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### **BUSHFIRE ASSESSMENT S.100B *RURAL FIRES ACT***

**For Planning Proposal  
Part Lot 202 DP 874273**

**Bark Hut Road Planning Area, Woolgoolga, NSW**



Prepared By: Paola Rickard  
BPAD – Level 3 Accredited Practitioner – BPAD-21855  
Land & Fire Assessments Pty Ltd  
For: Keiley Hunter  
Report No: LFA20043  
Date: 5 May 2021

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### Revision List

Revision No.	Revision Date	Report Title	Report Author	Field Survey By	Status
00	7.12.20	Bushfire Assessment_s.100B Rural Fires Act_For Planning Proposal, Part Lot 202 DP 874273, Bark Hut Road Planning Area, Woolgoolga, NSW	Main Author: Paola Rickard (LFA - Senior Environmental Planner & BPAD – Level 3 Accredited Practitioner –no. BPAD 21855)	Paola Rickard undertaken on the 18.11.20	Draft
01	05.05.21				Final


**Paola Rickard contact detail: 0427 809 352**

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## Summary Compliance Table

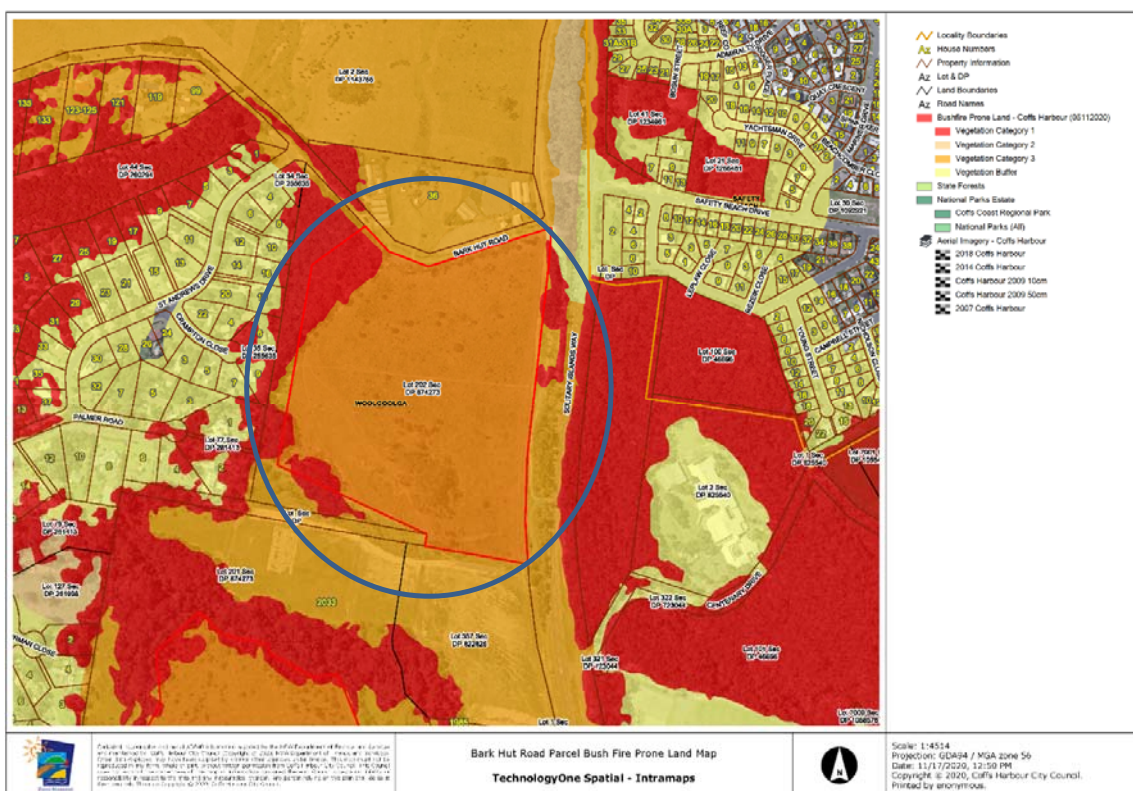
Site Details	Part of Lot 202 DP 874273, Bark Hut Road, Woolgoolga, NSW; Coffs Harbour City Council LGA
Proposal	Rezone the subject land (Bark Hut Road Planning Area) from Zone RU2 Rural Landscape to Zone R2 Low Density Residential
Bushfire Prone Land Map	Vegetation Category 1, Category 2 & Category 3 - see Fig. 1
Planning context	s. 4.46 of the <i>Environmental Planning and Assessment Act 1979</i> and s. 100B of the <i>Rural Fires Act 1997</i> ; section 9.1(2) of the <i>Environmental Planning and Assessment Act 1979 - Directions (specifically Direction 4.4 Planning for Bushfire Protection)</i>
Bushfire planning guideline and relevant chapter	Planning for Bushfire Protection 2019 (PBP) Chapter 5 - Residential and Rural Subdivision; s. 4.4.1 Consideration of bush fire issues; Appendix 1
Application complies with 'Deemed - to Satisfy' (DtS) provisions	Yes, all DtS provisions met
Consultation with RFS Commissioner	Required under s.9.1(2) Directions of the <i>Environmental Planning and Assessment Act 1979</i> ; specifically, Direction 4.4 Planning for Bushfire Protection
Compliance statement	This Assessment has duly considered the bushfire issues identified in s 4.4.1 of PBP 2019. Accordingly, it has found that the proposed Planning Proposal to amend LEP 2013 to allow low density residential development on part of Lot 202 DP 874273 can comply with the s.9.1(2) Directions (specifically Direction 4.4 Planning for Bushfire Protection), and with the specific objectives for the development type and the performance criteria for the various proposed Bushfire Protection Measures in accordance with PBP 2019.
Full Name of Accredited Practitioner	Paola Rickard - Land & Fire Assessments Pty Ltd
Qualification	BPAD – Level 3 Accredited Practitioner - Accreditation no. BPAD-21855, valid to 2/08/2021
Date	5 May 2021
Signature	



