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BUSH FIRE ASSESSMENT

For the Proposed Rezoning

At

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

JUNE 2021



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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) 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 2019 (PBP)*.

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*.

CONTENTS

1.0 INTRODUCTION	4
1.1 Proposal	4
2.0 OBJECTIVES AND SCOPE OF THE ASSESSMENT	6
3.0 LEGISLATION	7
4.0 SITE IDENTIFICATION AND DESCRIPTION	8
4.1 Site Identification and Location	8
4.2 Bushfire Prone Mapping.....	9
5.0 BUSH FIRE HAZARD ASSESSMENT	10
5.1 Surrounding Vegetation	10
5.2 Effective Slope	11
6.0 FUTURE LAND USE BUSH FIRE RISK ASSESSMENT	12
6.1 Background Information	12
6.2 Asset Protection Zones and Bushfire Attack Level (BAL).....	12
6.4 Access and Egress	17
6.5 Services	18
7.0 CONCLUSION	20

TABLES

Table 1: Asset Protection Zone Summary.....	13
Table 2: PBP Access Requirements	17
Table 3: PBP Service Requirements.....	19

DOCUMENT TRACKING

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Prepared 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 4.4 of *Planning for Bushfire Protection (2019) (PBP)* and demonstrates that the proposal satisfies the aim and objectives of PBP. This report provides a framework of strategies so that 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 following 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 (June 2021).

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 the 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:

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

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 1). The E2 areas are proposed to be dedicated to Council as part of a Voluntary Planning Agreement (VPA).

The rezoning of the land to IN1 – General Industrial will subsequently allow for industrial/commercial development permitted under that zoning. No residential development will be permitted within the zoning.

