Bushfire Threat Assessment

Medowie Christian School, 6B Waropara Road Medowie

Prepared for

Medowie Christian School

Final V2 / October 2018

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Approval for use:

Matt Doherty - Director

26 October 2018

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EXECUTIVE SUMMARY

MJD Environmental has been engaged by Medowie Christian School (MCS), to prepare a Bushfire Threat Assessment (BTA) to accompany a development application for the development and operation of a science and technology building within the existing MCS operation at 6B Waropara Road, Medowie.

The assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to such a proposal, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the Planning for Bush Fire Protection (PBP), 2006 that has been released and adopted through the *Environmental Planning & Assessment Amendment* (Planning for Bush Fire Protection) *Regulation 2007* & the *Rural Fires Amendment Regulation 2007*.

The proposal type triggers the criteria outlined with PBP (2006) for Special Fire Protection Purposes (SFPP). As such SFPP activates the provisions of integrated development under Section 4.46 of the EP& A Act, thus requiring approval and issue of a Bush Fire Safety Authority from the NSW RFS under section 100B of the *Rural Fires Act 1997* (RF Act).

In order to determine whether the proposed development is bushfire-prone, and if so, which setbacks and other relevant Bush Fire Protection Measures (BPM) will be appropriate, this assessment adheres to the methodology and procedures outlined in Appendix 4 of PBP 2006 and clause 44 of *Rural Fires Regulation 2013* (RF Regs).

This assessment has been made based on the bushfire hazards in and around the site at the time of the inspection (20th June 2018). The site inspection determined that a forest threat on a flat to 0-5° Downslope occurred to the north and north-east of site.

The proposal has been assessed as an infill SFPP under the provisions set out in PBP (2006).

In summary, the following key recommendations have been generated to enable the proposal to comply with PBP (2006) and AS3959-2009.

- The area between proposed building and northern site boundary is to be maintained as an APZ of 10m to 36m variable width to an IPA standard.
- The proposed development should have due regard to the specific considerations given in the BCA, which makes specific reference to the Australian Standard (AS3959 – 2009) construction of buildings in bushfire prone areas as outlined in Chapter 3, Section 3.2 of this report. Assessment of AS3959-2009 based on a Method 1 has shown that any future development on the site will be able to comply with this standard. In accordance with PBP (2006) and AS3959-2009 the science and technology building shall be constructed to a BAL-29.
- Existing access arrangements to MCS and along the northern site boundary shall be maintained as part of the proposal.
- Services are to be provided and connected to the site in accordance with PBP (2006) as summarised and assessed in Chapter 3, Section 3.4 of this report.
- Careful consideration of future site landscaping and ongoing fuel management must occur to minimise the potential impact of bushfire on the site.
- A bushfire management plan including fire emergency procedures will be prepared for the site.

Finally, the implementation of the measures and recommendations forwarded within this report would contribute to the amelioration of the potential impact of any bushfire upon the development site, but they do not and <u>cannot</u> guarantee that the area will <u>not</u> be affected by bushfire at some time.

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GLOSSARY OF TERMS AND ABBREVIATIONS

Term/ Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2009	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BCA	Building Code of Australia
BC Act	NSW Biodiversity Act 2016
BMP	Bush Fire Management Plan
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPL	Bush Fire Prone Land
BPLM	Bush Fire Prone Land Map
BPM	Bush Fire Protection Measures
BTA	Bushfire Threat Assessment
DoE	Commonwealth Department of the Environment
DPI Water	NSW Department of Primary Industries – Water
EPA Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
OPA	Outer Protection Area
OEH	NSW Office of Environment and Heritage
PBP or PBP (2006)	Planning for Bushfire Protection 2006
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service
TSC Act	NSW Threatened Species Conservation Act 1995 (as repealed)

1 Introduction

MJD Environmental has been engaged by Medowie Christian School (MCS), to prepare a Bushfire Threat Assessment (BTA) to accompany a development application for the development and operation of a science and technology building within the existing MCS operation at 6B Waropara Road, Medowie, hereafter referred to as the 'site' (**Figure 1**).

The assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to such a proposal, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the Planning for Bush Fire Protection (PBP), 2006 that has been released and adopted through the *Environmental Planning & Assessment Amendment* (Planning for Bush Fire Protection) *Regulation 2007* & the *Rural Fires Amendment Regulation 2007*.

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In order to determine whether the proposed development is bushfire-prone, and if so, which setbacks and other relevant Bush Fire Protection Measures (BPM) will be appropriate, this assessment adheres to the methodology and procedures outlined in Appendix 4 of PBP 2006 and clause 44 of *Rural Fires Regulation 2013* (RF Regs).

This assessment has been made based on the bushfire hazards in and around the site at the time of the inspection (20th June 2018).

1.1 Aims & Objectives

This assessment has been undertaken in accordance with clause 44 of the RF Regulation 2008. This BTA also addresses the six key BPM in a development assessment context being:

1) The provision of clear separation of buildings and bush fire hazards, in the form of fuel-reduced Asset Protection Zone (APZ) (and their components being Inner Protection Areas (IPAs) and Outer Protection Areas (OPAs);
2) Construction standards and design;
3) Appropriate access standards for residents, fire-fighters, emergency workers and those involved in evacuation;
4) Adequate water supply and pressure;
5) Emergency management arrangements for fire protection and / or evacuation; and
6) Suitable landscaping, to limit fire spreading to a building.

