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BUSHFIRE ASSESSMENT

For the Proposed Rezoning

At

**39 DELL ROAD, WEST GOSFORD, NSW
(Lot 6 DP 3944)**

FEBRUARY 2017



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EXECUTIVE SUMMARY

A bushfire protection assessment has been undertaken for the proposed rezoning of the property known as 39 Dell Road, West Gosford. The proposal is to rezone the land from “Deferred Matter” (previously 7(a) Scenic Protection - Rural Small Holdings) under Gosford LEP, 2014 to IN1 –General Industrial to accommodate a commercial/industrial development on the eastern portions of the site whilst the vegetated areas on the western portions are proposed to be zoned E2 – Environmental Conservation.

This report identifies matters for consideration for the planning proposal and highlights the required bushfire protection measures, including asset protection zones (APZs), for future development in accordance *Planning for Bush Fire Protection 2006 (PBP)* and the Rural Fire Service (RFS) public document known as *Community Resilience Practice Note 2/12 Planning Instruments and Policies*.

The key principle for the proposal is to ensure that future development is capable of complying with *PBP*. Planning principles for the proposal include the provision of adequate access including the establishment of adequate asset protection zones (APZs) for future development within the site and the introduction of controls which avoid placing inappropriate developments in hazardous areas and placement of combustible material in APZs.

Our assessment found that a bushfire can potentially affect the proposed rezoning area from vegetation existing within the site to the south and from vegetation existing on adjoining lands to the north, east and west. The bushfire risk posed to the rezoning proposal can however be mitigated if appropriate bushfire protection measures (including APZs) are put in place and managed in perpetuity.

The assessment has concluded that future development on site will provide compliance with the planning principles of *PBP*.

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DOCUMENT TRACKING

Project Location	39 Dell Road, West Gosford
Date	14/02/2017
Prepared by	Kristan Dowdle
Reviewed by	Anthony Clarke
Approved by	Kristan Dowdle
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1.0 INTRODUCTION

This report forms part of the planning proposal for the rezoning to occur on the property known as 39 Dell Road, West Gosford. This report addresses the planning principles identified in Section 2.3 of *Planning for Bushfire Protection (2006)* (PBP) and demonstrates that the proposal satisfies the aim and objectives of PBP. This report provides a framework of strategies so that a future development can comply with PBP.

This assessment aims to consider and assess the bushfire hazard and associated potential threats relevant to the future land usage potential of the site and to outline the minimum mitigative measures which would be required in accordance with the provisions of the *PBP*. This assessment has been made based on the bushfire hazards in and around the subject site at the time of the site inspection (November 2016).

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

More specifically, the objectives are to:

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

The *Environmental Planning and Assessment Act 1979 (EP&A Act)* section 117 Direction No 19 requires councils to consult with the Commissioner of the RFS under section 62 of the EP&A Act, and to take into account any comments by the Commissioner and have regard to the planning principles of Planning for Bushfire Protection.

This report provides adequate information in relation to bushfire constraints for the site.

1.1 Proposal

The property is currently zoned as 'Deferred Matter under' Gosford LEP 2014 and is zoned as Conservation 7(a) under Interim Development Order No.122. The objective/intended outcome of the planning proposal is for the rezoning of the disturbed eastern portions to 'IN1 – *General Industrial*' whilst the remaining areas will be rezoned to will involve 'E2 – *Environmental Conservation*' (See Figure 3). The E2 areas are proposed to be dedicated to Council as part of the Coastal Open Space System.

The rezoning of the land to IN1 – General Industrial will subsequently allow for industrial/commercial development permitted under that zoning.