# 1. Introduction

## 1.1 Background & Planning Context

This Bushfire Assessment report has been prepared by Land & Fire Assessments Pty Ltd (LFA) in accordance with the relevant provisions of Planning for Bushfire Protection (PBP) 2019 in its entirety and future residential development can comply with all relevant Acceptable Solutions in this version of PBP. This assessment has been prepared to support the **Planning Proposal of Part Lot 202 DP 874273, Bark Hut Road, Woolgoolga, NSW**. The site is shown on Figs. 1 & 2. Woolgoolga is located in the Coffs Harbour City Council (CHCC) Local Government Area approximately 23 km north of Coffs Harbour and 1.4 km northwest of Woolgoolga.



**Figure 1.** The Site (blue circle) & Bushfire prone land as applicable to the Bark Hut Road Planning Area. Source: CHCC Intramaps

The Planning Proposal applies to part of Lot 202 DP 874273, being an allotment comprising two portions separated by public open space land. Lot 202 DP 874273 includes a northern portion (see Figs. 2 & 3) as the 'Bark Hut Road Planning Area' and a southern portion (the 'Newmans Road Planning Area').

This Planning Proposal applies to the Bark Hut Road Planning Area (the Site) only, which is zoned RU2 Rural Landscape under the Coffs Harbour Local Environmental Plan (LEP) 2013 (refer to Fig. 4). The purpose of this Planning Proposal is to amend LEP 2013 to allow low density residential development on part of Lot 202 DP 874273. The proposal area is wholly affected by the Bush Fire Prone Land mapping, as shown on Fig. 1. Accordingly, the proposal triggers the need to address the bushfire planning provisions.

