

Strategic Bush Fire Study

Planning Proposal

**300 Woy Woy Road,
Kariong NSW**

Reference Number: 220628

Prepared For:
NSW Department of Planning,
Industry and Environment

2 May 2022

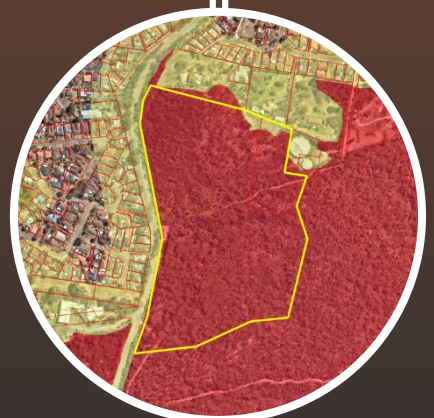


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Version Control				
Version	Date	Prepared by	Reviewed by	Details
1	22/04/2022	Stuart McMonnies	Ian Tyerman	Draft Report
2	2/05/2022	Stuart McMonnies		Final Report

List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 'Construction of buildings in bushfire-prone areas' – 2018
BAL	Bushfire Attack Level
BPMs	Bushfire Protection Measures
BPLM	Bush Fire Prone Land Map
Council	Central Coast Council
DA	Development Application
EP&A Act	Environmental Planning and Assessment Act - 1979
FRNSW	Fire & Rescue NSW
IPA	Inner Protection Area
NCC	National Construction Code
NP	National Park
NSP	Neighbourhood Safer Places
OPA	Outer Protection Area
PBP	Planning for Bush Fire Protection – 2019
ROW	Right of Way
RF Act	Rural Fires Act - 1997
RFS	NSW Rural Fire Service
SBFS	Strategic Bush Fire Study
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SWS	Static Water Supply

Executive Summary

Building Code and Bushfire Hazard Solutions P/L has been commissioned by the NSW Department of Planning, Industry and Environment to prepare an independent Bushfire Assessment Report for a Planning Proposal (PP) which will facilitate a future residential development at 300 Woy Woy Road, Kariong.

The subject site comprises of two (2) existing allotments (Lots 512 & 513 DP 727686), zoned C2: Environmental Conservation.

The Planning Proposal (PP) seeks to rezone part of the site from its current C2: Environmental Conservation zone to permit low and medium density residential with a maximum of 50 dwellings. The PP will result in a future mix of residential and environmental land.

The subject site is depicted on Central Coast Council's Bushfire Prone Land Map as containing Category 1 Vegetation and the Vegetation Buffer and is therefore considered 'bushfire prone land'.

In relation to this planning proposal Central Coast Council is required to apply section 9.1(2) of the *Environmental Planning and Assessment Act 1979*. Direction 4.4 Planning for Bushfire Protection identifies matters for consideration for proposals that affect or are in proximity to land mapped as bushfire prone. Under these directions the following objectives apply:

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

The NSW Rural Fire Service (NSW RFS) have provided Pre Gateway comment regarding the proposed rezoning of the subject site on 21 April 2021 (RFS ref: SPI20210401000042). This advice while having no specific objections at that time did identify future referrals are reliant on the proposal adequately addressing the relevant provisions of *Planning for Bush Fire Protection 2019 (PBP)*, inclusive of Chapter 4 'Strategic Planning'.

A Strategic Bush Fire Study has been undertaken consistent with Chapter 4 of PBP and concluded the proposal is appropriate in the bushfire hazard context.

A key consideration for planning proposals in bushfire prone areas is limiting or excluding incompatible development commensurate with the level of risk. In this regard the subject site is considered to have a moderate bushfire risk when considering the established residential development to the north and west, fire history, fire service coverage and available fire paths.

In addition to the Strategic Bush Fire Study an assessment of the proposed land zoning against the specific Bushfire Protection Measures of PBP has concluded that future Development Applications have the capacity to satisfy this document.

It is of our opinion that the LEP Amendment can provide an appropriate combination of Bushfire Protection Measures (BPMs) in accordance with PBP.

Furthermore we are satisfied that the proposed LEP Amendment, in combination with the bushfire protection measures discussed herein will not result in areas that are difficult to evacuate, create control difficulties during a bushfire or adversely affect other bush fire protection strategies or place existing development at increased risk.

1.0 Introduction

Building Code and Bushfire Hazard Solutions P/L has been commissioned by NSW Department of Planning to prepare an independent Bushfire Assessment Report for a Planning Proposal which will facilitate a future residential development at 300 Woy Woy Road, Kariong.

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

The proposal must demonstrate compliance with the s9.1(2) Directions and the relevant specifications and requirements of *Planning for Bush Fire Protection 2019* (PBP).

The application of PBP requires satisfactory demonstration of the aim and objectives and the specific objectives and bushfire protection measures relevant to the type of development.

In this instance the proposal relates to a Planning Proposal to facilitate a future residential subdivision and therefore in addition to the aim and objectives detailed in Chapter 1 'Introduction' the proposal must satisfy Chapter 4 'Strategic Planning' of PBP.

The bushfire protection measures detailed in Chapter 5 'Residential and Rural Residential Subdivisions' of PBP have also been considered for the future subdivision applications.

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide an independent bushfire assessment together with appropriate recommendations for bushfire mitigation measures considered necessary having regard to development within a designated 'bushfire prone' area.

This Bushfire Assessment Report addresses Section 4 'Strategic Planning' of *Planning for Bush Fire Protection 2019*.

3.0 Scope of this Report

The scope of this report is limited to providing a bushfire assessment and recommendations for the subject site (refer to Figure 01). Where reference has been made to the surrounding lands, this report does not purport to directly assess those lands; rather it may discuss bushfire impact and/or progression through those lands and possible bushfire impact to the subject site.