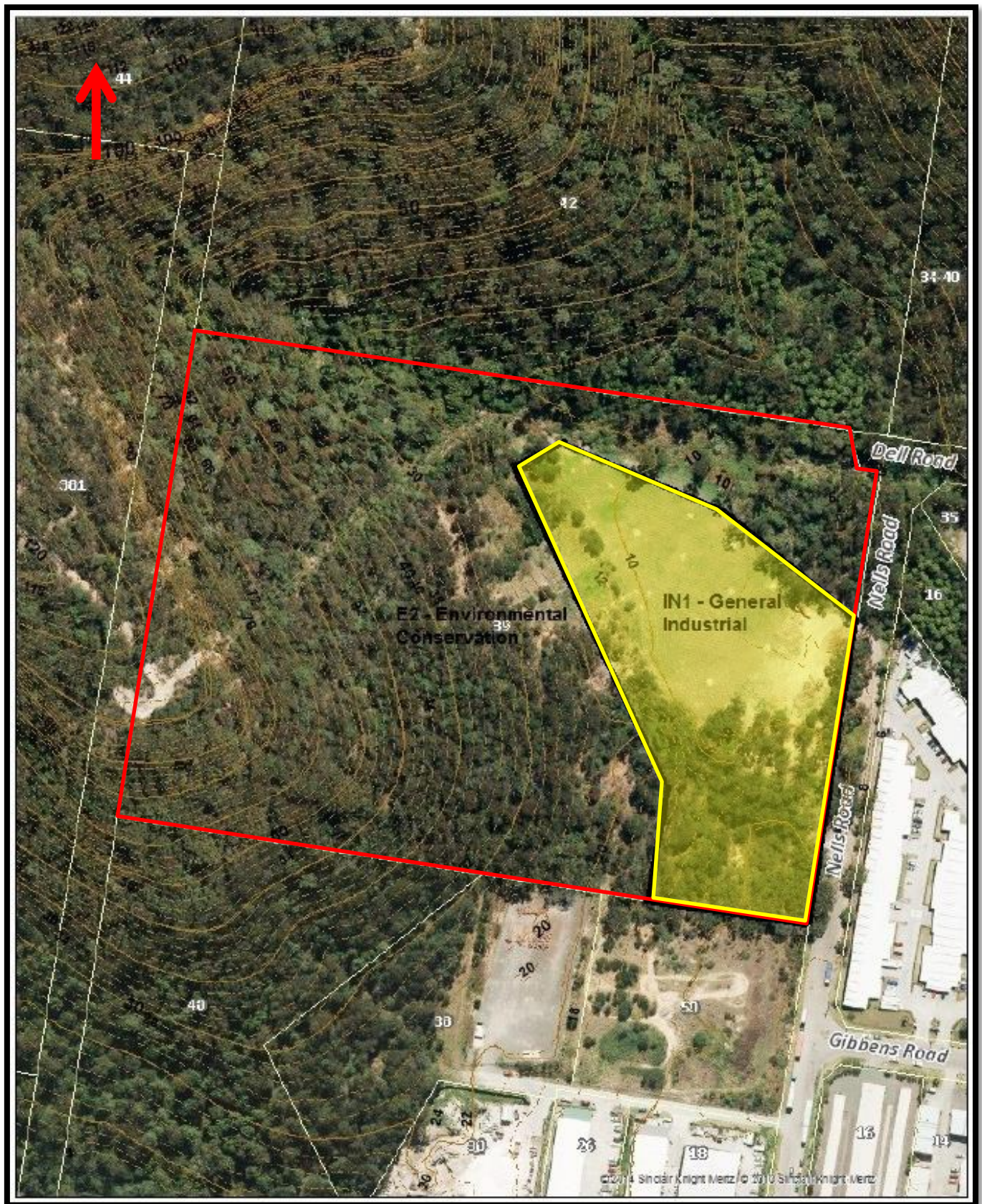


Figure 1: Proposed Zoning (site bordered in red)
Source: Central Coast Council, 2017

2.0 OBJECTIVES AND SCOPE OF THE ASSESSMENT

The scope and purpose of this assessment is to review the overall bushfire threat to the development subject and to review the capability of any future land development to provide a safe environment. This assessment will include information on ability of the subject site to comply with the requirements of PBP. The primary objectives of this report are to:

- Outline the degree of bushfire hazard currently affecting the site;
- Outline the degree to which any identified bushfire hazard can be managed;
- Indicate the potential of the site to provide a safe development;
- Provide recommendations for the provision of Asset Protection Areas and Construction standards;
- Review the accessibility of the site; and
- Identify any pre-existing bushfire protective measures such as roads and creeks.

In order to achieve the above objectives the following work was conducted:

- Compilation and review of site information including a site detail plan, topographic map, aerial photograph and site photographs;
- Review of appropriate guidelines including Australian Standard AS3959-2009 '*Construction of buildings in Bushfire Prone Areas*' and PBP;
- Inspection of the proposed development site and surrounding areas to assess the topography, slopes, aspect, drainage vegetation and adjoining land usage;
- Identification of any existing bushfire protection advantages such as roads, creeks and sporting ovals; and
- Visual appraisal of bushfire hazard and risk to the site.

3.0 LEGISLATION

Local Planning Directions contain statutory requirements regarding the principles, aims, objectives or policies to be achieved, or given effect to, in the preparation of draft local environmental plans, under Section 117(2) of the EP&A Act. The objectives of Ministerial Direction 4.4 are;

- a) *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*
- b) *to encourage sound management of bush fire prone areas.*

The provisions of this directive apply to all councils that are required to prepare a bush fire prone land map under section 146(2) of the EP&A Act, or, until such a map has been certified by the Commissioner of the NSW Rural Fire Service, a map referred to in Schedule 6 of the Act.

Section 2.3 of *PBP* stipulates that if a proposed amendment to land use zoning or land use affects a designated bushfire prone area, Section 117(2) Direction No 4.4 of the *EP&A Act* must be applied.

As the development involves the rezoning for the intended construction of an industrial type buildings, these development are not legally subject to PBP or Section 79BA of the *Environmental Planning and Assessment Act*. However, PBP states;

“The BCA does not provide for any bush fire specific performance requirements and as such AS 3959 does not apply as a set of ‘deemed to satisfy’ provisions. The general fire safety construction provisions are taken as acceptable solutions, but the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management”

This report will form the basis for providing an assessment of the bushfire protection requirements for the development and will provide recommendations on the provision of defensible spaces, accessibility, water supplies and construction standards of developments within the site.

In the preparation of a planning proposal the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 56 of the Act, and prior to undertaking community consultation in satisfaction of section 57 of the Act, and take into account any comments so made

4.0 SITE IDENTIFICATION AND DESCRIPTION

4.1 Site Identification and Location

The subject site is known as 39 Dell Road, West Gosford (Lot 6 DP 3944) and is within the Local Government Area (LGA) of Central Coast Council. The site itself contains predominately contains unmanaged vegetation throughout with cleared areas on the eastern portions (of which the proposed land rezoning and future industrial development is to occur) and an easement for powerlines on the western portions. The property is provided access via a dirt driveway that extends from Dells Road to the east.



