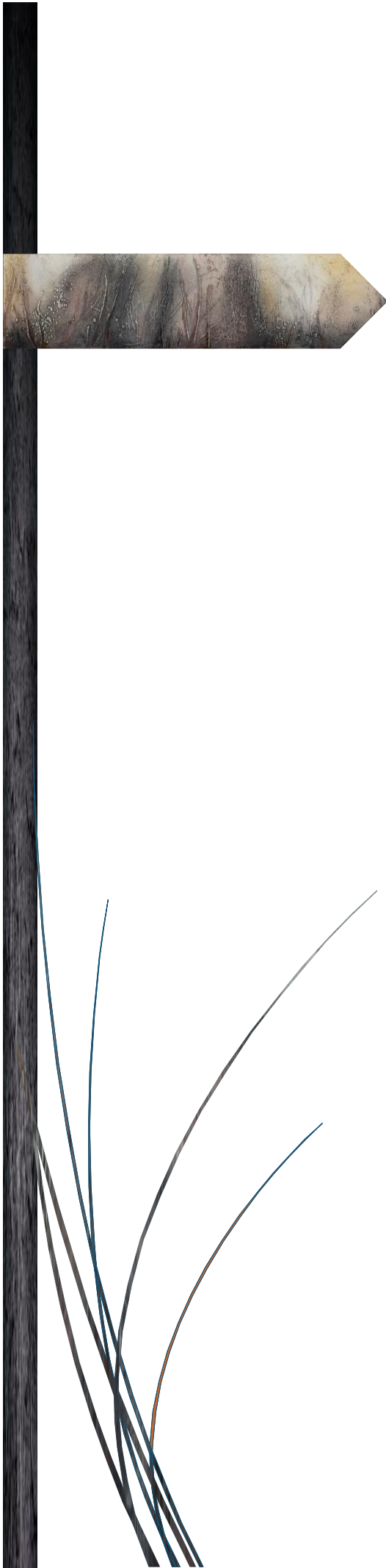




Bush Fire Strategic Study

Planning proposal

Lot 1-50 DP 270882 SP 103399 &

Lot 38 DP 270882

33 Gugandi Road, Narara

REF: W23001

Date: 19 September 2023



WARATAH BUSHFIRE

PLANNING | GIS | ASSESSMENT

Bush Fire Strategic Study

Planning proposal

Lot 1-50 DP 270882 SP 103399 & Lot 38 DP 270882

33 Gugandi Road, Narara

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File:	W23001	Version 1.1 Final (update to address NSW RFS request for additional information)
BAL rating	BAL 29 or less	

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EXECUTIVE SUMMARY

This Bush Fire Strategic Study has been prepared for a planning proposal in relation to 33 Gugandi Road Narara.

This report has been updated (with all changes identified in orange font for ease of assessment) to address the NSW RFS comments via their letter dated Friday 7 July 2023 (refer to Appendix 1) which states that the proposal appears to be generally consistent with the standards established by *Planning for Bush Fire Protection 2019*, however, should demonstrate compliance with the applicable sections of *Planning for Bush Fire Protection 2019* as summarised below:

Table E1- Vegetation

RFS requirements	Section addressed
Chapter 5 – (Residential and Rural Residential Subdivisions)	Section 3 – clarifies assessment requirements under chapter 5.
S8.2.1 – Increased residential density	Section 4.8
S8.3.1 – Buildings of Class 5 to 8 under the NCC	Section 4.9
Suitability of the existing access roads to facilitate evacuation in light of the proposed increased density of the area.	Section 2.3

The planning proposal seeks to amend the Central Coast Local Environmental Plan 2022 (LEP) resulting in an increase in yield from 150 to 167 dwellings.

- Reduce the minimum lot size map applying to the R2 - Low Density Residential land from 550m² to 450m²;
- Amend Schedule 1 to permit the following additional permitted uses on land zoned R2 Low Density Residential:

- Multi-dwelling housing – up to a maximum of 15 additional multi dwelling houses; and
- Commercial premises (comprising a maximum Gross Floor Area of 1,500m² including 200m² of food and drink premises).
- Rezone the RE1 Public Recreation zoned land to C3 Environmental Management;

This report identifies matters for consideration for the planning proposal and considers bushfire hazards at this strategic planning phase as required by the *Environmental Planning & Assessment Act 1997* section 9.1(2) Ministerial Direction 4.4 Planning for Bushfire Protection (PBP) 2019.

Section 9.1(2) Direction of the *EP&A Act* requires the Council to consult with the Commissioner of the RFS to take into account any comments by the Commissioner and to have regard to the planning principles of *PBP*.

The broad principles that apply at the strategic level include:

- ensuring the land is suitable for development in the context of bushfire risk
- ensuring new development on bushfire prone land will comply with PBP
- minimising reliance on performance-based solutions
- provide adequate infrastructure associated with emergency evacuation and firefighting operations; and
- facilitating appropriate ongoing land management practices.

Our assessment found that bushfire can potentially affect the site from the vegetation located within the C2 conservation zoned land to the west, Strickland State Forest to the north and west and forest within Grahame Recreation Reserve beyond the adjoining residential properties to the north-east resulting in possible ember and radiant heat attack.

The bushfire risk posed to the planning proposal is mitigated by the bushfire protection measures (including APZs) that have been put in place under previous development applications for Stage 1 and Stage 2.

The assessment has concluded that the planning proposal will provide compliance with the strategic planning principles of *PBP* and the proposed minor changes to residential density and zoning can comply with *PBP*.

An increase in yield from 150 to 167 dwellings will not significantly impact on the emergency evacuation capability of the site with the main central evacuation route located in a low-risk portion of the site and over 67m from the bushfire hazard, therefore providing safe egress opportunities.

Ongoing land management practices, including maintenance of the established asset protection zones throughout the site will continue under the community title scheme. And the preparation of a bushfire emergency evacuation plan will increase the preparedness of the Narara Eco Village (NEV) to facilitate safe evacuation for the site if required.

GLOSSARY

AHIMS	Aboriginal Heritage Information System
APZ	asset protection zone
AS1596	<i>Australian Standard – The storage and handling of LP Gas</i>
AS2419	<i>Australian Standard – Fire hydrant installations</i>
AS3745	<i>Australian Standard – Planning for emergencies in facilities</i>
AS3959	<i>Australian Standard – Construction of buildings in bushfire-prone areas 2018</i>
BAL	<i>bushfire attack level</i>
BCA	<i>Building Code of Australia</i>
BSA	bushfire safety authority
COSS	Coastal Open Space System
DA	development application
EEC	Endangered ecological community
EP&A Act	<i>Environmental Planning & Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
FFDI	forest fire danger index
IPA	inner protection area
CCLEP	Central Coast Local Environmental Plan
LGA	local government area
m	metres
NCC	<i>National Construction Code</i>
NEV	Narara Eco Village
OPA	outer protection area
PBP 2019	<i>Planning for Bush Fire Protection 2019</i>
RF Act	<i>Rural Fires Act 1997</i>
RFS	NSW Rural Fire Service
SFPP	special fire protection purpose
WBP	Waratah Bushfire Planning
VPA	Voluntary Planning Agreement

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1. INTRODUCTION

Waratah Bushfire Planning has been commissioned by Narara Eco Village Cooperative Ltd (NEV) to undertake a bush fire strategic study for a planning proposal located at Lot 1-50 DP 270882, SP 103399 and Lot 38 DP 270882, 33 Gugandi Road, Narara.

The proposal is located on land identified as bushfire prone on the Central Coast bushfire prone land map. Direction 4.4, *Planning for Bush Fire Protection 2019 (PBP)* identifies matters for consideration for planning proposals that will affect, or are in proximity to land mapped as bushfire prone.

As such, the proposal is subject to the requirements of Section 9.1(2) of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* which requires Council to consult with the Commissioner of the NSW Rural Fire Service (RFS) and to take into account any comments by the Commissioner.

1.1 Aims of the assessment

Planning applications are required to address Section 9.1(2) Direction 4.4 of *Planning for Bushfire Protection*. The objectives of this direction are to;

- 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 planning proposal, from a bushfire context, needs to ensure that future land uses are in a suitable location to minimise the risk and impact of bush fire attack. In addition, services and infrastructure to facilitate effective suppression of a bush fire needs to be provided.

The broad principles which should be applied to strategic level development are as follows:

- ensuring land is suitable for development in the context of bush fire risk
- ensuring new development on BFPL will comply with PBP

- minimising reliance on performance-based solutions
- providing adequate infrastructure associated with emergency evacuation and firefighting operations; and
- facilitating appropriate ongoing land management practices.