1.2 Site Particulars

Locality	The site is located in Medowie
Land Title	Lot 22 DP 1036306
LGA	Port Stephens City Council
Area	4.06ha (approx.)
Zoning	The site is currently zoned R5 – Large Lot Residential (NSW Planning & Environment 2018)
Boundaries	The site is situated within the existing Medowie Christian School land. The school is bound to the north by area of managed land and existing vegetation

	followed by rural residential lots. To the south a church and associated facilities. To the west rural residential lots and to the east existing bushland. An existing APZ is managed in a portion of the eastern school lands and extends into the neighbouring church lands the south.
Current Land Use	The land is currently part of the Medowie Christian School operation.
Topography	The site slopes gently from south to north.
Climate / Fire History	The site lies within a geographical area with a Fire Danger Index (FDI) rating of 100. Extreme bushfire weather is therefore associated with long periods of drought, high temperatures, low humidity and gusty often north-westerly winds. The site is classified as being effected by Category 1 Vegetation on the Bushfire Prone Land Map (DPE 2018). Refer to **Figure 2**.

1.3 Description of Proposal

The proposal seeks to construct and operate a science and technology building within the site. The new building will replace existing S Block and West Demountable buildings in the current location.

The building is to be constructed in two stages. Stage 1 will consist of the majority of the structure being constructed with two modules of the building to be established in the north-west and north-east corner of the building as Stage 2.

The building location has been informed by ongoing consultation with NSW RFS Officers including a pre-DA. Initially the building was to be located to the east of site and based on RFS input along with architectural considerations the building has been relocated to the front of site closer to the existing school access and further away from known hazards on neighbouring land to the north.

Refer to **Appendix A** for plans of the proposal.

1.4 SFPP as Infill

The site and proposal are considered to trigger the provisions of SFPP's as infill outlined within section 4.2.5 of PBP (2006). In this instance, the objectives for infill development outlined within section 4.3.2 (PBP, 2006) have been relied upon.

The specific objectives for SFPP developments outlined within PBP (2006) section 4.2.3 are to:

- *Provide for the special characteristics and needs of occupants. Unlike residential subdivisions, which can be built to withstand the fire event, enabling occupants and firefighters 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.*

- *Provide for safe emergency evacuation procedures. SFPP developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bushfire threats. During emergencies, the risk to firefighters and other emergency services personnel can be high through prolonged exposure, where door-to-door warnings are being given and exposure to the bushfire is imminent.*

Figure 1
Site Location
Legend
Site - Science & Tech Building
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S
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MJD Environmental
Aerial: Nearmap (16/02/2018)
Data: MJD Environmetal, LPI (2018)
Datum/Projection: GDA 1994 MGA Zone 56
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Figure 2 Bushfire Prone Land Map

Source: NSW Planning & Environment, 2018)

2 Bushfire Hazard Analysis

2.1 Vegetation Assessment

Methodology

The vegetation in and around the site, to a distance of 140m, has been assessed in accordance with PBP 2006. This assessment has been made via a combination:

- aerial photo interpretation;
- reference to regional community vegetation mapping; and
- on site vegetation classification.

These vegetation communities have been classified for bushfire purposes into structure and formation using the system adopted by Keith (2004) and using Table A2.1 of PBP (2006) with due regard to Addendum Appendix 3 (PBP 2006).

Vegetation Classification

Vegetation classification has been presented in **Table 1** below and **Figure 3**.

Table 1 Vegetation Classification

Direction	Description	Vegetation Classification
North	To the immediate north of the site, an existing concrete access provides trafficable access from the carpark to the outdoor recreation courts and multi purpose centre (school hall/ indoor courts). Beyond the access is the property boundary. Land to the north consists of an area where tree cover has been reduced and management occurs periodically. Beyond this area remnant tree'd bushland occurs and on observation has areas of previous understorey management. This area has been classified as forest and managed vegetation. Separation distance from the building location (site) to the property boundary is 10m (approx.) and the area of managed vegetation extends 40m (approx.) or greater north from the school boundary.	Managed vegetation assessed No Hazard / Forest
North-east	To the north-east of the site, an existing concrete access provides trafficable access from the carpark to the outdoor recreation courts and multi purpose centre (school hall/ indoor courts) situated to the east. A managed turf area is situated between the site and concrete driveway. Beyond the property boundary, neighbouring land contains existing bushland that has been assessed as forest. Beyond the forest the canopy and understorey areas open up to a woodland. Separation distance from the building location (site) to the property boundary is 36m (approx.).	Managed / Forest
East	Existing school buildings, playground areas and circulation paths.	Managed
South	Existing school buildings, playground areas and circulation paths. Beyond the southern school property boundary, the church land is comprised of buildings, car parking and ancillary structures.	Managed

Direction	Description	Vegetation Classification
	To the east of the church car park and buildings exists an open tree'd area with managed understorey and reduced canopy to an APZ standard. A portion of this APZ area relates to an existing approval on school grounds for a relocated demountable building.	
West	Existing site access from Waropara Road, car parking, turf and managed garden beds. Beyond Waropara Road, existing rural residential properties containing dwellings, ancillary structures and areas of managed turf with scattered trees.	Managed

Site Photos

Photo 1 – View to the north of site

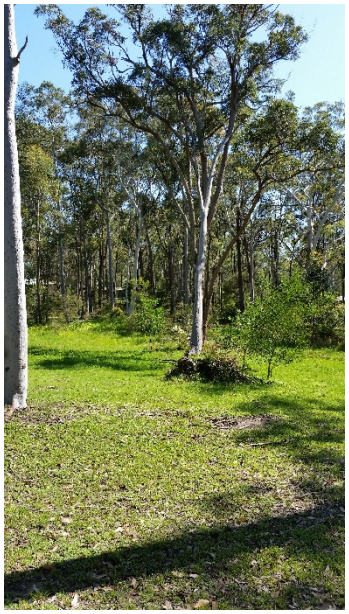

Photo 2 – View to the north of site

Photo 3 – View to north-east of site

Photo 4 – View to north-east of site along existing concrete driveway

Photo 5 – View to north-east of site along concrete driveway. MPC shown to left of photo

Photo 6 – View to west across site along concrete driveway to school access from Waropara Road.