4.0 Aerial Image, BPLM, Zoning & Urban Design Principles Summary

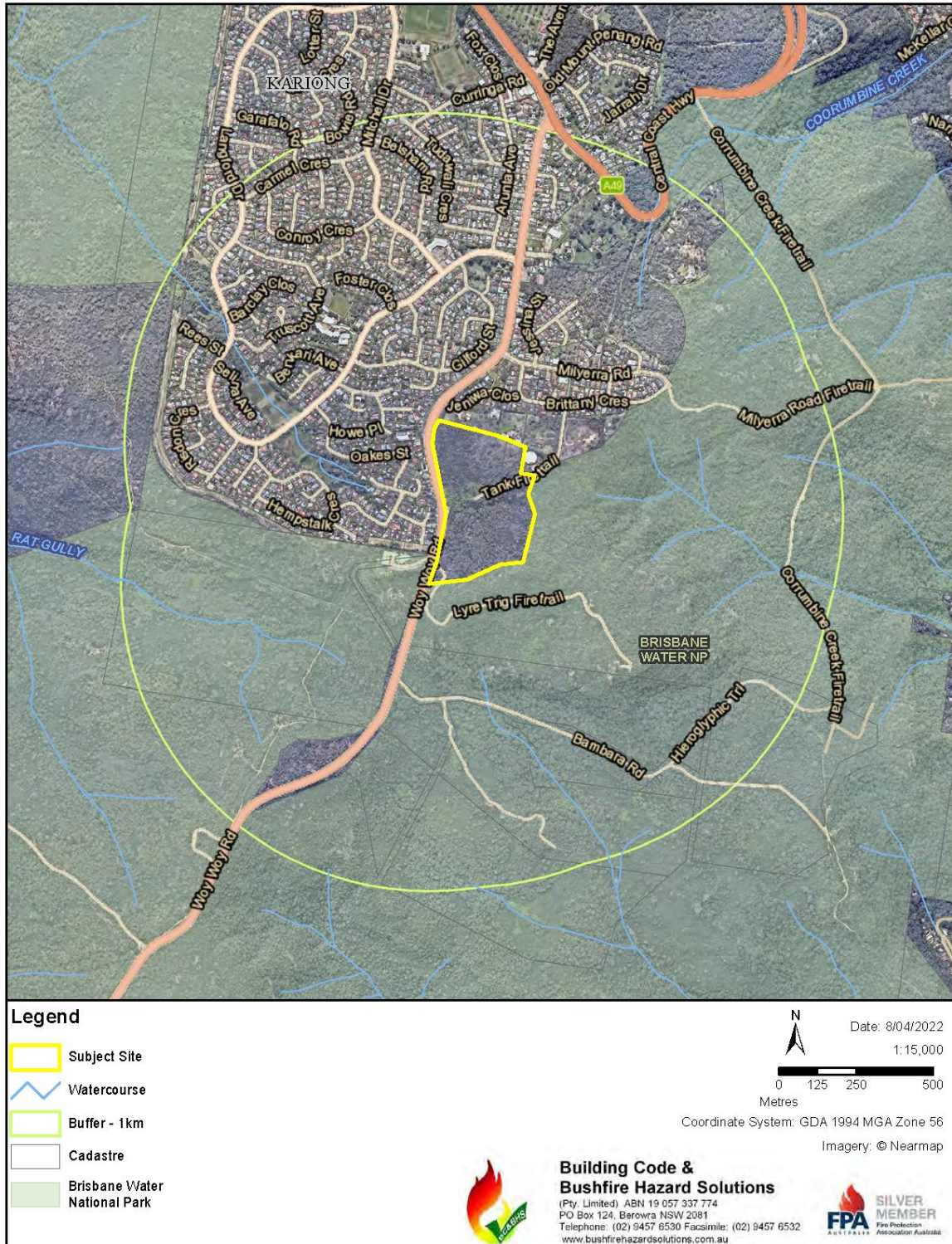


Figure 01: Aerial view of the subject area

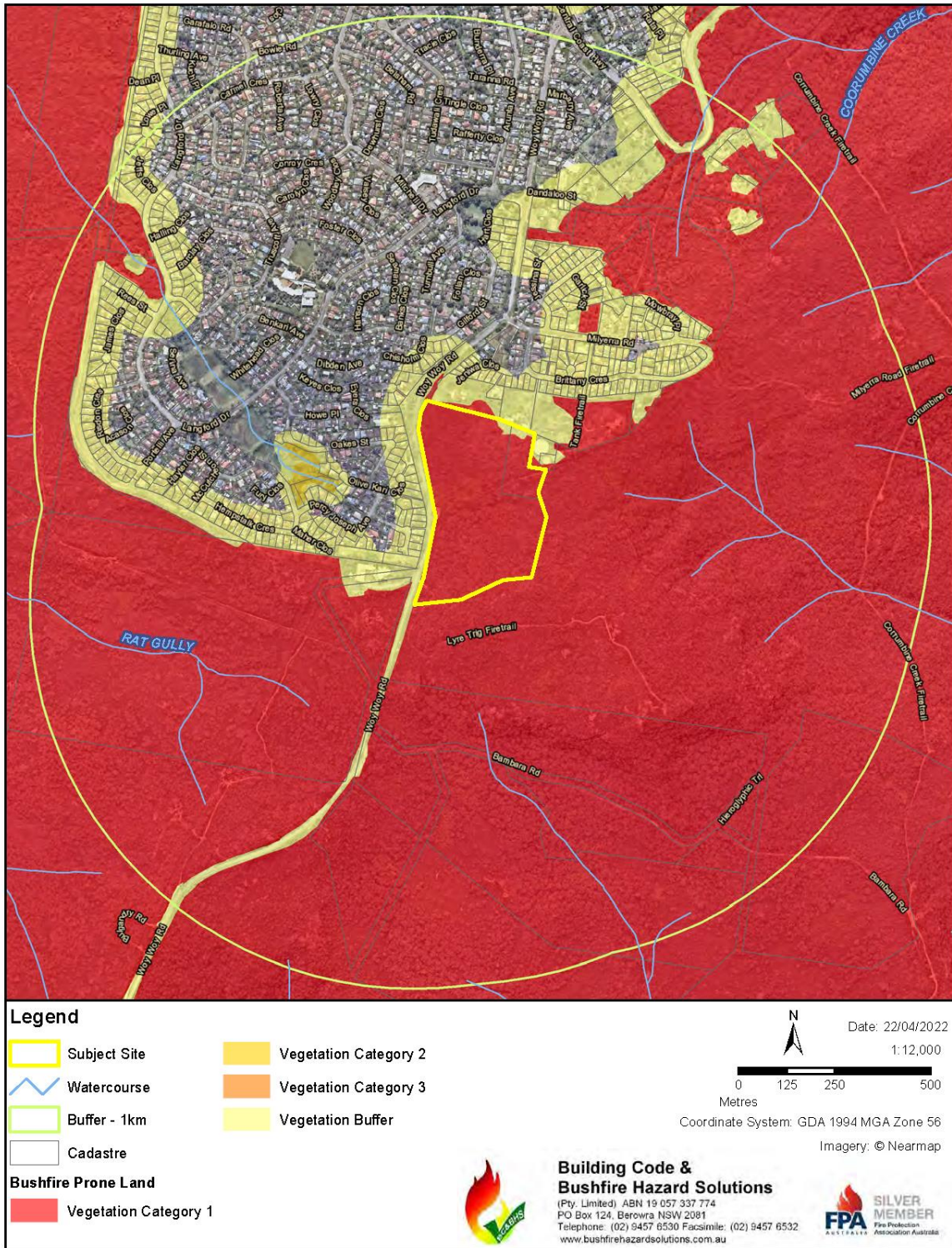


Figure 02: Extract from Central Coast Council's Bushfire Prone Land Map

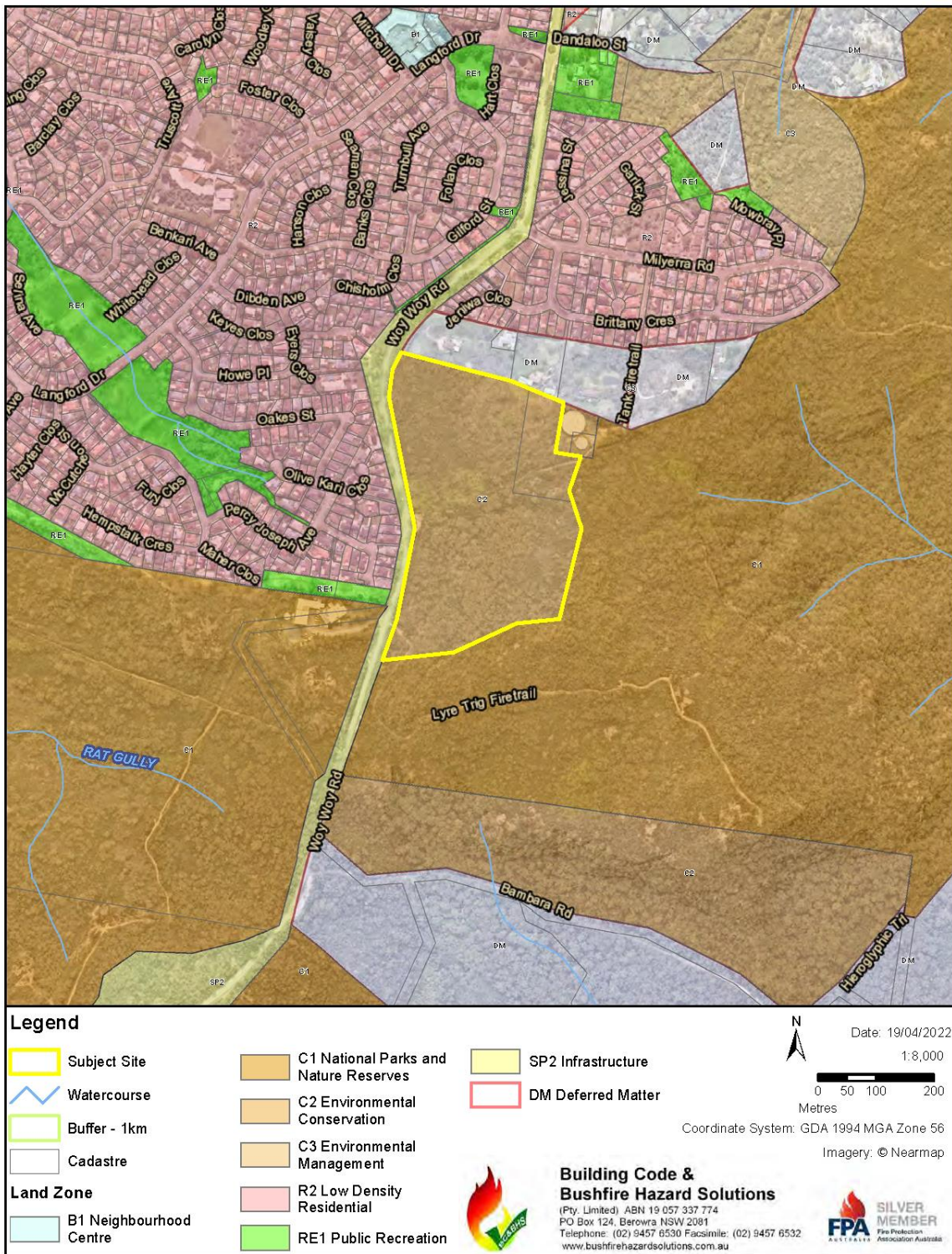
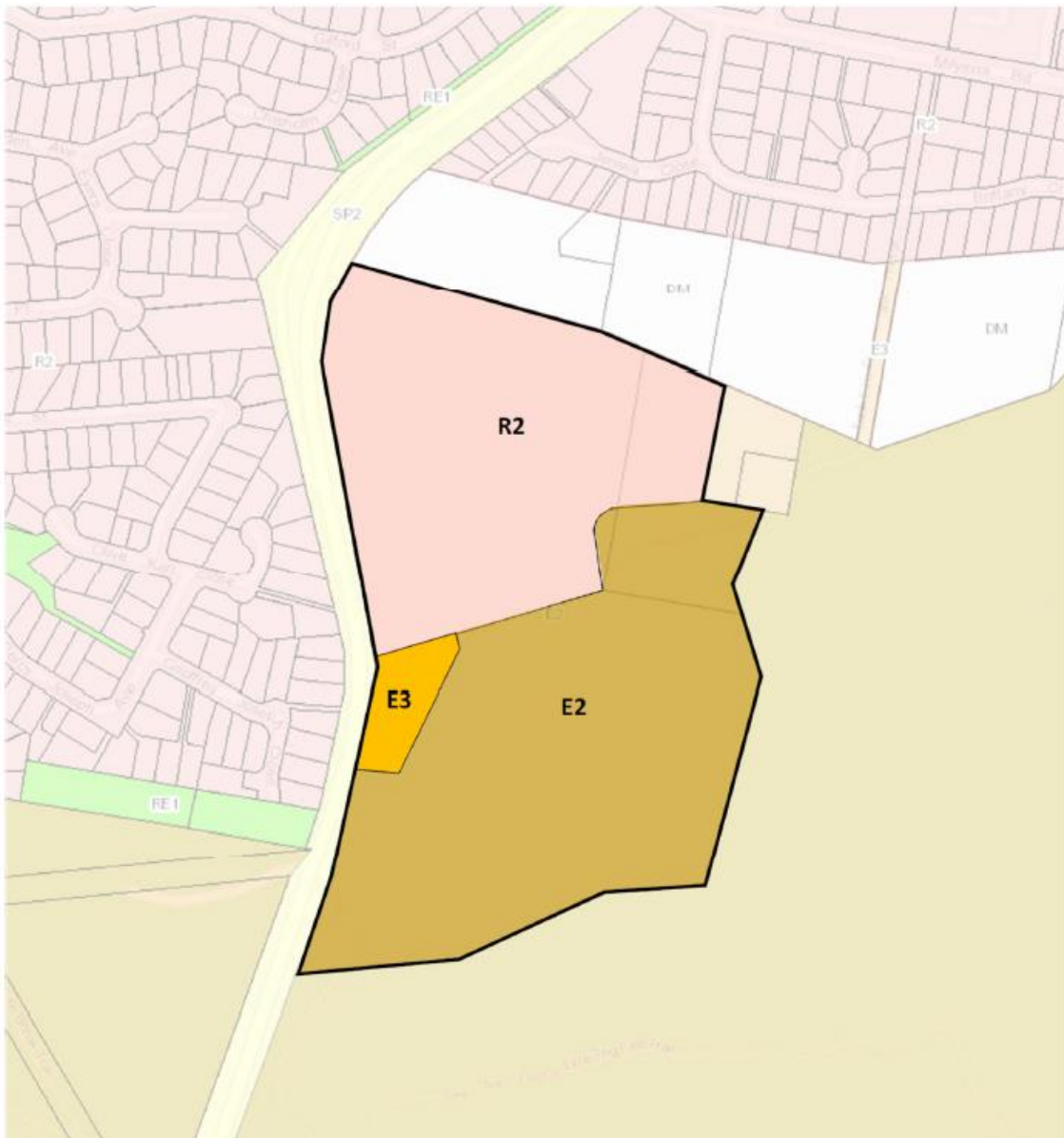