Strategic planning should provide for the exclusion of inappropriate development in bush fire prone areas as follows:

- the development area is exposed to a high bush fire risk and should be avoided
- the development is likely to be difficult to evacuate during a bush fire due to its siting in the landscape, access limitations, fire history and/or size and scale
- the development will adversely effect other bush fire protection strategies or place existing development at increased risk
- the development is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants;
- and the development has environmental constraints to the area which cannot be overcome.

1.2 Proposal

Various development consents have been approved since the site's acquisition in 2012 including Stage 1 development consent (DA/44899/2013). At that time the site was zoned 2(a) Residential under the former *Gosford Planning Scheme Ordinance* (GPSO) and the development was classified as 'cluster housing' which was permissible with consent in the 2(a) Residential zone.

The site is now zoned R2 Low Density Residential under *Central Coast Local Environmental Plan* (CCLEP) 2022. Cluster housing is no longer a specifically defined use. Cluster housing is now defined as multi dwelling housing which is prohibited in the R2 zone. The previously approved cluster housing development has the benefit of 'existing use rights' as defined in Section 4.65 of the *Environmental Planning & Assessment Act 1979*.

This Planning Proposal seeks to permit a maximum of 15 additional multi-dwellings (previously defined as cluster housing), consistent with the currently approved development on the site.

Specifically, the Planning Proposal seeks to;

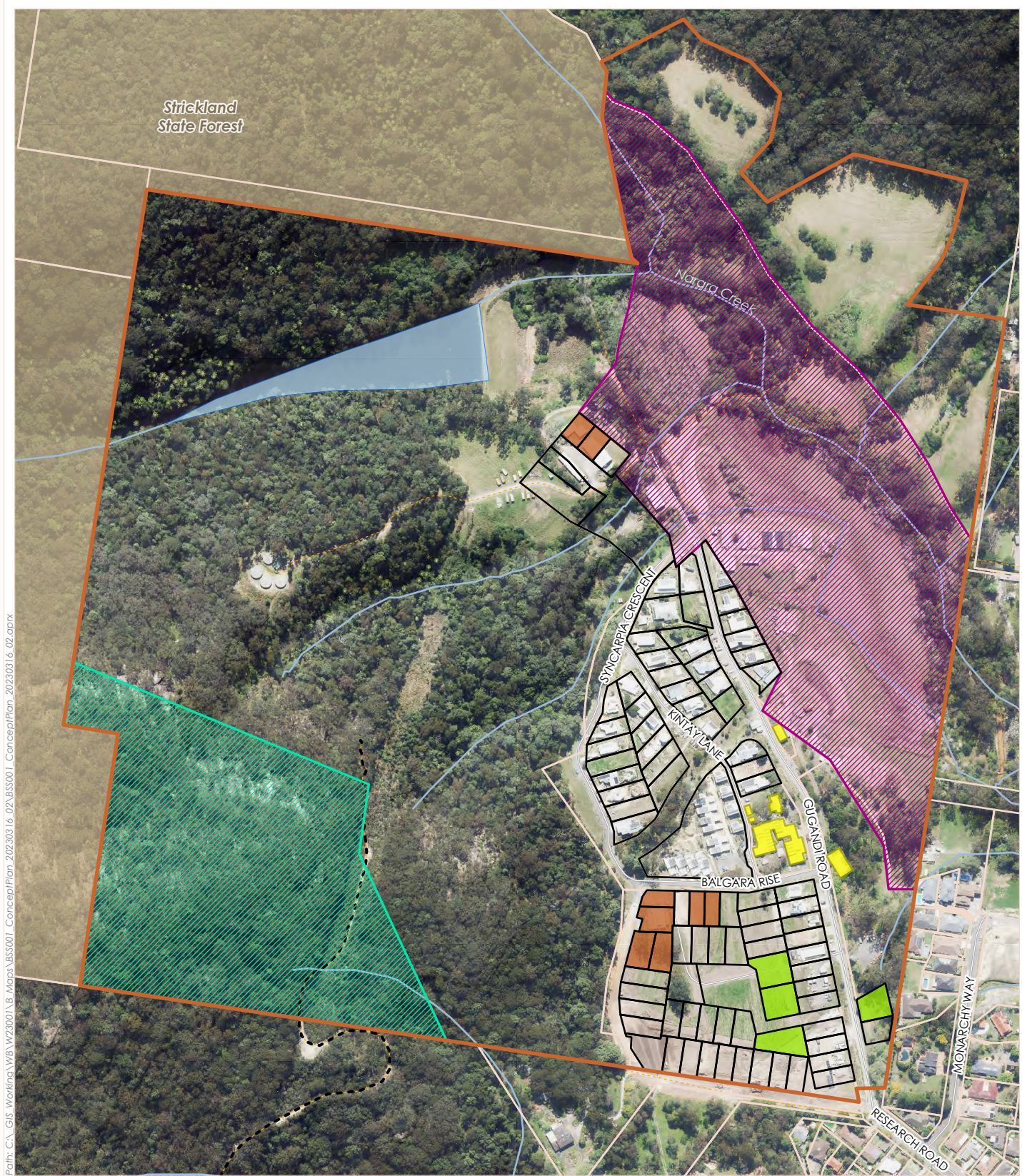
- enable commercial premises (comprising a maximum Gross Floor Area (GFA) of 1,500m² including 200m² food and drink premises). The commercial premises will be contained within the existing buildings associated with the former use as Gosford Horticultural Institute. These buildings include an administration block, visitor centre and grafting shed. This Planning Proposal seeks to utilise the existing GFA within these buildings for the purposes of commercial premises.
- retain the extent of the R2 Low Density Residential zoning and reduce the minimum lot size provisions from 550m² to 450m². This would be restricted to seven (7) additional lots due to lots either being pre-sold, already developed or slope restrictions.
- enable multi-dwelling housing (maximum of 15 additional multi-dwelling houses) on four (4) lots as additional permitted uses on the site (consistent with the previous 2a zone). Multi dwelling housing means three or more dwellings (whether attached or detached) on one lot of land, each with access at ground level, but does not include a residential flat building.

Based on the above future Cooperative members of the eco-village will have the option of:

- Subdividing some or all of the seven lots into 450m² single dwelling lots;
- Retaining the 4 x large lots and developing 15 multi-dwelling houses; or
- A combination of the above.

The amendment seeks to dedicate approximately 10ha of C2 Environmental Conservation zoned land to the Council as part of the Coastal Open Space System (COSS). In return, the RE1 Open Space zoned land will be transferred back to NEV with a proposal to rezone the land to C3 Environmental Management.

The planning proposal will allow for an overall increase in yield from 150 to 167 dwellings.



Path: C:\GIS Working\WB\W23001\B Maps\BSS001 ConceptPlan 20230316_02.aprx

Data source: WBP (2023); DCSSS (2023); MetroMap (2023); ICSM (2020)

LEGEND

Site boundary	Increase yield - Commercial Use	Existing environment	Lot boundary
Approved subdivision	Increase yield - additional R2 Residential lot	Vehicular track	State forest
Concept plan	Increase yield - additional multi-dwelling lot	Classified fire trail	
C2 zoned land (to be dedicated to Council)		Watercourse/drainage line	
Proposed rezoning (RE1 to C3)		Waterbody	

1.3 Referenced documents & information collation

A review of the information relevant to the property was undertaken prior to the initiation of a site inspection. Documents reviewed include:

- Central Coast Council Local Environmental Plan 2022
- Central Coast Development Control Plan 2022 Chapter 5.8
- Business Papers Item 2.4 Request to Prepare a Planning Proposal for 33 Gugandi Road, Narara to amend Central Coast Local Environmental Plan 2022, dated 13 December 2022
- Supplementary advice to 2020 traffic assessment report, Transport & Urban Planning Pty Ltd, dated 5 October 2022
- Draft Forecast Traffic and Access Assessment, Transport & Urban Planning Pty Ltd, dated November 2020.
- Narara Eco-Village Utilities Services Report Planning Proposal, Henry & Hymas, dated 25/03/2022, project number 19A86
- *Metromap* aerial photography
- *Australian Standard 3959 Construction of buildings in bushfire-prone areas*
- *Planning for Bush Fire Protection 2019 (PBP)*

An inspection of the proposed development site and surrounds was undertaken by Nicole van Dorst on 3 March 2023 to assess the topography, slopes, vegetation and adjoining land use.

1.4 Site description

The site is located at Lot 1-50 DP 270882, SP 103399 and Lot 38 DP 270882, 33 Gugandi Road, Narara and is commonly known as Narara Eco Village (NEV).

The NEV site comprises approximately 62.97 hectares of land formerly known as the Gosford Horticulture Research and Advisory Station. The land was acquired in September 2012 by a co-operative for the purposes of establishing an eco-village.

Various development consents have been approved since the site's acquisition in 2012 including a Stage 1 development consent (DA/44899/2013) for 48 residential lots (including a cluster housing development comprising 18 dwellings) and a Stage 2 development consent for 43 residential lots. Construction of the road network and associated services and infrastructure to support stage 1 is complete with Stage 2 currently nearing completion.

