

Bushfire Threat Assessment

Planning Proposal - Rezoning
18 Macleay Avenue, Woy Woy, NSW



Prepared for: Pacific Link Housing

29 April 2022

AEP Ref: 2507.01

Revision: 00

Document Control

Document Name	Bushfire Threat Assessment – Planning Proposal – Rezoning; 18 Macleay Avenue, Woy Woy, NSW.
Project Number	2507.01
Client Name	Pacific Link Housing c/ Barker Ryan Stewart
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Revision

Revision	Date	Author	Reviewed	Approved
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Distribution

Revision	Date	Name	Organisation
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Appendix

Appendix A – Extract from the BFRMP

1.0 Introduction

Anderson Environment & Planning was commissioned by Barker Ryan Stewart c/ Pacific Link Housing (the client) to undertake a Bushfire Threat Assessment (BTA) for a Planning Proposal to rezone RE1 – Public Recreation to R1 – General Residential and RE1 – Public Recreation at 18 Macleay Avenue, Woy Woy, NSW (the Subject Site).

The Planning Proposal will be assessed as per Division 3.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). As a result, Section 3.18 requires concurrence from the Rural Fire Service (RFS) to enable the planning proposal to proceed on Bushfire Prone Land. This report addresses the required heads of consideration relevant to obtaining concurrence from the RFS.

This report is specifically intended to assess the bushfire protection measures required by “Planning for Bushfire Protection 2019” (PBP) and the construction requirements for proposed development in accordance with the provisions of the Building Code of Australia – Volume 2, Edition 2010 and Australian Standard 3959-2009 (AS 3959) – “Construction of buildings in bushfire-prone areas”, to provide direction for future development planning within the site.

For the purposes of referencing, this document should be referred to as:

Anderson Environment & Planning (2021). *Bushfire Threat Assessment – Planning Proposal – Rezoning; 18 Macleay Avenue, Woy Woy, NSW*. Unpublished report for Pacific Link Housing. April 2022.


2.0 Site Particulars


- **Address** – 18 Macleay Avenue, Woy Woy, NSW.
- **LGA** – Central Coast Council.
- **Title Details** – Lot 16 DP 255220.
- **Subject Site** – Consists of all land within the subject site (title details above) which total approximately 0.56ha.
- **Zoning** – Under the Gosford Local Environmental Plan 2014 (the LEP), the site is zoned: RE1 – Public Recreation.
- **Current Land Use** – The site is currently a vacant block with remnant vegetation in the east and central portion of the lot. The western portion is predominantly cleared / regenerating vegetation. An unnamed 1st order stream passes from south to north and runs parallel to the eastern boundary.
- **Surrounding Land Use** –
 - North West: R1 – General Residential
 - West: R2 – Low Density Residential
 - South West: R2 Low Density Residential
 - South / South East: R2 – Low Density Residential and RE1 – Public Recreation
 - West: RE1 – Public Recreation (Nambucca Drive Playground and Hillview Street Bushland Reserve).
- **Proposed Development** – Planning Proposal to rezone RE1 – Public Recreation to R1 – General Residential and RE1 – Public Recreation for multi-dwelling housing, at 18 Macleay Avenue, Woy Woy, NSW.


Figure 1 depicts the extent of the site overlain on an aerial photograph of the locality.


Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Legend

 Lot Boundary

 Cadastre

 Hydroline



AEP

Title: Figure 1 - Site Location

Date: April 2022

Location: 18 Macleay Avenue, Woy Woy

Client: Barker Ryan Stewart

AEP Ref: 2507.01








3.0 Bushfire Hazard Assessment

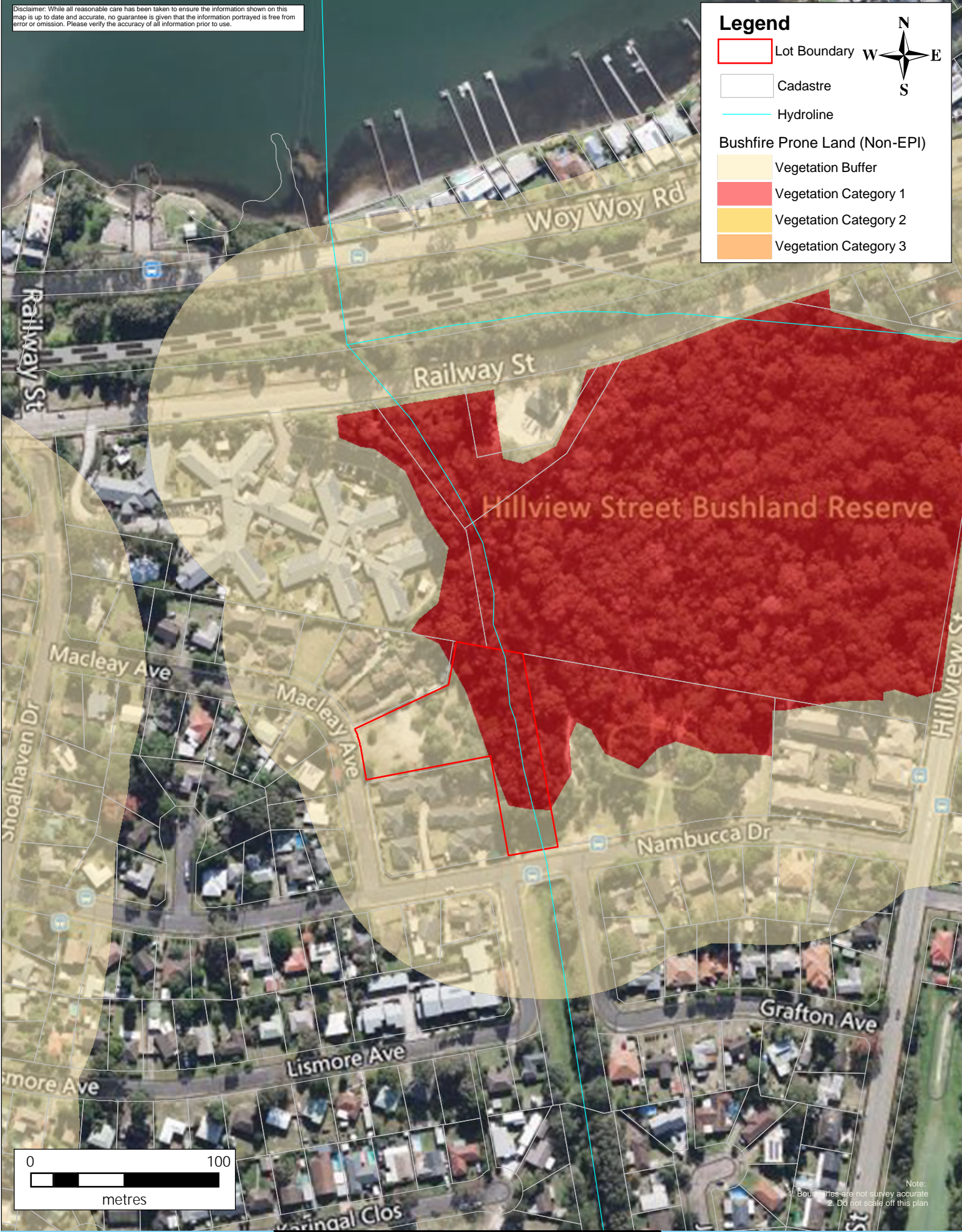
3.1 Bushfire Prone Land Mapping

Examination of the Central Coast Council LGA Bushfire Prone Land (BPL) Mapping (NSW Planning Portal) confirms that part of the site is mapped as “Vegetation Category 1” as well as “Bushfire Prone Land – Vegetation Buffer” as shown in **Figure 2**. This designation has triggered the need for this assessment as part of the Planning Proposal submission.