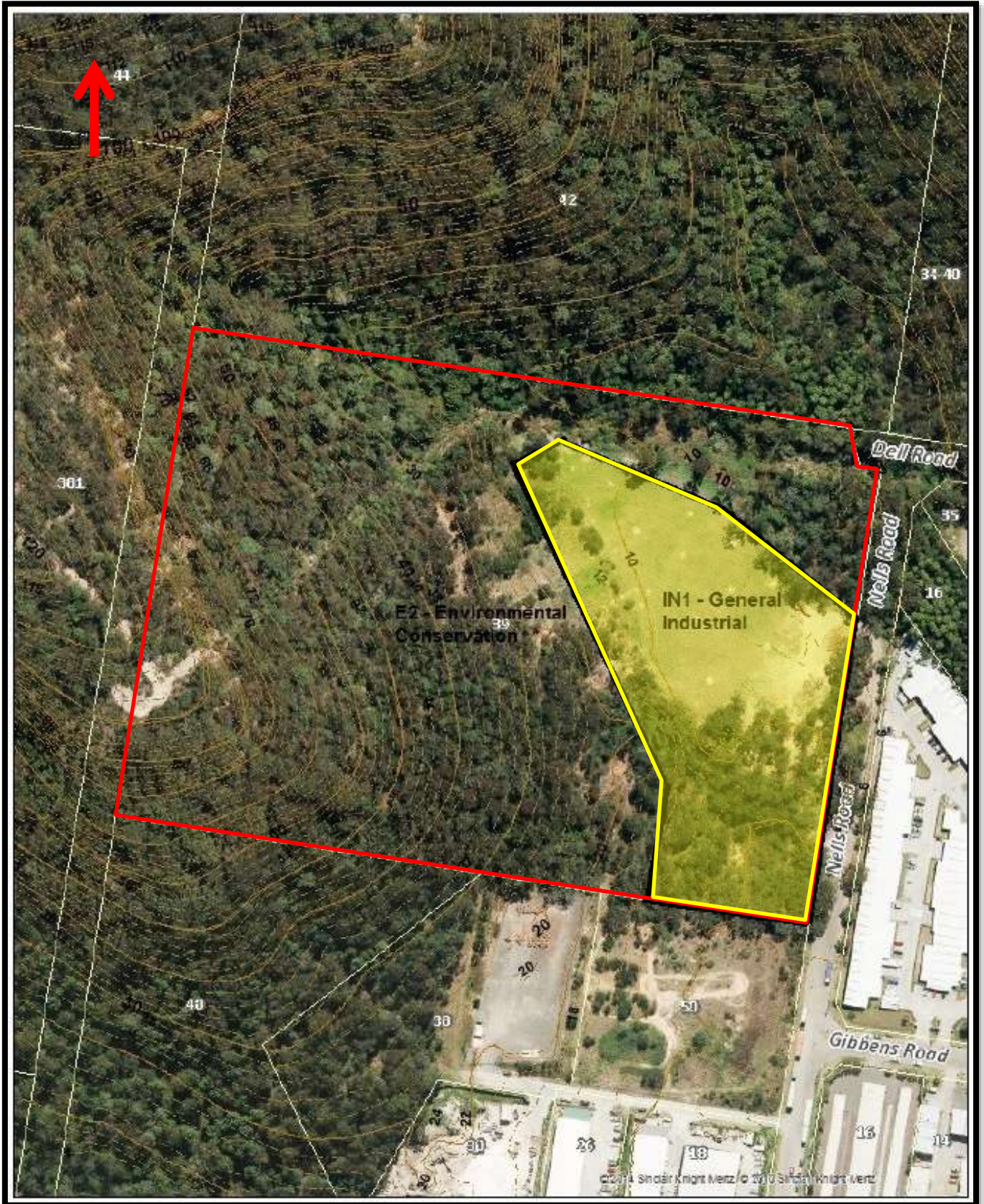


Figure 1: Proposed Zoning (site bordered in red)

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 the ability of the subject site to comply with the requirements of PBP. The primary objectives of PBP and this report are to:

- *afford buildings and their occupant's 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, minimises material ignition;*
- *ensure that appropriate operational access and egress for emergency service personnel and residents is available;*
- *provide for ongoing management and maintenance of bush fire protection measures; and*
- *ensure that utility services are adequate to meet the needs of firefighters.*

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 AS3959-2018 'Construction of buildings in Bushfire Prone Areas' and PBP;
- Inspection of the site and surrounding areas to assess the topography, slopes, aspect, drainage vegetation and adjoining land usage;
- Review of the existing and future access/egress arrangements
- 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

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) is the principal planning legislation for the state, providing a framework for the overall environmental planning and assessment of development proposals. Various legislation and instruments are integrated with the EP&A Act, including the *Rural Fires Act 1997* (RF Act).

When investigating the capability of bushfire prone land to be rezoned for residential purposes, councils must have regard to s.9.1 (2) Direction 4.4 – ‘Planning for Bushfire Protection’ of the EP&A Act. The objectives of 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.*

Direction 4.4 instructs councils on the bushfire matters which need to be addressed when drafting LEPs. This includes:

- Consultation with the Commissioner of the NSW RFS, and take into account any comments so made;
- Draft LEPs shall have regard to PBP; and
- Compliance with numerous bushfire protection provisions where development is proposed.

After the rezoning stage, future subdivision and the construction of buildings will also require assessment against PBP. These assessments are based on the final development applications for these proposals.

As the planning proposal relates to the rezoning of the land for commercial/industrial usage (no residential development- Class 5-8 Buildings), these developments are not legally subject to PBP or Section 4.14 of the *Environmental Planning and Assessment Act*. However, PBP states;

Whilst bush fire is not captured in the NCC for Class 5-8 buildings, the following objectives will be applied in relation to access, water supply and services, and emergency and evacuation planning:

- *to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;*
- *to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;*
- *to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and*
- *provide for the storage of hazardous materials away from the hazard wherever possible.*

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.

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 unmanaged vegetation throughout with cleared areas on the eastern portions (of which the proposed land rezoning and future industrial development are 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 the site
Source: Nearmap, 2021

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 easternmost portions of the large allotment.

4.2 Bushfire Prone Mapping

The site has been identified as being located upon Bush Fire Prone Lan (BFPL). Figure 3 outlines this.



Figure 3: Bushfire Prone Mapping and location of the site (highlighted in yellow)
Source: Central Coast Council, 2021

5.0 BUSH FIRE HAZARD ASSESSMENT

5.1 Surrounding Vegetation

The vegetation in and around the subject site's boundaries, to a distance of 140m, have been assessed under PBP (See Figures 4 & 5).

5.1.1 *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.

5.1.2 *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'. In accordance with Appendix 4 in PBP, the vegetation will be assessed as **Forest**.