Figure 2: Aerial photograph of site
Source: Nearmap, 2017

As detailed in Figure 2 above, the eastern portions of the property are cleared, whilst the remaining western portions are heavily vegetated. The planning proposal and future development will be confined to the eastern most portions of the large allotment.

4.2 Bushfire Prone Mapping

The site has been identified by Central Coast Council bushfire mapping as being within the 100m buffer (red) and containing Category 1 vegetation (orange) upon the western portion of the site. Figure 3 outlines this.

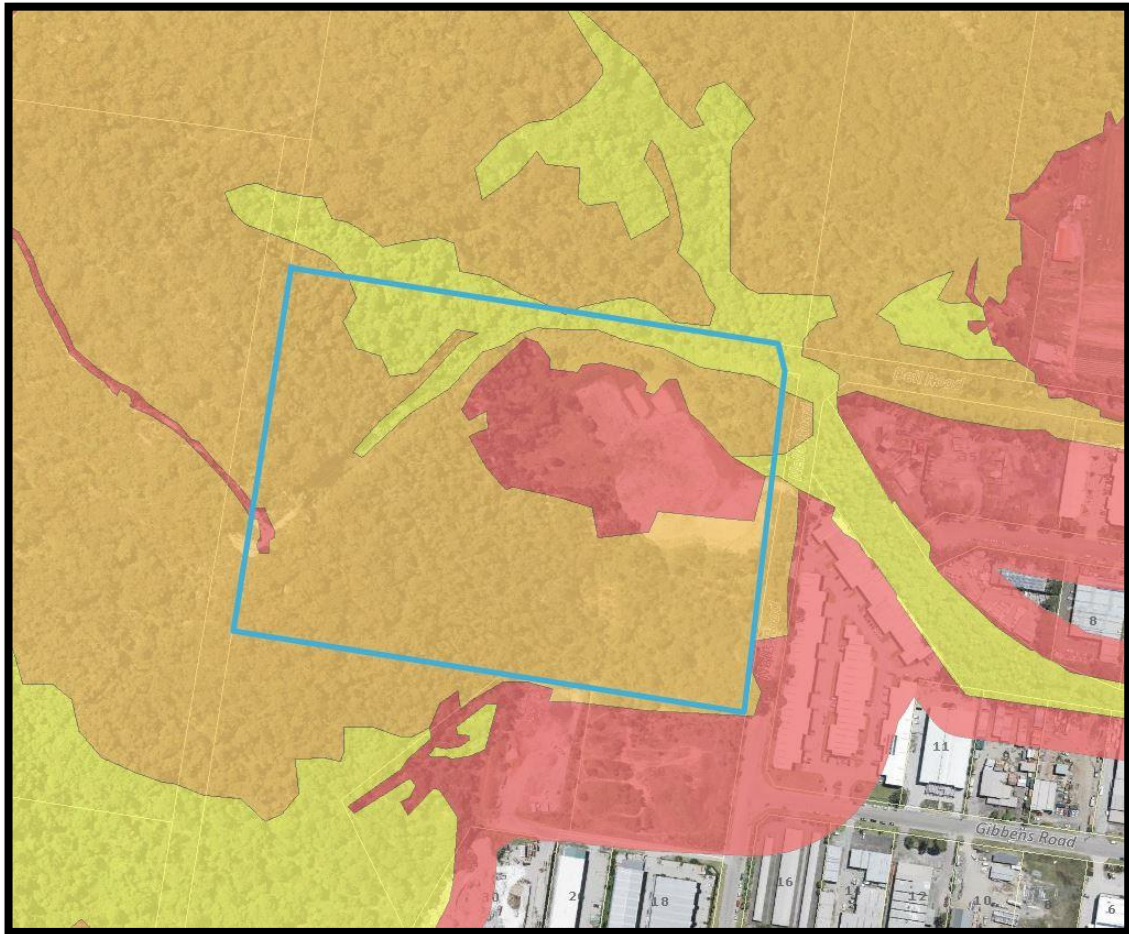


Figure 3: Bushfire Prone Mapping and location of site (outer most boundaries are highlighted in blue)
Source: Central Coast Council, 2017

5.0 SURROUNDING VEGETATION

The vegetation in and around the subject site's boundaries, to a distance of 140m, have been assessed in accordance with PBP.

5.1 Non-Hazard Aspects

South

To the south beyond cleared lands associated with the proposed rezoning area is a cleared and vacant industrial allotment. Therefore this aspect is deemed not to contain a bushfire hazard.

5.2 Hazard Aspects

North

To the north beyond cleared lands associated with the proposed rezoning area is vegetation that has been mapped as containing a mixture of *Coastal Narrabeen Moist Forest*, *Coastal Warm Temperate Rainforest* and *Hawkesbury Peppermint-Apple Forest*. PBP states 'Where a mix of vegetation types exist the type providing the greater hazard is said to predominate.' The predominant vegetation meets with the Keith (2004) description of a 'wet sclerophyll forest' therefore, in accordance with conversion table 3.7 in Addendum: Appendix 3 in PBP, the vegetation will be assessed as **Forest** as per AUSLIG 1999 Pictorial Analysis (AS 3959-2009).