Photo 7 – View to north-east of site toward forest hazard(left of photo)

Photo 8 – View to south-east of site into managed APZ area

Photo 9 – View to south of site into Church carpark

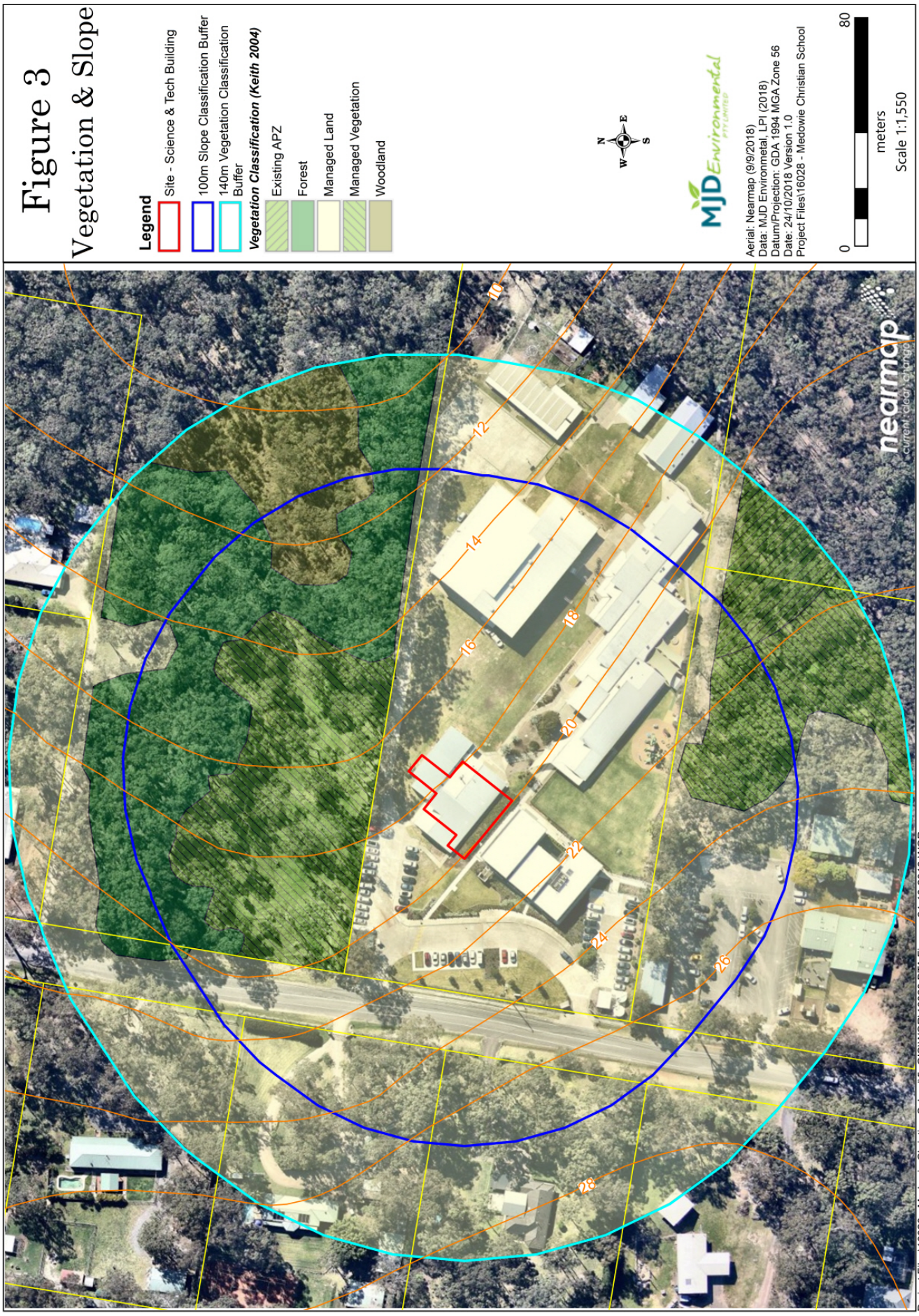
Figure 3
Vegetation & Slope
Legend
Site - Science & Tech Building
100m Slope Classification Buffer
140m Vegetation Classification Buffer
Vegetation Classification (Keith 2004)
Existing APZ
Forest
Managed Land
Managed Vegetation
Woodland
MJD Environmental PTY LIMITED
Aerial: Nearmap (9/9/2018)
Data: MJD Environmetal, LPI (2018)
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2.2 Slope Assessment

Methodology

In accordance with PBP (2006), an assessment of the slope throughout the site (where a hazard is to remain) and for a distance of 100m around the site in the hazard direction. Both the average slope and maximum slopes were considered to determine the level of gradient which will most significantly influence fire behaviour on the site.