Figure 03: Current land zoning of the subject area




 Subject Land

Figure 04: Proposed land zoning of subject site

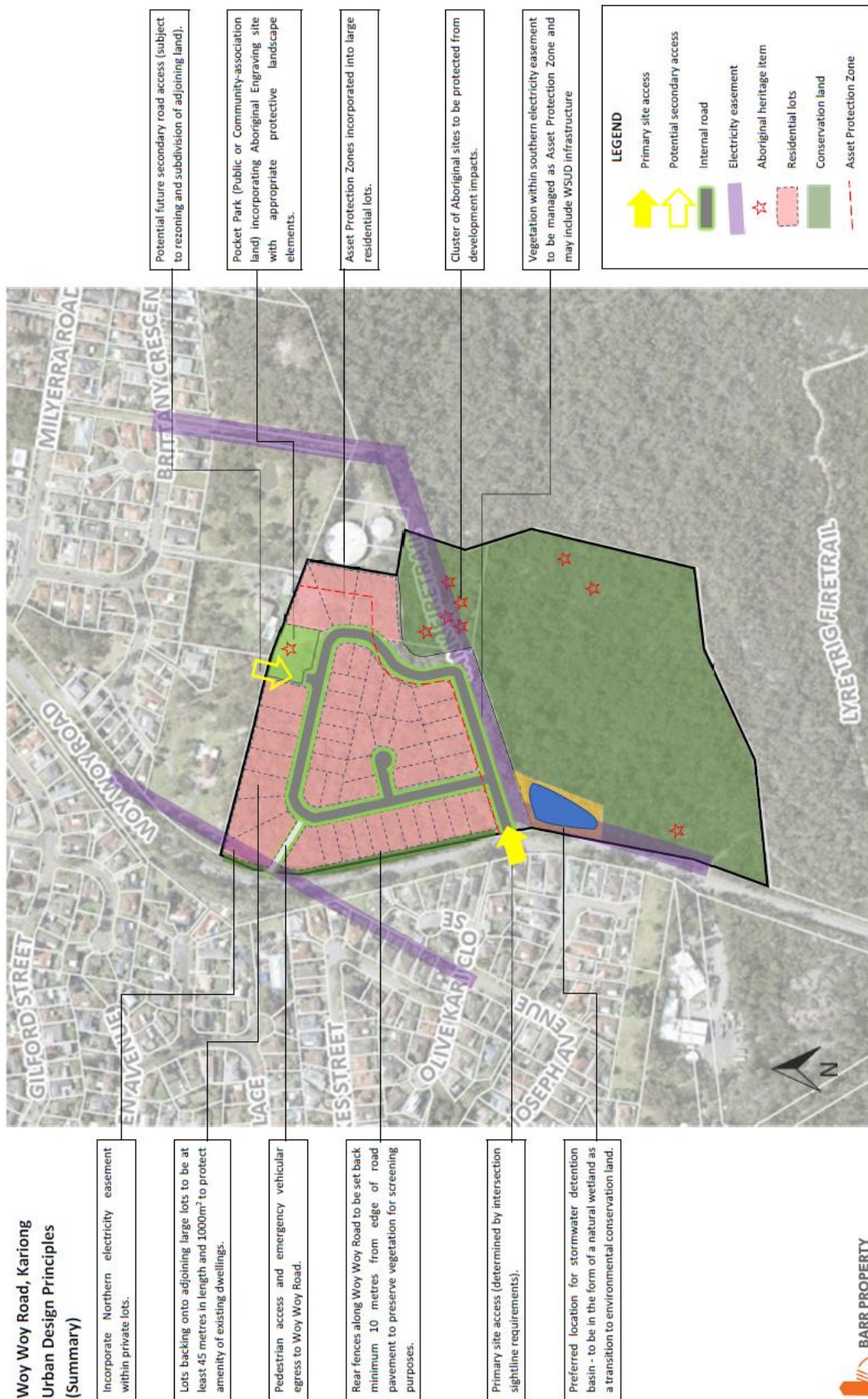


Figure 05: Urban Design Principles Summary (Barr Property & Planning 2020)

5.0 Bushfire Assessment

5.01 Preface

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and/or the Rural Fire Service. All development within affected areas is subject to the application of the relevant specifications and requirements of 'Planning for Bush Fire Protection - 2019' (PBP).

PBP formally adopted on the 1st March 2020 provides for the protection of property and life (including fire-fighters and emergency service personnel) from bushfire impact.

In this instance the subject site is depicted on Central Coast Council's Bushfire Prone Land Map as containing Category 1 Vegetation and Vegetation Buffer. The subject site is therefore considered to be 'bushfire prone land'.

When preparing a planning proposal s9.1(2) of the EP&A Act is required to be applied. Direction 4.4 'Planning for Bushfire Protection' of the s9.1(2) Direction, applies when a Council prepares a draft LEP that affects, or is in proximity to, land mapped as bushfire prone. Under these directions the following objectives apply:

- i. 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
- ii. to encourage sound management of bush fire prone areas.

Under direction 4.4 the Commissioner of the NSW RFS must be consulted and any comments taken into account. As part of the consultation process with the NSW RFS, a bush fire assessment is required to be submitted to demonstrate compliance with the s9.1(2) Directions and PBP.

The NSW Rural Fire Service (NSW RFS) have provided Pre Gateway comment regarding the proposed rezoning of the subject site on 21 April 2021 (RFS ref: SPI20210401000042). This advice while having no specific objections at that time did identify future referrals are reliant on the proposal adequately addressing the relevant provisions of *Planning for Bush Fire Protection 2019* (PBP), inclusive of Chapter 4 'Strategic Planning'.

Consideration must be given to limiting or excluding incompatible development in bushfire affected areas commensurate with the level of risk. A key principle to ensure this is that future development is designed and sited capable of complying with PBP.

The NSW RFS also encourages the application of zones that limit or exclude inappropriate development in bushfire prone areas where:

- *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.*

We provide the following assessment in consideration of the above and *Planning for Bush Fire Protection 2019* to highlight the suitability of the proposed residential zone and the relevant Bushfire Protection Measures.

5.02 Strategic Bush Fire Study

Planning proposals which relate to bushfire prone properties require the preparation of a Strategic Bush Fire Study. The Strategic Bush Fire Study (SBFS) provides opportunity to assess the broader landscape and ultimately assesses whether the new zones and proceeding development is appropriate in the bushfire hazard context.

The broad principles which apply to the SBFS analysis are:

- 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.

Once the strategic assessment has been addressed in the SBFS, an assessment of whether the future land uses can comply with the aim and objectives and specific bushfire protection measures of PBP must then be carried out. The assessment against PBP is addressed in section 5.03 of this report.

The following assessment details the components in Table 4.2.1 of PBP which must be addressed in a SBFS.

Bushfire Landscape Assessment

The Bushfire Landscape Assessment component considers the likelihood of a bushfire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.

Location

The subject site comprises of two (2) existing allotments zoned 'C2: Environmental Conservation' located at 300 Woy Woy Road, Kariong being:

Street Address	Lot and DP
300 Woy Woy Road, Kariong	Lot 512 DP 727686
2 / 300 Woy Woy Road, Kariong	Lot 513 DP 727686

The subject site is located within Central Coast Council's local government area and is approximately 13.2 hectares in size. The proposed residential zoned land occupies the northern portion of the site (approx. 5.7ha).

The site is within the Greater Sydney Region Fire Weather District and is captured by the Central Coast Bush Fire Risk Management Plan 2020.

The site has street frontage to Woy Woy Road to the west and abuts private residential allotments to the north, Central Coast Council water reservoirs to the northeast and Brisbane Water National Park to the east and south.

The site is within the immediate fringe of the Kariong township, with established residential properties located to the north and west.

Vegetation

The vegetation structure, connectivity and attributes are fundamental contributors to bushfire behaviour and its movement through the landscape.

