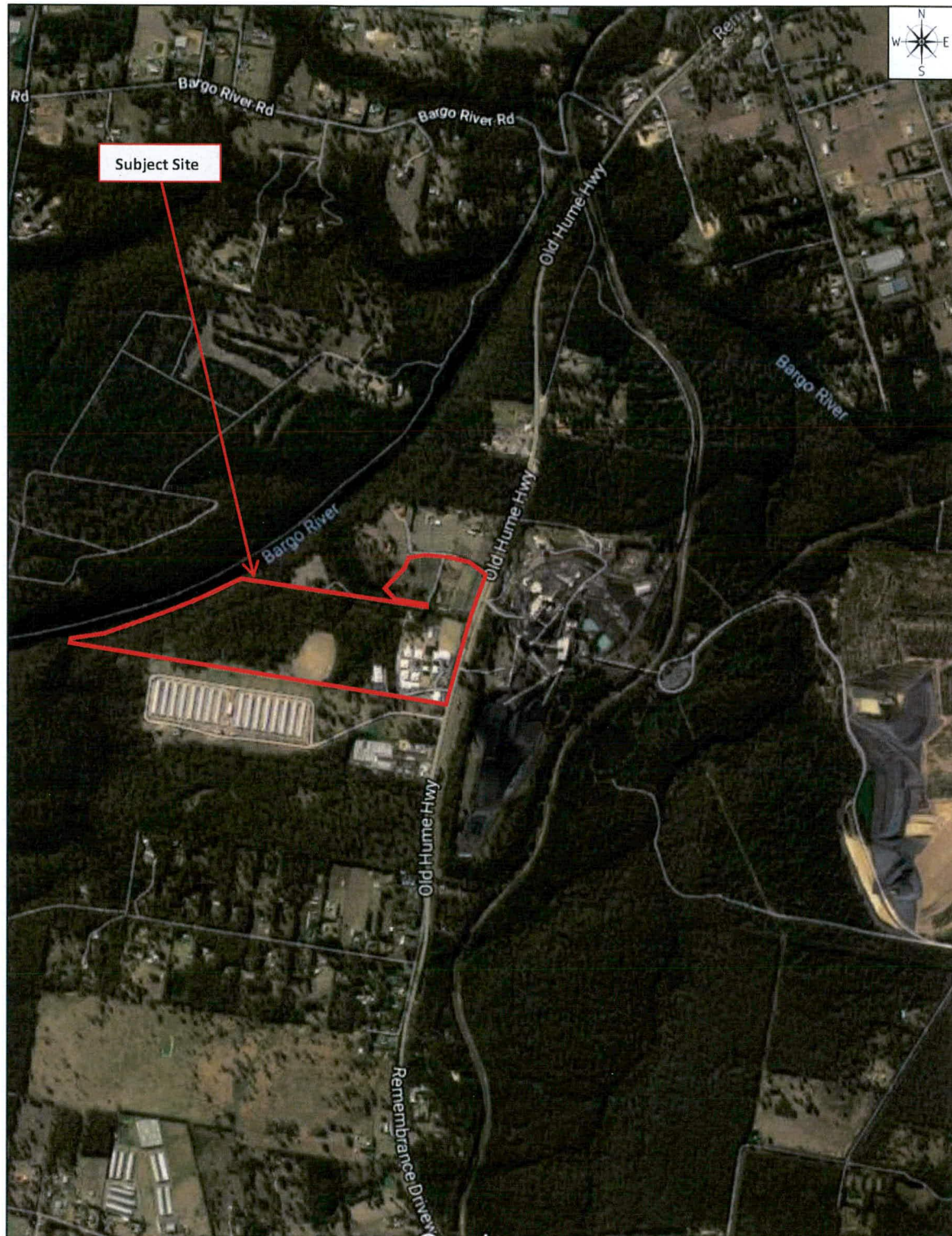


Figure 1: Site location/ context



3.1.5 Existing and Proposed Development on the Site

Existing development on the site includes:

- **Lot 12:**

The eastern quarter of Lot 12 is cleared land and contains the existing college classrooms, administration and core facilities buildings and external sports facilities. The Year 5/ 6 block (i.e. Stage 11 of the Masterplan) was approved by Council in January 2018 and is currently under construction.

The future Year 3/ 4 block remains the only building proposed under the WAC Master Plan yet to be developed on Lot 12.

- **Lots 2 and 4:**

Lots 2 and 4 are currently utilised primarily as agricultural land (i.e. predominantly planted as an olive grove). Existing building development on these lots comprises several outbuildings (sheds).