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 meets with Section A1.11.1 Simplified approach in PBP for assessing *remnant bushland and narrow vegetation corridors*. Therefore, this narrow strip can be considered as a 'remnant' and will be assessed as equivalent to a **Rainforest**

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 Appendix 4 in PBP, the vegetation will be assessed as **Forest**.

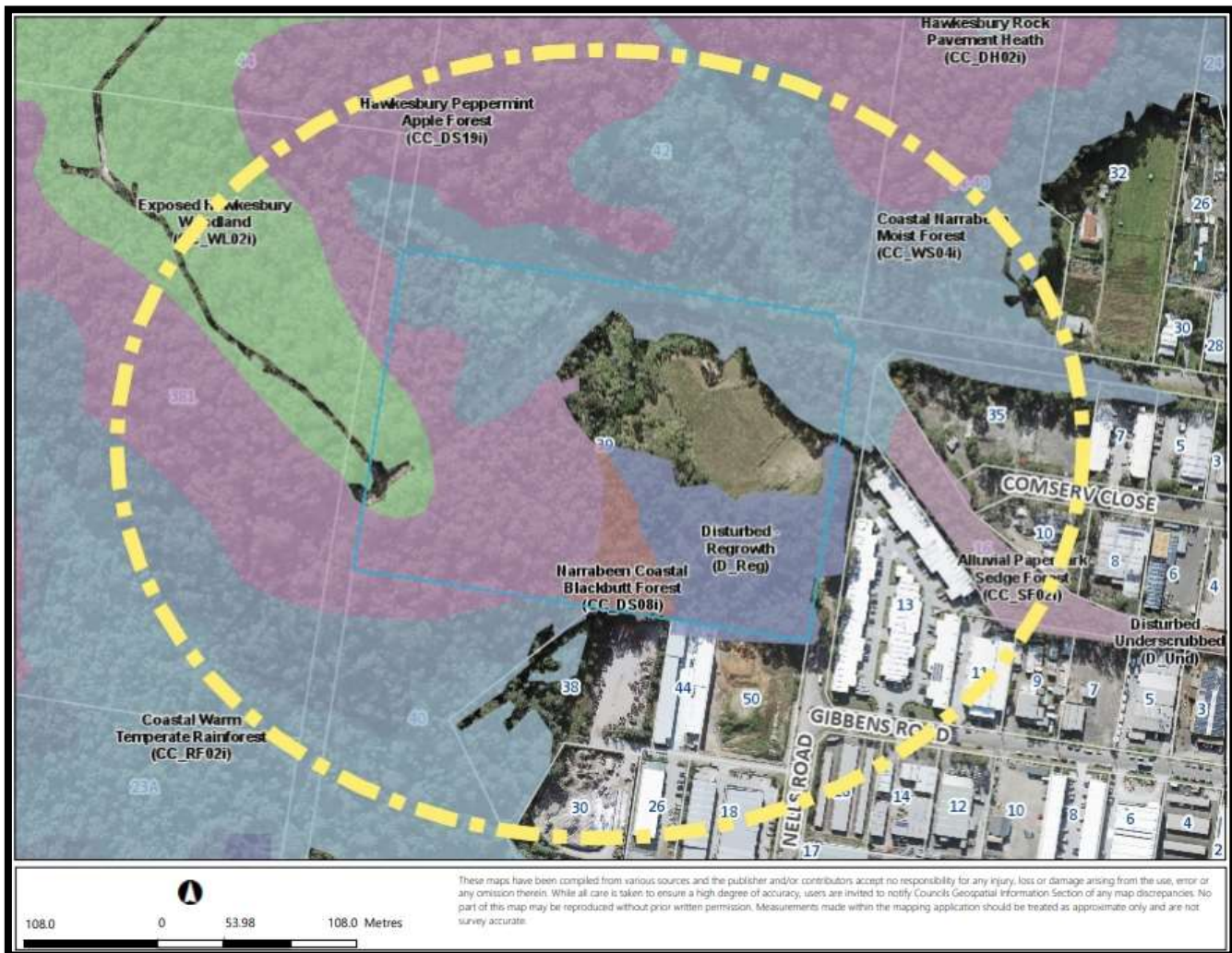


Figure 4: Vegetation Mapping
 Source: Central Coast Council, 2021

5.2 Effective Slope

PBP states in A1.5 that the effective slope is;

'The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the ultimate level of radiant heat flux. The effective slope is the slope of the ground under the hazard (vegetation). It is not the slope between the vegetation and the building (slope located between the asset and vegetation is the site slope).'