As part of this assessment we have considered the potential bushfire runs (catchments) that currently exist into the site, as well as the potential fire behaviour and impacts following the delivery of the LEP Amendment.

Historically development within the subject site has been limited to minor impacts from infrastructure (electrical transmission lines and associated trails), a classified fire trail and management creep from adjacent residential properties. A large portion of the site was subsequently found to comprise of natural bushland.

To assess the potential fire runs into the development site we have considered all existing vegetation within 1 kilometre and potential bushfire behaviour and impacts following the delivery of the LEP Amendment (Figure 05).

The most significant catchments for bushfire to impact the overall site were identified to be:

- Southwest, through Brisbane Water National Park;
- Southeast and south, through Brisbane Water National Park and retained bushland (C2: Environmental Conservation zoned land) within the subject site.

We have assumed all land other than the retained C2: Environmental Conservation zoned land within the site will either be developed, maintained to the standard of an Asset Protection Zone or considered Low Threat Vegetation in accordance with A1.10 of PBP.

The existing vegetation within the development site is mapped (Umwelt 2019) as being Dwarf Apple – Scribbly Gum healthy low woodland on sandstone ranges of the Central Coast (PCT1641), Scribbly Gum – Red Bloodwood – Old Man Banksia heathy woodland of southern Central Coast (PCT1642) and Heath- leaved Banksia – Coral Fern wet heath on sandstone ranges of the lower Central Coast (PCT1699).

The following vegetation parameters apply to the mapped vegetation within the development site:

Plant Community Type	Formation	Class	Surface and Elevation Fuel Load*	Overall Fuel Load (including bark and canopy)*
Dwarf Apple – Scribbly Gum healthy low woodland on sandstone ranges of the Central Coast (PCT1641)	Heathlands	Sydney Coastal Heaths	36.9 t/ha	36.9 t/ha
Scribbly Gum – Red Bloodwood – Old Man Banksia heathy woodland of southern Central Coast (PCT1642)	Dry Sclerophyll Forests (Shrubby sub-formation)	Sydney Coastal Dry Sclerophyll Forests	21.3 t/ha	27.3 t/ha
Heath- leaved Banksia – Coral Fern wet heath on sandstone ranges of the lower Central Coast (PCT1699)	Freshwater Wetlands	Coastal Heath Swamps	15.0 t/ha	15.0 t/ha

* Fuel loads from NSW Rural Fire Service publication Comprehensive Vegetation Fuel Loads (2019)

The vegetation posing a hazard to the southeast, south and southwest was generally found to comprise of trees 10-15 metres in height having a 30-70% canopy foliage cover and an understorey of low trees, shrubs and grasses.

While it is acknowledged that there are large areas of Sydney Coastal Heaths within these hazards as a conservative measure a Forest classification was applied to the southeast, south and southwest.

This conservative assessment has also been applied to the retained vegetation within the subject site.

The private large residential allotments to the north and the Central Coast Council allotments (containing the local water reservoirs) to the northeast have been considered Low threat vegetation in accordance with A1.10 of PBP based on the existing land management practices. This assessment is consistent with Council's Bush Fire Prone Lands Map.

Figure 06 overleaf shows the vegetation assessment adopted for both the bushfire landscape assessment and site specific assessment.

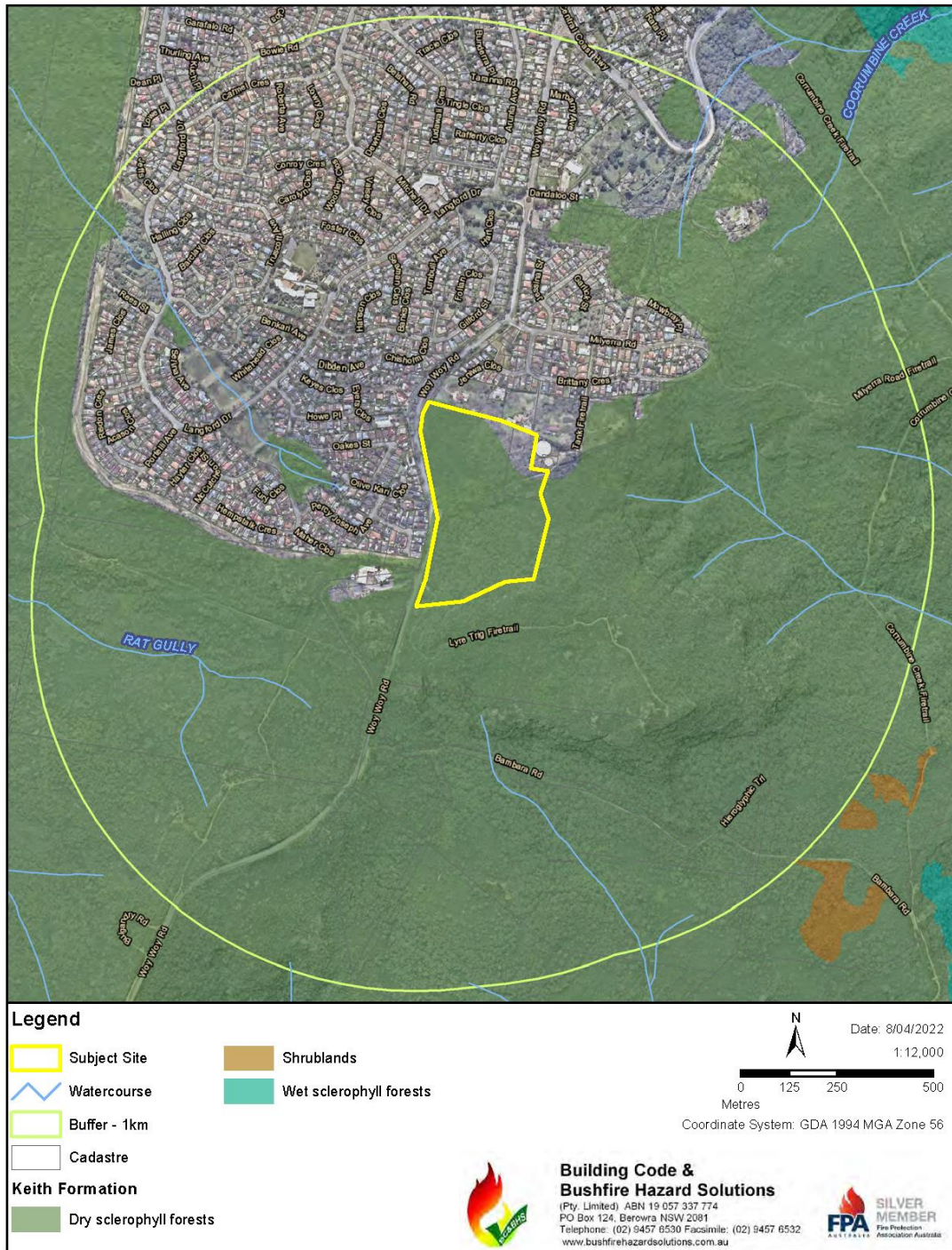


Figure 06: Vegetation Assessment

Slope and Topography

The slope of the land under the classified vegetation has a direct influence on the forward rate of spread, fire intensity and radiant heat exposure. The effective slope is considered to be the slope under the classified vegetation which will most significantly influence bushfire behaviour toward the development site.

The slope that would **most significantly** influence bushfire impact was determined using 1 metre LiDar contours of the subject area.

