

175 Cranebrook Road, Cranebrook, Proposed New Dwellings

Bushfire Assessment Report

Client : Peter and Charlene Adcock
Prepared by : Australian Wetlands Consulting Pty Ltd
Project # : 3-16778-2a
Date : June 2017

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Bushfire Assessment Report

Project control

Project name: **175 Cranebrook Road, Cranebrook**

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Job number: 3-16778-2a

Client: Peter & Charlene Adcock

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1 Introduction and Background

This Bushfire Assessment has been completed on behalf of Peter and Charlene Adcock in support of a proposed dwelling at – Lot 8 DP31820, No. 175 Cranebrook Road, Cranebrook. The aim of the Bushfire Assessment is to highlight bushfire issues at the site and indicate matters required to be compliant with Planning for Bushfire Protection (PBP hereafter) (NSW Rural Fire Service, 2006), as the site is mapped as bushfire prone, Vegetation Category 2 by Penrith City Council (2014) (refer Figure 1.1). The Assessment will provide information to the building design and vegetation management requirements.

The Bushfire Assessment for construction and/or amendments to a single dwelling, which does not require the spatial extension of services (i.e. public roads, electricity, water or sewerage) and is within an existing allotment must meet the requirements of Section **79BA** of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This type of development is also defined as 'Infill Development' (as defined in PBP).

Under s.79BA a consent authority (ie. Local Council) cannot grant approval for a Development Application unless satisfied that:

- a. the development conforms to the specifications and requirements of PBP, or
- b. consults with the Commissioner of the NSW Rural Fire Service concerning measures to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bush fire

Therefore, where an Infill Development proposal does comply with the acceptable solutions outlined in Chapter 4 of PBP, consultation by the consent authority with the Rural Fire Service (RFS) is not required. PBP states that it must be demonstrated that the proposal satisfies the broad aim and objective of PBP, the specific objectives for the development type and the performance criteria for the various proposed Bushfire Protection Measures (BPMs).

Section 4.3 of PBP sets the specific objectives and the specifications and requirements for Bushfire Protection Measures for Infill Development. These Measures, summarised below, are addressed in this report:

- Asset Protection Zones
- Access
- Services
- Landscaping and Maintenance
- Construction Standards

This report is in 4 sections:

- Section 1 provides an introduction and background to the site
- Section 2 describes vegetation at and surrounding the site
- Section 3 provides information regarding bushfire protection measures for infill development (as per PBP)