The site also contains a number of buildings associated with the former use as Gosford Horticultural Institute. These buildings include an administration block, visitor centre and grafting shed. This Planning Proposal seeks to utilise the existing GFA within these buildings for the purposes of commercial premises.



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Data source: WBP (2023); DCSSS (2023); MetroMap (2023); ICSM (2020)

LEGEND

- Site boundary
- Area subject to planning proposal
- Lot boundary

1.5 Legislation and planning instruments

1.5.1 Environmental Planning and Assessment Act (1979) and bush fire prone land

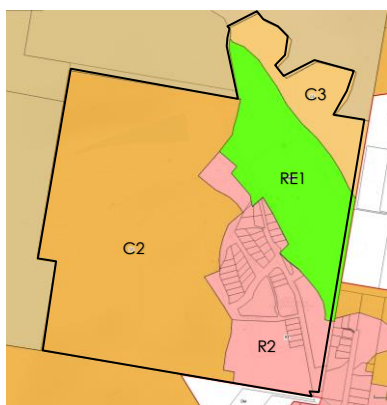
The EP&A Act governs environmental and land use planning and assessment within New South Wales. It provides for the establishment of environmental planning instruments, development controls and the operation of construction controls through the *National Construction Code (NCC)*. The identification of bushfire prone land is required under Section 10.3 of the EP&A Act.

PBP stipulates that if a proposed amendment to land use zoning or land use affects a designated bushfire prone area then the Section 9.1(2) Direction No 4.4 of the EP&A Act must be applied. This requires Council to consult with the Commissioner of the RFS and to take into account any comments by the Commissioner and to have regard to the planning principles of PBP.

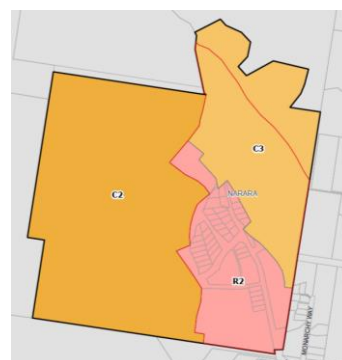
1.5.2 Local Environmental Plan (LEP)

A LEP provides for a range of zonings which lists the objectives for development.

The proposal seeks to dedicate approximately 10ha of C2 Environmental Conservation zoned land to Council as part of the Coastal Open Space System (COSS). In return, the current RE1 Open Space zoned land will be transferred back to NEV with a proposal to rezone the land to C3 Environmental Management.



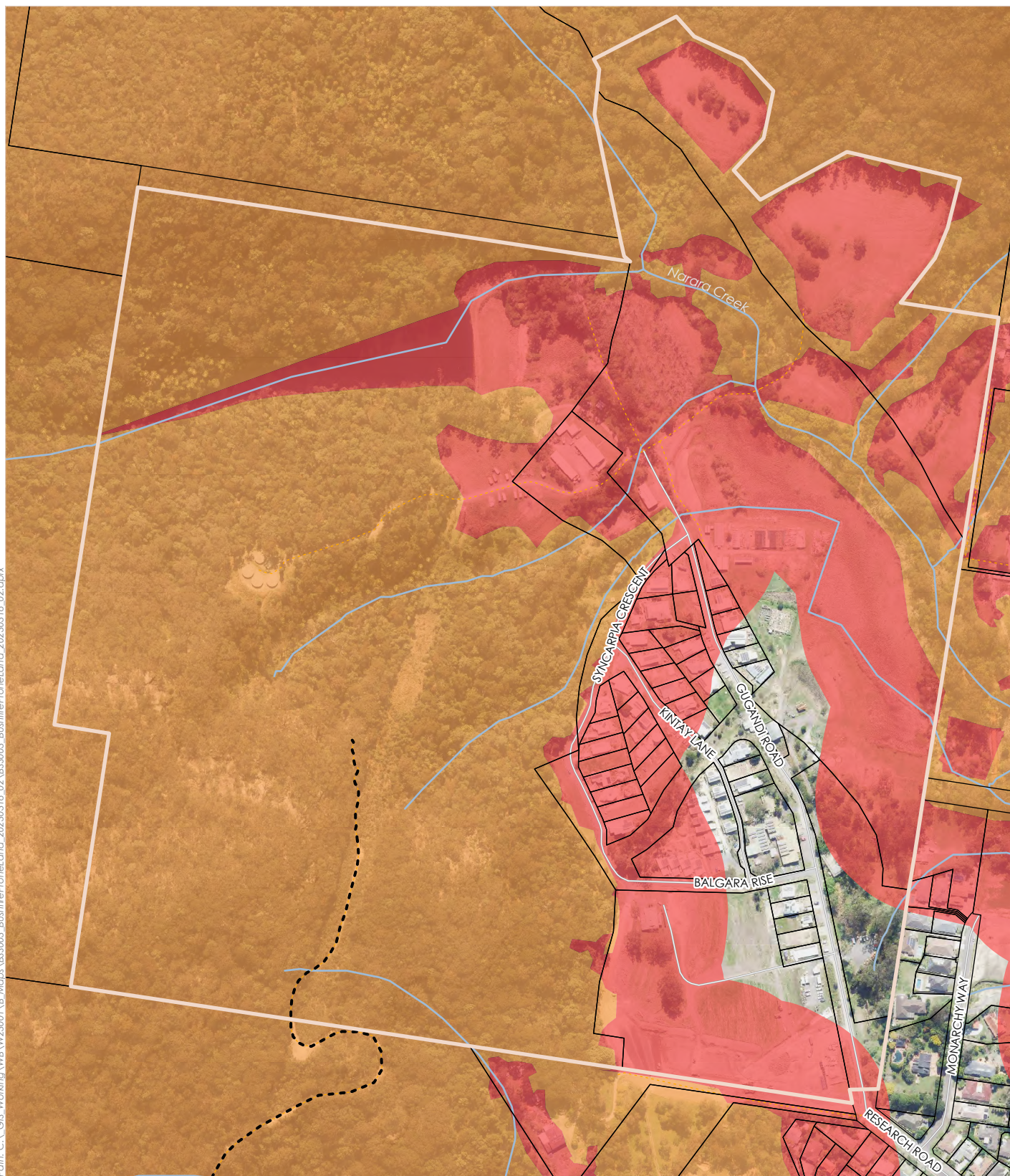
Existing Zoning



Proposed zoning

Figure1-3 - Existing and proposed zoning

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Data source: WBP (2023); DCSSS (2023); MetroMap (2023); RFS (2022); ICSM (2020)

LEGEND

- | | |
|-----------------------|---------------------------|
| Site boundary | Existing environment |
| Bushfire prone land | Local road |
| Vegetation Buffer | Vehicular track |
| Vegetation Category 1 | Classified fire trail |
| | Watercourse/drainage line |
| | Lot boundary |

1.5.3 Planning for Bush Fire Protection 2019 (PBP)

For strategic development proposals in bush fire prone areas *PBP* requires, as a minimum, an assessment to determine if the new development is appropriate in the broader bush fire hazard context and to assess the strategic implications for bush fire mitigation and management as detailed within Section 3 of this report.

Once these strategic issues have been addressed, an assessment of whether the proposal can comply with the specific bushfire protection measures outlined in *PBP* (refer Section 4 of this report) can then be carried out.

1.6 Environmental and cultural constraints

1.6.1 Environmental constraints

Chapter 5.8 of the Central Coast Development Control Plan 2022 outlines the following environmental protection considerations:

- The locations of the two *Syngium paniculatum* (Magenta Lily Pilly) specimens are to be fixed by land survey and plotted on any future development application for subdivision/development.
- A 20-metre exclusion zone is to be created around the *Syngium paniculatum* specimens, with the details to be determined at the development application stage.
- Any future development application for subdivision/development or future dwellings is to be designed so as to not result in the removal of any hollow-bearing trees or roosting or nesting habitat for threatened owl species.
- Any future subdivision/development layout shall be designed so as to not result in the removal of any actual yellow bellied glider sap trees.
- Plant species used for landscaping should be restricted to locally native species appropriate to the locally occurring vegetation types and/or those introduced species that do not have known potential to become environmental weeds.
- External night lighting associated with any future subdivision/development layout will be designed to reduce light spillage into adjacent forested areas.

- A Plan of Management shall be prepared for any future subdivision/development application. The Plan of Management will provide a prescriptive framework for the management of threatened species habitat, weed management, mitigate potential indirect impacts associated with any future subdivision/development and provide strategies for the on-going management of the site.

These considerations have been addressed in previous development applications for Stage 1 & 2. Due to the environmental values of the land, bushfire asset protection zones have been measured from the edge of existing areas of remnant native vegetation and are unlikely to result in the removal or modification of any remnant vegetation.