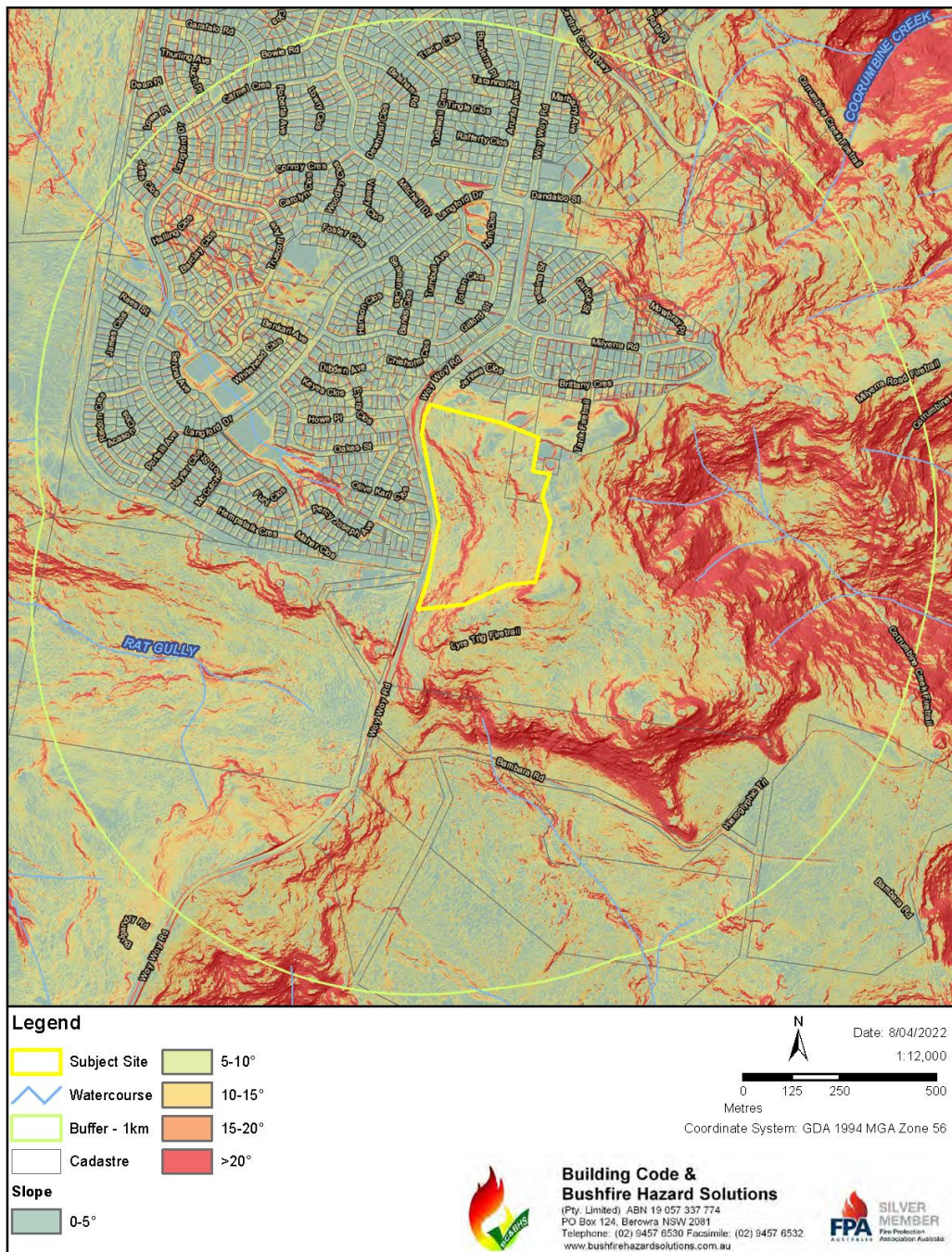


Figure 07: Slope categorisation of the subject area

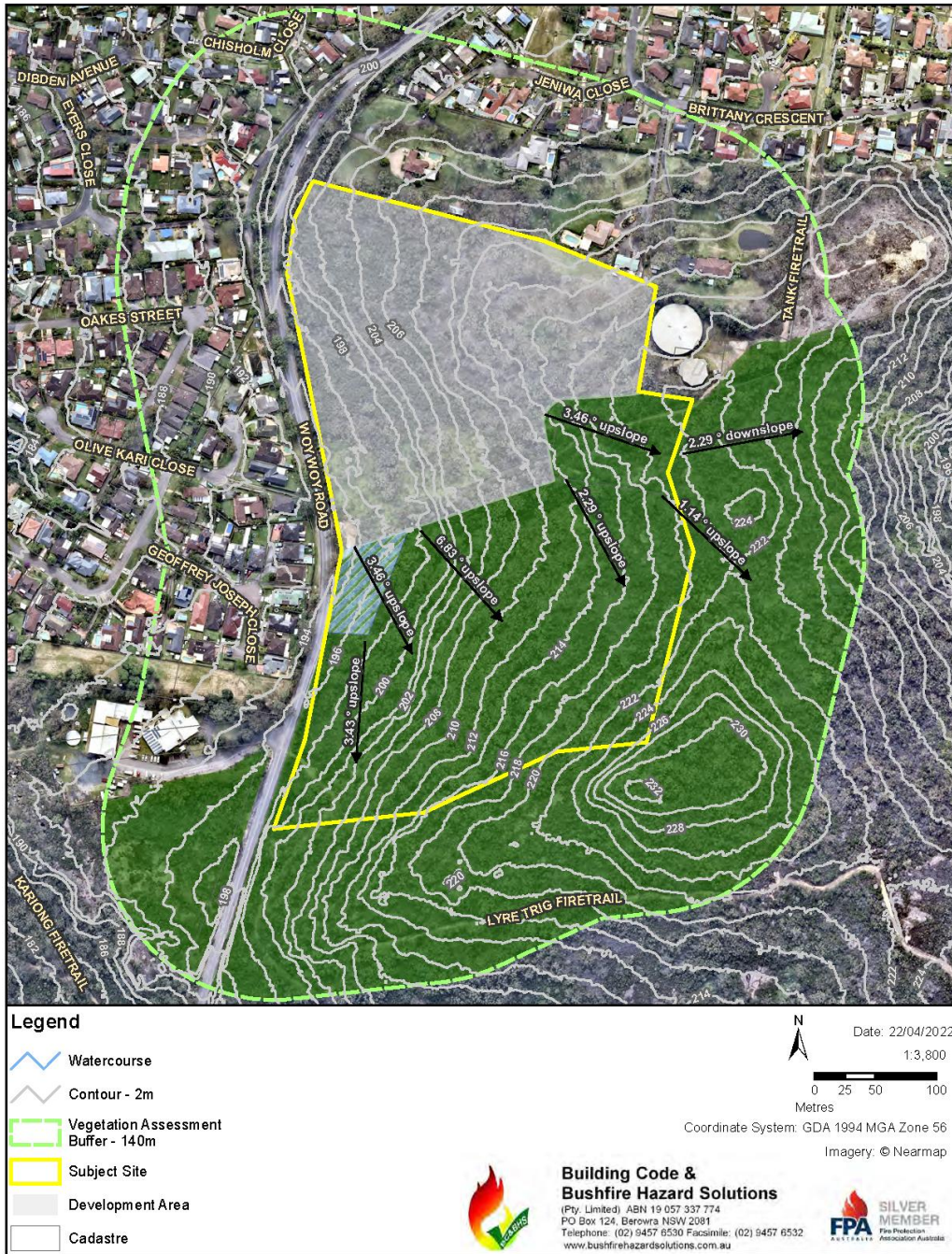


Figure 08: Slope assessment of adjacent development site

Fire Weather

All development which attracts an Asset Protection Zone under PBP requires the identification of the relevant Fire Danger Index (FDI). The FDI required to be used for development assessment purposes is based on the local government boundaries, being Central Coast Council in this instance.

In accordance with the NSW Rural Fire Service publication 'NSW Local Government Areas FDI' (2017) Central Coast Council is located within the Greater Sydney Region Fire Weather District which attracts a Fire Danger Index (FDI) of 100 for bushfire planning purposes.

Previous Bushfire History

There are areas within NSW that have significant fire history and are recognised as known fire paths. In a planning context it is important to identify these locations and ensure incompatible development is not proposed.

In this instance the subject site was impacted in 1964/65, 1968/69 and 1976/77 (source NPWS Fire History dataset).

Large wildfires have been recorded, >30 metres to the southwest (2002/03), >85 metres to the south (2005/06), >170 metres to the southwest (1994/95) and >250 metres to the southwest (1988/89) of the subject site.

It should be noted that the 1988/89 fire and those earlier occurred prior to the expansion of the Kariong township, with impacted areas now comprising of established residential properties.

Severe fire behaviour in this part of NSW is typically heavily influenced by hot dry northwest / westerly winds brought from inland Australia. These winds are the primary influence for the direction of a fire, generally pushing fires in a south-easterly / easterly direction. Southerly changes which are typically associated with strong winds that push fires in a northerly direction are an exception to this.

In this regard there are no direct fire paths from the northwest or west to the development site, with this area comprising of established residential properties and active open space for >800 metres.

The development site is therefore not considered to be within a known fire path.

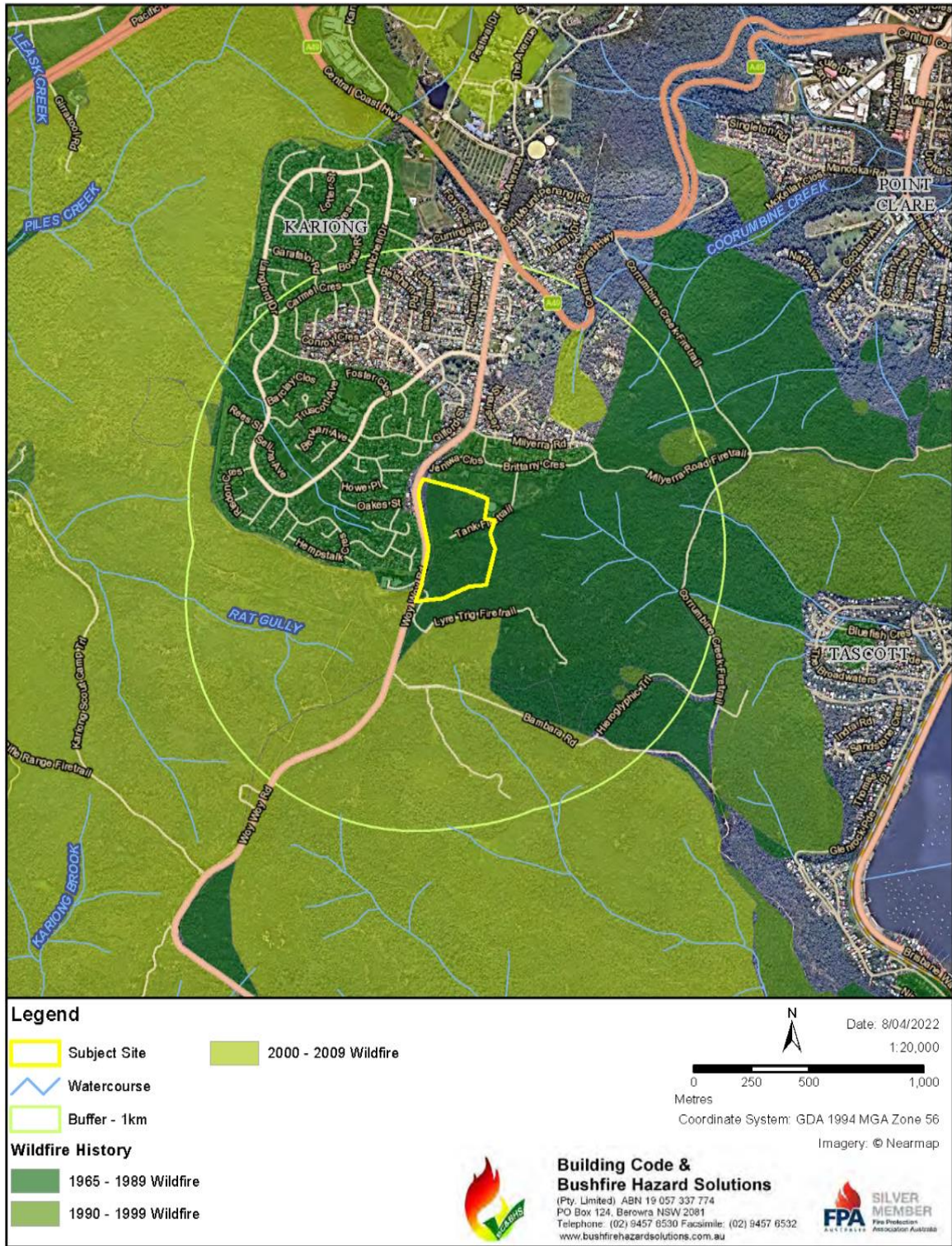


Figure 09: Previous bushfire history of subject area

Potential Fire Behaviour

In this instance it has been identified that the largest fire catchments to the development site are from the south and southwest through Brisbane Water National Park. In the broader landscape there are catchments to the northwest and west, however the established township of Kariong shields the development site from these fire runs.