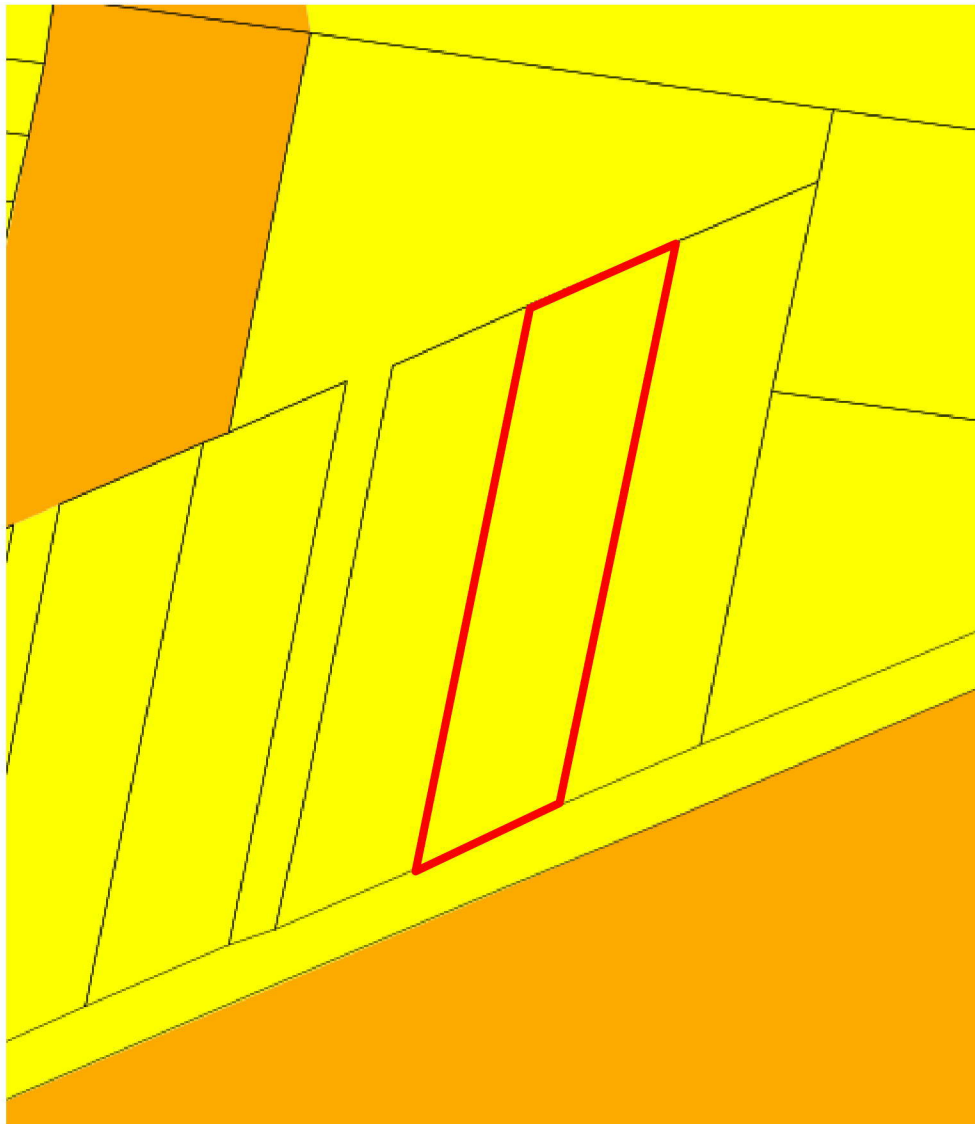


Figure 1-1 Bushfire prone land mapping; site outline in red, yellow = Vegetation Category 2, orange = Vegetation Category 1
(Source: Penrith City Council)

1.1 The Subject Site

The property is approximately two hectares in size and runs north from Cranebrook Road on flat land. There is an existing dwelling and wholesale nursery at the site and the landuse in the area is rural residential and substantial forest reserves immediately south of Cranebrook Road (Wianamatta Nature Reserve) and to the north within Castlereagh Nature Reserve. Vegetation within the site comprises remnant native woodland, planted vegetation and raised garden beds.

1.2 Significant environmental features

The site has a number of environmental features including:

- Remnant native forest characteristic of Endangered Ecological Communities (EECs) listed in the *Threatened Species Conservation (TSC) Act 1995*
- Endangered (two) flora species

- Tree hollows and roosting points for native mammals and birds
- Connectivity with contiguous forest habitat within regional corridors

1.3 Consultant qualifications

This report has been prepared by Damian McCann and Jesse Munro. Damian holds an Honours degree in Ecology and has over 15 years experience in ecological assessment. Jesse has completed a Bachelor of Applied Science, a Certificate 2 in bushland regeneration, has 10 years' experience in environmental consulting and management issues and has completed the *"Planning for Bushfire Prone Areas"* unit at the University of Technology, Sydney.

1.4 Proposed Development

It is proposed that a five bedroom dwelling with a detached two bedroom self-contained unit will be constructed in the northern portion of the property. The development will also have a pool and associated carports. The location on the site has an existing access however this will be upgraded with appropriate passing bays and reversing areas to exit the dwelling in a forward motion.



Figure 1-2 Subject site including location of proposed dwellings (Source: Nearmap, 2016)

2 Vegetation Assessment

2.1 Vegetation at and surrounding the site

Figure 1-1 shows the vegetation types within 140m of the proposed dwellings. The primary vegetation is managed through mowing to retain a grassland type landscape; these areas are not considered a hazard in terms of bushfire. To the north of the site is a wetland that has some trees that is classified as a 'forested wetland', however it is separated from the proposed dwellings by a cleared road and the other vegetation type described below.

The primary bushfire hazard vegetation to the site of the proposed dwellings is classified as 'woodland'. The vegetation extends along the boundary of the site and to the north east. The patch has a mix of mature tree densities and management types with some areas being slashed underneath to retain a grassy understory. The mature trees are Eucalypt species and most of the area sees separated canopies. There will be a reduction in fuel around the dwellings with the application of APZ requirements.