East

To the east beyond cleared lands associated with the proposed rezoning area and a developed industrial/commercial allotment is a narrow strip of vegetation existing between industrial allotments and has been mapped as containing a mixture of *Alluvial Paperbark Sedge Forest*, *Coastal Warm Temperate Rainforest* and *Coastal Narrabeen Moist Forest*. This narrow strip provides a fire run of less than 50m directly towards the site and therefore in accordance with Section A2.3 in PBP can be considered as a 'remnant' and will be assessed as equivalent to a **Rainforest** and provides a bushfire risk to the proposal.

West

To the west beyond cleared lands associated with the proposed rezoning area is vegetation existing on steep east facing land that has been mapped as containing a mixture of *Hawkesbury Peppermint-Apple Forest*, *Coastal Narrabeen Moist Forest*, *Coastal Warm Temperate Rainforest*, and *Exposed Hawkesbury Woodland*. In accordance with conversion table 3.7 in Addendum: Appendix 3 in PBP, the vegetation will be assessed as **Forest** as per AUSLIG 1999 Pictorial Analysis (AS 3959-2009).



1.



2.



3.



4.



5.



6.

Note: See figure 2 for photograph location and direction.

6.0 EFFECTIVE SLOPE

PBP states in A2.3(b) that effective slope is;

'the gradient within the hazard (vegetation) which will most significantly influence the fire behaviour of the site having regard to vegetation class found.'

In regards to the site, the effective slopes for each hazard facing were inspected and calculated through a combination of topographic mapping from the Central Coast Council (1m contours) and ground truthing. The effective slope measured 100m from the proposed development for the hazard facing aspects are;

North: Flat/Up Slope

East: Flat/Cross Slope

West: >15° Up Slope (AS3959-2009 states 'where the effective upslope is greater than 15 degrees, then 15 degrees is used')

Figure 4 provides the topographic mapping for the site and surrounding area.

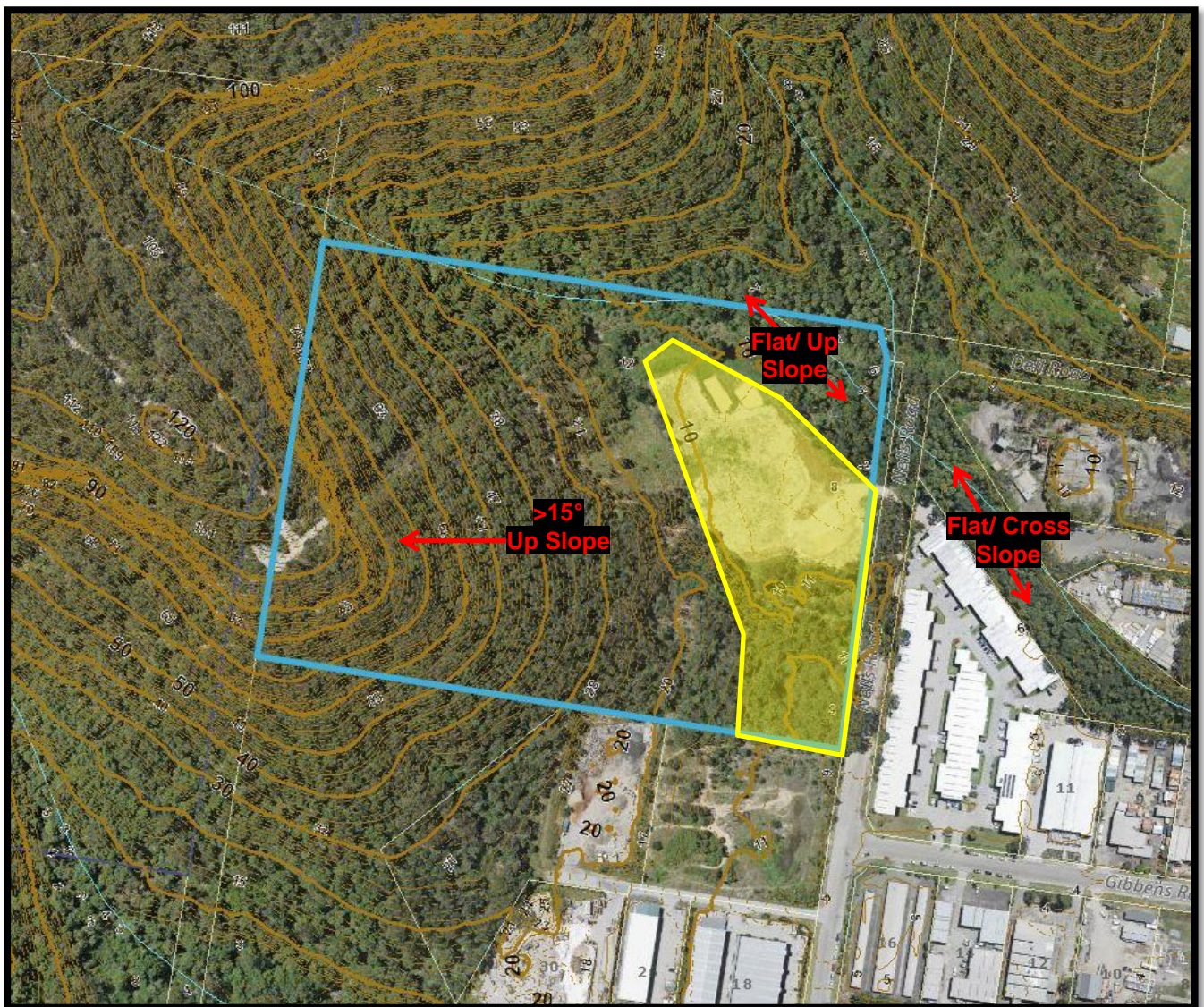


Figure 4: Topographic mapping and location of proposal
Source: Central Coast Council, 2017