Development proposed under the Masterplan for Lots 2 and 4 includes:

- A gymnasium and performing arts block;
- External sporting facilities including a playing field (and associated spectator stand, amenities and equipment store); and other courts used for various sporting activities;
- College access road, car parks and a school bus shelter.

The College Masterplan is hereby used as the basis for determining the suitability of the site for future SFPP development under the proposed rezoning of land.

3.1.6 Staging Issues/ Aerial and Ground Photographs of the Subject Land

Staging issues are not considered relevant to the proposed rezoning of land. Given the nature of surrounding land and existing bushfire asset protection zones and fire management practices (as detailed further in this report), it is unlikely that the extent of bushfire (hazard) vegetation on (and surrounding) the site will increase beyond its current extent.

Ground/ site photographs of the subject property are appended to this report (Appendix 1 – Site Photos, July 2018).

Part 4 Bushfire Hazard Assessment

The following assessment is made in accordance with the assessment methodology outlined in Appendix 2 of PBP.

PBP (Section A2.3) specifies the following procedure for determining asset protection zone (APZ) setback distances for SFPP development:

- a). Determine the vegetation formations as follows:
 - I. Identify all vegetation formations in all directions from the site for a distance of 140 metres;
 - II. Consult Table A2.1 (i.e. Keith. D. 2004 Vegetation Formations) to determine the predominant vegetation type;
 - III. Select the predominant vegetation formation as described in Table A2.1.
- b). Determine the effective slope of the land under the predominant vegetation class (slope classes are detailed on page 56 – PBP).
- c). Determine the appropriate fire (weather) area in Table A2.3 and note the relevant Fire Danger Index (FDI).
- d). Consult Table A2.4 and determine the appropriate APZ/ setback distance for the building envelope/s proposed as part of the subdivision.

4.1 *Classification of vegetation in accordance with Keith. D (2004 Formations) out to 140m from the development*

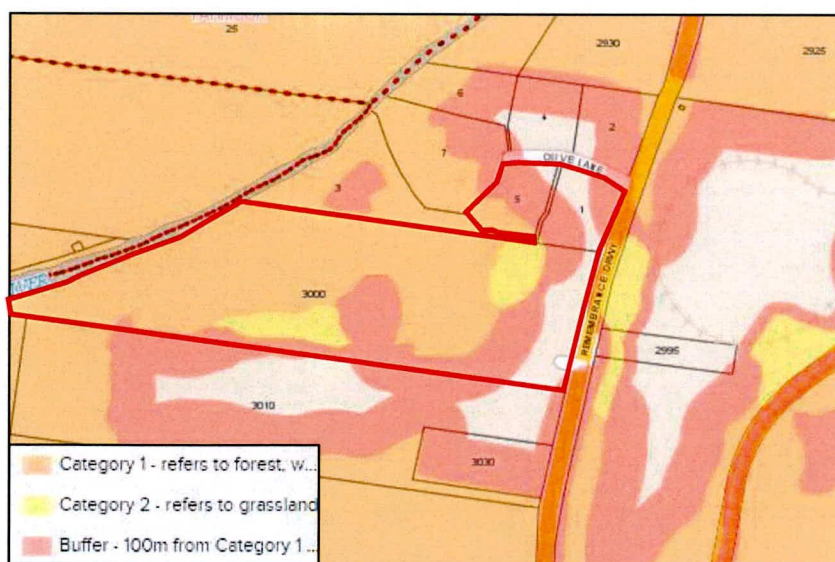


Figure 3: Extract: WSC bushfire prone land map

Vegetation extent (bushfire hazard) within the study area is derived from aerial photo interpretation (API); a review of the SEED Portal (NSW Government Data/Mapping depicting Keith. D formations); a review of the *Native Vegetation of the Cumberland Plain – Map 1 of 16 Wollondilly LGA Southern Section* (NSW NPWS, Hurstville, October 2002); and an inspection of the subject property and surrounds.

The *Native Vegetation of the Cumberland Plain* mapping depicts *Shale/Sandstone Transition Forest* (SSTF) with elements of *Upper Georges River Sandstone Woodland* (UGRSW) as the predominant vegetation classifications across the study area. SSTF is listed as an Endangered Ecological Community (EEC) in accordance with the Threatened Species Conservation Act 1995 (TSC Act).

The SEED portal depicts the predominant formation (i.e. Keith. D formations) as Dry Sclerophyll Forest (Shrubby subformation) for vegetation located to the west/ northwest of the main College complex. This formation is depicted as transitioning to Grassy Woodlands along the southern boundary of Lot 12.