Table 2-1 shows the equivalent vegetation classification with regard to both Keith (2004) and the AUSLIG Pictorial Analysis classification adopted under Australian Standard 3959-2009 *Construction of Buildings in Bush Fire Prone Areas*, as referenced in PBP Addendum 3 (RFS, 2010).

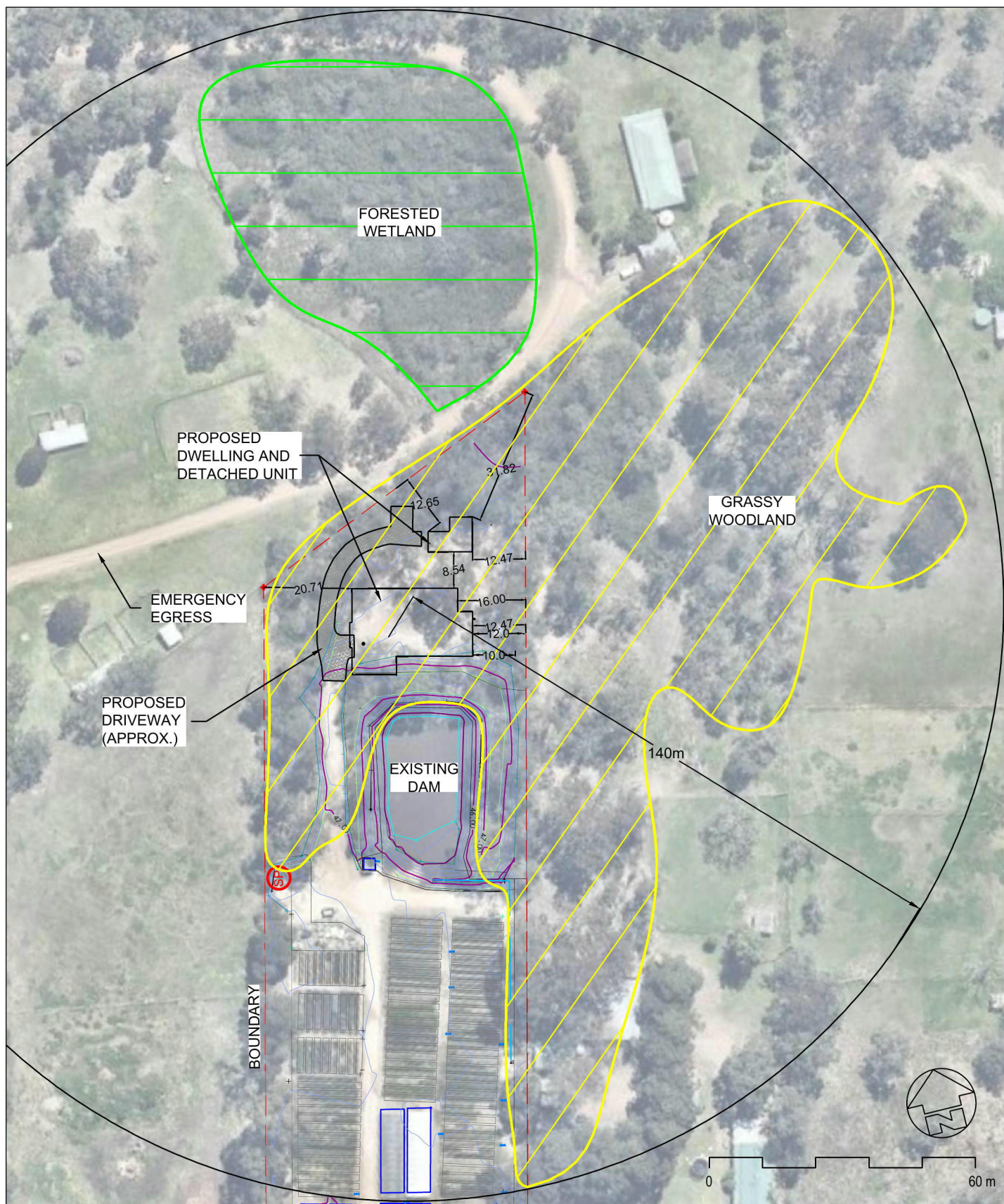
Table 2-1 Vegetation communities at the site and classification as per Keith (2004), RFS (2012) and AS3959-2009