7.0 BUSHFIRE RISK ASSESSMENT

7.1 Background Information

This bushfire assessment follows the methods and procedures recommended in PBP. This document provides concepts for (via a NSW State variation to the BCA) Class 1, 2, 3 buildings, Class 4 parts of buildings, some Class 10 structures and Class 9 buildings that are Special Fire Protection Purposes (SFPP) (AS3959-2009) in bushfire prone areas and gives guidance on planning and development control processes in relation to bushfire protection measures. The document also provides a methodology for determining setback and Bushfire Attack Levels (BAL) required in development for residential purposes that are found to fall in areas designated as bushfire-prone.

7.2 Asset Protection Zones

Appendix 2 of PBP provides a methodology for determining the Asset Protection Zone (APZ) required for any given proposed development. APZ's describe the distance between the proposed development (the asset) and the hazard (the bushland) and vary according to topography and vegetation type. PBP states that the primary purpose of an APZ is to ensure that a progressive reduction of bushfire fuels occurs between the bushfire hazard and any habitable structures within the development.

A summary of the APZ's required for each aspect of the proposed subdivision is provided in Table 1.

7.3 Bushfire Attack Level (BAL)

The bushfire risk to a property depends on the vegetation type, slope and proximity of vegetation to the proposed development, and can be classified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL FZ as outlined in AS3959-2009 and PBP. The level of bushfire attack then determines the construction standards necessary for the proposed development.

It is noted that the National Construction Code (NCC) does not provide AS3959-2009 as a deemed-to-satisfy building solution for industrial/commercial developments within bushfire prone areas. Therefore bushfire protection measures required for the proposed development are provided within the recommendations of this report with recognition of the surrounding site conditions.

Table 2 provides a summary of the bushfire attack assessment and the minimum required APZs in order to achieve compliance with BAL 29 in accordance with AS3959-2009 for any newly created allotment.

Table 1: Asset Protection Zone Summary

Aspect	Vegetation ¹ within 140m of development	Effective Slope of Land	APZ in accordance with Appendix 2 ²
North	Forest	Flat/Up Slope	20m
East	Rainforest (Remnant)	Flat/Cross Slope	10m
South	Managed Lands	-	-
West	Forest	>15° Up Slope	20m

Notes for Table 1:

- (1) Refer to AS3959-2009, Keith (2004) and Table A2.1 *PBP*
- (2) Refer to Appendix 2 in *PBP*

The minimum APZ's detailed in Table 2 can be accommodated and exceeded within the properties boundaries and provide compliance with *PBP*.

7.4 Aboriginal and Environmental Considerations

No aboriginal artefacts/cultural survey was conducted as part of the planning proposal.

An Ecological Assessment was conducted for the proposal and found that due to the planning proposal and subsequent industrial development occurring in previously cleared areas, the environmental impacts will be minimal.