1.6.2 Cultural constraints

A basic search was conducted on the Aboriginal Heritage Information System (AHIMS). The results show that there are 22 identified Aboriginal sites of significance in or within 1km of 33 Gugandi Road, Narara.

The site has played a significant role in the development of agricultural and horticultural research on the Central Coast. Consultant studies have been prepared in relation to the heritage values of the land. Some buildings and elements on the land have been identified in Central Coast LEP 2022 for listing as Heritage Items under Schedule 5 of the Central Coast LEP 2022. These include:

- Manager's Cottage
- Former Grafting Shed / Administration Block which is proposed to be repurposed for commercial i.e. a café
- Group of *Taxodium distichum* (Bald Cypress) located at the entrance of the site (eastern side)
- Specimen of *Syncarpia glomulifera* (Turpentine) located on the eastern boundary near the entrance to the site
- Group of *Araucaria cunninghamii* (Hoop Pines) located on the western side of the existing internal access road



2. BUSH FIRE STRATEGIC STUDY

2.1 Bush fire landscape assessment

The following bush fire landscape assessment considers the likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.

2.1.1 Bushfire hazard, fire behaviour & potential fire runs

The likely fire behaviour and potential fire paths and scenarios can be predicted based on the information provided in the following sections.

The predominate bushfire risk is from the extensive wet and dry sclerophyll forest (overall fuel loads of up to 35.98 t/ha) that exists within the C2 zoned land to the west of the NEV development and extending within Strickland State Forest further to the north and west. The vegetation transitions to rainforest and forested wetland communities (lower fuel loads of <15.1t/ha) in the gullies and lower slopes around Narara Creek to the north of the site. The flood affected land to the north-east (proposed C3 zoned land) is predominately cleared pasture with forest vegetation adjoining the Narara Creek.

Whilst the site is surrounded by extensive bushland, particularly to the north and west, the NEV development is located on the foothills with steep uphill slopes (in excess of 20 degrees) to west as depicted in Figure 2.2 below. This will have the effect of slowing the approach of a bushfire from these directions and limiting flame impact on development with site.

The effect of bushfire on the site is expected to be in form of extensive ember attack kilometres ahead of the fire front and radiant heat impact. As indicated on Figure 2.2, the problematic fire scenario is the combination of undesirable fire weather (i.e. hot and dry north-westerly westerly winds during late spring and summer) with ignition from dry lightning strikes to the west and north-west or human-induced ignition from the Strickland State Forest creating the potential for a bushfire to spread east along the creek lines and flank up the steep slopes to impact the north-western section of the

subject site. A smaller, and less intense fire could occur within the grassed areas within the north-eastern section of the site.

All development within site has been undertaken in accordance with *Planning for Bushfire Protection* with Stage 1 approved in 2013 and Stage 2 approved in 2020. The calculated radiant heat impact is not expected to exceed 29kW/m² on these approved dwellings based on an FDI of 100.

Mitigating factors for potential fire runs into the site include the cleared land associated with residential development to the south and south-east, the electrical transmission line that dissects the central portion of the site in a north-east to south direction and the large dam located to the north-west.

Path: C:\GIS Working\WB W23001\B Maps\GIS004 VegetationClassification 20230413_05\GIS004 VegetationClassification 20230413_05.aprx



Data source: WBP (2023); DCSSS (2023); MetroMap (2023); DPE (2022); ICSM (2020)

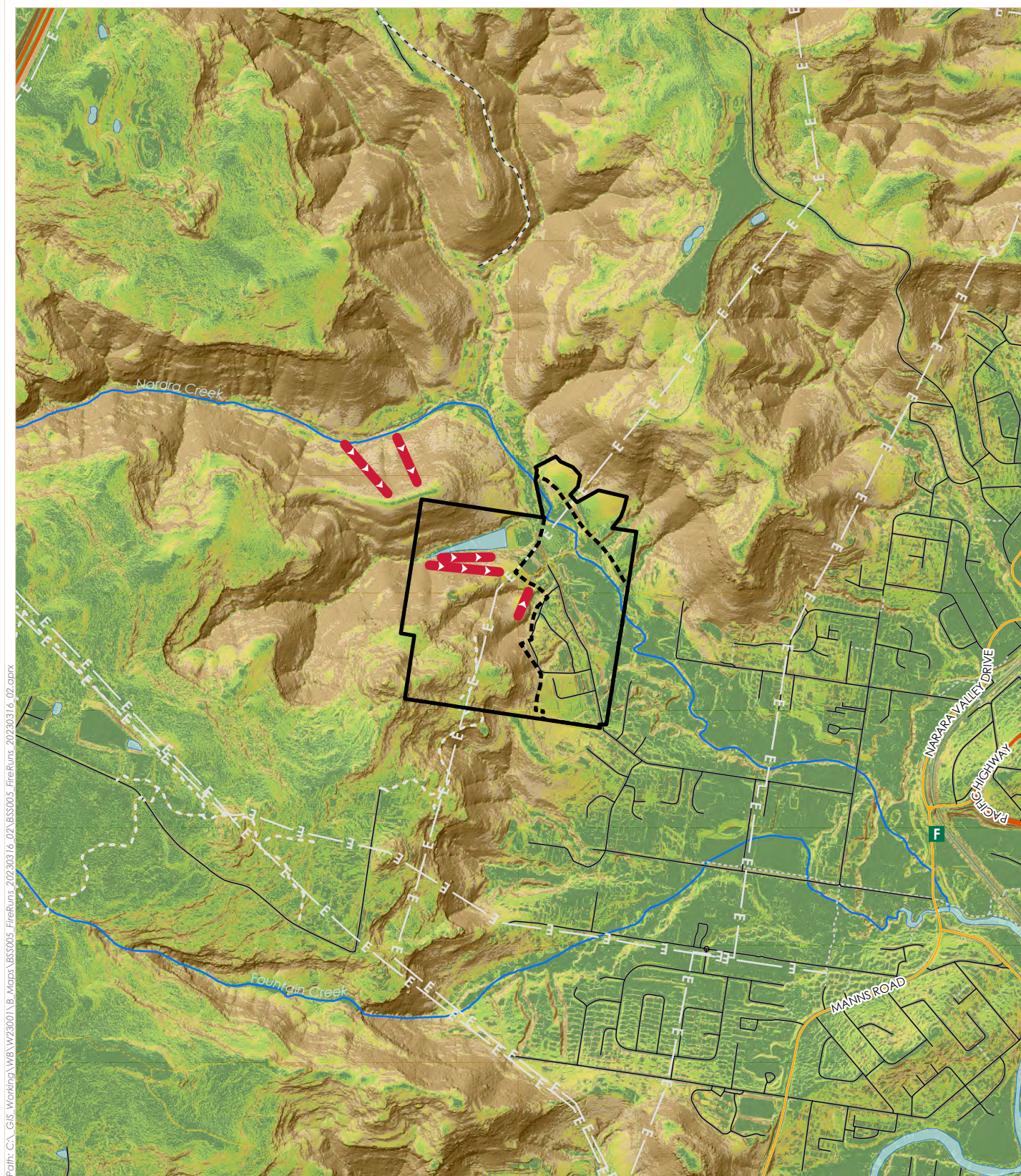
LEGEND

- | | |
|--------------------------------|---------------------------|
| Site boundary | Lot boundary |
| Approved asset protection zone | Easement |
| Managed land | Watercourse/drainage line |
| Local road | Waterbody |
| Vehicular track | |
| Classified fire trail | |

Vegetation class

- | | |
|--|---|
| | Coastal Floodplain Wetlands (8.2 / 15.1 t/ha) |
| | North Coast Wet Sclerophyll Forests (22 / 35.98 t/ha) |
| | Northern Hinterland Wet Sclerophyll Forests (20/ 33.1 t/ha) |
| | Northern Warm Temperate Rainforests (10 / 13.2 t/ha) |
| | Sydney Coastal Dry Sclerophyll Forests (21.3 / 27.3 t/ha) |





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Data source: WBP (2023); DCSSS (2023); ICSM (2020)

LEGEND

	Site boundary		Major road		Named watercourse		Slope (degrees)
	Area subject to planning proposal		Minor road		Waterbody		0 - 5
	Potential fire run		Local road				5 - 10
	Rural fire service		Vehicular track				10 - 15
	Electricity transmission line		Path				15 - 20
	Classified fire trail		Access way				> 20

2.1.2 Fire History

The Central Coast Bush Fire Risk Management Plan 2020-2025 (Gosford District Bush Fire Management Committee 2011) notes a list of common ignition sources affecting the LGA. Those that may apply within the area surrounding the NEV are arson which is most common in bushland reserve areas, arching of high voltage electrical powerlines in high winds (on top of and west of the escarpment) and dry lightning strikes.