Vegetation community	Vegetation Classification (Keith, 2004 / RFS, 2012)	Vegetation Classification (AUSLIG, AS 3959-2009)
Landscape grounds	Forested wetland	Forest
Eucalypt Woodland	Grassy Woodland	Woodland
Grassland	Grasslands	Grassland

Woodland communities have the highest fuel load of any community at the site, thus it is considered the primary vegetation hazard. Grassland communities are recognised as being of moderate bushfire risk when unmanaged, however the maintenance of grassland areas at and surrounding the site by regular slashing and debris removal reduces the bushfire risk of these areas significantly. Non vegetated areas are not considered a hazard or a predominant vegetation class/formation and can be included in an APZ (PBP 2006); this includes reduced vegetation areas such as maintained lawns.

Figure 2-1 maps vegetation at the site based on the bushfire classifications shown at Table 2.1 and allocates a hazard rating as per the above.

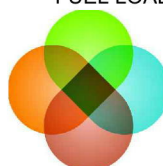
Note: Vegetation communities in the vicinity are recognised as having a high fire danger and are recognised by both AS3959 and PBP as having a Fire Danger Index (FDI) of 100.



NOTE:
THE VEGETATION SURROUNDING THE PROPOSED DWELLINGS IS VARIABLE WITH MIXED PATCHES WHERE INFORMAL FUEL REDUCTION IS UNDERTAKEN. THE AREA IS CLASSIFIED OVERALL AS **WOODLAND** AND HAS A PREDOMINANTLY GRASSY UNDER STORY.

**FIGURE 2.1
VEGETATION PLAN**

OPEN WOODLAND AND FORESTED WETLAND VEGETATION ZONES SHOWN. REMAINING AREAS ARE MANAGED GRASSLANDS AND LANDSCAPED GROUNDS HAVING REDUCED FUEL LOADS AND ARE NOT CONSIDERED A HAZARD



AWC

PROPOSED DWELLINGS
175 CRANEBROOK ROAD,
CRANEBROOK
BUSHFIRE ASSESSMENT
JOB No: 3-16778

3 Bushfire Protection Measures for Single Dwellings

3.1 Introduction

All development on Bush Fire Prone Land must satisfy the aims and objectives of PBP. The aim of PBP is to provide for the protection of human life (including firefighters) and minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment.

The objectives of PBP are to:

1. *Afford occupants of any building adequate protection from exposure to a bush fire*
2. *Provide for a defensible space to be located around buildings*
3. *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition*
4. *Ensure that safe operational access and egress for emergency service personnel and residents is available*
5. *Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zones (APZ), and*
6. *Ensure that utility services are adequate to meet the needs of firefighters (and other assisting in bush firefighting)*

More specifically the objectives for 'infill development' are:

- *ensure that the bush fire risk to adjoining lands is not increased*
- *provide a minimum defensible space*
- *provide better bush fire protection, on a re-development site, than the existing situation. This should not result in new works being exposed to greater risk than an existing building*
- *ensure that the footprint of the proposed building does not extend towards the hazard beyond existing building lines on neighbouring land*
- *not result in an increased bush fire management and maintenance responsibility on adjoining land owners unless they have agreed to the development*
- *ensure building design and construction enhance the chances of occupant and building survival*

Furthermore PBP identifies the performance criteria and acceptable solutions for the various proposed BPMs. The relevant BPM criteria and acceptable solutions with regard to infill development are outlined in Sections 3.2 to 3.6.

3.2 Asset Protection Zones (APZs)

3.2.1 General requirements

Asset Protection Zones (APZs) are buffer areas between development and a fire hazard which aim to protect human life and property. An APZ comprises an Inner Protection Area (IPA) and an Outer Protection Area (OPA) which must be managed to reduce the bushfire hazard (refer Table 3-1).