Section 4.4.1 of PBP 2019 requires consideration of bushfire issues when preparing a draft LEP or planning proposal. The emphasis is on early consultation and inclusion of a bushfire assessment that demonstrate compliance with the s.9.1(2) Directions (specifically Direction 4.4 Planning for Bushfire



Protection) and PBP. A prior bushfire assessment was submitted to the Rural Fire Service (RFS) on the 5/11/19 with the Pre – Exhibition version of the Planning Proposal, dated September 2019 (CHCC 2019). The pre-exhibition Bushfire Risk Assessment, which was undertaken by Resource Design & Management Pty Ltd in March 2019 (CHCC 2019), assessed the proposal against the provisions of the draft *Planning for Bushfire Protection 2018*. The RFS response, which was received on the 30 January 2020 stated that ‘*Future residential subdivisions are to comply with the requirements of Planning for Bush Fire Protection 2019 and associated documents.*’ This assessment will review the proposal against the provisions of PBP 2019.

The Minister for Planning, under section 9.1(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) issues directions that relevant planning authorities (such as local councils) must follow when preparing planning proposals for new Local Environmental Plans (LEP) and amending LEPs. Direction 4.4 Planning for Bushfire Protection identifies matters for consideration for rezoning that will affect, or are in proximity to land mapped as bush fire prone.

The key principle is to ensure that future development is capable of complying with PBP. To achieve this, it is necessary to undertake a constraint assessment of the Site to identify potential bush fire risks to the individual site and proposed forms of development. The assessment requirements are detailed in s. 4.4.1 of PBP 2019. These measures, summarised below, will be evaluated for compliance in this assessment:

1. Assessment of the suitability of the land for the proposed development given the bush fire risk and existing land uses
2. The proposal must demonstrate that the required APZs can be met on the development site and that the road network can support evacuation demands numbers in the event of an emergency.
3. It is important that new development does not increase the level of bush fire risk to the existing community. A traffic report prepared by a suitably qualified traffic consultant may be required in circumstances where issues relating to access/egress are identified.
4. In addition to the review of any layout designs, consideration must also be given to the LEP provisions relating to minimum lot sizes to ensure appropriate APZs can be accommodated within future subdivisions.

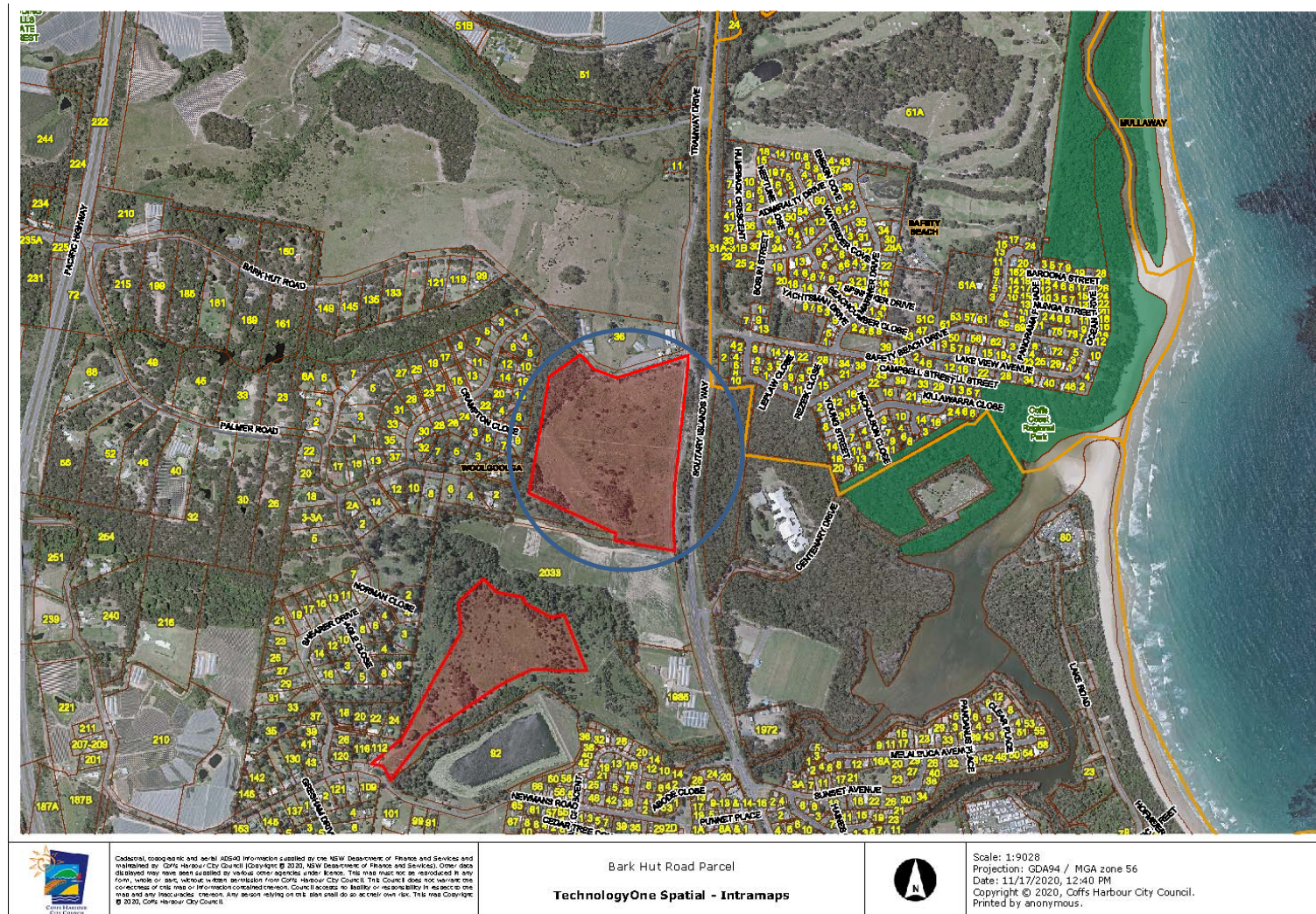
Under s. 4.46 of the *Environmental Planning and Assessment Act 1979* and s. 100B of the *Rural Fires Act 1997* a Bushfire Safety Authority (BFSa) will be required from the Commissioner of the NSW Rural Fire Service (RFS) for the future subdivision of the land. Clause 44 of the *Rural Fires Regulation 2013* specifies the points to be considered in preparing an application for a Bush Fire Safety Authority (BFSa). In addition, PBP 2019 states that it must be demonstrated that the proposal satisfies the broad aim and objective of PBP, the specific objectives for the development type and the performance criteria for the various proposed Bushfire Protection Measures (BPMs).