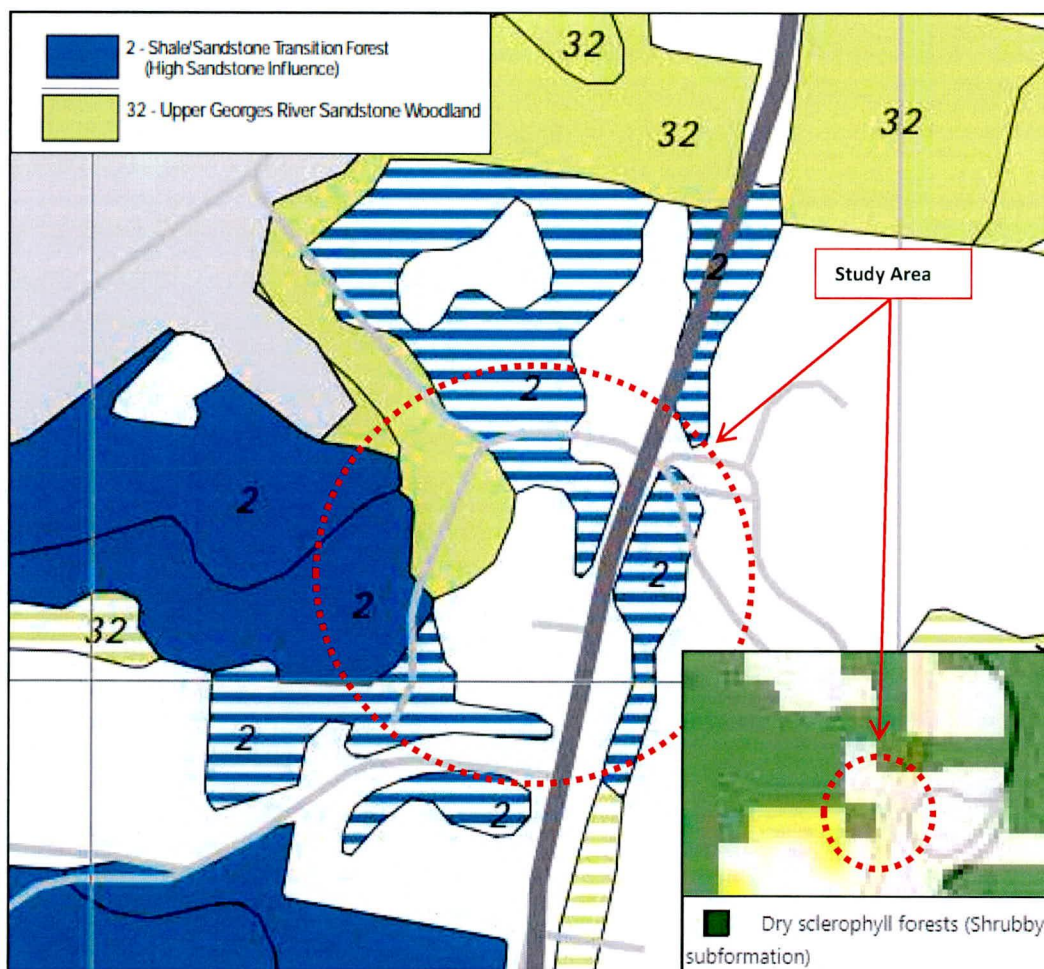


Figure 4: NVCP Mapping (Insert: SEED Portal – Keith. D Vegetation dataset)

An inspection of the subject property confirms the relevant formation is *Dry sclerophyll forest (Open forest)*. This classification is downgraded to a 'Remnant' for vegetation within the Tahmoor Mine property where the relevant parcel measures <1 hectare in area; or, provides a potential fire run of <50 metres in a direction towards the subject site. Under PBP (A2.3), 'remnant' vegetation is modelled as a 'rainforest' classification in terms of the fuel load used to calculate the relevant APZ.

The primary bushfire risk to the subject site is that from native vegetation within the subject property (i.e. western portion of Lot 12) and that extending via a gully line to the northwest along the boundary of Lots 3 and 5. APZ's approved and conditioned under existing development approvals provide a buffer separating existing development from the primary hazard area. The existing APZ is also significant in terms of providing a buffer for future development proposed as part of the WAC Master Plan.

A secondary bushfire risk is that associated with remnant vegetation located within the Tahmoor mine site to the east. This hazard area is also relevant in terms of the assessment of required APZ setbacks.



Figure 5: Bushfire hazard vegetation providing a risk to subject site

PBP (A2.3) states the following regarding areas considered to be a non-hazard:

'For the purposes of assessment, the following are not considered to be a hazard or as a predominant vegetation class/formation and can be included within an asset protection zone;

- *Non-vegetated areas including roads, footpaths, cycle ways, waterways, buildings, rocky outcrops and the like; and*
- *Reduced vegetation including maintained lawns, golf course fairways, playgrounds or sports fields, vineyards, orchards, cultivated ornamental gardens and commercial nurseries'.*

The following land within the study area is therefore considered as 'managed land' (i.e. non-hazard areas) in terms of this assessment.