3.2.2 APZs required for residential development

Based on the existing primary hazard vegetation type at and adjacent to the site and according to the *Table A2.4 Minimum Specifications for Asset Protection Zones (m) for Residential and Rural Residential Subdivision Purposes (for Class 1 and 2 buildings) in FDI 100 Fire Areas*, within PBP (2006), the APZ is to be 10m. This will be increased to **12m** to retain the BAL40 building requirements (refer Section 3.5.1)

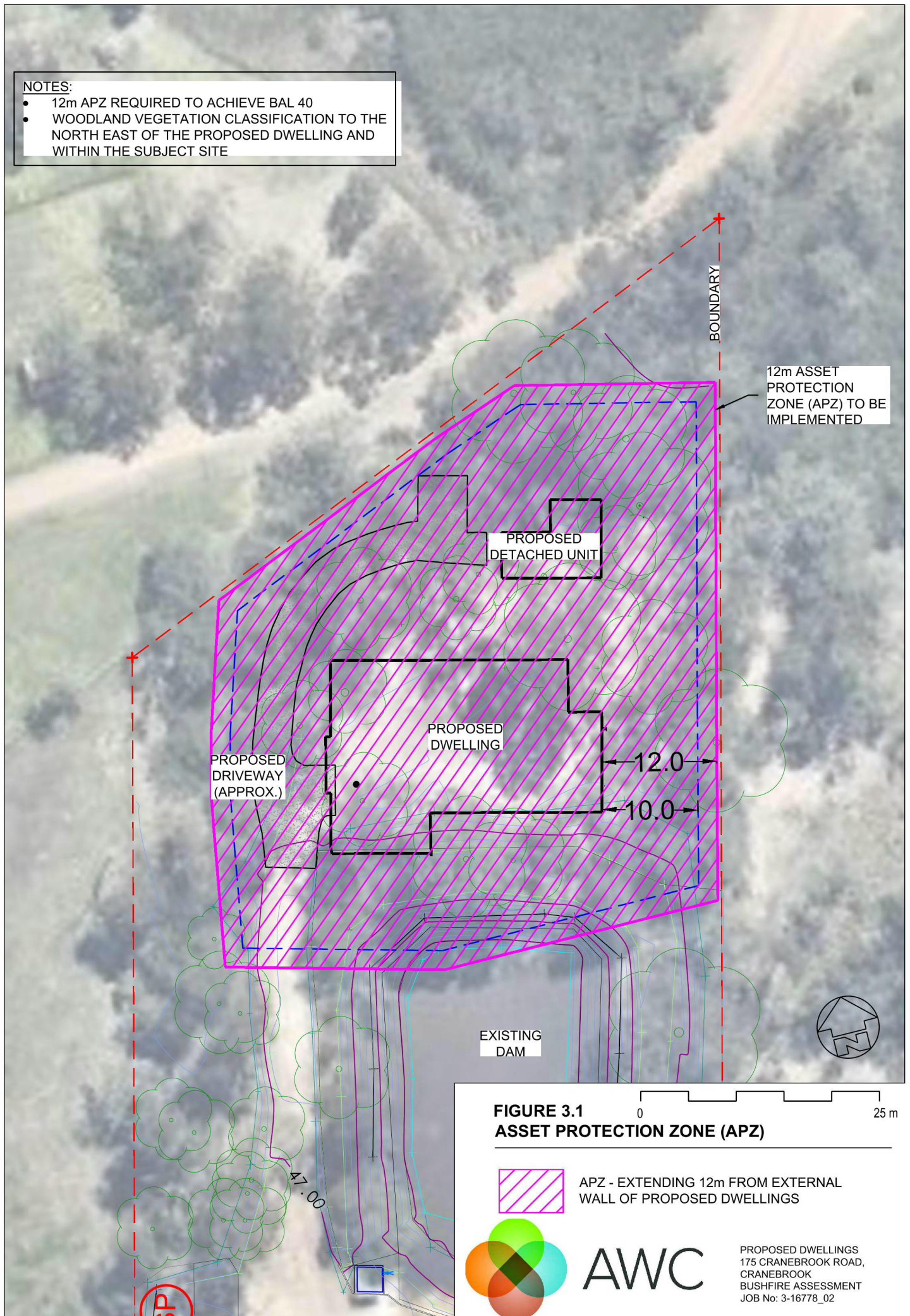
The primary vegetation hazard to the proposed dwellings is classified as woodland (refer Figure 2-1), therefore the APZ requirement for the proposed dwellings is 10m. This incorporates a 10m Inner Protection Area (IPA) with no Outer Protection Area (OPA). This means the total APZ is to be managed as an IPA in accordance with PBP 2006 (refer Table 3-1).