Two (2) impact scenarios to the development site has been considered these being:

1. A bushfire burning from the east or south through Brisbane Water National Park and retained C2: Environmental Conservation zoned land within the site toward the development site. While the coastal influences of a fire burning in these directions are expected to reduce temperatures and humidity, stronger winds can also be experienced resulting in increased fire activity.
2. A bushfire burning from the west / southwest through Brisbane Water National Park. This scenario provides the largest catchment area and is the direction of travel commonly associated with severe fire behaviour in this area. A bushfire burning under this scenario would be burning along Rat Gully and past the NSW Rural Fire Service district Fire Control Centre, directly impacting southern portion of the subject site. A bushfire burning under this scenario with westerly winds would have the head pushing past the development site, with the impact being a flanking fire; and

In applying the parameters described in this section and the accepted assessment methodology described in PBP bushfire design modelling was undertaken to determine the intensity of scenario 2 being that associated with more severe fire behaviour.

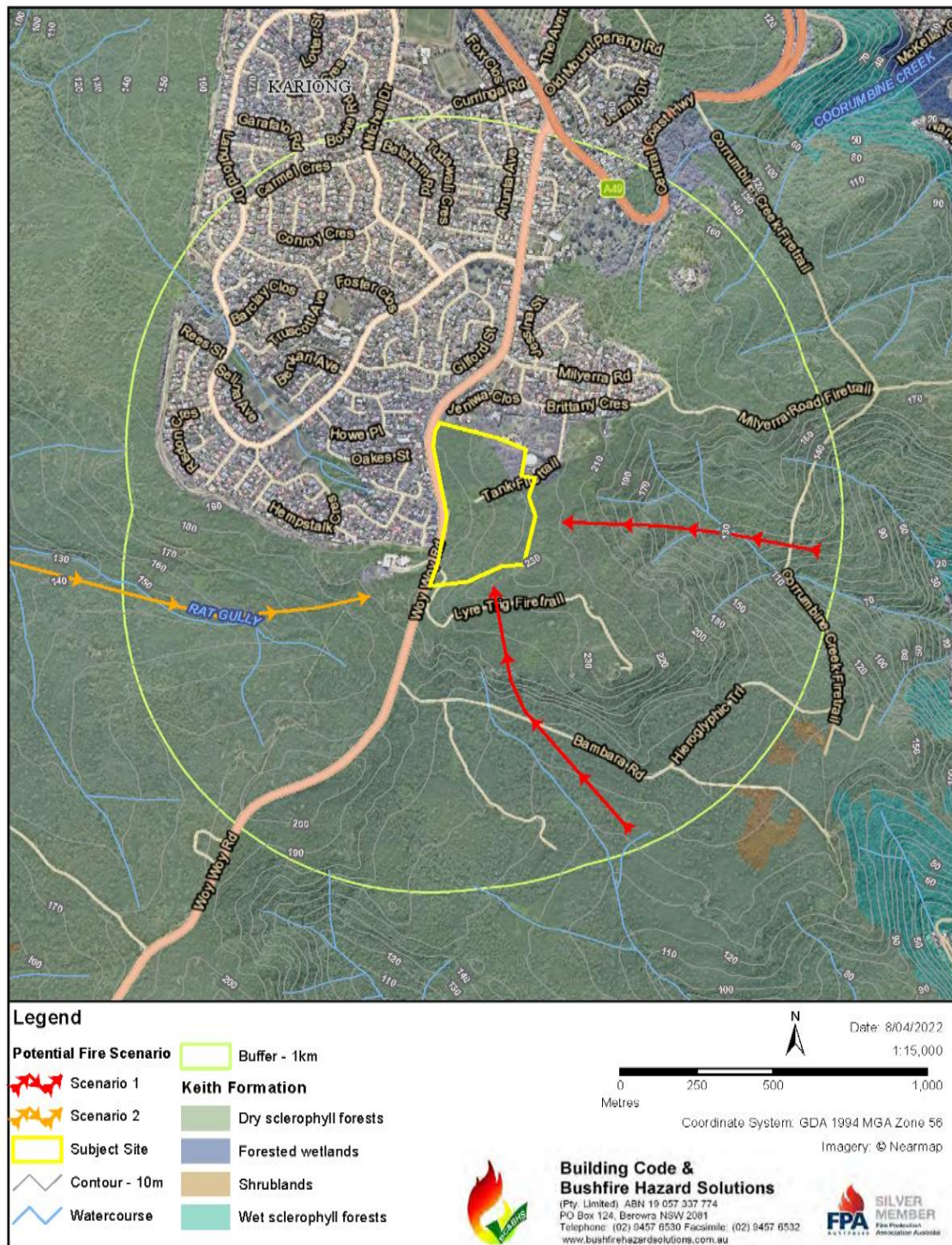


Figure 10: Aerial view of the subject area showing assessed fire runs

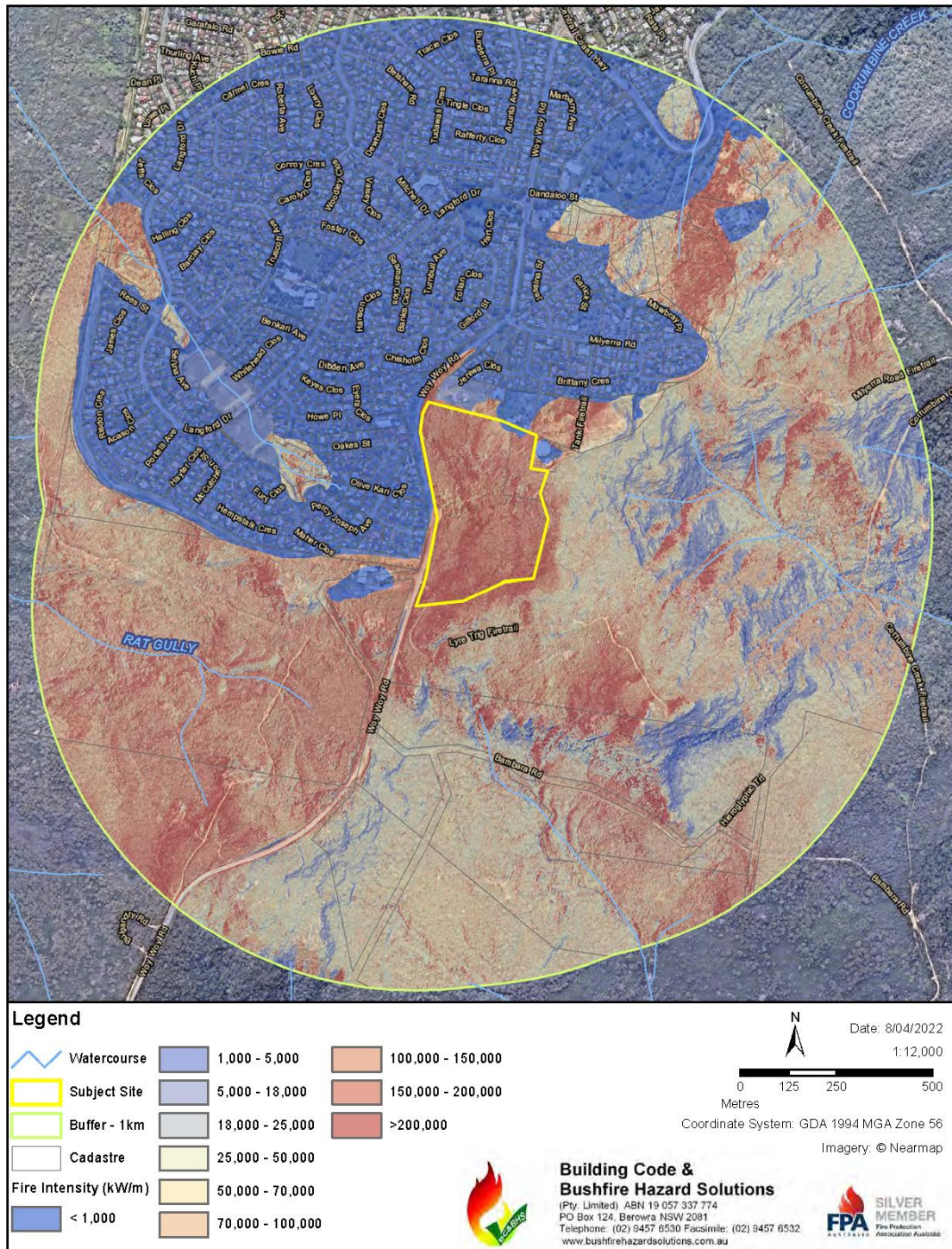


Figure 11: Fire intensity of Scenario 2 (north to southwest)

Access & Suppression

Access for attending fire services to undertake early suppression is a key factor in whether a fire has the opportunity to develop into a quasi-steady state at which point the opportunity to control / extinguish the fire becomes far more challenging.