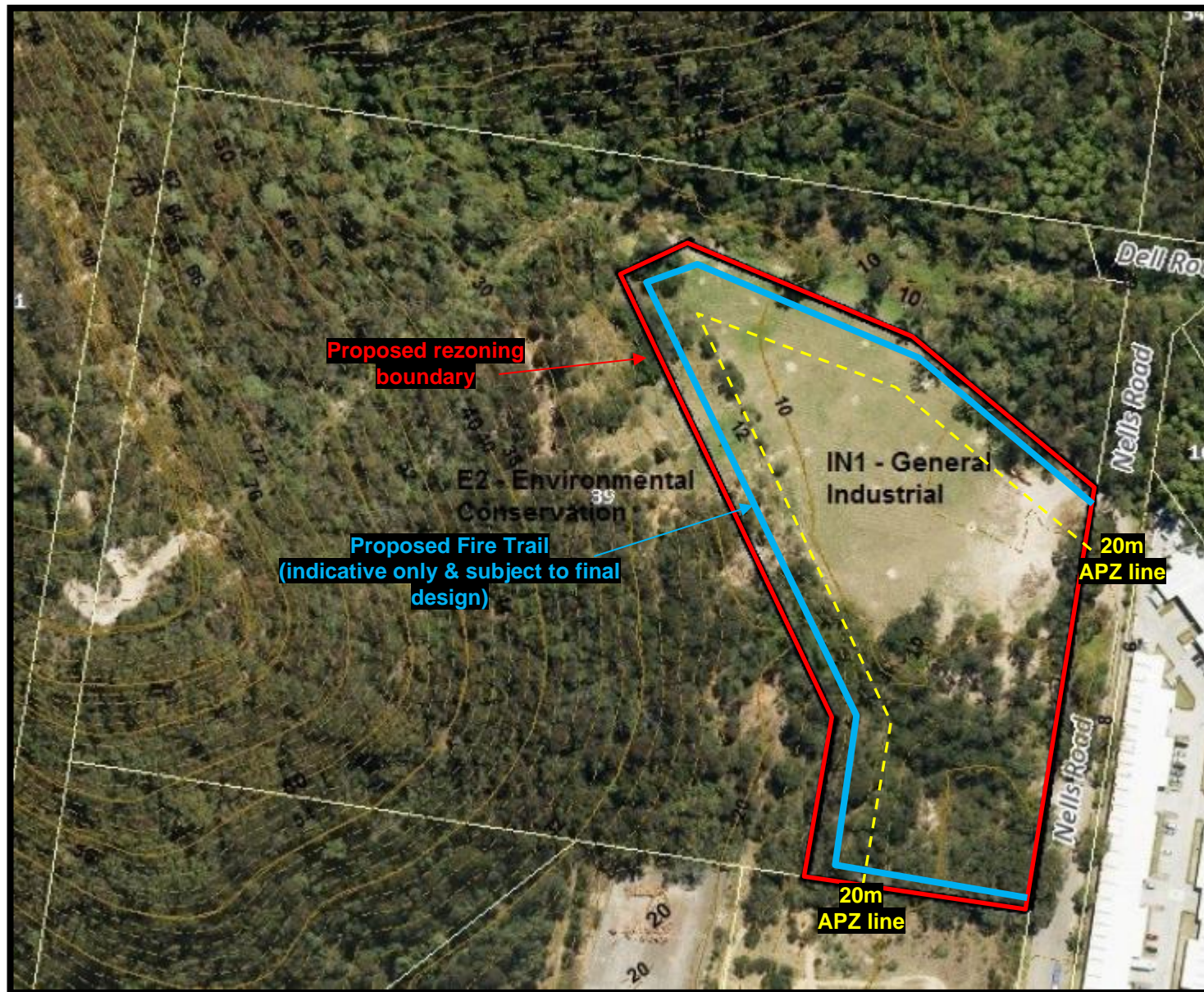


Figure 5: Bushfire Protection Site Plan (indicative only)

8.0 PERFORMANCE CRITERIA COMPLIANCE

The following table outlines the proposed subdivision's compliance or otherwise with each of the performance requirements and acceptable solutions provided in Section 4.1.3 of PBP.

8.1 Asset Protection Zones

In relation to Asset Protection Zones, PBP states;

'Intent of measures: to provide sufficient space and maintain reduced fuel loads, so as to ensure radiant heat levels at buildings are below critical limits and to prevent direct flame contact with a building.'

The following compliance table summarises the specific areas for performance requirements, acceptable solution and performance compliance of the proposal for APZ's

Table 2: Performance Compliance Table Summary for APZ's

PBP Performance Requirement	Acceptable Solution	Performance Compliance
In relation to asset protection zones: • radiant heat levels at any point on a proposed building will not exceed 29 kW/m ²	APZs are provided in accordance with Appendix 2. APZs are wholly within the boundary of the development site.	Yes - APZs comply with these minimum requirements. The APZ's required are located within the site.
APZs are managed and maintained to prevent the spread of a fire towards the building.	In accordance with the requirements of Standards for Asset Protection Zones (RFS 2005).	Yes - can be made a condition of consent.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.	The APZ is located on lands with a slope of less than 18°.	Yes-complies

8.2 Access-Public Roads

In relation to Public Roads, PBP states;

'Intent of measures: to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.'

No public roads are proposed for any future works.

8.3 Access- Property Access

In relation to Property Access, PBP states;

'Intent of measures: to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupants faced with evacuation.'

The following compliance table summarises the specific areas for performance requirements, acceptable solution and performance compliance of the proposal for Property Access

Table 3: Performance Compliance Table Summary for Property Access

PBP Performance Requirement	Acceptable Solution	Performance Compliance
Access to properties is provided in recognition of the risk to fire fighters and /or evacuating occupants.	At least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200m from a public through road.	Not required as dwellings will not be greater than 200m of public road.
the capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles.	The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles.	No bridges will be constructed
all weather access is provided.	All weather access is provided.	Yes - can be made a condition of consent
Road widths and design enable safe access for vehicles.	<p>A minimum carriageway width of 4m for dwellings with a distance of greater than 70m from the nearest hydrant point to the most external part of a proposed building.</p> <p><i>Note: No specific access requirements apply in a urban area where a 70m unobstructed path can be demonstrated between the most distant external part of a dwelling and the nearest part of the public access road that supports the operational use of firefighting vehicles (road speed limit <70kph)</i></p> <p>In forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide (min. width 6m).</p> <p>A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches.</p> <p>Internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum outer radius of 12m.</p> <p>Curves have a minimum inner radius of 6m and are minimal in number to allow rapid access/egress.</p> <p>The minimum distance between inner and outer curves is 6m.</p> <p>The cross fall is not more than 10°.</p> <p>Maximum grades for sealed roads do not exceed 15° and not more than 10° for unsealed roads.</p>	Yes – can be made a condition of consent.

8.4 Access- Fire Trails

In relation to Fire Trails, PBP states;

'Intent of measures: to provide suitable access for fire management purposes and maintenance of APZs.'