Table 3-1 APZ: Inner Protection Area requirements

Specifications and management - IPA	
Location	The IPA extends from the edge of the OPA to the development.
Purpose	Ensures the presence of fuel which could become involved in fire is minimised.
Depth	Varies from 10 to 100 metres.
Fuel Loading	Minimum fine fuel at ground level which could be set alight by bushfire.
Vegetation Requirements	Vegetation does not touch or overhang the building; Trees are well spread out and do not form a continuous canopy; Trees are not species that retain dead material or deposit excessive quantities of ground fuel in a short period; and Trees are located far enough away from the house so that they will not ignite the house by direct flame contact or radiated heat emissions.
Uses Within the Area	Tennis courts, swimming pools and gardens are permitted. Woodpiles, wooden sheds, combustible material storage areas, large quantities of garden mulch, stacked flammable building materials are not permitted.
Maintenance	The area should be regularly mowed and all fuel removed eg. fallen branches, leaf build-up.

NOTES:

- 12m APZ REQUIRED TO ACHIEVE BAL 40
- WOODLAND VEGETATION CLASSIFICATION TO THE NORTH EAST OF THE PROPOSED DWELLING AND WITHIN THE SUBJECT SITE



3.3 Property Access Roads

All property access roads must comply with Section 4.1.3 and Section 4.2.7 of PBP (refer Table 3-4). The current access is a compacted gravel road for a distance of approximately 220m, then reverts to an unsealed road of 3m width.

While no other formal property access occurs, there is an opportunity to access the adjacent property access to the west and northern boundaries in the event of a bushfire (refer Figure 3-1).

Table 3-2 Performance criteria and acceptable solutions for property access roads in accordance with PBP

Performance Criteria	Acceptable Solutions
<i>Access to properties is provided in recognition of the risk to firefighters and/or evacuating occupants.</i>	<i>At least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200 metres from a public through road.</i>
<i>The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles.</i>	<i>Roads do not traverse a wetland or other land potentially subject to periodic inundation (other than flood or storm surge)</i>
<i>All weather access is provided.</i>	<i>A minimum carriageway width of four metres for rural-residential areas, rural landholdings or urban areas with a distance of greater than 70 metres from the nearest hydrant point to the most external part of a proposed building (or footprint).</i>
<i>Road width and design enable safe access for vehicles</i>	<i>In forest, woodland and heath situation, rural property access roads have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six metres at the passing bay.</i>
	<i>A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches.</i>
	<i>Internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle within a minimum 12 metre outer radius.</i>
	<i>Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.</i>
	<i>The minimum distance between inner and outer curves is six metres.</i>
	<i>The crossfall is not more than 10 degrees.</i>
	<i>Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degree for unsealed roads</i>

The proposed access meets all the criteria above apart from the provision of a secondary access since the dwelling will be more than 200m from Cranebrook Road. There is however uninterrupted access to the northern boundary from Lot 6.

3.4 Utilities

Provision of services for the dwelling must comply with acceptable solutions to address performance criteria of PBP as shown at Table 3-6. The proposed dwellings will have a pool which can be drawn upon in bushfire situations to fight fire by the RFS and/or the owner. Additionally, the existing dam to the south of the proposed dwellings can be used for this purpose.

Table 3-3 Performance criteria and acceptable solutions for provision of services in accordance with PBP

Performance Criteria	Acceptable Solutions
<i>Reticulated water supplies</i> <i>Water supplies are easily accessible and located at regular intervals</i>	<i>Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.</i> <i>Fire hydrant spacing, sizing and pressures comply with AS2419.1 – 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.</i> <i>Hydrants are not located within any road carriageway.</i> <i>All above ground water and gas service pipes external to the building are metal, including and up to any taps.</i> <i>The provisions of parking on public roads are met.</i>
<i>Electricity Services</i> <i>Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings.</i> <i>Regular inspection of lines is undertaken to ensure they are not fouled by branches.</i>	<i>Where practicable, electrical transmission lines are underground.</i> <i>Where overhead electrical transmission lines are proposed:</i> <i>lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and</i> <i>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).</i>
<i>Gas Services</i> <i>Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.</i>	<i>Reticulated or bottled is installed and maintained in accordance with AS1596 and the requirements of relevant authorities. Metal piping is to be used.</i> <i>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.</i> <i>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.</i> <i>Polymer sheathed flexible gas supply lines to gas metres adjacent to buildings are not used.</i>

3.5 Siting, design and construction standards

3.5.1 Siting and design

With regard to siting and design PBP states that “...buildings are sited and designed to minimise the risk of bushfire attack”. Acceptable Solutions to meet these criteria is that buildings are designed and sited in accordance with the siting and design principles in Section 4.3.5 of PBP as shown at Table 3-7.