- Playgrounds, car parks, playing fields, landscaped grounds and cultivated agricultural land within the College property.
- Cleared and cultivated agricultural land and rural-residential properties to the north, northwest and south of the site.

4.2 Assessment of the effective slope to a distance of 100m

The effective slope is the gradient within the hazard which will most significantly influence fire behaviour, determined over a distance of at least 100 metres from the development site (**Note:** vegetation located closest to an asset may not necessarily be located on the effective slope).

In this instance, the relevant gradient has been determined using Department of Lands SIX Mapping (displaying 10 metre contours) and via observations made during the site inspection. The effective slope influencing bushfire behaviour is assessed as:

Slope Transect 1 (southwest):

- Upslope/ flat 0 degrees: underlying hazard in Lot 12

Slope transect 2 (west/northwest):

- >0 – 5 degrees down slope: underlying the hazard in Lot 12 and that associated with the gully to the northwest of Lot 12.

Slope transect 3 (west/northwest):

- >5 – 10 degrees down slope: underlying the hazard west of Lot 4.

Slope transect 4 (east/ northeast):

- Upslope/ flat 0 degrees: underlying the hazard areas located within the Tahmoor Mine site.

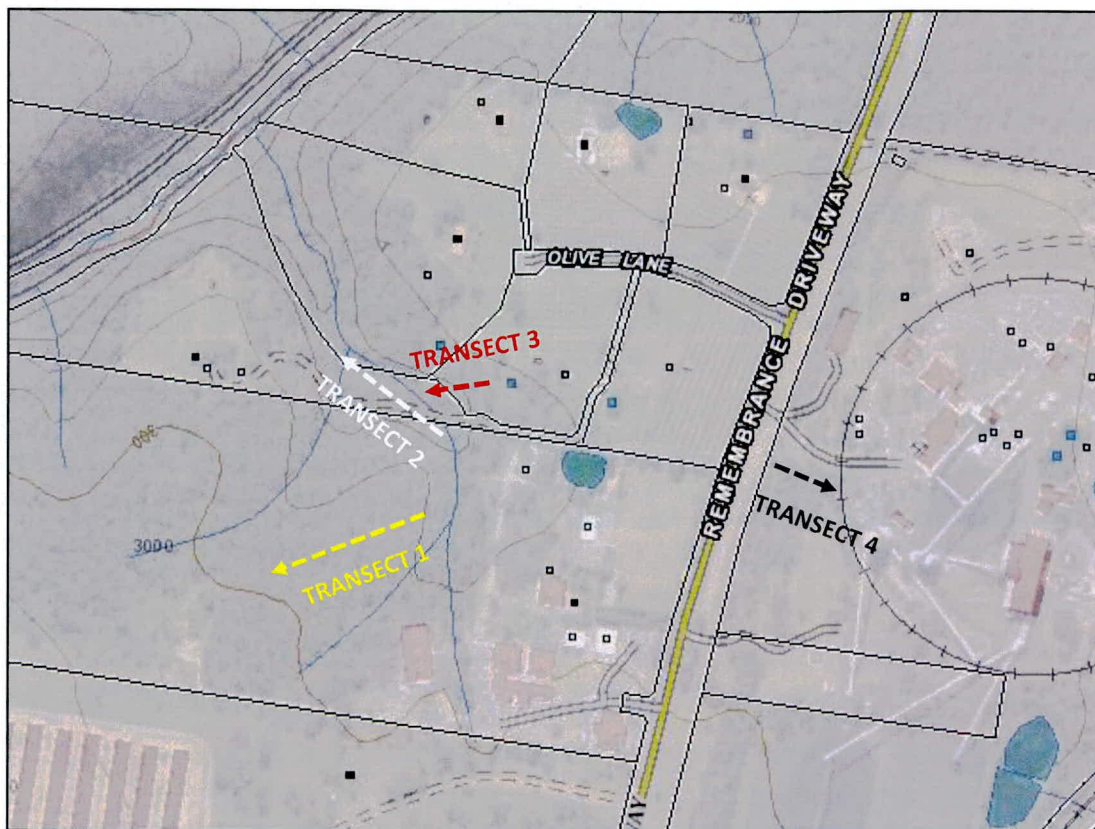


Figure 5: Effective slope relevant to subject site

4.3 Determination of Fire Weather (FDI) relevant to the Wollondilly LGA

The Wollondilly Shire Council LGA is designated as potentially having an **FDI of 100** as a 1:50 year event (PBP Appendices 2 – Table A2.3).