Information on fire history such as spatial pattern of fire spread has been used to gain an understanding the bushfire risk. Fire history mapping has been obtained from <https://datasets.seed.nsw.gov.au/dataset/fire-history-wildfires-and-prescribed-burns-1e8b6>

Figure 2.3 indicates that the last significant wildfire to affect the site was to the north-west of the dam in the 1979-80 fire season.

The most recent recorded wildfire occurred in early 2000/01 less than 1km to the west of the site and appears to have been contained to a small area. The majority of wildfire have occurred to the north and west and have been contained by creek lines and access trails.

Fire appears to have been absent from the majority of the subject site. Although fires have not directly impacted the development area, the fire behaviour including spread pattern demonstrates how a fire could emanate from the forest to the north-west and travel to the site.



LEGEND

- | | | |
|-----------------------|-----------------|-----------------|
| Site boundary | Major road | State forest |
| Fire and rescue | Minor road | Fire history |
| Rural fire service | Local road | Wildfire |
| Classified fire trail | Vehicular track | Prescribed burn |
| Named watercourse | Path | |
| Waterbody | Access way | |

2.1.3 Access and fire suppression

Figure 2.5 indicates control opportunities that exist throughout the broader landscape to provide access and fire suppression opportunities to the north, west from the north-east. The most notable are the classified fire trails that follow the electrical easement to the west and within Strickland Stage Forest further the north. In addition, there are vehicular tracks within the property that provide access to the static water supply within the property to the north-west, towards the dam in the north and the floodplain to the north-east.

An opportunity also exists via the fire breaks naturally created by Narara Creek and its tributaries to the east as well as the large dam within the site to the north-west. Aerial bombing would be required to create additional control lines within the broader landscape. Control line establishment on the ground by manual removal of vegetation would be challenging due to steep slopes and access restrictions.

Within the immediate vicinity of the NEV approved Stage 1 & 2 is provided with a 5.5m perimeter road with passing bays strategically located where the sealed road is a total of 8.5m wide. Hydrants are spaced across the site to facilitate easy access during a bushfire event. The central loop for Stage 2 is accessible by fire-fighting vehicles to provide direct access to those properties. Land-locked properties are all within access of both vehicles and hydrants. The network of pedestrian access laneways throughout the site are maintained by the wider community with all lots fence free.

Future access to Stage 3 must consider the requirements of PBP, inclusive of the provision of a perimeter road and additional asset protection zones along the access route to the south.

2.2 Land use assessment

NEV is zoned C2 – Environmental Conservation, C3 – Environmental Management and R2 Low Density Residential. The allotments within the R2 zoned land will be used primarily for residential purposes with some neighbourhood shops, open days and community events in the retained older research station buildings identified for commercial use.

Whilst there are no high-risk special fire protection purpose uses on the site NEV does host events for the broader public with monthly open days, workshops and working

bees. As a result, careful consideration on when these events are held, and management of emergency evacuation procedures will be important.

Figure 2.4 provides a risk profile to identify portions of the site that may be impacted by flame contact (high risk), radiant heat between 10kW/m^2 to 29kW/m^2 (medium risk) and ember attack (low risk). The buildings proposed to be used for commercial use, events and workshops are located within the central portion of the site and over 100m from bushfire prone vegetation. Whilst this area is not expected to experience flame contact or high levels of radiant heat impact, ember attack is possible.

Proposed areas for increased density are located in the southern portion of the site and closest to the offsite evacuation route. The proposed lots at the northern end of the site will require the implementation of asset protection zones and road upgrades to ensure compliance with the acceptable solutions of PBP. These requirements will be subject to further assessment at subdivision stage. Whilst the land surrounding this area is managed, the implementation of the APZ's will need to consider the C2 zoning of the land to the north-west.



LEGEND

- | | | |
|---|--|---|
| Site boundary | Local road | Medium risk (radiant heat 29 kW/m^2 - 10 kW/m^2) |
| Area subject to planning proposal | Vehicular track | Low risk (ember attack) |
| Concept plan | | |
| Approved subdivision | Classified fire trail | Vegetation formation |
| Increase yield - Commercial Use | Topographic contour (2 m) | Forested Wetlands |
| Increase yield - additional R2 Residential lot | Watercourse/drainage line | Rainforests |
| Increase yield - additional multi-dwelling lot | Waterbody | Forest |
| Approved internal access road | Risk profile | |
| | High risk (potential flame contact) | |

2.3 Access and egress

The site is accessed from Manns Road via Deanne or Carrington Street thence Fountains and Research Road to the site entrance. Deanne and Carrington Streets act as collector routes within the local road hierarchy whilst Fountains and Research act as local access streets.

Fountains Road is a local road that connects Carrington Street and Hanlan Street South. The carriageway width on Fountains Road is approximately 7.6 metres between Hanlan Street South and Pandala Road, and approximately 12.7 metres along the frontage of the Narara Valley High School.

As outlined in the DCP the site does not have flood free access and would be isolated in the event of flooding in the vicinity of Hanlan Street. It is unlikely that a flood event would occur at the same time as a bush fire and an increase in yield from 150 to 167 dwellings will not significantly impact on the emergency evacuation capability of the site. The majority of Gugandi Road and the only egress route via Research Road is located in the lower risk portion of the site and over 100m from the bushfire hazard in most cases. The entrance point is approximately 67m from the nearest bushfire prone vegetation with radiant heat exposure expected to be $<10\text{kW/m}^2$. The direction of travel is away from the direct threat of bushfire.

Transport & Urban Planning have prepared the traffic assessment report and subsequent supplementary advice for the planning proposal. This advice is based on the acknowledgement that NEV members utilise a range of car sharing, lift sharing, ride sharing and car-pooling activities. It also envisages an electric community vehicle(s) will be operated to provide an alternative to car dependency.

The supplementary advice concludes that the planning proposal is likely to comprise moderate residential traffic generating developments and will result in minimal additional traffic impacts on the existing public road network.

Development surrounding the site is essentially low density residential. Narara Valley High School is located on Fountains Road approx. 800 metres from the site and is the only significant traffic generating development in the vicinity of the Narara Ecovillage site.

Depending on the time of day, school traffic along Research Road may create a bottleneck, however there is a second evacuation option via Fountains Road and Carrington Street to avoid traffic from Narara Valley High School

The existing access roads within and external to the site have been considered in light of its ability to facilitate evacuation based on the proposed minor increase in density (i.e., additional 17 dwellings).

Earlier traffic reports on the critical access road to the village indicates relatively moderate traffic flows which means there is ample spare capacity in the existing external road network to adsorb any traffic growth resulting from the planned development within the village as identified to date and in keeping with the original 2006 traffic projections (email advice from Mick Bridgman – Transport & Urban Planning).

Email advice Transport & Urban Planning has confirmed that no urban road network is predesigned to cater for immediate community evacuations in the event of a major flood or fire. Normally emergency services would advise residents of a precinct to evacuate over several hours before needed thereby spreading the traffic demand, however, ultimately there is a point where it is too late to evacuate, and the access roads are required solely for emergency services to get in.

In this circumstance all new buildings within Narara Ecovillage have been designed to comply with AS3959 – *Construction of buildings in bush fire prone areas* and therefore there is scope for residents to reside on site (on days where FDI is <100) and stay and defend. In addition, it is a recommendation of this report that a Community Bush Fire Emergency Management and Evacuation Plan is prepared to facilitate an orderly evacuation when required, particularly on days of Catastrophic fire danger.

In addition, there is also scope to upgrade existing buildings (i.e. administration block) located over 100m from the bush fire hazard for ember protection and for this building to act as a potential safe assembly point if required by emergency services and to facilitate safe evacuation.

In summary the existing access routes to NEV have ample spare traffic capacity to accommodate an orderly evacuation of the area if needed under police and emergency services supervision and in accordance with a site-specific Community Bush Fire Emergency Management and Evacuation Plan.



LEGEND

- Site boundary
 - Area subject to planning proposal
 - F Fire and rescue*
 - F Rural fire service**
 - Major road
 - Minor road
 - Local road
 - Vehicular track
 - Path
 - Access way
 - Classified fire trail
 - Named watercourse
 - Named waterbody
 - Lot boundary
 - State forest
- Access road
- 5.5 m carriageway with passing bays
 - 5.5 m (one-way) carriageway
 - 3.5 m (one-way) carriageway with passing bays

* Fire and Rescue NSW Wyoming is located at 2 Laycock Street Wyoming (8 minute drive)

** Narara Rural Fire Brigade is located at 2 Manns Road Narara (5 minute drive)

Figure 2.5 – Access

Bush fire strategic study – 33 Gugandi Road Narara

24/03/2023 (v04) 1:30,000 @A4 1:5,250 @A4 GDA2020 MGA Zone 56

0 250 500 m (left)

0 50 100 m (right)

Disclaimer: mapping is indicative only and the data shown has an inherent level of inaccuracy that is dependent on the data source. The location of all mapped features and boundaries should be confirmed by a registered surveyor.