Table 3-4 Siting and design principles and their application to the proposal

Principle
<i>The higher the building the greater its exposure of the building to radiant heat, wind turbulence and ember attack</i> <i>Avoid building on ridge tops and saddles</i> <i>Build on level ground whenever possible</i> <i>Where buildings must be constructed on sloping land, they are built on cut-in benches</i> <i>Avoid raised floors, utilise concrete slabs</i> <i>Reduce the bulk of the building (height and width) facing the bushfire hazard</i>
<i>Locating the habitable buildings near the property entrance for easier access/egress</i>
<i>Some cladding material such as brickwork are more robust</i>
<i>Intricate forms of design can trap debris and influence wind turbulence. Re-entrant corners readily accumulate debris.</i> <i>Simplify the design of buildings to reduce the number of re-entrant corners.</i> <i>Provide more simplified rooflines.</i>
<i>The use of box gutters, flat roof and variation in the angle of the roof should be avoided.</i> <i>Guttering and gutter valleys being:</i> <i>a) installed with gutter guarding having a flammability index of not more than 5, when tested to AS 1530.2</i> <i>...b)...limited to the lowest possible levels (bottom fascia) to improve access and maintenance; and</i> <i>...c) covered with a mesh of aluminium bronze or stainless steel with a maximum aperture of 5 mm fixed to the outer edge of the gutter (or valley) and be located beneath the second (or higher) row of tiles or roof sheeting for a distance of 250mm</i>
<i>Some design features can enhance the protection of a building, including limiting glazing on exposed façade and providing barriers (eg. BBQ areas, courtyards, fenced off areas for gardens etc).</i>
<i>When garages are located under the roofline of the main building, garage doors are to be ember proofed and employ ember traps or brushes to prevent entry of embers into the garage area.</i> <i>Where a garage or other attached structure has a common roof space with a building required to comply with any level of construction, the entire garage, carport, veranda or similar roofed structure is assessed as part of the building and must comply with the relevant construction requirements as if it were the subject building,</i>
Adjacent structures <i>Where any garage, carport, veranda or similar roofed structure is not attached to a building required to comply with a level of construction, the entire garage, carport, veranda or similar roofed structure is to be—</i> <i>(a) assessed as if it were a building required to comply with the appropriate level of construction; or</i> <i>(b) separated by a distance of greater than 10 metres from the building required to comply with the appropriate level of construction.</i>
Garage Doors <i>Garage doors are to be:</i> <i>(a) tight fitting to door frames and jambs with gaps no greater than 5 mm when closed; and</i> <i>(b) where a roller shutter door is installed it shall be provided with an ember protection device at the top of the shutter that captures any embers where a gap of 2.0 mm on the external surface exists.</i>

3.5.1 BAL rating for residential development

Following on from APZ requirements, setbacks are required to protect a building from bushfire attack with construction materials needing to achieve a specified bushfire attack level (BAL) rating. BAL ratings range between BAL 12.5, the lowest level to BAL-FZ (flame zone), with BAL 19 and BAL 29 and BAL 40 the intermediate values.

For the proposed dwellings, BAL 29 and BAL 40 have been considered with setbacks provided within Table 3-5, following Table 2.4.2 of *Australian Standard 3959-2009 Construction of Buildings in Bush Fire Prone Areas* (AS 3959:2009 hereafter). Where greater separation from hazardous vegetation is achieved, construction levels may be reduced accordingly.

Table 3-5 Setbacks required to achieve BAL construction standards – FDI 100 as per AS3959-2009

Vegetation community	Slope	BAL 29	BAL 40
Woodland	Upslope/Flat	16-<24m	12-<16m

When comparing APZ and BAL requirements, the larger of the two values would be adopted. As the adjoining vegetation is classed as 'woodland', a setback of 12-16m is required to achieve BAL 40 and 16-24m for BAL 29 to apply.

The positioning of the proposed dwellings only allows a separation of 12m from the eastern and northern boundaries. It is recommended that a 12m APZ is implemented in order to achieve the BAL40 rating.