The following compliance table summarises the specific areas for performance requirements, acceptable solution and performance compliance of the proposal for Fire Trails

Table 4: Performance Compliance Table Summary for Fire Trail's

PBP Performance Requirement	Acceptable Solution	Performance Compliance
the width and design of the fire trails enables safe and ready access for firefighting vehicles	<p>a minimum carriageway width of four metres with an additional one metre wide strip on each side of the trail (clear of bushes and long grass) is provided.</p> <p>the trail is a maximum grade of 15 degrees if sealed and not more than 10 degrees if unsealed.</p> <p>a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches is provided.</p> <p>the crossfall of the trail is not more than 10 degrees.</p> <p>the trail has the capacity for passing by: reversing bays using the access to properties to reverse fire tankers, which are six metres wide and eight metres deep to any gates, with an inner minimum turning radius of six metres and outer minimum radius of 12 metres; and/or</p> <p>- a passing bay every 200 metres, 20 metres long by three metres wide, making a minimum trafficable width of seven metres at the passing bay.</p>	<p>Yes- can be made a condition of consent</p> <p>A fire trail will be recommended to implementaed surrounding the zoning area within the proposed Asset Protection Zone.</p>
fire trails are trafficable under all weather conditions. Where the fire trail joins a public road, access shall be controlled to prevent use by non authorised persons.	<p>the fire trail is accessible to firefighters and maintained in a serviceable condition by the owner of the land.</p> <p>appropriate drainage and erosion controls are provided.</p> <p>the fire trail system is connected to the property access road and/or to the through road system at frequent intervals of 200 metres or less.</p> <p>fire trails do not traverse a wetlands or other land potentially subject to periodic inundation (other than a flood or storm surge).</p> <p>gates for fire trails are provided and locked with a key/lock system authorized by the local RFS.</p>	<p>Yes - can be made a condition of consent</p>
fire trails designed to prevent weed infestation, soil erosion and other land degradation	<p>fire trail design does not adversely impact on natural hydrological flows.</p> <p>fire trail design acts as an effective barrier to the spread of weeds and nutrients.</p> <p>fire trail construction does not expose acid-sulphate soils.</p>	<p>Yes – can be made a condition of consent.</p>

8.5 Services – Water, electricity and gas

In relation to services, PBP states;

'Intent of measures: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building'

The following compliance table summarises the specific areas for performance requirements, acceptable solution and performance compliance of the proposal for Water Supplies, Gas and Electricity.

8.5.1 Water Supplies

Table 5: Performance Compliance Table Summary for Water Supply

PBP Performance Requirement	Acceptable Solution	Performance Compliance
Water supplies are easily accessible and located at regular intervals	<p>At Reticulated water supply to urban subdivision uses a ring main system for areas with perimeter roads</p> <p>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.</p> <p>Hydrants are not placed within any road carriageway</p> <p>All above ground water and gas pipes external to the building are metal, including and up to taps.</p> <p>The provisions of parking on public roads are met.</p>	Yes - can be made a condition of consent

8.5.2 Gas

Table 6: Performance Compliance Table Summary for Gas

PBP Performance Requirement	Acceptable Solution	Performance Compliance
Location of gas services will not lead to the ignition of surrounding bushland land or the fabric of buildings.	<p>Reticulated or bottled gas bottles are to be installed and maintained in accordance with AS 1596 – 2002 and the requirements of relevant authorities. Metal piping is to be used.</p> <p>All fixed gas cylinders are to be kept clear of flammable materials to a distance of 10m and shielded on the hazard side of the installation.</p> <p>If gas cylinders are to be kept close to the building the release valves must be directed away from the building and at least 2m away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal.</p> <p>Polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.</p>	Yes - can be made a condition of consent.

8.5.3 Electricity

Table 7: Performance Compliance Table Summary for Electricity

PBP Performance Requirement	Acceptable Solution	Performance Compliance
<p>Locations of electricity services limit the possibility of ignition of surrounding bushland or the fabric of buildings.</p> <p>Regular inspection of lines in undertaken to ensure they are not fouled by branches.</p>	<p>Where practicable, electrical transmission lines are underground.</p> <p>Where overhead electrical transmission lines are proposed:</p> <ul style="list-style-type: none"> • Lines are installed with short pole spacing(30m), unless crossing gullies, gorges or riparian areas: and • No part of a tree is closer to a power line than the distance set out in accordance with the specification in; Vegetation Safety Clearances issued by Energy Australia (NS179, April 2002). 	<p>Yes - can be made a condition of consent.</p>

9.0 CONCLUSION

It is clear from this investigation and assessment that the subject site located at 39 Dell Road, West Gosford is bushfire prone land. Therefore, any future development upon the site will have to be carried out in accordance with the specifications contained within PBP as assessed and presented within this report.

In summary, the following key recommendations have been generated to enable the any future land development to meet the relevant legislative requirements:

- A minimum Asset Protection Zones (APZ) of 20m is recommended from the bushfire hazard located on the northern and western portions of the site to any proposed building (See Figure 5)
- Water, electricity and gas supply is to comply with the acceptable solutions as provided within Section 4.1.3 of PBP
- A Fire trail to run along the northern and western boundary of the zoning line and be design/constructed in accordance with Section 4.1.3 (3) of PBP (See Figure 5)
- Internal access roads are to comply with the acceptable solutions provided within Section 4.1.3 (2) of PBP

As demonstrated the proposed rezoning offers compliance with the Rezoning Principles of PBP. This report should be referred to NSW Rural Fire Service for review.

For and on behalf of

Clarke Dowdle and Associates



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Disclaimer

PBP States;

Notwithstanding the precautions adopted, it should always be remembered that bushfire burn under a wide range of conditions and an element of risk, no matter how small always remains.

This Report provides measures and recommendations which would contribute to the amelioration of the potential impact of any bushfire upon this study area, they do not and cannot guarantee that the area will not be affected by bushfire at some time.

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APPENDIX A

ASSET PROTECTION ZONES

The following information has been taken from 'Planning for Bushfire Protection' (NSW Rural Fire Service and Planning Australia, 2001).