2.4 Emergency Services

As depicted in the figure above, Fire and Rescue NSW and Narara Rural Fire Brigade are located to the south-east within an 8-minute drive to NEV. The increase in yield from 150 to 167 dwellings will not significantly increase the demand for emergency services and does not trigger the need for new stations and brigades. The existing and approved road network has been designed to provide perimeter access for fire fighters with additional egress opportunities available via the fire trails and vehicular tracks.

2.5 Infrastructure

The development comprises a range of existing and proposed utilities to service the development including potable & non-potable water, sewer, electrical, and communications. There are no requirements for gas services in this development.

The site is currently being supplied by a temporary 50mm diameter potable water line from Monarchy Way, east of the site. The water is sent to a number of header tanks at the high point of the site, re-chlorinated and distributed to the lots via a gravity system.

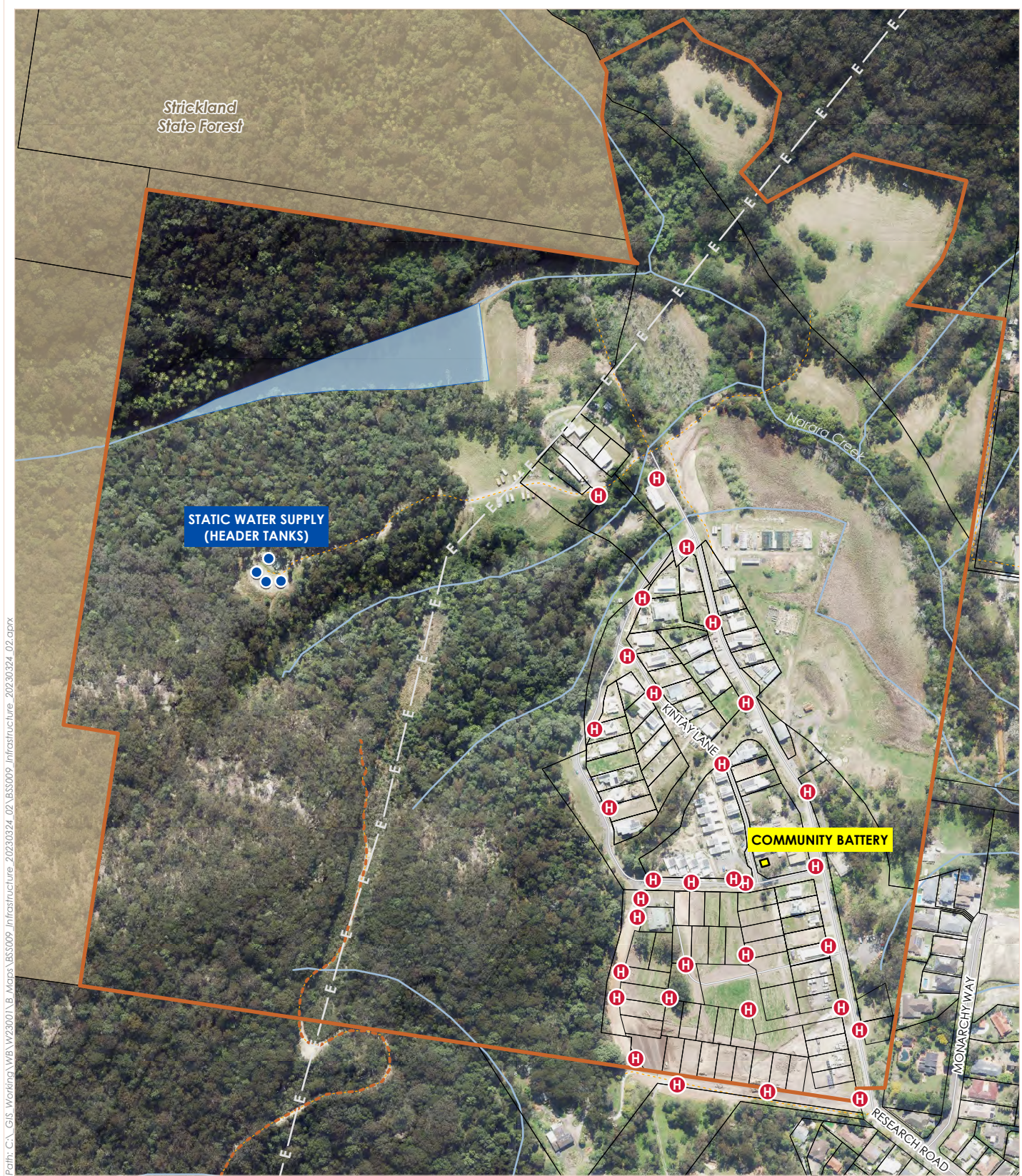
The non-potable water supply is sourced from the Central Coast Council potable water network. There are existing and proposed non-potable water lines installed throughout the site used to distribute the water to Stages 1 and 2 of the development. The non-potable water will be distributed to all residential properties through a second purple pipe.

Hydrants have been located at all high and low points and provide the required fire coverage. Hydrant spacing meets requirements under AS 2419.1:2017 and the results from the design show hydrant pressure and flow 10.85 L/s lowest hydrant flow and 181kPa lowest pressure.

The provision of electricity is underground with a community battery (437kWh) located within the lower risk portion of the site.

The location of hydrants, header tanks, dam and community battery are provided within the following figure as approved under Stage 1 & 2 development consents.

High Voltage Powerlines traverse the site over 100m to the west and adjoining future Stage 3 to the north. Vegetation management is undertaken in accordance with the specification of ISSC3 Guideline for Managing Vegetation near Power Lines.



Path: C:\GIS\Working\WB\W23001\B Maps\BSS009 Infrastructure_20230324_02\BSS009 Infrastructure_20230324_02.aprx

Data source: WBP (2023); DCSSS (2023); MetroMap (2023); ICSM (2020)

LEGEND

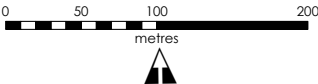
- | | |
|------------------------------------|---------------------------|
| Site boundary | Local road |
| Fire hydrant | Vehicular track |
| Community battery (437kWh) | Watercourse/drainage line |
| Static water supply (header tanks) | Waterbody (dam) |
| Electricity transmission line | Lot boundary |
| Classified fire trail | State forest |

Figure 2.6 – Infrastructure

Bush fire strategic study – 33 Gugandi Road Narara
24/03/2023 (v02)

1:5,000 @A4

GDA2020 MGA Zone 56



Disclaimer: mapping is indicative only and the data shown has an inherent level of inaccuracy dependent on source. The location of all mapped features and boundaries should be confirmed by a registered surveyor.

2.6 Adjoining land

NEV is adjoined by residential land to the south and south-east and State Forest to the north and west. Approved development within NEV has resulted in a decrease in bushfire risk for the adjoining residential properties through the implementation of asset protection zones and improved access for emergency services to the bushland and access to water supply.

Additional improvements can be made through liaison with adjoining land holders including *Forestry Corporation of NSW* to implement hazard reduction burning regimes in the future.



3. BUSHFIRE THREAT ASSESSMENT

As outlined in Section 2 above this report concludes that the broader strategic issues can be addressed in support of the planning proposal and minor increase in yield from 150 to 167 dwellings. The following section outlines how the proposal can comply with the bushfire protection measures outlined in *Planning for Bushfire Protection 2019* and the requirements of Chapter 5 of PBP 2019. This is particularly applicable to future Stage 3 which has not been subject to development approval.

Stage 1 & 2 development was approved in 2016 & 2020 and the approved asset protection zones are summarised below and depicted in Figure 3.1.

To assess the bushfire threat and to determine the minimum required width of an APZ (to achieve a maximum radiant heat of 29kW/m^2) for future development in Stage 3, an assessment of the predominate vegetation and the effective slope has been undertaken.

3.1 Predominant vegetation

PBP guidelines require the identification of the predominant vegetation formation in accordance with David Keith (2004) if using the simplified acceptable solutions in PBP 2019, or alternatively the vegetation class if adopting the comprehensive vegetation fuel loads.

For the purposes of the planning proposal (future Stage 3), we have undertaken an assessment using the acceptable solutions based on vegetation formation.

The hazardous vegetation is calculated for a distance of at least 140m from a proposed development site.