Slope assessment was assisted by:

- Aerial photo coupled with contour (2m interval) overlays; and
- Site assessment.

Effective Slope

The slope class under the bushfire hazard within 100m is presented in **Table 2** below and **Figure 3**.

Table 2 Slope Class

Direction of Hazard	Vegetation Classification	Slope Class
North	Forest	Flat
North-east	Forest	0-5º Downslope

3 Bushfire Protection Measures

PBP sets out a suite of BPMs and criteria that require consideration and assessment for applicable proposals on bushfire prone land in order to provide an adequate level of protection to new developments.

The measures required to be assessed are listed below and discussed throughout this chapter:

- Asset Protection Zones (APZ)
- Construction Standards and Design – Bushfire Attack Levels (BAL) set out in AS3959-2009
- Access
- Services – Water supply, Gas and Electricity
- Landscaping and Fuel Management
- Emergency Management

Notwithstanding the SFPP infill provisions outlined within Section 1.4 of this report, a response to each of the 6 BPMs has been provided in sections 1.3 to 3.6 below. A comment against the specific objectives for infill development (PBP Section 4.3.2) have been provided as section 3.7 of this BTA.

3.1 Asset Protection Zone

An APZ is a buffer zone between the hazard and buildings that is progressively managed to minimise bushfire hazard (fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack) PBP (2006), in order to mitigate risk to life and asset. Where a forest or woodland vegetation classification has been determined, an APZ can consist of two areas being:

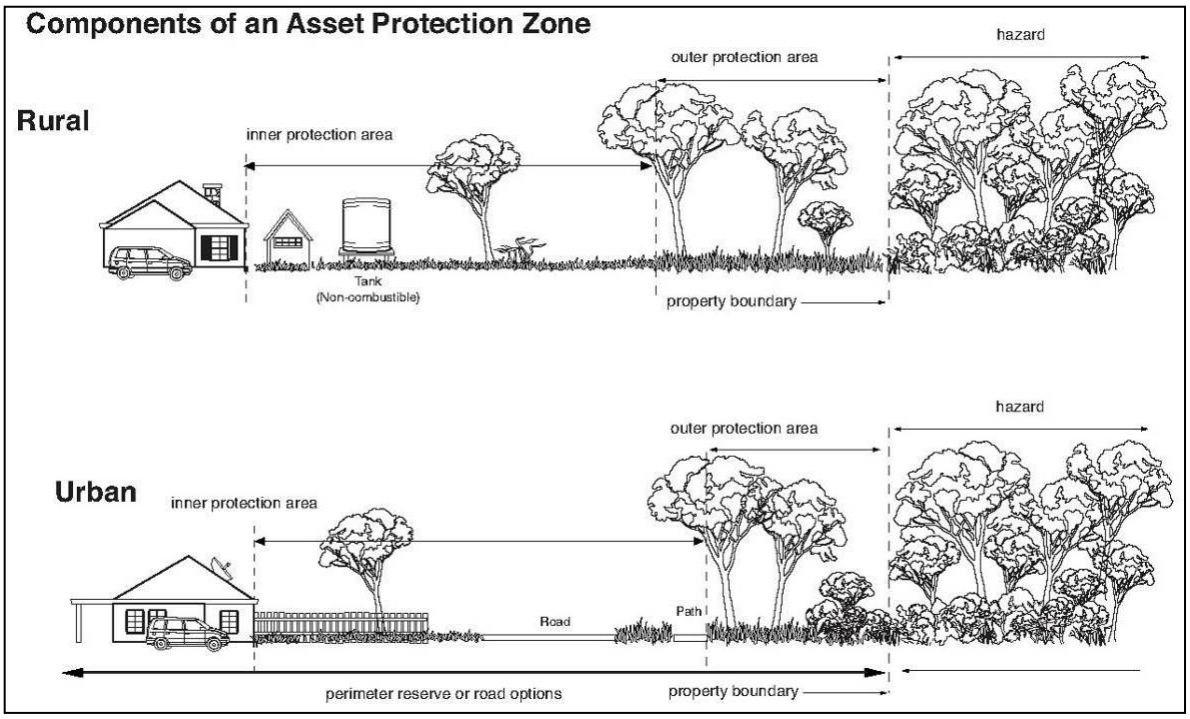
1) Inner Protection Area (IPA) – The IPA extends from the edge of the development/ buildings to the OPA. The IPA aims to provide defendable space and reduce potential for direct or spontaneous ignition by maintain providing a heavily reduced or fuel free zone.
2) Outer Protection Area (OPA) – The OPA is located adjacent to the hazard. Within the OPA any trees and shrubs should be maintained in a manner such that the vegetation is not continuous in order to reduce flame length and fire intensity. A properly managed OPA can aid in ember attack by filtering embers and slowing the fires rate of spread.

Refer to **Figure 4** that shows the components of an APZ presented in PBP (2006).

An APZ can include the following:

- Lawns;
- discontinuous gardens;
- swimming pools;
- driveways;
- detached garages;
- open space / parkland;
- car parking;
- swales; and
- cycleway and formed walkways.