Figure 5 provides the topographic and vegetation mapping surrounding the proposal as sourced by NSW Spatial Services (2m contours). The effective slope measured 100m from the proposed development for the hazard facing aspects are (See Figure 5);

North: Flat/Up Slope
East: Flat/Cross Slope
West: >15° Up Slope

Figure 5 provides the topographic mapping for the site and surrounding area.

6.0 FUTURE LAND USE BUSH FIRE RISK ASSESSMENT

6.1 Background Information

The EP&A Act and the RF Act are the primary legislative instruments relevant to bushfire planning for the site. PBP is called up by these Acts as the subject land is mapped as bush fire prone land, and it is a critical guide in assessing the bushfire risk suitability of the proposal.

PBP outlines broad principles and assessment considerations for strategic planning. It also specifies that bushfire protection measures need to be considered at the strategic planning stage to ensure that future developments can comply with PBP (as specified in Chapters 5-8 of PBP 2019).

The aim and objectives of PBP (RFS 2019) below provide additional guidance for land use assessment within a planning proposal:

The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.

The planning relates to the rezoning creating a larger area of IN1 – *General Industrial* which will not include any future residential and/or Special Fire Protection Purpose (SFPP) development. As a result, and as stated APZ's are not legally applicable, however, the objectives of PBP will be followed.

6.2 Asset Protection Zones and Bushfire Attack Level (BAL)

An Asset Protection Zone (APZ) is a buffer zone between a bush fire hazard and buildings. The APZ is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, smoke and ember attack. The appropriate APZ distance is based on vegetation type, slope and the nature of the development.

The APZ provides a fuel-reduced, physical separation between buildings and bush fire hazards is a key element in the suite of bush fire measures and dictates the type of construction necessary to mitigate bushfire attack.

PBP does not specify APZ's for Class 5-8 buildings, however, it does state as an objective;

- *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;*

As a result of the above clause, to provide compliance with PBP, APZ's will be recommended to ensure any future development is not subject to flame contact (BAL FZ). The recommended APZ will achieve a radiant heat load no exceeding 40kWm², equating to BAL 40 under AS3959-2018 of which is deemed appropriate for industrial/commercial type construction.

Table 2 and Figure 7 provides a summary of the bushfire attack assessment and the minimum required APZs to achieve compliance with BAL 40 in accordance with PBP

Table 1: Asset Protection Zone Summary

Aspect	Vegetation ¹ within 140m of development	Effective Slope of Land	APZ Recommended/Provided ²	BAL Rating ³
North	Forest	Flat/Up Slope	18m	BAL 40
East	Rainforest (Remnant)	Flat/Cross Slope	>11m	BAL 40
South	Managed Lands	-	>100m	-
West	Forest	>15° Up Slope	18m	BAL 40

Notes for Table 1:

- (1) Refer to Keith (2004), AS 3959-2018 and *PBP*
- (2) APZ Recommended Table A1.12.5 in *PBP*
- (3) BAL's are in accordance with Table A1.12.5 in *PBP*