The vegetation posing a bushfire threat to the proposed development includes:

Table 3-1 - Vegetation

Aspect	Vegetation formation	Predominate vegetation classification	Comprehensive fuel loads (t/ha)
West	Forest	North Coast West Sclerophyll Forest	22/35.98
		Northern Hinterland Wet Sclerophyll Forest	20/33.1
		Sydney Coastal Dry Sclerophyll Forest	21.3/27.3
South	Forest	North Coast West Sclerophyll Forest	22/35.98
		Northern Hinterland Wet Sclerophyll Forest	20/33.1
North	Forest	North Coast West Sclerophyll Forest	22/35.98
	Forested Wetland	Coastal Floodplain Wetlands	8.2/15.1
East	Forested Wetland	Coastal Floodplain Wetlands	8.2/15.1
	Forest	North Coast West Sclerophyll Forest	22/35.98

The remaining land to the south-east within 140m of the property is considered managed.

3.2 Effective slope

The effective slope has been assessed for up to 100m from the development site and is described in detail within Table 3-2 below.

3.3 Bushfire attack assessment

The following assessment has determined the APZ and BAL levels as they relate to the planning proposal via the following methodology;

- Appendix B Method 2 (alternative solution (AS)) of AS3959 *Construction of buildings in bushfire prone areas* (2009); and
- Deemed to satisfy (DTS) Appendix 1 of Planning for Bushfire Protection 2019

A fire danger index (FDI) of 100 has been used based on its location within the Greater Hunter region.

Table 3-2 - Bushfire Attack Assessment Summary

Aspect	Predominant* Vegetation Class	Effective Slope	Methodology used	Minimum APZ Required	BAL Rating / Radiant heat exposure
Stage 1 (previously approved under PBP 2006) & Stage 2 (previously approved under PBP 2019)*					
North & east	Managed land	N/A	N/A	N/A	BAL Low
West	Forest	>8° upslope	AS	18m	BAL 29
South	Forest	10° upslope	AS	16m	BAL 29
North-west	Forest	0-5 degrees downslope	AS	22-25m	BAL 29
Commercial use (previously approved)					
North, south, east and west	Forest over 100m from buildings	N/A	DTS	>100m provided	N/A – recommend upgrade for ember protection and potential future use as an assembly building
Stage 3 (subject to future DA)**					
North-east	Forested Wetland	5-10° downslope	DTS	26m	BAL 29

Aspect	Predominant* Vegetation Class	Effective Slope	Methodology used	Minimum APZ Required	BAL Rating / Radiant heat exposure
North- west & south	Forest	5-10° downslope	DTS	36m	BAL 29
South- west	Forest	Level and upslope	DTS	24m	BAL 29
South- east	Forest	0-5° downslope	DTS	29m	BAL 29

*Stage 2 was approved with conditions issued by the NSW RFS (ref: DA58072/2020) on 23rd December 2020 in compliance with PBP 2019. This subdivision is currently under construction. The planning proposal involves an overall increase in yield from 150 to 167 dwellings with the majority of lots (six) subject to yield increase located in Stage 2. Therefore, compliance with Chapter 5 of PBP has been addressed in the previous DA consent for Stage 2.

**The planning proposal includes a proposed increase in yield for two existing lots located in Stage 3. An assessment of the minimum APZ requirements in compliance with PBP 2019 is provided in Table 3.2 and Figure 3.1.



LEGEND

- 
- WARATAH
BUSHFIRE**
PLANNING | GIS | ASSESSMENT

GDA2020 MGA Zone 56



Disclaimer: mapping is indicative only and the data shown has an inherent level of inaccuracy dependent on source. The location of all mapped features and boundaries should be confirmed by a registered surveyor.

4. BUSHFIRE PROTECTION MEASURES

The following bushfire protection measures have been identified in accordance with Chapter 5 of PBP.

4.1 Asset protection zones (APZs)

Table 4.1 outlines the proposal's compliance with the performance criteria for APZs.

Table 4-1 – Performance criteria for asset protection zones (PBP 2019)

Performance criteria	Acceptable solutions	Acceptable solution	Comment
Potential building footprints will not be exposed to radiant heat levels exceeding 29kW/m ² on each proposed lot	APZs are provided in accordance with Tables A1.12.2 and A1.12.4 based on the FFDI	☑	Stage 3 lots can accommodate APZ's in accordance with the acceptable solutions. Lots within the southern portion of the site can accommodate minimum APZ's in accordance with the performance criteria as previously approved
APZs are managed and maintained to prevent the spread of a fire towards the building	APZs are managed in accordance with the requirements of Appendix 4	☑	APZ's have been approved as part of Stage 1 and Stage 2 developments and are maintained under Community Title arrangement in accordance with an 88B instrument. Future development for Stage 3 will be subject to a separate development application
The APZ is provided in perpetuity	APZs are wholly within the boundaries of the development site	☑	
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised	The APZ is located on lands with a slope of less than 18o	☑	Complies. All slopes are less than 18 degrees.

Performance criteria	Acceptable solutions	Acceptable solution	Comment
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions	Landscaping is in accordance with Appendix 4	☑	Landscaping has been approved as part of Stage 1 and Stage 2 developments. Future development for Stage 3 will be subject to a further development application
	Fencing is constructed in accordance with section 7.6	☑	

4.2 APZ management

APZs are required to be managed as an inner protection area (IPA) in accordance with RFS guidelines *Standards for Asset Protection Zones* (RFS, 2005), with landscaping design to comply with Appendix 4 of *PBP*. Appendix 2 of this report provides additional maintenance advice for vegetation within the APZ.

4.3 Building protection

Building construction standards for the proposed future dwellings located within 100m of bushland or 50m of grassland are to be applied in accordance with *AS3959 Construction of buildings in bushfire prone areas (2018)* or *NASH Standard - Steel Framed Construction in Bushfire Areas* and Section 7.5 of *Planning for Bush Fire Protection 2019*.

4.4 Access for firefighting operations

The planning proposal relies on the existing road network which was approved at the Masterplan stage and set a precedent for the subsequent Stage 1 and Stage 2 development. The design was based on a performance assessment which allowed two-way roads (including the perimeter roads) to comply with the following;

- A carriageway width of 5.5m with parking provided outside of this minimum width and passing bays provided at strategic intervals to support firefighting operations.

- Roll top kerbing on both sides of the road
- The full extent of the road reserve to be managed as an APZ to provide a safe operating environment.

It is expected that the future design of Stage 3 roads will follow the same performance criteria and the requirements of *PBP 2019* is detailed within Table 4-2 below.

Table 4-2 – Performance criteria for access within Residential Subdivisions (PBP 2019)

Performance criteria		Acceptable solution	Acceptable solution	Comment
ACCESS (GENERAL REQUIREMENTS)	Firefighting vehicles are provided with safe, all weather access to structures.	Property access roads are two-wheel drive, all-weather roads	☒	Complies
		Perimeter roads are provided for residential subdivisions of three or more allotments.	☒	Complies
		Subdivisions of three or more allotments have more than one access in and out of the development.	☐	Complies with performance criteria
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	☒	Complies
		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.	☒	Complies
		All roads are through roads	☒	Complies
		Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200m in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end.	☒	Complies
		Where kerb and guttering are provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	☒	Complies
		Where access / egress can only be achieved through forest, woodland or heath vegetation, secondary access shall	☒	Complies

Performance criteria		Acceptable solution	Acceptable solution	Comment
		be provided to an alternate point on the existing public road system.		
		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.	☒	Complies
	The capacity of access roads is adequate for firefighting vehicles.	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.	☒	Complies
	There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	☒	Complies
		Hydrants are provided in accordance with AS 2419.1:2005.	☒	Complies
		There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	☒	Complies
PERIMETER ROADS	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	Are two-way sealed roads.	☒	Complies
		Minimum 8m carriageway width kerb to kerb.	☐	Complies with performance criteria
		Parking is provided outside of the carriageway width.	☒	Complies
		Hydrants are located clear of parking areas.	☒	Complies
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	☒	Complies
		Curves of roads have a minimum inner radius of 6m.	☒	Complies
		The maximum grade road is 15° and average grade is 10°.	☒	Complies

Performance criteria		Acceptable solution	Acceptable solution	Comment
	emergency management on the interface.	The road crossfall does not exceed 3°.	☑	Complies
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	☑	Complies
NON-PERIMETER ROADS	Access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while residents are evacuating.	Minimum 5.5m carriageway width kerb to kerb.	☑	Complies
		Parking is provided outside of the carriageway width.	☑	Complies
		Hydrants are located clear of parking areas.	☑	Complies
		Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	☑	Complies
		Curves of roads have a minimum inner radius of 6m.	☑	Complies
		The road crossfall does not exceed 3°.	☑	Complies
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	☑	Complies

4.5 Water supplies

The intent of measures is to provide adequate services of water for the protection of buildings during and after the passage of bushfire.

Table 4-3 outlines the proposal's compliance with the acceptable solutions for reticulated water supply.