Figure 4 Components of an APZ (PBP 2006)



3.1.1 Determining APZs

The subject site lies within the Port Stephens Council LGA and therefore is assessed under an FDI (Fire Danger Index) rating of 100. By applying Table A2.6 within PBP (2006), the deemed to satisfy setbacks have been calculated based on the bushfire hazard analysis presented in Chapter 2. Refer to **Table 3** below and **Figure 5** for the proposed APZ.

Table 3 APZ

Direction of Hazard	Vegetation Classification	Slope Class	APZ required by PBP (2006)	Proposed APZ
North	Forest	Flat	60m	Minimum separation of 10m to 36m provided from the buildings northern elevation to the north and north-east. Suitable separation to the east, south and west are provided via the existing school buildings and grounds.
North-east	Forest	0-5° Downslope	70m	

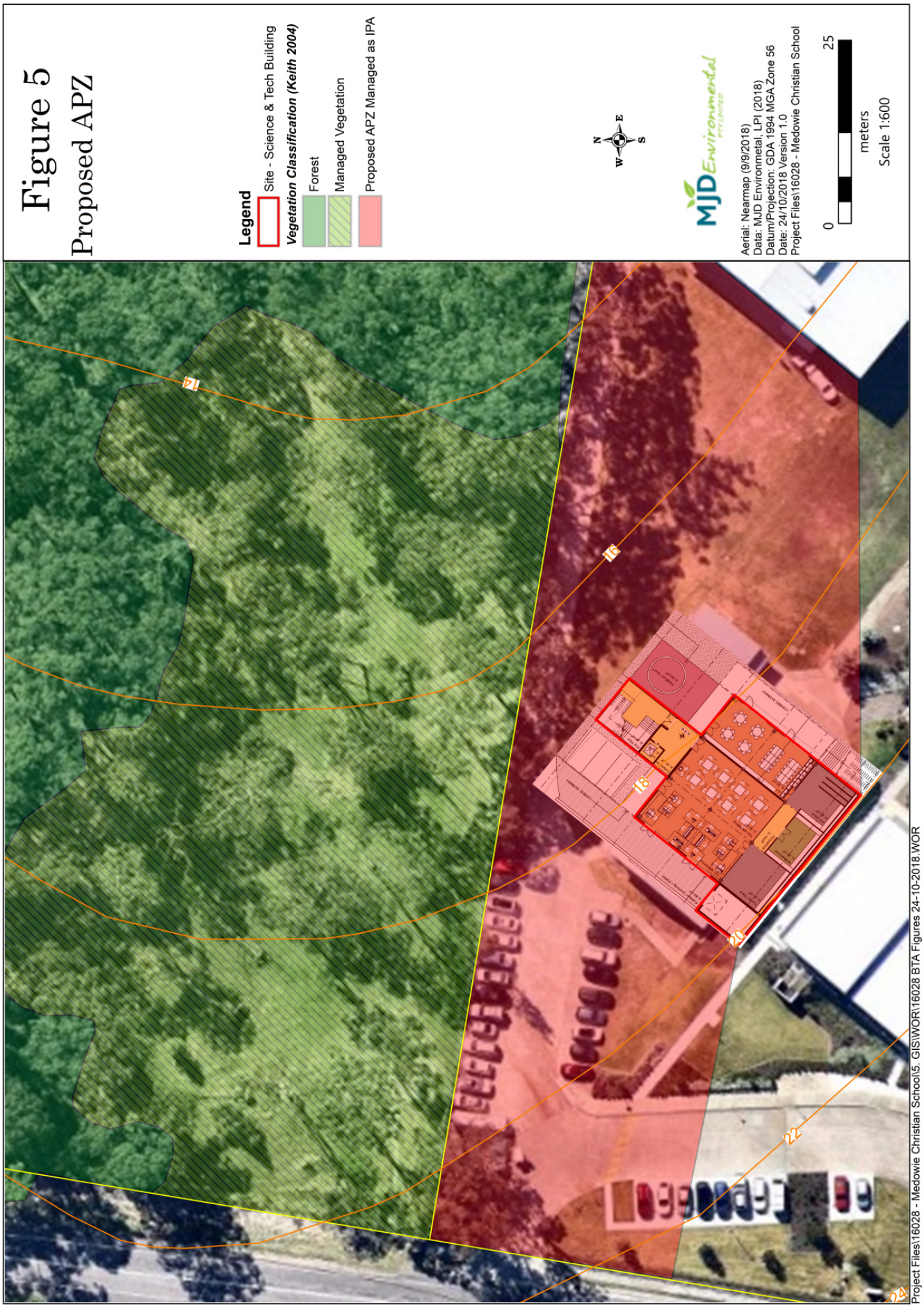


Figure 5
Proposed APZ
Legend
Site - Science & Tech Building
Vegetation Classification (Keith 2004)
Forest
Managed Vegetation
Proposed APZ Managed as IPA
MJD Environmental PTY LIMITED
Aerial: Nearmap (9/9/2018)
Data: MJD Environmetal, LP((2018)
Datum/Projection: GDA 1994 MGA Zone 56
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3.2 Construction Standards & Design

Construction of Buildings in Bushfire Prone Areas is encompassed by AS3959-2009. This Australian Standard specifies construction requirements to improve a buildings ability to withstand attack from bushfire and afford protection to occupants and the building during a bush fire situation. By considering the bushfire hazard analysis outcomes presented in Chapter 2, this standard provides scalable construction specifications (Bushfire Attack Levels – BAL) relative to the building separation from a proximate hazard.