BUSH FIRE SITE PLAN

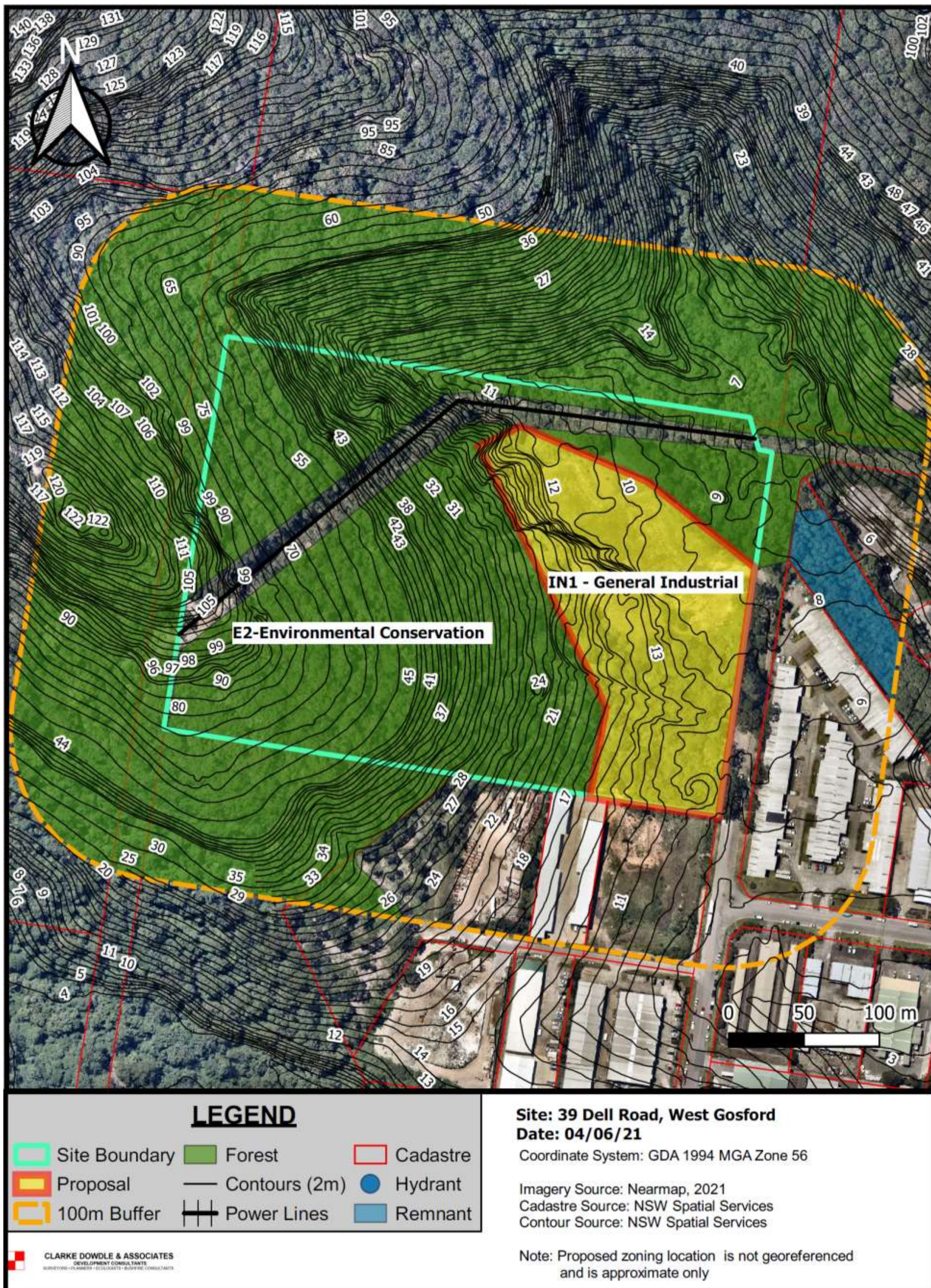
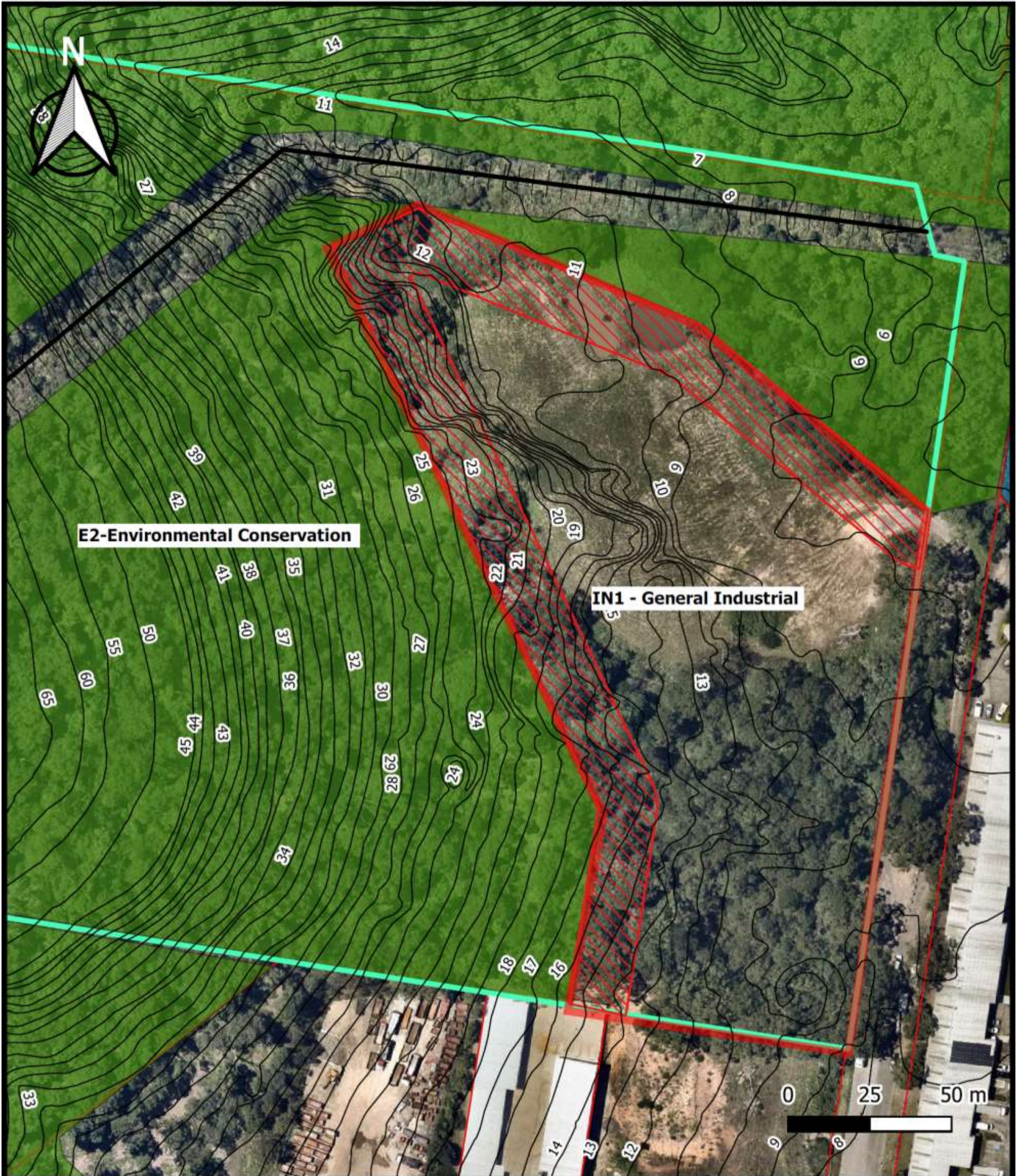