4.4 Determination of Asset Protection Zones

An asset protection zone (APZ) is a buffer zone located between a bushfire hazard and buildings. This area is managed to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack at the building elevation.

The intent of measures of PBP for asset protection zones for SFPP development is that sufficient space for firefighters and other emergency services personnel is provided to ensure radiant heat levels permit operations under critical conditions of heat, smoke and embers, while supporting or evacuating occupants.

The performance criteria of PBP for SFPP development is that radiant heat levels of greater than 10kW/m² will not be experienced by occupants or emergency services workers entering or exiting a building.

With reference to the bushfire parameters determined in this assessment, the following APZ distances are relevant to future SFPP development on the site:

Note: Table 1 includes the APZ distances detailed in Draft Planning for Bushfire Protection 2018. This document is due for release in its final version by 2019.

Table 1: Minimum APZ Specifications for SFPP Development (PBP Table A2.6 & Draft PBP 2018)

Vegetation Classification	Effective Slope (under vegetation)	APZ Required under PBP 2006 (Table A2.6)	APZ Required under Draft PBP 2018
Forest	Upslope/ flat 0°	60m	67m
	>0 - 5° down slope	70m	79m
	>5 - 10° down slope	85m	93m
Remnant	Upslope/ flat 0°	30m	38m

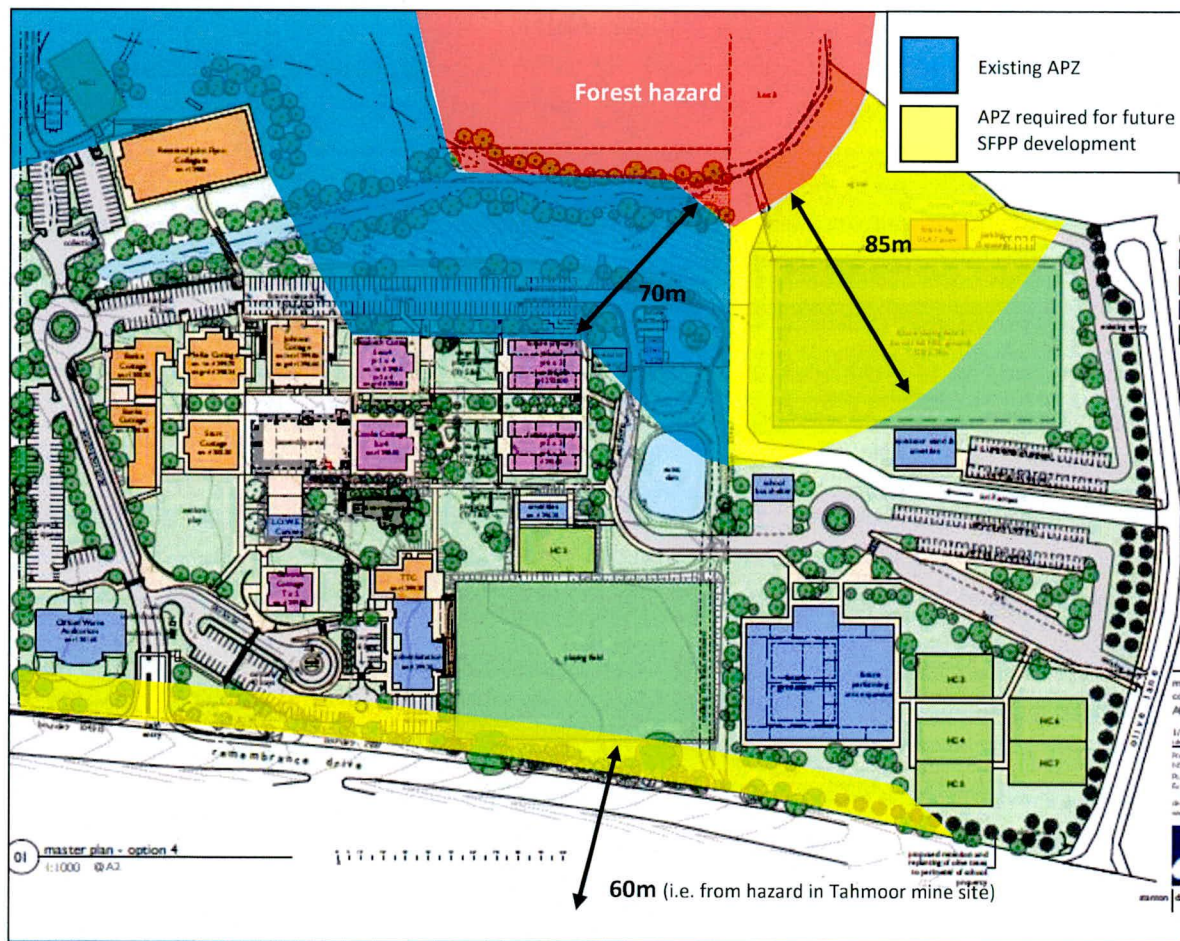


Figure 6: APZ's (Existing & Required) under PBP 2006

NOTE:

- I. Playing fields, sports courts, carparks and internal roads are considered as managed land and can be included within an APZ.
- II. Class 10a buildings (e.g. a storage shed) are permitted within an APZ. These buildings may be subject to compliance with the bushfire construction standard (AS 3959-2009) where they are located in close proximity to a habitable building.
- III. The existing APZ (i.e. west of the College buildings on Lot 12) is based on the following approvals:
 - Integrated Development Consent 010.2017.00000040.001 for Stage 10 (dated: 8 June 2017) – Condition 1 (RFS Bushfire Safety Authority) – APZ's in relation to all school buildings:
 - Property around all school buildings to a distance of 70 metres;
 - Integrated Development Consent 010.2017.00000699.001 for Stage 11 (dated: 23 January 2018) – Condition 2 (1) – APZ's in relation to the approved Year 5/6 building:
 - Northwest for a distance of 70 metres;
 - West for a distance of 60 metres.
- IV. As a considered opinion, the WAC College Master Plan is suitable in terms of addressing the APZ requirements of PBP. The proposed development (i.e. playing field; sports courts; roads and carparks; and managed/ landscaped areas) on Lots 2 and 4 is significant in terms of providing a significant (managed) buffer from the adjacent hazard and improving the overall resilience of the site to bushfire attack.

It is anticipated that the required APZ's can be suitably adjusted to accommodate the variations specified under the updated version of PBP (due for release by 2019).

PART 5 BUSHFIRE PROTECTION ASSESSMENT

5.1 *Asset Protection Zones (APZ's)*

The assessment given in Section 4.4 of this report demonstrates the suitability of the College masterplan in terms of addressing the APZ requirements of PBP.

The proposed rezoning of the property is therefore considered suitable in terms of compliance with PBP APZ requirements.

5.2 *Access*

The subject site has road frontages to Remembrance Driveway and Olive Lane. Existing development on Lot 12 is accessed via a main property access road incorporating a 9-metre-wide carriageway and turning areas suitable for turning of school buses. The existing buildings are separated from the hazard to the west by a perimeter road and carpark area.

Proposed access under the WAC Master Plan will provide a link to the existing perimeter road from Olive Lane (via Lot 2). The proposed access includes suitable turning areas for school buses and additional carparking areas. The proposed playing field (Lot 4) is also considered to be suitable in terms of access for fire services to the APZ area separating future development on Lots 2 and 4 from the hazard area to the west.

As a considered opinion, the proposed internal road layout is suitable in terms of addressing the intent of measures of PBP (section 4.2.7 Access – Internal Roads) stated as follows:

'Internal road widths and design enable safe access for emergency services and allow crews to work with equipment about the vehicle'.

The proposed access via Olive Lane is via cleared/ managed land within and adjacent to the site. The proposed layout is therefore significant in terms of improving the existing emergency access arrangement for the College.

The final road layout and design specifications will be subject to further assessment and recommendations for bushfire compliance at the DA stage for future development.

5.3 *Construction Standards - Future Building Development*

The construction standards of 'AS3959–2009 Construction of buildings in Bushfire Prone Areas' will apply where any proposed Class 9 and/ or habitable building on the site is located within 100 metres of bushfire (hazard) vegetation.

The APZ/separation distances determined by this report indicate that APZ's based on 10kW/m² are suitably provided separating future Class 9 buildings from the adjacent hazard area.

The highest bushfire construction standards applying to these buildings are those required for BAL-12.5 construction (i.e. AS 3959-2009 sections 3 and 5).

This outcome is consistent with the specifications and requirements for SFPP development under PBP.

5.4 Water and Services

The College is serviced by a reticulated water mains system incorporating a 450mm trunk main and regularly spaced hydrants located along Remembrance Driveway. A ring main servicing pillar-hydrants is installed on Lot 12. A hydrant booster servicing this system is located at the main site entry. The property also has a bore water supply which is used to maintain the capacity of existing dams on the site.

Based on the above, the proposed rezoning is suitable in terms of the site's capacity to satisfy the water supply provisions of PBP Section 4.1.3 including compliance with the provisions of AS 2419.5 – 2005.

Power transmission lines external to the site are located above ground. Existing power on the site is located below ground.