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Legend

-  Lot Boundary
-  Cadastre
-  Hydroline
- Bushfire Prone Land (Non-EPI)**
 -  Vegetation Buffer
 -  Vegetation Category 1
 -  Vegetation Category 2
 -  Vegetation Category 3



Note:
1. Boundaries are not survey accurate
2. Do not scale off this plan



AEP

Title: Figure 2 - Bushfire Prone Land

Date: April 2022

Location: 18 Macleay Avenue, Woy Woy

Client: Barker Ryan Stewart

AEP Ref: 2507.01

3.2 Planning for Bushfire Protection 2019

Planning for Bush Fire Protection 2019 aims to provide an assessment and review process for proposed development within NSW on land identified as bush fire prone to minimise the risk of bush fires to life and property.

Section 4.2 and Table 4.2.1 within the PBP (2019) outlines the bush fires issues and assessment considerations for a strategic development proposal. **Table 1** outlines these components and assessment as relates to the Subject Site.

Table 1 - Bush Fire Issues and Strategic Assessment

Issue	Detail	PBP 2019 Considerations	AEP Assessment
Bush fire landscape assessment	A 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.	<p>The bush fire hazard in the surrounding area, including:</p> <ul style="list-style-type: none"> • Vegetation • Topography • Weather 	<p>The site and surrounds occur within the Greater Hunter region, with existing vegetation subsequently classified with a Fire Danger Index (FDI) of 100 as per Appendix 1 Section A1.6 of the PBP.</p> <p>AEP understands that hazard vegetation along the eastern boundary of the Subject Site will be retained as RE1 – Public Recreation land and the vegetation will be managed under a vegetation management plan (VMP). The retention and management of this land will mean that this vegetation will form hazard vegetation and has been assessed as hazard vegetation for the purpose of this planning proposal.</p> <p>The remaining vegetation within the Subject Site to the west of the retained RE1 – Public Recreation land will be cleared for future developments.</p> <p>The vegetation to the east outside of the Subject Site will not be managed and will remain as hazard vegetation.</p> <p>The residential developments to the north west, west, south west and predominantly south are not considered to contain hazardous vegetation.</p> <p>Therefore, on and off-site vegetation will be considered within this bushfire assessment. All vegetation within 140m of the Subject Site has been subjected to this assessment:</p> <ul style="list-style-type: none"> • South east, east and northeast and retained RE1 – Public Recreation land within the Subject Site – has been determine as Eucalypt-dominated ‘Forest’ vegetation as defined in the PBP, which represent a future hazard, refer to Plate 4, 5, 7, 8, 9 and 10. • North, north west, west, south west, south and south east – Predominantly residential development, refer to Plate 1, 2, 3 and 6.

Issue	Detail	PBP 2019 Considerations	AEP Assessment
			<p>Figure 3 provides an indication of the vegetation surrounding the site that constitutes the future hazard post development for the proposal.</p> <p>Furthermore, consultation of the Bushfire Risk Management Plan 2020-2025 (BFRMP) produced by the Central Coast Bush Fire Management Committee (CCBFMC, 2020) indicates that sections of forested vegetation to the north east of the site (Hillview Street Bushland Reserve (AKA Woy Woy Park)) and north-west of the site are mapped as Strategic Fire Advantage Zone (SFAZ). This section is subject to dedicated bush fire management strategies under the responsibility of the relevant authority (Council, NSW RFS). A map showing the location of these zones was extracted from the BFRMP and is included in Appendix A of this report.</p>
		The potential fire behaviour that might be generated based on the above.	Canopy fire may occur in land to the north, northeast, east and south east.
		Any history of bush fire in the area.	There is little evidence of recent bush fire in vegetation to the south east, east and north east of the Subject Site. Refer Plates 4, 5, 7, 8, 9 and 10
		Potential fire runs into the site and the intensity of such fire runs.	Canopy fire may occur in land to the north, northeast and south east.
		The difficulty in accessing and suppressing a fire, the continuity of bush fire hazards or the fragmentation of landscape fuels and the complexity of the associated terrain.	The Proposal has ample space to provide the required APZs, suitable access and egress points, defensible space, hydrants and, given the location to local fire station (<5.3km approximately 8 minutes – NSW RFS – The Bays Brigade Phegans Bay), this is not considered an issue.
Land use assessment	The land use assessment will identify the most appropriate locations within the masterplan area	The risk profile of different areas of the development layout based on the above landscape study.	<p><u>Slope Analysis</u></p> <p>From the plan presented in Figure 3, it is apparent that the site falls predominantly downslope to the east into the unnamed creek line. Further east the slope is flat / upslope once passed</p>