Figure 5: Bushfire Protection Site Plan

APZ SITE PLAN



LEGEND

- | | | |
|---------------|---------------|----------|
| Site Boundary | Forest | Cadastre |
| Proposal | Contours (2m) | Hydrant |
| 100m Buffer | Power Lines | 18m APZ |

Site: 39 Dell Road, West Gosford

Date: 04/06/21

Coordinate System: GDA 1994 MGA Zone 56

Imagery Source: Nearmap, 2021

Cadastre Source: NSW Spatial Services

Contour Source: NSW Spatial Services

Note: Proposed zoning location is not georeferenced and is approximate only

Figure 6: APZ Site Plan

6.4 Access and Egress

The site and future lands usage will provide access via the extension of the existing public road known as Dell Road. In addition, an internal road network would be proposed for any new works. Therefore compliance with table 5.3b of PBP is required. This is outline below in Table 2.

Table 2: PBP Access Requirements

<i>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</i>	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
ACCESS	<p>firefighting vehicles are provided with safe, all-weather access to structures.</p> <ul style="list-style-type: none"> property access roads are two-wheel drive, all-weather roads; perimeter roads are provided for residential subdivisions of three or more allotments; subdivisions of three or more allotments have more than one access in and out of the development; traffic management devices are constructed to not prohibit access by emergency services vehicles; maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient; all roads are through roads; dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end; where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road; where access/egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system; and one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.
	<p>the capacity of access roads is adequate for firefighting vehicles</p> <p>the capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.</p>
	<p>there is appropriate access to water supply.</p> <ul style="list-style-type: none"> hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression; hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005 - <i>Fire hydrant installations System design, installation and commissioning</i>; and there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.
PERIMETER ROAD	<ul style="list-style-type: none"> are two-way sealed roads; minimum 8m carriageway width kerb to kerb; parking is provided outside of the carriageway width; hydrants are located clear of parking areas; are through roads, and these are linked to the internal road system at an interval of no greater than 500m; curves of roads have a minimum inner radius of 6m; the maximum grade road is 15 degrees and average grade of not more than 10 degrees; the road crossfall does not exceed 3 degrees; and a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided. <p>access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.</p>