As a considered opinion, the acceptable solutions of PBP relating to the safe installation of utilities (electricity and gas) can be suitably incorporated for any future development on the site.

5.5 Emergency Planning

The acceptable solutions of PBP (section 4.2.7) for emergency and evacuation planning include:

- *'An Emergency Planning Committee is established to consult with residents (and their families in the case of schools) and staff in developing and implementing an Emergency Procedures Manual.*
- *Detailed plans of all emergency assembly areas including "onsite" and "offsite" arrangements as stated in AS 3745-2010 are clearly displayed, and an annual (as a minimum) trial emergency evacuation is conducted'.*

The existing Wollondilly Anglican College Bushfire Safety and Evacuation Plan (AVK Environmental Management, dated February 2008) is a revision of earlier plans based on subsequent development on the site.

This plan has been developed in accordance with the relevant legislation and standards including the NSW RFS document *A Guide to Developing a Bushfire Evacuation Plan* (2004).

It is anticipated that future development of the site will involve further revisions to the current plan. The proposed rezoning of the site is therefore considered to be suitable in terms of being able to address the emergency and evacuation planning requirements of PBP.

Furthermore, the existing Emergency Management Plan for the Wollondilly LGA would reasonably be expected to provide a suitable level of emergency response for future development on the subject site. This plan should include measures designed to ensure that the safety and evacuation of staff and students can be undertaken in accordance with the emergency planning principles noted in PBP.

5.6 Landscaping/ Vegetation Management

Ongoing management of existing APZ's on the site is required in accordance with the relevant conditions of consent for previous approvals as detailed in section 4.4 of this report. Outside of the required APZ's the College maintenance staff undertake regular scheduled management of landscaped areas surrounding buildings on the site.

In relation to future development on the site, section 4.4 of this report demonstrates that the required APZ's can be provided for within the subject property and adjacent (developed) land. In perpetuity management of these APZ's will be subject to the conditions of approval granted for future development.

The Wollondilly Anglican College Fire Management Plan (AVK Environmental Management, dated August 2004) provides a detailed plan for ongoing management of native bushland and existing APZ's on the site.

Hazard reduction works, prescribed burns and maintenance of existing fire trails are scheduled under this plan and have been carried out since 2004 in consultation with the NSW RFS. This plan is due to be reviewed and updated in 2019.

As a considered opinion, the proposed rezoning of the property is suitable in terms of compliance with PBP APZ requirements and on-going landscape/ vegetation management on the subject property.

5.7 Bushfire Management Measures

The Wollondilly Anglican College Fire Management Plan sets out the schedule for ongoing management of native vegetation and APZ's on the site.

Section 4.4 of this report illustrates the required APZ's for future SFPP development based on a review of the WAC Master Plan.

The APZ's required for future development are predominantly located on existing managed land (i.e. Olive Grove in Lots 2 and 4 and the access road to Lot 3) and on land proposed as a future playing field (i.e. Playing Field 3).

The proposed rezoning and future development based on the Masterplan is therefore suitable in terms of ongoing management/maintenance of required APZ's and management (i.e. hazard reduction works and prescribed burning) of native vegetation on the site in accordance with the Wollondilly Anglican College Fire Management Plan

5.8 Wollondilly/ Wingecarribee Bushfire Risk Management Plan (WBFRMP)

The WBFRMP (2017) was prepared by the Wollondilly/ Wingecarribee Bushfire Management Committee in accordance with the legislative requirements of Part 3 Division 4 of the RF Act. It is a strategic document that identifies community assets at risk and sets out a five-year program of coordinated multi-agency treatments designed to reduce the risk of bushfire to these assets.

Wollondilly Anglican College is listed under this plan as a 'Human Settlement' asset (No. 172). The specific risk mitigation treatment identified for the College is for 'Community Education' (i.e. Community engagement activities with the responsible agency being the NSW RFS).

The College is identified under this plan as having a 'High' bushfire risk. The likelihood and consequence of a bushfire impacting the site are listed respectively as 'Likely' and 'Moderate'.

As a considered opinion, future development of the site in accordance with the WAC Master Plan and proposed rezoning is suitable in terms of addressing the specific treatment identified under the WBFRMP.

5.9 Bushfire Environmental Assessment Code 2006 (BEAC)

The 'Bushfire Environmental Assessment Code NSW 2006' (NSW Rural Fire Service) is

designed to provide for a streamlined environmental assessment for use by issuing authorities and certifying authorities in determining bushfire hazard reduction certificates, with regard to the principles of ecological sustainable development and *Section 111 of the EP & A Act 1979*.