Addendum Appendix 3 of PBP (2006) was applied to the vegetation classification presented Chapter 2 to determine the AUSLIG (1990) vegetation equivalent. This coupled with the slope analysis was applied to Table 2.4.2 of AS3959-2009 (Method 1) to calculate the required Bushfire Attack Level (BAL) for the site. Refer to **Table 4** below and **Figure 6** for the required BAL.

Table 4 BAL (AS3959-2009 Method 1)

Direction of Hazard	Vegetation Classification	Slope Class	APZ required by PBP (2006)	APZ proposed	Separation Distance	BAL	Notes
North	Forest	Flat	60m	10m – 36m variable	<19m 19-<25m 25-<35m 35-<48m 48-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low	Refer to Addendum Appendix 3 of PBP (2006) and Sections 1,3, 5-8 of AS3959-2009
North-east	Forest	0-5º Downslope	70m	10m – 36m variable	<24m 24-<32m 32-<43m 43-<57m 57-<100m >100m	BAL-FZ BAL-40 BAL-29 BAL-19 BAL-12.5 BAL-Low	

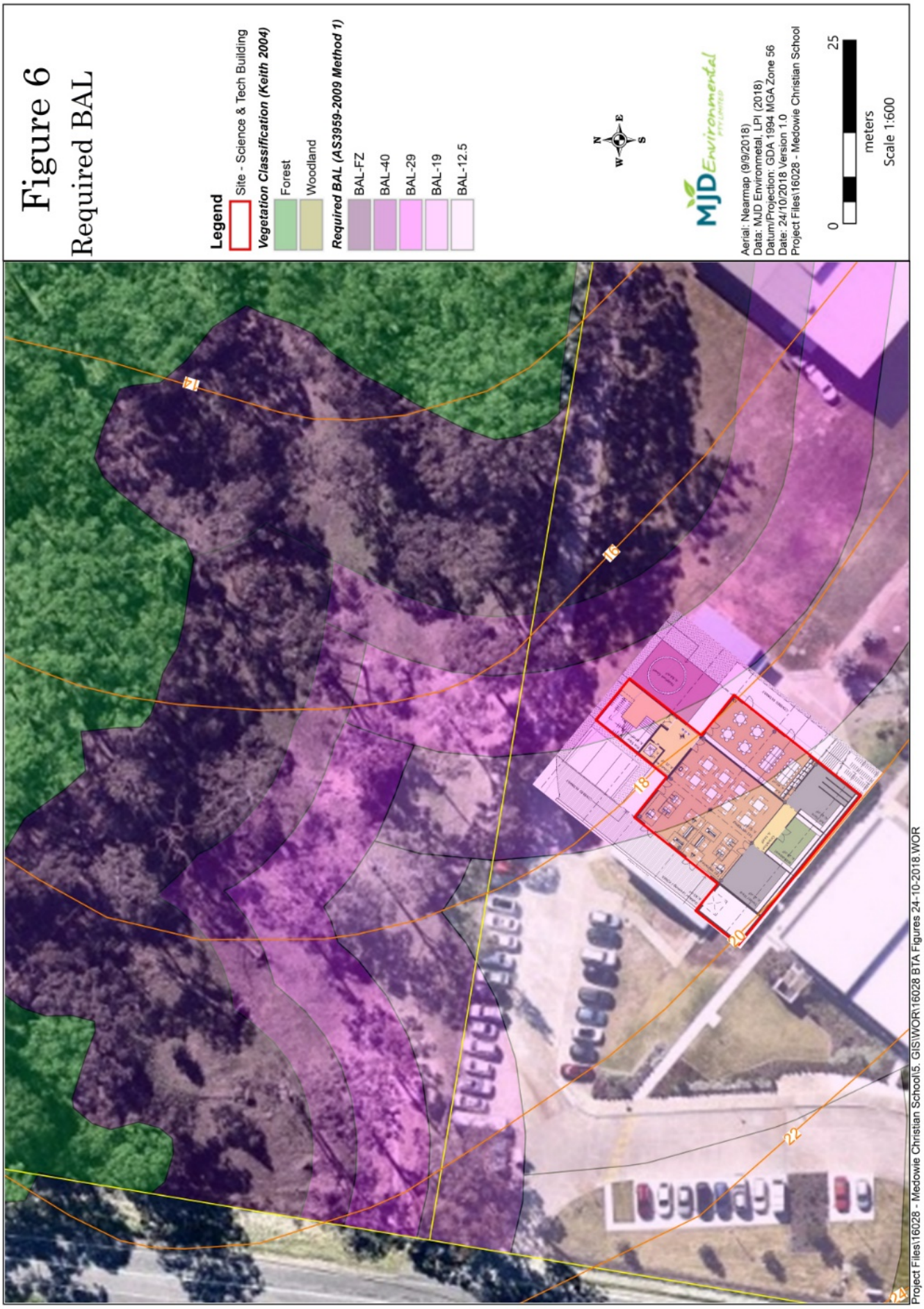
Figure 6
Required BAL
Legend
Site - Science & Tech Building
Vegetation Classification (Keith 2004)
Forest
Woodland
Required BAL (AS3959-2009 Method 1)
BAL-FZ
BAL-40
BAL-29
BAL-19
BAL-12.5
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MJD Environmental
Aerial: Nearmap (9/9/2018)
Data: MJD Environmetal, LPI (2018)
Datum/Projection: GDA 1994 MGA Zone 56
Date: 24/10/2018 Version 1.0
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3.3 Access

Continued access to MCS shall be taken from the existing main access operating form Waropara Road. Access along the northern boundary between the new building and site boundary will be maintained under the current proposal. The proposal is considered to meet the acceptable solutions for property access set out in PBP (2006) as summarised below.