NON-PERIMETER ROAD	<p>access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.</p>	<ul style="list-style-type: none"> • minimum 5.5m carriageway width kerb to kerb; • parking is provided outside of the carriageway width; • hydrants are located clear of parking areas; • roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m; • curves of roads have a minimum inner radius of 6m; • the road crossfall does not exceed 3 degrees; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.
PROPERTY ACCESS	<p>firefighting vehicles can access the dwelling and exit the property safely</p>	<ul style="list-style-type: none"> • There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external 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 firefighting vehicles. <p>In circumstances where this cannot occur, the following requirements apply:</p> <ul style="list-style-type: none"> • minimum 4m carriageway width; • in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay; • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; • provide a suitable turning area in accordance with Appendix 3; • curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; • the minimum distance between inner and outer curves is 6m; • the crossfall is not more than 10 degrees; • maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and • a development comprising more than three dwellings has access by dedication of a road and not by right of way. <p>Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.</p>

6.5 Services

6.5.1 Water

To comply with PBP (Table 5.3c), the subject site should be serviced by reticulated water. Fire hydrant spacing, sizing and pressures should 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. Fire hydrants should not be located within any road carriageway. All above ground water and gas service pipes external to the building are to be metal, including and up to any taps.

Table 3 identifies the acceptable solution requirements of Table 5.3c of PBP

6.5.2 Electricity and Gas

Electricity and gas supplies to the site and future developments should meet with Table 5.3c 4 of PBP of which are outlined below in Table 3.

Table 3: PBP Service Requirements

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.		
	PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
WATER SUPPLY	adequate water supplies is provided for firefighting purposes.	<ul style="list-style-type: none"> reticulated water is to be provided to the development where available; a static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and static water supplies shall comply with Table 5.3d.
	<ul style="list-style-type: none"> water supplies are located at regular intervals; and the water supply is accessible and reliable for firefighting operations. 	<ul style="list-style-type: none"> fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005; hydrants are not located within any road carriageway; and reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.
	flows and pressure are appropriate	fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.
	the integrity of the water supply is maintained.	<ul style="list-style-type: none"> all above-ground water service pipes are metal, including and up to any taps; and above-ground water storage tanks shall be of concrete or metal
ELECTRICAL SERVICES	location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	<ul style="list-style-type: none"> where practicable, electrical transmission lines are underground; where overhead, electrical transmission lines are proposed as follows: <ul style="list-style-type: none"> lines are installed with short pole spacing of 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 <i>ISSC3 Guideline for Managing Vegetation Near Power Lines</i>.
GAS SERVICES	location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	<ul style="list-style-type: none"> reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - <i>The storage and handling of LP Gas</i>, the requirements of relevant authorities, and metal piping is used; <ul style="list-style-type: none"> all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; connections to and from gas cylinders are metal; polymer-sheathed flexible gas supply lines are not used; and above-ground gas service pipes are metal, including and up to any outlets.

7.0 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.

It has been found that the Planning Proposal meets the aim and objectives of PBP and can achieve required APZs and other bushfire mitigation measures and does not impose additional mitigation actions on adjoining land. At the detailed design phase, lot design / APZ provision, infrastructure, access and construction plans are required to meet the specifications outlined in PBP 2019. However, the assessment of the Planning Proposal identifies that the orderly provision of bushfire protection measures to achieve the deemed to satisfy standards prescribed within PBP is achievable.

In summary, the following key recommendations have been generated to enable any future land development to meet the relevant legislative requirements based upon the non-residential nature of the future works:

- A minimum Asset Protection Zones (APZ) of 18m is recommended from the bushfire hazard located on the northern and western portions of the site to any proposed building (See Figure 5)
- The 18m APZ will equate to BAL 40 construction as per AS3959-2018 and not allow for flame contact as per Table A1.12.5 of PBP
- All new public and internal roads are to comply with Table 5.3b Property Access of PBP
- Water, electricity and gas supply is to comply with the acceptable solutions as provided within Table 5.3c 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

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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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