The Wollondilly Anglican College Fire Management Plan sets out a schedule for prescribed burning of native vegetation on the site designed to conserve biodiversity values. This is achieved via periodic mosaic burning and is designed to encourage species regeneration.

Outside of the specified APZ's and managed/ landscaped areas on the property, the objectives of the Fire Management Plan are consistent with the 'Land Management Zone' (LMZ) practices specified under the BEAC.

The objectives for LMZs in terms of prescribed burning and hazard reduction are as per the land management and fire protection objectives of the responsible land management agency and may include;

- To reduce the likelihood of spread of fires;
- To undertake mosaic burning.

The relevant fire thresholds for 'Dry Sclerophyll Forests (Shrub Formation)' are;

- Minimum LMZ threshold: 10 years
- Maximum threshold: 50 years (note: occasional intervals greater than 25 years may be desirable).

Based on the values applying to LMZs, it is envisaged that any future application for hazard reduction works (prescribed burning) for native vegetation on the site will be in accordance with the requirements of the *Bushfire Environmental Assessment Code*.

PART 6 COMPLIANCE WITH PBP SPECIFIC OBJECTIVES FOR SFPP DEVELOPMENT

The proposed rezoning application has been assessed for bushfire compliance with reference to the WAC Master Plan. Compliance with the specific objectives (PBP Section 4.2.3) for SFPP development is detailed below:

PBP SFPP Specific Objective	Comment
<i>To provide for the special characteristics and needs of occupants. Unlike residential subdivisions, which can be built to a construction standard to withstand the fire event, enabling occupants and fire-fighters to provide property protection after the passage of fire, occupants of SFPP developments may not be able to assist in property protection. They are more likely to be adversely affected by smoke or heat while being evacuated.</i>	<p>This assessment demonstrates that future development proposed under the WAC Master Plan can suitably comply with the APZ/ setback distances required under PBP for SFPP development.</p> <p>The WAC Master Plan is significant in terms of improving the existing emergency access arrangement for the site.</p>
<i>To provide for safe emergency evacuation procedures. SFPP developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bush fire threats. During emergencies, the risk to fire-fighters and other emergency services personnel can be high through prolonged exposure, where door-to-door warnings are being given and exposure to the bush fire is imminent.</i>	<p>APZ's based on 10kW/m² can be suitably provided on the subject property.</p> <p>It is anticipated that the existing bushfire emergency evacuation plan for the College will be revised and updated to include any new development on the site.</p>

PART 7 **CONCLUSION**

This assessment has considered the proposed rezoning of the subject property with due regard to the required legislation and policies relevant to a planning proposal on bushfire prone land.

The WAC Master Plan demonstrates the extent of future development under consideration for the site. This plan has been reviewed as the basis for this assessment and has been assessed with reference to the relevant bushfire planning policies and guidelines. More specifically, this plan has been assessed against the specific objectives of PBP for a SFPP development.

Based on this review, this assessment confirms that the proposed rezoning of land is suitable in terms of compliance with the aim and objectives of PBP and specific objectives for SFPP development. As a considered opinion, future development as proposed under the WAC Master Plan will result in an improved bushfire outcome for the College by way of ensuring significant areas of managed land within the subject property are maintained as a bushfire buffer (APZ) and by providing improved emergency access to/ from the site.

The APZ's required for future development are primarily located on managed land within the site and will have little impact on existing areas of native vegetation. Future development as required for bushfire compliance can therefore be undertaken with due regard to the biodiversity values of the site.

It should be noted that future/ proposed development on site (post rezoning) will be subject to further assessment under *section 100B of the Rural Fires Act 1997*.

Should any of the above information require clarification or further discussion, please contact the undersigned.



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Native Vegetation of the Cumberland Plain – Map 3 of 16 Wollondilly LGA (NSW NPWS, Hurstville, October 2002)

Ocean shores to desert dunes: the native vegetation of NSW and the ACT (2004) – Keith D,

NSW Dept of Environment and Conservation, Hurstville NSW.

Planning for Bushfire Protection. A guide for councils, planners, fire authorities and developers (2006) – NSW Rural Fire Service.

Addendum: Appendix 3 - Planning for Bushfire Protection. A guide for councils, planners, fire authorities and developers (2010) – NSW Rural Fire Service.

Standards for Asset Protection Zones – NSW Rural Fire Service

Appendix 3: Site Photos (July 2018)



1. WAC – main entry - Lot 12



2. Year 5/6 Block under construction



3. Olive Grove – Lot 2



4. Access via Olive Lane – showing managed land to the north



5. Looking across southwest portion of Lot 4 towards hazard



6. Olive Grove – Lot 4

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Appendix F

Bushfire Impact Assessment by Bushfire and Evacuation Solutions