Introduction

Asset Protection Zones (APZ's) are required for any development adjoining a bushfire hazard area, whether it is a single building, a group of isolated buildings or an urban subdivision. The Asset Protection Zone acts as a buffer zone between the development and the hazard. The primary purpose of an Asset Protection Zone is to ensure that a progressive reduction of bushfire fuels occurs between the bushfire hazard and any habitable structures within the development. Where a bushfire hazard exists on or adjacent to the development site, an Asset Protection Zone is to be established on the hazard side of the development, as indicated in Figure 4.1.

It is the responsibility of Local Governments to ensure that the developments they approve, particularly subdivisions, do not offset bushfire protection measures to neighbouring areas. Bushfire protection measures that are essential to a development must occur on the site of the proposed development unless the most exceptional circumstances apply. This has been supported by various court rulings including *Scott Revay and Unn v. Wyong Shire Municipal Council 1994*, *Williams's v Blue Mountains City Council 1995* and *Spargo v Wollongong City Council 1997*.

Components of an Asset Protection Zone

The Asset Protection Zone (APZ) should incorporate:

- a) An Outer Protection Area (OPA); and
- b) An Inner Protection Area (IPA), which should include a perimeter road or reserve (which incorporates an access track).

a) **Outer Protection Area:**

(i) **Location:**

The Outer Protection Area is located adjacent to the hazard. Originally the Outer Protection Area would have been part of the bushfire hazard but has become an area where the fuel loadings are reduced.

(ii) **Purpose:**

The reduction of fuel in this area substantially decreases the intensity of an approaching fire and restricting the pathways to crown fuels; reducing the level of direct flame, radiant heat and ember attack on the Inner Protection Area.

(iii) Depth:

The depth of the OPA is largely dependent on the type of land use and vulnerability of the dwelling or persons affected. For residential development the OPA is usually 10m deep. For special protection development the OPA is usually 15m deep. Some variation may be possible in consultation with local fire authorities (RFS or NSWFB).

(iv) Fuel Loadings:

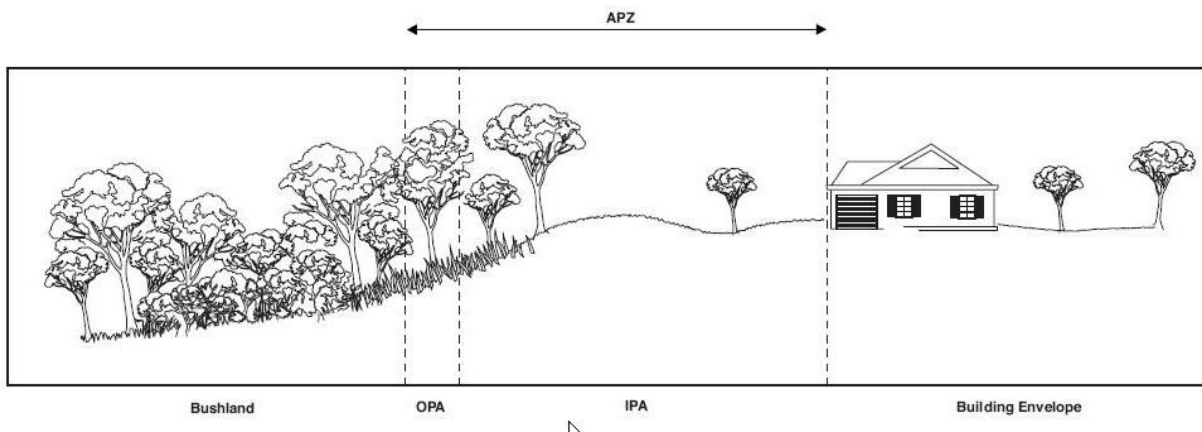
Within the Outer Protection Area any trees and shrubs should be maintained in such a manner that the vegetation is not continuous.

Fine fuel loadings within the OPA should be kept to a level where the fire intensity expected will not impact on adjacent developments. In the absence of any policy to the contrary, 8 tonnes per hectare of fuel is commonly used.

In grasslands, fuel height should be maintained below 10 centimetres.

b) Inner Protection Area:**(i) Location:**

The Inner Protection Area extends from the edge of the Outer Protection Area to the development (see below)

**(ii) Purpose:**

The Inner Protection Area ensures that the presence of fuels, which could become involved in a fire, are minimised close to a development. Therefore the impact of direct flame contact and radiant heat on the development is minimised.

(iii) Depth:

The depth of the IPA is dependent upon the slope of the land. The greater the slope, the greater the intensity of any approaching fire and hence the greater the depth required for the IPA.

(iv) Fuel Loadings:

It is more practical to determine the specifications of the IPA in terms of performance than in terms of a minimum fuel loading.

The performance of the Inner Protection Area must be such that:

- There is minimal fine fuel at ground level which could be set alight by a bushfire; and
- Any vegetation in the Inner Protection Area does not provide a path for the transfer of fire to the development – that is, the fuels are discontinuous.

The presence of a few shrubs or trees in the Inner Protection Area is acceptable provided that they:

- Do not touch or overhang the building;
- Are well spread out and do not form a continuous canopy;
- Are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
- Are located far enough away from the building so that they will not ignite the building by direct flame contact or radiant heat emission.

Woodpiles, wooden sheds, combustible material storage areas, large areas/quantities of garden mulch, stacked flammable building materials etc should not be permitted in the Inner Protection Area.