Table 4-3 – Performance criteria for reticulated water supplies (PBP 2019)

Performance criteria	Acceptable solutions	Acceptable solution	Comment
Adequate water supplies is provided for firefighting purposes.	Reticulated water is to be provided to the development, where available.	☑	Complies as per previous consent for Stage 1 & 2
	A static water supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed	☑	

<i>Performance criteria</i>	<i>Acceptable solutions</i>	<i>Acceptable solution</i>	<i>Comment</i>
	Static water supplies shall comply with Table 5.3d.	☑	
Water supplies are located at regular intervals.	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005.	☑	
The water supply is accessible and reliable for firefighting operations.	Hydrants are not located within any road carriageway.	☑	
	Reticulated water supply to urban subdivisions uses a ring main system for areas 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.	All above-ground water service pipes are metal, including and up to any taps.	☑	
	Above ground water storage tank shall be of concrete or metal	☑	

4.6 Gas

Narara Ecovillage does not have access to underground gas. The intent of measures is to locate gas so as not to contribute to the risk of fire to a building. Table 4-4 outlines the required acceptable solutions for gas supply.

Table 4-4 – Performance criteria for gas supplies (PBP 2019)

<i>Performance criteria</i>	<i>Acceptable solutions</i>	<i>Acceptable solution</i>	<i>Comment</i>
Location of gas services will not lead to the ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas bottles are to be installed and maintained in accordance with AS/NZS 1596 (2014), the requirements of relevant authorities and metal piping is to be used.	☑	Complies as per previous consent for Stage 1 & 2

<i>Performance criteria</i>	<i>Acceptable solutions</i>	<i>Acceptable solution</i>	<i>Comment</i>
	All fixed gas cylinders are to be kept clear of flammable materials to a distance of 10m and shielded on the hazard side.	☒	Complies as per previous consent for Stage 1 & 2
	Connections to and from gas cylinders are metal.	☒	
	Polymer sheathed flexible gas supply lines are not used.	☒	
	Above ground gas service pipes are metal, including and up to any outlets.	☒	

4.7 Electricity

The ARENA-funded Smart Grid project commenced in September 2016 with the aim to enable NEV Power, a wholly owned subsidiary of Narara Co-operative Ltd, to operate a smart grid system using solar PV and battery storage for approximately 150 dwellings in total.

The microgrid (and battery storage shown in photo below) enables energy generated on-site to be used within the Ecovillage either via other residents within the community or through on-site utilities, rather than being exported back into the National Electricity Market.

Battery infrastructure and equipment (PV panels, transformers, battery, HVC, metering, switchboards) is located adjacent to the administration building.



The intent of measures is to locate electricity so as not to contribute to the risk of fire to a building. Table 4-5 outlines the required acceptable solutions for the subdivision's electricity supply.

Table 4-5 – Performance criteria for electricity services (PBP 2019)

Performance criteria	Acceptable Solutions	Acceptable solution	Comment
Location of electricity services limit the possibility of ignition of surrounding bushland or the fabric of buildings.	Where practicable, electrical transmission lines are underground.	☒	Overhead services have been removed and connection to the Ausgrid network has been completed underground
	Where overhead electrical transmission lines are proposed: 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 ISSC3 Guideline for Managing Vegetation Near Power Lines.	☐	N/A

4.8 Increase residential density

As required under Section 8.2.1 of PBP this report has assessed the proposal having regard to the strategic principles of *PBP* (refer Section 2 of this report), including increasing density (the potential for additional 17 dwellings) and the impact on evacuation and sheltering of residents during bushfire.

As outlined in Table 3.2 of this report APZ's can be provided based on a radiant heat threshold of 29kW/m² for any new dwellings and suitable provision for construction, access, water and landscaping can be provided and will be addressed in any future DA for dwelling construction.

4.9 Buildings of Class 5 to 8

The planning proposal seeks to enable commercial premises (comprising a maximum Gross Floor Area (GFA) of 1,500m² including 200m² food and drink premises).

The commercial premises will be contained within the existing buildings associated with the former use as Gosford Horticultural Institute. These buildings include an administration block, visitor centre and grafting shed. This Planning Proposal seeks to utilise the existing GFA within these buildings for the purposes of commercial premises.

Whilst the development of these buildings will be subject to a separate DA specific to the proposed use, Section 8.3.1 of *PBP* states the following for these classes of buildings:

Whilst bush fire is not captured in the NCC for Class 5-8 buildings (i.e., there is no specific requirement to comply with AS3959 (2019)), the following objectives will be applied:

- 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.

As depicted in Figure 2.4 & 3.1 the proposed commercial use buildings are in a lower risk area of the site with APZ's in excess of 100m and are provided with safe access and adequate services.

It should be noted that these building also can comply with Section 8.3.11 – Public Assembly buildings of *PBP*. This relates to Class 9 buildings with a floor space area of >500m² which are required to comply with the requirements of a Special Fire Protection Purposes (SFPP). These buildings (particularly the administration building) have the capacity to be used as assembly area during a bush fire event. Future use will be subject to a sperate DA which may involve the upgrade of the building (ember protection).

5. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This Bush Fire Strategic Study has been prepared for a planning proposal at 33 Gugandi Road Narara which seeks to amend the Central Coast Local Environmental Plan 2022 (LEP) resulting in an increase in yield from 150 to 167 dwellings.

Our assessment found that bushfire can potentially affect the site from the vegetation located within the C2 conservation zoned land to the west, Strickland State Forest to the north and west and forest within Grahame Recreation Reserve beyond the adjoining residential properties to the north-east resulting in possible ember and radiant heat attack.

The bushfire risk posed to the planning proposal is mitigated by the bushfire protection measures (including APZs) that have been put in place under previous development applications for Stage 1 and Stage 2 and any future development within Stage 3 will comply with PBP.

The assessment has concluded that the planning proposal will provide compliance with the following broad principles that apply at the strategic level:

- The increase in yield land is suitable for development in the context of bush fire risk.
- new development within Stage 3 will comply with PBP.
- adequate infrastructure is available for emergency evacuation and firefighting operations; and
- ongoing land management practices will continue to occur under the community title scheme.

The following recommendations are provided to improve the bushfire resilience of the NEV community.

5.2 Recommendations

Recommendation 1 – A Community Bush Fire Emergency Management and Evacuation Plan should be prepared in accordance with Table 6.8d of *Planning for Bush Fire Protection 2019* and be consistent with the following:

- The NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan;
- include planning for the early relocation of occupants.
- an Emergency Planning Committee is established to consult with residents in developing and implementing an Emergency Procedures Manual; and
- detailed plans of all emergency assembly areas, including on-site and off-site arrangements are clearly displayed, and an annually emergency evacuation is conducted.

A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information.

Recommendation 2 – Future development applications for Stage 3 must ensure compliance with the acceptable solutions outlined in *Planning for Bushfire Protection 2019*. This must include the provision of a perimeter road and asset protection zones along the egress route to the south.

6. REFERENCES

Councils of Standards Australia AS3959 (2018) – *Australian Standard Construction of buildings in bush fire-prone areas.*

Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT.* The Department of Environment and Climate Change.

Rural Fire Service (2019) - *Planning for bushfire protection – a guide for councils, planners, fire authorities and developers.* NSW Rural Fire Service.

APPENDIX 1. NSW RFS RESPONSE



NSW RURAL FIRE SERVICE

Department of Planning and Environment (Newcastle Regional Office)
26 HONEYSUCKLE DR
NEWCASTLE NSW 2300

Your reference: PP-2023-164
Our reference: SPI20230619000079

ATTENTION: Stacey Stephens

Date: Friday 7 July 2023

Dear Sir/Madam,

Strategic Planning Instrument LEP Amendment – Gateway

The proposal seeks to reduce the minimum lot size applying to the R2 zoned land to facilitate the delivery of smaller and more affordable housing options. Reducing the minimum lot size will enable the delivery of more diverse housing and affordable options for future residents of the eco-village.

I refer to your correspondence dated 15/06/2023 inviting the NSW Rural Fire Service (NSW RFS) to comment on the above Strategic Planning document.

The NSW RFS has considered the information submitted and provides the following comments.

The proposal appears to be generally consistent with the standards established by *Planning for Bush Fire Protection 2019*, however should demonstrate compliance with the applicable sections of *Planning for Bush Fire Protection 2019*. The applicable sections include Chapter 5 (Residential and Rural Residential Subdivisions), s8.2.1 (Increased Residential Density) and s8.3.1 (Buildings of Class 5 to 8 under the NCC). Furthermore, the suitability of the existing access roads to facilitate evacuation should be considered, in light of the proposed increased density of the area.

For any queries regarding this correspondence, please contact Bryce Pascoe on 1300 NSW RFS.

Yours sincerely,

Kalpana Varghese
**Supervisor Development Assessment & Plan
Built & Natural Environment**

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