Where good access is available it provides opportunity to control / extinguish a fire in its growth phase before developing further and consequently becoming more difficult to conduct direct attacks.

In addition to good access, visual advantage points such as fire towers and lookouts also facilitate early identification for fire services.

In this particular instance Woy Woy Road bisects Brisbane Water National Park from Phegans Bay to Kariong.

Traffic flows on Woy Woy Road are reasonably high during the commuter peaks as it provides an attractive route between Woy Woy and suburbs further south and the Central Coast Highway for connection to the M1 Pacific Motorway to the west of the locality (SECA Solution 2020).

This high traffic flow results in increased exposure to the identified hazard and consequently increased likelihood of early identification of a bushfire.

In addition Berowra Fire Tower, the numerous lookouts throughout Brisbane Water National Park and sight lines from Brisbane Water and communities to the east provide excellent visual advantage points for the early detection of a bushfire.

Access to the hazard in the broader landscape is available via existing public roads and the extensive classified fire trail network within Brisbane Water National Park. Refer to Figure 12 for the extent of existing roads, trails and classified fire trails in the subject area (source Transport NSW).

Classified fire trails must meet certain standards to be registered as such. This ensures that the NSW RFS and other fire agencies have confidence to deploy resources to a location, with confidence that they will be able to efficiently access and respond to an incident.

In consideration of the comprehensive access and its exposure to the public the identification and subsequent extinguishment of a bushfire within the site is considered reasonable.



Figure 12: Aerial view of the subject area overlaid with roads, trails and classified fire trails (source Transport NSW)

Land Use Assessment

The Land Use Assessment identifies the most appropriate locations in the study area for the proposed land uses. In a bushfire planning context the various land uses present different risk profiles and as such are assessed differently under Planning for Bush Fire Protection.

In this instance the proposal does not include a broad masterplan but rather a specific 'spot' rezoning to facilitate a future residential development. The proposal provides a mix of low and medium density residential and environmental zones.

Special Fire Protection Purpose (SFPP):

SFPP development is one which is occupied by people who are considered to be at-risk members of the community. In a bushfire event, these occupants may be more susceptible to the impacts of bush fire.

SFPP development consequently attracts the highest Bushfire Protection Measures commensurate to the risk profile. Most notably SFPP development, attracts large minimum required Asset Protection Zones, which in instances can preclude future development.

Development that is listed in section 100B of the *Rural Fires Act 1997* as SFPP are:

- (a) a school,
- (b) a child care centre,
- (c) a hospital (including a hospital for the mentally ill or mentally disordered),
- (d) a hotel, motel or other tourist accommodation,
- (e) a building wholly or principally used as a home or other establishment for mentally incapacitated persons,
- (f) seniors housing within the meaning of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004*,
- (g) a group home within the meaning of *State Environmental Planning Policy No 9—Group Homes*,
- (h) a retirement village,
- (i) any other purpose prescribed by the regulations.

Section 46 of the *Rural Fires Regulation 2013* also lists additional SFPP development which are:

- (a) a manufactured home estate (within the meaning of *State Environmental Planning Policy No 36—Manufactured Home Estates*), comprising two or more caravans or manufactured homes, used for the purpose of casual or permanent accommodation (but not tourist accommodation),
- (b) a sheltered workshop, or other workplace, established solely for the purpose of employing persons with disabilities,
- (c) a respite care centre, or similar centre, that accommodates persons with a physical or mental disability or provides respite for carers of such persons,
- (d) student or staff accommodation associated with a school, university or other educational establishment,
- (e) a community bush fire refuge approved by the Commissioner

Buildings used for public assembly which have a floor area of greater than 500m² are also treated technically as SFPP development due to the evacuation challenges presented by large numbers of occupants.

In this instance the Planning Proposal seeks residential and environmental land zones and subsequently does not directly seek approval to facilitate future SFPP development.

It is acknowledged that the residential zone can permit, with consent, some SFPP uses (e.g. bed and breakfast, childcare etc). Where future SFPP development is proposed these will be the subject to independent Development Applications which would be required to demonstrate compliance with the relevant specifications and requirements of PBP at that time.

Residential:

Residential development (increased density, subdivision, townhouses etc) presents the next highest risk profile and accordingly also attracts minimum required Asset Protection Zones. In this regard a Residential Asset Protection Zone overlay (Figure 13) has been prepared to depict the minimum required for residential development.

It should also be noted that this is a macro-level assessment and further refinement of the APZs at a micro level may be achieved.

The proposal includes an additional permitted use clause to provide flexibility in the built form outcome for the site. The clause will enable a community title subdivision and the ability for housing to be clustered to reduce the footprint of development in response to site constraints and support preservation of landscape features of the site. The clause will restrict the number of dwellings across the proposed R2 zoned land to a maximum of 50 dwellings.

The LEP Amendment demonstrates that the land proposed to be low density residential and additional permitted use can accommodate a building footprint outside the minimum required APZs for residential development.

The delivery of a future residential development, which will incorporate all current bushfire planning controls, including Asset Protection Zones and construction measures, within the northern portion of the site will reduce the bushfire risk to the existing established residential properties to the north and west.

Land Use:

The proposed LEP Amendment locates the residential land adjacent existing established residential development resulting in mutually beneficial Asset Protection Zones and improved access for attending fire services.

In consideration of the landscape study and risk profiles we are of the opinion the proposed land uses are appropriate.

Access and Egress

It is important to assess the capacity of both the existing and proposed road networks both within and external to the investigation area to deal with evacuating residents and responding emergency services.

The key evacuation and access route for the site is Woy Woy Road.

From Woy Woy Road residents / occupants can travel north deeper into the established township of Kariong.

Mount Penang Parklands Village Green is the closest identified Neighbourhood Safer Place and is located less than 2 kilometres to the north of the subject site.

While travel is also available in a southerly direction along Woy Woy Road this route is considered unlikely to be utilised during a bushfire event considering the increased exposure to bushland immediately adjacent and long travel distance to an area of safety.

Woy Woy Road provides an overall pavement width in the order of 7.5 metres, single lane travel in both locations and operates under the posted speed limit of 60km/h. Woy Woy Road exceeds the minimum carriageway requirements for non-perimeter roads as described in section 5.3.2 of PBP.

The modest population increase as a result of the proposal is unlikely to cause issues for a coordinated or timely evacuation of both existing and new occupants.

Emergency Services

In some circumstances the scale of a planning proposal warrants a need to include provisions for a new fire station.

The subject site is located within a NSW Rural Fire Service area, with the district Fire Control Centre located immediately opposite the subject site on Woy Woy Road. The Kariong Rural Fire Service station is located on Dandaloo Street less than 600 metres to the north of the subject site.

The established Kariong township is within a NSW Fire & Rescue area, with a station located within the Kariong township, less than 1.2 kilometres to the north of the subject site. It would be expected that following the delivery of the future residential development within the site the fire service boundary will be updated to capture the residential development in the NSW Fire & Rescue area.

In consideration of the relatively modest population increase relating to this planning proposal the existing fire service coverage is considered acceptable.

Infrastructure

An assessment of the issues associated with infrastructure and utilities must be undertaken. This assessment is to include the ability of the reticulated water system to deal with a major bushfire event in terms of pressures, flows and spacing of hydrants.

There are hydrants available along the existing public roads within the area. The capabilities of the broader hydrant network is the responsibility of Central Coast Council.

The sizing, spacing and pressures of any future hydrant system must comply with AS2419.1-2005.

It is understood that the proposal will not directly impact any existing electrical or gas infrastructure.

5.03 Planning for Bush Fire Protection

As the strategic issues have been satisfactorily addressed in the SBFS, an assessment of compliance with PBP is required. This section addresses the future developments capacity to comply with the relevant specifications and requirements of PBP.

The application of PBP requires satisfactory demonstration of the aim and objectives and the specific objectives and bushfire protection measures relevant to the type of development. The bushfire protection measures detailed in Chapter 5 of PBP have been considered for the future residential development.

The following table details the aim and objectives of *Planning for Bush Fire Protection 2019* and the proposals ability to comply.

Aim / Objective	Comment
<p><i>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.</i></p>	<p>With the inclusion of the recommendations made herein it is of our opinion that the aim of PBP has been satisfied.</p>
<p><i>(i) afford buildings and their occupants protection from exposure to a bush fire;</i></p>	<p>The proposed land uses can support the minimum required Asset Protection Zones for residential development.</p> <p>In conjunction with the application of the relevant Bushfire Attack Level under Australian Standard 3959 'Construction of buildings in bushfire-prone areas' future buildings and their occupants will be afforded protection from exposure to a bushfire.</p>
<p><i>(ii) provide for a defensible space to be located around buildings;</i></p>	<p>The retained conservation area, which presents the bushfire threat, is framed by a perimeter road.</p> <p>This road provides a defensible space for fire services and logical fire-fighting platform.</p>
<p><i>(iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;</i></p>	<p>The application of the minimum required APZs in conjunction with the relevant Bushfire Attack Level for the future buildings will prevent the likely fire spread to buildings.</p>

Aim / Objective	Comment
<p>(iv) ensure that appropriate operational access and egress for emergency service personnel and occupants is available;</p>	<p>Comprehensive access will be available to the bushfire hazards for attending fire services via the internal road network.</p> <p>The future subdivision application can provide a perimeter road adjacent the identified bushfire hazards providing direct access for attending fire services undertaking hazard reduction or fire suppression activities.</p>
<p>(v) provide for ongoing management and maintenance of bush fire protection measures, (BPMs); and</p>	<p>The specific bushfire protection measures of the future developments will be addressed within the submission documents of those developments.</p>
<p>(vi) ensure that utility services are adequate to meet the needs of firefighters.</p>	<p>The capabilities of the broader hydrant network is the responsibility of Central Coast Council.</p> <p>The sizing, spacing and pressures of any future hydrant system within the site must comply with AS2419.1-2005.</p> <p>These future hydrants are considered to be the logical water supply for fire services undertaking hazard reduction and / or fire suppression activities.</p>

It is therefore of our opinion that the proposal can satisfactorily comply with the aim and objectives of *Planning for Bush Fire Protection 2019*.