Issue	Detail	PBP 2019 Considerations	AEP Assessment
	<p>or site layout for the proposed land uses.</p>		<p>the creek. Examination of slope class to relevant hazard areas reveals:</p> <ul style="list-style-type: none"> • North – 0-5 degrees downslope • North east – 0-5 degrees downslope • East – 0-5 degrees downslope • South east – 0-5 degrees downslope • South – 0-5 degrees downslope <p><u>Asset Protection Zones</u></p> <p>Based on the information presented previously, the following derivation of required Asset Protection Zones (APZ's) was concluded. Examination of slope class to relevant hazard areas reveals:</p> <p><u>Fire Danger Index Rating = 100</u></p> <p><u>North, north east, east, south east and south</u></p> <ul style="list-style-type: none"> • Predominant Vegetation – Forest. • Effective Slope – 0-5 degrees downslope • Required minimum APZ – 29m. <p>As per Section A4.1.2 of PBP2019, the APZ may be composed of an Inner Protection Area (IPA) and an Outer Protection Area (OPA) with management summarised as follows:</p> <ul style="list-style-type: none"> • IPA: up to 15% canopy cover; 2-5m minimum canopy separation; no shrubs at the base of trees; shrub cover under 10%; grasses kept to no more than 100mm in height; • OPA: up to 30% canopy cover; 2-5m minimum canopy separation; shrub cover under 20%; grasses kept to no more than 100mm in height;

Issue	Detail	PBP 2019 Considerations	AEP Assessment
			<ul style="list-style-type: none"> The OPA can be located within 10 metres from the outer edge of the APZ. Figure 4 shows the required APZs.
		The proposed land use zones and permitted uses.	Given the above assessment the proposed Residential zone is deemed suitable within the Subject Site.
		The most appropriate siting of different land uses based on risk profiles within the site (i.e., not locating development on ridge tops).	Given the above assessment the proposal to rezone to R1 – General Residential and RE1 – Public Recreation land is deemed the appropriate.
		The impact of the siting of these uses on APZ provision.	Refer Above APZ assessment.
Access and egress	A study of the existing and proposed road networks both within and external to the masterplan area or site layout.	The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile.	Future development would be serviced via the existing accessway along Macleay Avenue. The proposed rezoning allows for residential development in accordance with the proposed density provisions and permitted uses. Emergency response times would be expected to be prompt as NSW RFS The Bays Brigade located at Phegans Bay is approximately 5.3km / 8 minutes from the site
		The location of key access routes and direction of travel.	As discussed above.
		The potential for development to be isolated in the event of a bush fire.	It is unlikely that in the event of a fire the Subject Site would become isolated due to the location within an urban landscape and the accessibility of access to the site and defensible space provided between the site and future dwellings.
Emergency services	An assessment of the future impact of new development on emergency services.	Consideration of the increase in demand for emergency services responding to a bush fire emergency including the need for new stations/ brigades.	Given the proximity to the adjoining urban developments and the local fire station it has been determined that the planning proposal to rezone the land would not significantly increase the demand on fire vehicles nor emergency timeframes.
		Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency.	There is ample land for offsite vegetation to be accessed via suitable access and egress points and defensible space around any future development, therefore it has been

Issue	Detail	PBP 2019 Considerations	AEP Assessment
			determined that this would be able to provide suitable access to undertake suppression activities if required.
Infrastructure	An assessment of the issues associated with infrastructure and utilities.	The ability of the reticulated water system to deal with a major bush fire event in terms of pressures, flows, and spacing of hydrants.	It is expected that future development would be serviced by a reticulated water supply system extended from existing and proposed residential areas. The reticulated water supply and street hydrant access will need to be delivered in accordance with AS 2419.1–2017.
		Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.	The installation of all services will be undertaken to ensure they comply with requirements within the PBP 2019.
Adjoining land	The impact of new development on adjoining landowners and their ability to undertake bush fire management.	Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans.	The planning proposal is likely to reduce the risk of Bush Fire to the adjoining land, given the area proposed for residential zoned land will be managed and future vegetation removal undertaken, reducing the risk of bushfire fires into the adjoining residential areas.