According to PBP (2006), the design specifications for **property access roads** require that:

- a minimum carriageway width of four metres for rural-residential areas, rural landholdings;

  Note: No specific access requirements apply in a urban area where a 70m unobstructed path can be demonstrated between the most distant part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency fighting vehicles (i.e. a hydrant or water supply).
- a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches;
- on forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20 metres long by two metres wide;
- curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress;
- the cross fall is not more than 10^{o};
- maximum grades for sealed roads do not exceed 15^{o} and not more than 10^{o} for unsealed roads; and
- access to a development comprising more than three dwellings have formalised access by dedication of a road and not by right of way.

The above road specifications are the acceptable solutions as detailed within PBP (RFS, 2006). Deviations from the above acceptable solutions for access may be considered (depending on the situation) through a performance-based assessment.

3.4 Services – Water, Electricity, Gas

The site is to be developed in accordance with the PBP (2006) acceptable solutions for services listed in **Table 5**.

The proposal is able to satisfy these requirements given:

- Reticulated water supply is connected to the existing buildings. This shall be extended and augmented as part of the new building works.
- The site is connected to power from the service available within the existing buildings. This shall be extended and augmented as part of the new building works.
- Any future gas connection will be non-reticulated (bottled) and shall be installed in accordance with the provisions of PBP (2006).

Table 5 Acceptable solutions for services (PBP 2006)

<table>
<tr><th>Performance Criteria</th><th>Acceptable Solutions</th></tr>
<tr><td colspan="2">The intent may be achieved where:</td></tr>
<tr><td>Reticulated water supplies
▪ water supplies are easily accessible and located at regular intervals.
To note, if reticulated water supplies are considered inadequate or shall not be connected as part of the proposal, the PBP (2006) performance criteria for ‘non-reticulated’ water supply shall apply as detailed below.</td><td>▪ reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.
▪ fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles.
▪ hydrants are not located within any road carriageway
▪ all above ground water and gas service pipes external to the building are metal, including and up to any taps.
▪ the provisions of parking on public roads are met.</td></tr>
<tr><td>Non-reticulated water supply areas
▪ for rural-residential and rural developments (or settlements) in bush fire prone areas, a water supply reserve dedicated to firefighting purposes is installed and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the subdivision (community titled subdivisions), or held individually on each lot.
<table><tr><th>Development type</th><th>Water requirement</th></tr><tr><td>Residential Lots (<1,000m²)</td><td>5,000 l/lot</td></tr><tr><td>Rural-residential Lots (1,000 – 10,000m²)</td><td>10,000 l/lot</td></tr><tr><td>Large Rural/Lifestyle Lots (>10,000 m²)</td><td>20,000 l/lot</td></tr><tr><td>Dual Occupancy</td><td>2,500 l/unit</td></tr><tr><td>Townhouse/Unit Style (eg Flats)</td><td>5,000 l/unit up to 20,000 l maximum.</td></tr></table>Table 4.2 PBP 2006</td><td>▪ the minimum dedicated water supply required for firefighting purposes for each occupied building excluding drenching systems, is provided in accordance with Table 4.2 (refer to insert on left).
▪ a suitable connection for firefighting purposes is made available and located within the IPA and away from the structure. A 65mm Storz outlet with a Gate or Ball valve is provided.
▪ Gate or Ball valve and pipes are adequate for water flow and are metal rather than plastic.
▪ underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole.
▪ above ground tanks are manufactured of concrete or metal and raised tanks have their stands protected. Plastic tanks are not used. Tanks on the hazard side of a building are provided with adequate shielding for the protection of fire fighters.
▪ all above ground water pipes external to the building are metal including and up to any taps. Pumps are shielded.</td></tr>
<tr><td>Electricity Services
▪ location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings
▪ regular inspection of lines is undertaken to ensure they are not fouled by branches.</td><td>▪ where practicable, electrical transmission lines are underground.
▪ where overhead electrical transmission lines are proposed:
○ lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and
○ no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ‘Vegetation Safety Clearances’ issued by Energy Australia (NS179, April 2002).</td></tr>
</table>

Performance Criteria	Acceptable Solutions
Gas services ▪ location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	▪ reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used. ▪ all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. ▪ if gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal. ▪ polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.

3.5 Landscaping & Fuel Management

All future landscaping on the site should be designed and managed to minimise impact of bushfire based on the principles set out in PBP (2006) being:

- Prevent flame contact / direct ignition on the dwelling;
- Provide a defendable space for property protection;
- Reduce fire spread;
- Deflect and filter embers;
- Provide shelter from radiant head; and
- Reduce wind speed.

In this manner, consideration should be given to species selection, planting location, flammability and size at maturity to ensure discontinuous canopy/ structure both vertically and horizontally to ensure the above principles are met.

Ongoing fuel management across the site including existing managed areas will be undertaken by the MCS grounds maintenance team. The maintenance regime should give due consideration to the RFS Standards for Asset Protection Zones (2005) which provides guidance on maintenance activities to assist in achieving the landscape principles. The entire area around the new building is to be maintained as an IPA consistent with current site management.

3.6 Emergency Management

Any fire within the site would be attended in the first instance by the Medowie branch of the NSW Rural Fire Brigade.