3.5.2 Construction standards

Differences between construction standards stated in PBP and those in AS3959:2009 are identified in 'Addendum: Appendix 3' (RFS, 2010). The Addendum aligns the setbacks stated in PBP with the 'deemed to satisfy' (DTS) separation requirements in the Building Code of Australia (BCA), which references AS3959-2009.

The BAL at the site is as follows:

- BAL-40: risk very high; construction elements expected to be exposed to a radiant heat flux no greater than 40 kW/m².

3.6 Landscaping and property maintenance

3.6.1 Landscaping

The following principles from PBP should be incorporated into future landscaping designs:

- Prevent flame impingement on dwellings
- Provide a defensible space for property protection
- Reduce fire spread
- Deflect and filter embers
- Provide shelter from radiant heat
- Reduce wind speed

This can be achieved via appropriate species selection, plant location, planting density and ongoing maintenance.

3.6.2 Vegetation management



Vegetation management is the responsibility of property owners and should, as per PBP, include:

- *Maintaining a low cut lawn*
- *Keeping areas around the garden free of fuel*
- *Utilising non-combustible fencing materials*
- *Breaking up tree and shrub canopies by defining garden beds*
- *Using non-flammable mulch*
- *Ensuring tree branches do not overhang roofs*
- *Ensuring tree canopies are not continuous*
- *Installing windbreaks in the direction from which fires are likely to approach*

3.6.3 Property maintenance

Property maintenance should, as per PBP, include:

- *Removal of material such as litter from the roof and gutters*
- *Ensure painted surfaces are in good condition with decaying timbers being given particular attention to prevent the lodging of embers within gaps*
- *Check pumps and water supplies are available and in working order*
- *Driveways are in good condition with trees not being too close and forming an obstacle during smoky conditions*
- *Check tiles and roof lines for broken tiles or dislodged roofing materials*
- *Screens on windows and doors are in good condition without breaks or holes in flyscreen material and frames are well fitting into sills and window frames*
- *Drenching or spray systems are regularly tested before the commencement of the fire season*
- *Hoses and hose reels are not perished and fittings are tight and in good order*
- *Doors are fitted with draught seals and well maintained*
- *Mats are of non-combustible material or in areas of low potential exposure*
- *Woodpiles, garden sheds and other combustible materials are located well away from the house*
- *Trees and other vegetation in the vicinity of power lines and tower lines should be managed and trimmed in accordance with the specifications in "Vegetation Safety Clearances" issued by Energy Australia (NS179, April 2002).*

4 Conclusion and Recommendations

AWC has completed an assessment of bushfire risk associated with proposed new dwellings at 175 Cranebrook Road, Cranebrook and has determined the following:

- For the purpose of determining and APZ, the vegetation is classified as woodland and a minimum setback of 10m is required.
- The corresponding BAL rating is BAL 40 with a 12-16m setback.
- Although PBP (2006) provides that a 10m APZ is required, the BAL40 has a minimum setback of 12m, thus it is proposed that the APZ is 12m.
- These setbacks can be achieved within the subject site without reliance upon vegetation management on adjoining lots.
- The proposed dwellings are greater than 200m from Cranebrook Road and a secondary fire access/egress may be required. It is proposed this access/egress is via Lot 6 to the north.

4.1 Recommendations

Any vegetation management is subject to an ecological assessment. The presence of endangered vegetation and flora species may mean that additional permits from Penrith City Council and/or other agencies are required.

A bushfire evacuation plan shall be developed for the proposed dwellings such that occupants are fully aware of risks associated with bushfire attack and appropriate responses.

5 References

Keith, D. (2004) Ocean Shores to Desert Dunes. Department of Environment and Conservation, Sydney.

NSW Rural Fire Service (2006) Planning for Bushfire Protection. Produced by NSW Rural Fire Service in cooperation with the Department of Planning.

NSW Rural Fire Service (2010) Addendum: Appendix 3 Planning for Bushfire Protection. NSW Rural Fire Service.

NSW Rural Fire Service (2011) Holiday Parks Fast Fact 1/08. NSW Rural Fire Service.

NSW Rural Fire Service (2014) Community Resilience Fact Sheet 1/14 - Ecotourism. NSW Rural Fire Service.

Standards Australia (2009) Construction of buildings in bushfire-prone areas, AS3959, Third Edition 2009, incorporating Amendment 1. Standards Australia International, Sydney.



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