Plate 1: Residential development (Macleay Avenue) located opposite the site in Macleay Avenue, looking directly west from the western boundary



Plate 2: Residential development (Macleay Avenue) looking north west from the western boundary



Plate 3: Residential development (Macleay Avenue) looking south west from the western boundary



Plate 4: Central point within Subject Site looking south east where proposed RE1 – Public Recreation Forest hazard vegetation is to be retained.



Plate 5: Central point within Subject Site looking north east where proposed RE1 – Public Recreation Forest hazard vegetation to be retained.



Plate 6: Southern boundary (Nambucca Drive) looking south towards residential developments



Plate 7: Southern boundary (Nambucca Drive) looking north into Forest hazard vegetation within proposed retained RE1 – Public Recreation land across the Pacific Highway looking directly south



Plate 8: South eastern boundary (Nambucca Drive) looking to the north east towards Nambucca Drive playground and Forest hazard vegetation












Plate 9: North eastern boundary looking to the east towards Forest hazard vegetation



Plate 10: North eastern boundary looking to the north towards Forest hazard vegetation

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Legend

-  Lot Boundary
 -  Cadastre
 -  Proposed Development Footprint
 -  140m Hazard Assessment Buffer
 -  100m Slope Assessment Buffer
- ### Hazard Vegetation
-  Forest - Hazard Vegetation
 -  Forest - Vegetation to be Removed
 -  Contours
 -  Hydroline



AEP

Title: Figure 3 - Slope & Hazard Assessment

Date: April 2022

Location: 18 Macleay Avenue, Woy Woy

Client: Barker Ryan Stewart

AEP Ref: 2507.01

4.0 Bushfire Hazard Determination

4.1 Construction Standards – AS 3959:2018

As outlined above, the identification of proximate hazards post development has resulted in the need for APZs, and hence consideration of related construction standards. As part of the planning proposal phase of the project, these APZ's are assumed based on residential development consistent with the R1 zoning land use table and proposed density provisions.

The Australian Standard 3959:2018 “Construction of buildings in bushfire prone areas”, details six (6) levels of construction standard that are required for buildings, depending upon the expected impact of a bushfire from adjacent areas. These Bushfire Attack Levels (BAL) are measured from the edge of the hazard and incorporate vegetation type and slopes (**Section 4**) to determine the relevant distance for each BAL rating (and associated construction standard).

The relationship between the expected impact of a bushfire and the BAL rating is provided in **Table 2** below. BALs and APZs are shown in **Figure 4**.

Table 2 - BAL Construction Standard

Bushfire Attack Level	Maximum radiant heat impact (kW/m ²)	Level of construction standard under AS 3959:2018
Low		No special construction requirements
12.5	≤12.5	BAL – 12.5
19	12.6 to 19.0	BAL – 19
29	19.1 to 29	BAL - 29
40	29 to 40	BAL – 40
Flame Zone	≥40	BAL – FZ (Not deemed to satisfy provisions)

The BAL construction standards applicable for the proposed development are:

0-5 degrees downslope towards Forest vegetation to the north, north east, east, south east and south

- <22m – BAL-FZ
- 22 to <29m – BAL-40
- 29 to <40m – BAL-29
- 40 to <54m – BAL-19
- 54 to < 100m – BAL-12.5