To assist emergency response from the NSW RFS and/or NSW Fire and Rescue, site access is to comply with the provisions set out in PBP (2006) and all tanks including connection points be readily accessible and clearly marked. If pumps are to be made available, they must be regularly maintained and in good working order.

An Emergency Management and Evacuation Plan is recommended to be prepared that is consistent with the RFS Guidelines 'Development Planning – A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan December 2014' and AS3745-2010 Planning for emergencies in facilities.

3.7 SFPP Specific Objectives

The proposed science and technology building location does not meet the minimum APZ for SFPP development, however it complies with the aims and objectives of PBP for infill development. The specific objectives for infill development and a comment on how they are achieved has been provided below.

Table 6 Specific Objectives to Infill

Objective (PBP 2006 Section 4.3.2)	Comment
1. Ensure that the bushfire risk to adjoining lands is not increased	▪ The proposal does not increase the bushfire risk to adjoining land. This objective is satisfied.
2. Provide a minimum defendable space	▪ A minimum defendable space of 7m to 33m variable from the buildings northern elevation to the property boundary is provided by the proposal. This area contains an existing concrete driveway along the property boundary and managed turf area. This objective is satisfied.
3. Provide a better bushfire fire protection, on a redevelopment site, that the existing situation. This should not result in new works being exposed to greater risk than an existing building	▪ The existing classroom buildings on site are demountable structures. ▪ The new building will be constructed to current day standards in accordance with the BCA and to AS3959-2009 resulting in an overall improvement to the building resilience. The combined outcomes are considered to result in an improved level of bushfire protection. This objective is satisfied.
4. Ensure that the footprint of the proposed building does not extent towards the hazard beyond existing building lines on neighbouring land	▪ The new building is situated over the existing S Block and West Demountable buildings footprint. The closest building to the northern property boundary and hazard is the MPC building situated to the east. The new building does not encroach beyond the northern building line established by the MPC. This objective is satisfied.
5. Not result in an increased bushfire management and maintenance responsibility on adjoining land owners unless they have agreed to the development	▪ The development does not increase or offset the bushfire management onto neighbouring lands. This objective is satisfied.
6. Ensure building design and construction enhance the chances of occupant and building survival.	▪ Section 3.2 outlines the relevant BAL under AS3959-2009. The new building is subject to the BCA and AS 3959-2009. ▪ The building has been designed with a stairwell to the northern elevation of the building AND in emergency situations this access will be available to emergency personnel. The building has been designed to facilitate egress during emergency situations for all occupants (students, staff) to exit the building to the south and out onto the western hardstand area at the front of the school where MCS access occurs from Waropara Road. This objective is satisfied.

4 Conclusion & Recommendations

MJD Environmental has been engaged by MCS, to prepare a BTA to accompany a development application for the development and operation of a science and technology building within the existing MCS operation at 6B Waropara Road, Medowie.

The assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to such a proposal, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the Planning for Bush Fire Protection (PBP), 2006 that has been released and adopted through the *Environmental Planning & Assessment Amendment* (Planning for Bush Fire Protection) *Regulation 2007* & the *Rural Fires Amendment Regulation 2007*. Consideration has also been given to *SEPP (Housing for Seniors or People with a Disability) 2004* in the context of the provisions of *Planning for Bushfire Protection (2006)*.

In order to determine whether the proposed development is bushfire-prone, and if so, which setbacks and other relevant Bush Fire Protection Measures (BPM) will be appropriate, this assessment adheres to the methodology and procedures outlined in Appendix 4 of PBP 2006 and clause 44 of *Rural Fires Regulation 2013* (RF Regs).

This assessment has been made based on the bushfire hazards in and around the site at the time of the inspection (26th October 2107).

The proposal type triggers the criteria outlined with PBP (2006) for Special Fire Protection Purposes (SFPP). As such SFPP activates the provisions of integrated development under Section 91 of the EP& A Act, thus requiring approval and issue of a Bush Fire Safety Authority from the NSW RFS under 100B of the *Rural Fires Act 1997* (RF Act).

The proposal has been assessed as an infill SFPP under the provisions set out in PBP (2006).

In summary, the following key recommendations have been generated to enable the proposal to comply with PBP (2006) and AS3959-2009.

- The area between proposed building and northern site boundary is to be maintained as an APZ of 10m to 36m variable width to an IPA standard.
- The proposed development should have due regard to the specific considerations given in the BCA, which makes specific reference to the Australian Standard (AS3959 – 2009) construction of buildings in bushfire prone areas as outlined in Chapter 3, Section 3.2 of this report. Assessment of AS3959-2009 based on a Method 1 has shown that any future development on the site will be able to comply with this standard. In accordance with PBP (2006) and AS3959-2009 the science and technology building shall be constructed to a BAL-29.
- Existing access arrangements to MCS and along the northern site boundary shall be maintained as part of the proposal.
- Services are to be provided and connected to the site in accordance with PBP (2006) as summarised and assessed in Chapter 3, Section 3.4 of this report.
- Careful consideration of future site landscaping and ongoing fuel management must occur to minimise the potential impact of bushfire on the site.
- A bushfire management plan including fire emergency procedures will be prepared for the site.

Finally, the implementation of the measures and recommendations forwarded within this report would contribute to the amelioration of the potential impact of any bushfire upon the development site, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

5 Bibliography

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Appendix A Plan of Proposal