Asset Protection Zones

Asset Protection Zones (APZs) for residential subdivision are determined from Table A1.12.2 of PBP or bushfire design modelling achieving a radiant heat impact of no more than 29 kW/m² at a building footprint.

The minimum required Asset Protection Zones for the future residential development were determined from Table A1.12.2 of PBP to be 29 metres from the hazard to the east and 24 metres from the hazard to the south.

These minimum required APZs for the residential subdivision are depicted on Figure 13 overleaf.

The available APZs consist of the land within the subject site (including the perimeter road and residential land).

The subject site has the capacity to comply with the minimum required APZs as detailed in PBP.

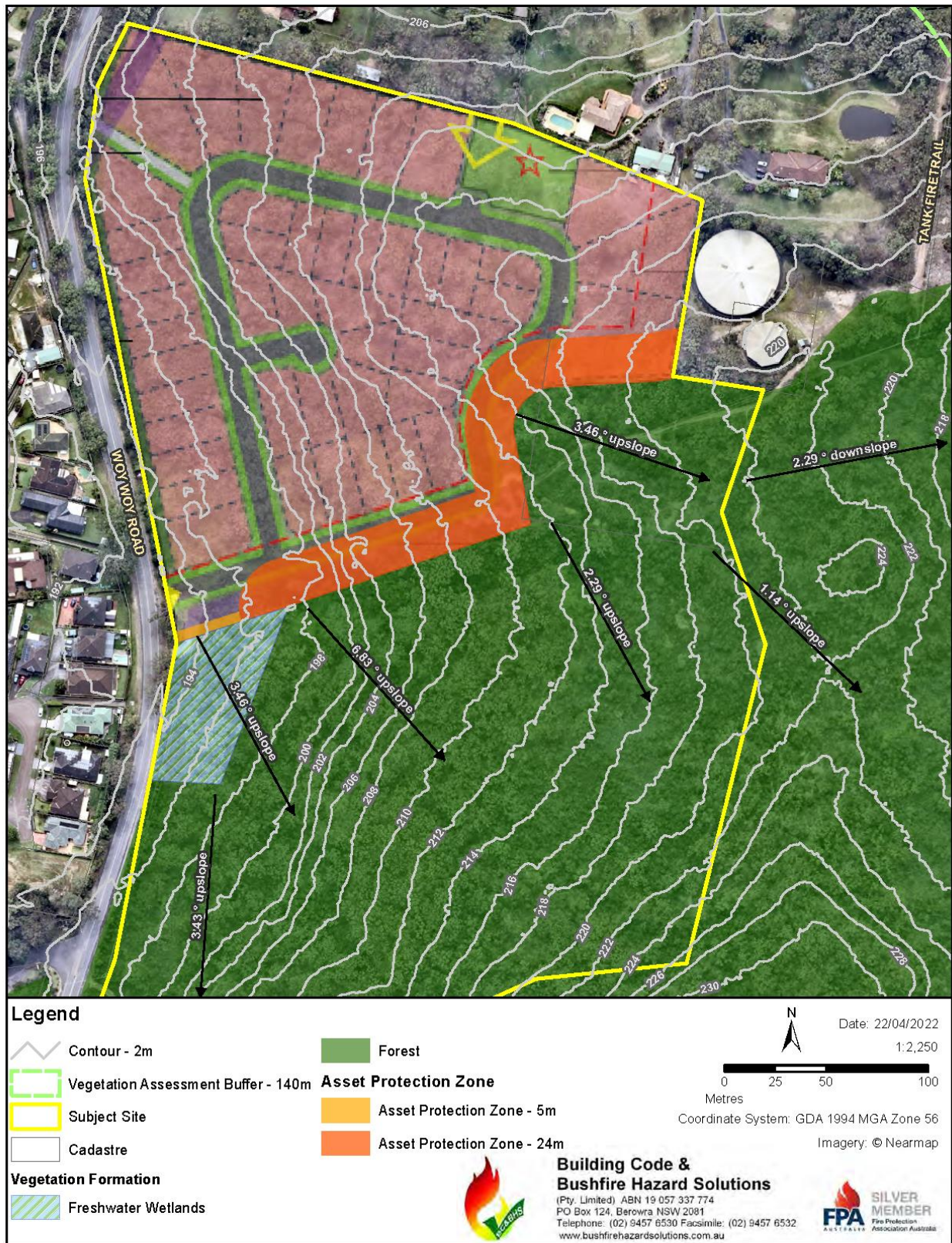


Figure 13: Residential Asset Protection Zone Overlay

Fire Fighting Water Supply

There are hydrants available along the existing public roads within the township of Kariong. In addition an existing hydrant point is available within the adjacent Central Coast Council allotment which also contains the two (2) large water reservoirs.

The sizing, spacing and pressures of any future internal hydrant system must comply with AS2419.1-2021. Alternatively to achieve compliance with PBP each future allotment will require the installation of a Static Water Supply.

The subject site has the capacity to comply with the Water Supply requirements as detailed in sections 5.3.3 of PBP.

Access

Planning for Bush Fire Protection addresses design considerations for internal roads (public roads) for properties determined to be bushfire prone. In a bush fire prone area, the purpose of the road system is to:

- provide firefighters with access to structures, allowing more efficient use of firefighting resources;
- provide evacuation routes for firefighters and the public; and
- provide access to areas of bush fire hazard for firefighting and hazard mitigation purposes.

The subject site has street frontage to Woy Woy Road to the west.

The Urban Design Principles Summary provides one main connection point to Woy Woy Road and an additional emergency vehicle access point. In addition the Urban Design Principles Summary allows for a possible future connection point to the north from the existing large residential allotments (zoned deferred matter).

The Urban Design Principles Summary also includes a perimeter road adjacent the bushfire hazards and utilises through roads throughout the design, satisfying the preferred design option. This future road infrastructure provides an improved access outcome for the existing Kariong community.

The short dead-end road is less than 200 metres in length (approx. 40m) and will only service five lots.

We are satisfied that the proposed internal road system has the capacity to comply with the requirements for Access under section 5.3.2 of PBP 2019.

6.0 Conclusion

Building Code and Bushfire Hazard Solution P/L has been commissioned to prepare an independent Bushfire Assessment Report for a Planning Proposal which will facilitate a future residential development at 300 Woy Woy Road, Kariong.

The subject site is currently zoned 'C2: Environmental Conservation' and is located within Central Coast Council's local government area.

The Planning Proposal (PP) seeks to rezone part of the site from its current C2: Environmental Conservation zone to permit low and medium density residential with a maximum of 50 dwellings. The PP will result in a future mix of residential and environmental land.

In this instance the subject site is depicted on Central Coast Council's Bushfire Prone Land Map as containing Category 1 Vegetation and Vegetation Buffer. The subject site is therefore considered 'bushfire prone'.

We are satisfied that the subject site and proposed LEP Amendment has the capacity to comply with the relevant specifications and requirements of *Planning for Bush Fire Protection 2019*.

Furthermore we are satisfied that the proposed LEP Amendment, in combination with the bushfire protection measures discussed herein will not result in areas that are difficult to evacuate, create control difficulties during a bushfire or adversely affect other bush fire protection strategies or place existing development at increased risk.

We are therefore in support of the Planning Proposal.

Should you have any enquiries regarding this project please contact me at our office.

Prepared by
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BPAD Accreditation No. BPAD30356



7.0 Annexure 01

List of Referenced Documents

Australian Building Codes Board (2019). *National Construction Code Volume Two - Building Code of Australia*. ABCB

Barr Property & Planning (2020). Planning Proposal – 148 Woy Woy Road, Kariong

Barr Property & Planning (2020). Urban Design Principles – Woy Woy Road, Kariong

ELVIS -Elevation -Foundation Spatial Data. Elevation.fsdf.org.au. Available at: <http://elevation.fsdf.org.au/>

Environmental Planning and Assessment Act 1979

NSW Department of Planning and Environment (2019). *Planning Portal*. Accessed at: <https://www.planningportal.nsw.gov.au/>

NSW Rural Fire Service (2019). *Planning for Bushfire Protection. A Guide for Councils, Planners, Fire Authorities and Developers*.

Rural Fires Act 1997

Rural Fires Regulations 2013

Rural Fire Service NSW (2005). *Standards for Asset Protection Zones*

Rural Fire Service NSW (2017). *NSW Local Government Areas FDI*

SECA Solution (2020). Traffic advice – proposed residential zoning application, land off Woy Woy Road, Kariong.

Standards Australia (2018). *AS3959 Construction of buildings in bushfire-prone areas*.

Standards Australia (2014). *AS/NZS 1596 The storage and handling of LP Gas*

Acknowledgements to:

Geoscience Australia
Nearmap
Street-directory.com.au
Transport NSW
NPWS Fire History

Attachments

Attachment 01: Nil