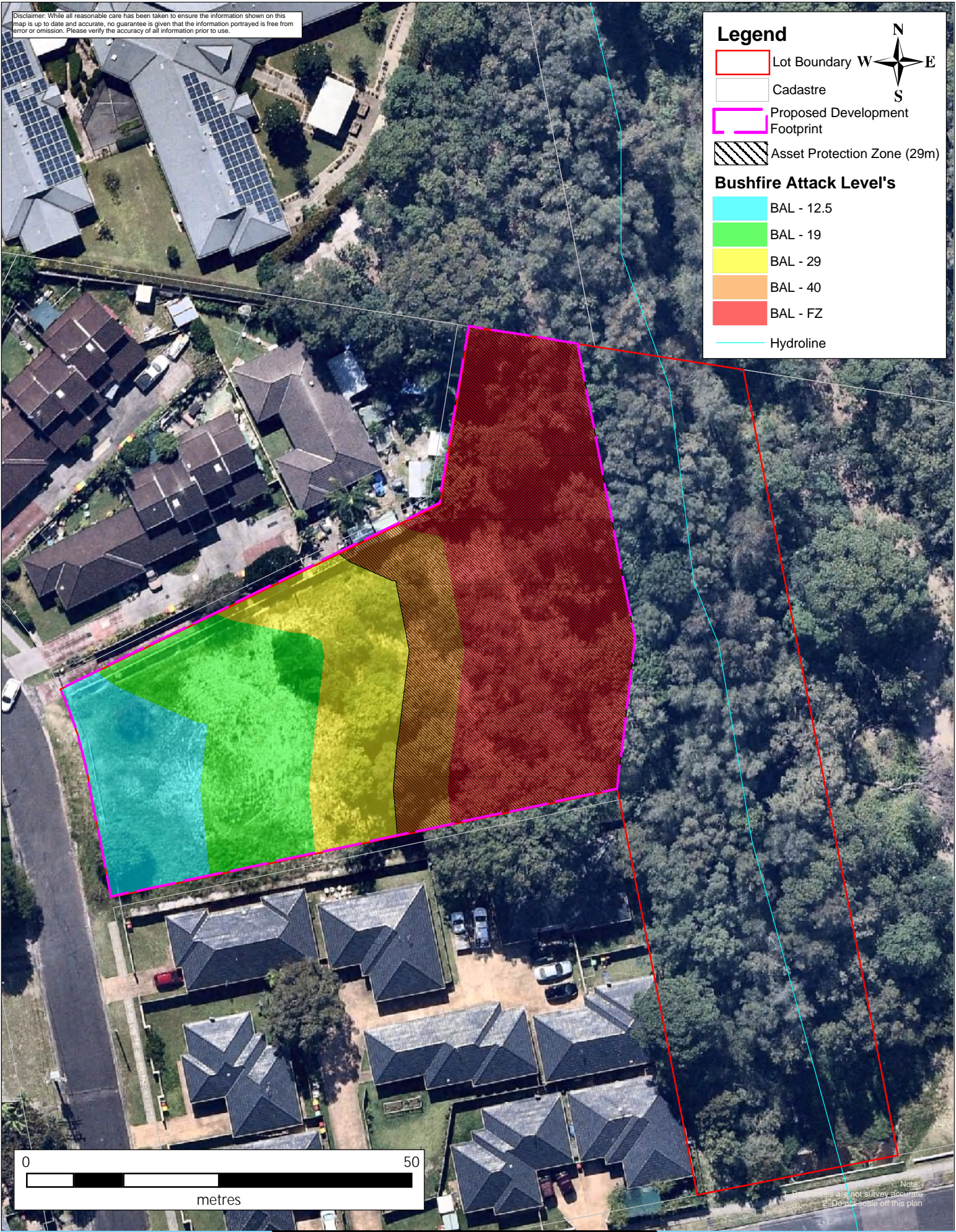
Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Legend

- Lot Boundary W
- Cadastrate
- Proposed Development Footprint
- Asset Protection Zone (29m)

Bushfire Attack Level's

- BAL - 12.5
- BAL - 19
- BAL - 29
- BAL - 40
- BAL - FZ
- Hydroline



Note:
1. Boundaries are not survey accurate.
2. Do not scale off this plan.



AEP

Title: Figure 4 - Bushfire Attack Level's and Asset Protection Zones

Date: April 2022

Location: 18 Macleay Avenue, Woy Woy

Client: Pacific Link Housing

AEP Ref: 2507.01

5.0 Other Considerations

The following analysis applies to the site in reference to environmental features present.

- **Riparian Corridors** – One first order stream runs through the Subject Site. Unnamed stream along the eastern boundary of the site.
- **SEPP (Resilience and Hazard) 2021 – Chapter 2 Coastal Management** – The Subject Site is mapped as a Coastal Environmental Area and is proposed to be rezoned to R1 – General Residential and RE1 – Public Recreation.
- **SEPP (Biodiversity and Conservation) 2021 – Chapter 4 Koala Habitat Protection 2021** – The Subject Site is less than 1ha, as such Koala Habitat Protection 2021 does not apply. General ecological investigations have been undertaken and did not identify koalas on site during the survey period.
- **Areas of geological interest** – none present.
- **Environmental protection zones or steep lands (>18°)** – none present.
- **Land slip or flood prone areas** – none present.
- **National Parks estate or various other reserves** – Nambucca drive playground and Hillview Street Bushland Reserve are located outside of the Subject Site predominantly to the east.
- **Threatened species matters** – Several threatened species are known from the area and three threatened microbats were identified within the Subject Site. Further to this Threatened Ecological Communities have been identified on site. Ecological investigations have been undertaken as part of an Ecological Assessment for the site and will accompany the Planning Proposal.
- **Aboriginal Heritage** – none known to be present.

6.0 Conclusion

Investigations undertaken for this Bushfire Threat Assessment report have revealed that the Planning Proposal will be affected by Forest vegetation to the north, northeast, east, south east and, and within the proposed RE1 – Public Recreation land to be retained and acquired by the local council and managed under a Vegetation Management Plan.

Required Asset Protection Zones and associated BAL construction standards have been derived and applied to the site and will be subject to tree removal as approved as part of the planning proposal and future Development Applications. Existing and future hazards associated with the bushland surrounding the Subject Site will result in at least part of the required APZ occurring within the Subject Site. As such, the position of future building envelopes will need to take this into consideration. As described above future APZs will be subject to tree removal as approved as part of the Development Application. The current APZs assume that vegetation within the Subject Site can be cleared up to the proposed RE 1 zone.

The proposed rezoning allows for residential development in accordance with the proposed density provisions and permitted uses.

A reticulated water supply system from established residential areas is expected to service the site, and street hydrant access will need to be delivered in accordance with AS2419.1 – 2017.

It is considered that the proposed protection measures, principally APZ's, suitable access and egress points, defensible space and relevant construction standards, would comply with the relevant requirements of PBP 2019 and AS-3959. When applied at development application stage and subject to proposed works, these measures should provide adequate protection to life and property within the proposed development in the event of a bushfire occurring in the immediate locality.

As such, it is considered that the Planning Proposal is able to meet the required objectives and principles of Chapter 4 – Strategic Planning of PBP 2019. However, it can never be guaranteed that the site and residents and property therein will not at some stage be affected by a bushfire event.

7.0 References

Central Coast Bush Fire Management Committee (2020). *Bush Fire Risk Management Plan 2020-2025*. CCBFMC. Charmhaven, NSW.

NSW Government (1979). *Environment and Planning & Assessment Act 1979*. NSW Government, Sydney.

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NSW Government (2022). *ePlanning Spatial Viewer*.
<https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>

NSW Office of Environment and Heritage (OEH) (2019). *Planning for Bushfire Protection*. NSW Rural Fire Service / NSW Department of Planning, Sydney.

Standards Australia (2018) AS-3959 *Construction of Buildings in Bushfire-Prone Areas*. Standards Australia, Sydney.

Appendix A – Extract from the BFRMP



Layer List

- Protection Zone
- Fire Exclusion Zone
- Strategic Fire Advantage Zone
- Asset Areas - RISK 2021
 - Extreme
 - Very High
 - High
 - Medium
 - Low
- Asset Areas - TYPE 2021
 - Human Settlement
 - Cultural
 - Environment
 - Economic
- NSW_Cadastre
 - Cadastre_Labels
 - Cadastre