Chapter 5 of PBP sets out the specific objectives, and the specifications and requirements for Bushfire Protection Measures for Residential and Rural Subdivision Development. These measures, summarised below, will be assessed for compliance in this assessment:

- Asset Protection Zones/Bushfire Attack Level;
- Access;
- Services; and
- Landscaping and Maintenance

Furthermore, address of Direction 4.4 Planning for Bushfire Protection is undertaken in s.3 of this report.





**Figure 2.** The Bark Hut Road Planning Area (blue circle) within the locality context. Source: CHCC Intramaps







**Figure 3.** The Bark Hut Road Planning Area and surrounding landuse. Source: CHCC Intramaps



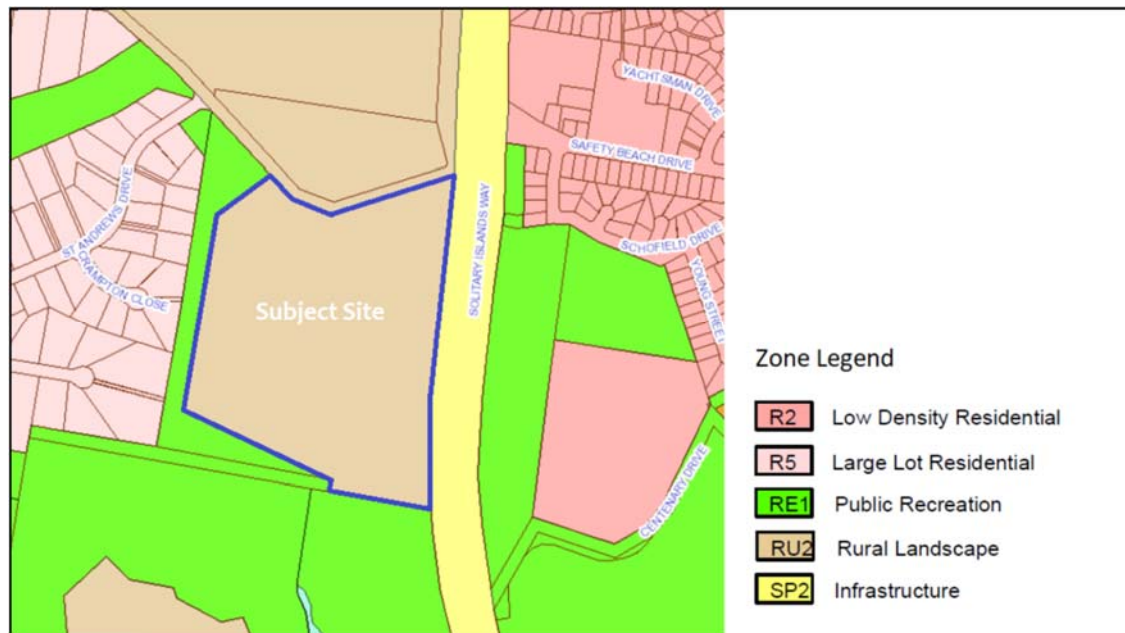


Figure 4. Land zoning applicable to the Site (blue boundary). Source CHCC (2019)

## 1.2 The Subject Site

The land, which is 16.4 ha in size, is directly accessed from Bark Hut Road. The land in context with the locality is shown on Fig. 2. It entails a vacant property bounded by Bark Hut Road to the north, Solitary Islands Way to the east, residential development (known as the Country Club Estate) to the west, the Woolgoolga Sporting Fields (under construction) to the south, and rural and intensive horticulture (blueberry farm) to the north.

The Subject Site is in close proximity to the established residential areas of Woolgoolga and Safety Beach, and a Large Lot Residential precinct is also located to the west. Furthermore, the Site is close to urban services including schools and a shopping centre (CHCC 2019). Whilst rural land is found to the north, it is identified as '*possible future urban investigation*' land and, in any case, the Site is not located near any significant farmland or sensitive ecosystems (CHCC 2019).



Plate 1. Looking south - south east from corner of Bark Hut Road across the Planning Proposal area

The Site is predominantly cleared with scattered trees (Plates 1-7). Denser stands of predominantly Dry Sclerophyll Forest (i.e. Forest vegetation formation) are found along the western portion of the Site extending to the north west and south west, as shown on Figs. 3, 7 & 8 and Plates 1-12. This Forest vegetation spreads into the adjacent Council Reserve found to the west of the Site (Figs. 3 & 7). A stand of Forest (~0.7 ha in size) on a knoll is found to south of the Site (Plates 3, 4 & 6). A marshy swamp area is found to the south east (Plate 12). Disturbed Dry Sclerophyll Forest and Grassland is also found to the west of the Site along the Solitary Islands Way road reserve (Plates 8-10). A wide spaced windbreak is found along the northern boundary (Plate 7). Existing overhead transmission



powerline runs along the eastern boundary (Plates 8-10) and the Woolgoolga Sporting Fields are found to the south (Plates 13 & 14).



**Plate 2.** Looking north west across Site to the Forest vegetation found along the western portion of the land



**Plate 3.** Looking south towards the Woolgoolga Sports Fields. The Forest vegetation along the western boundary to the right and the Forest stand on a knoll to left



**Plate 4.** Looking east across the small Forest stand on a knoll found to the south east of the Site



**Plate 5.** Looking north west to the Forest vegetation along western boundary and adjoining residential development





**Plate 6.** Looking east, south east and south west across the Site



**Plate 7.** Looking NE at entry to Site from Bark Hut Road, planted single row and wide spaced windbreak along the northern boundary and beyond it a blueberry farm



**Plate 8.** Looking south along the Solitary Islands Way road reserve, which entails a corridor of open Forest between the Solitary Islands Way (to the left) and the open Grassland area within the Site (to right)



**Plate 9.** Looking north along the Solitary Islands Way road reserve. The Site is to the left. Note the overhead transmission powerline running along the eastern boundary of the Site





**Plate 10.** Looking south along the Solitary Islands Way road reserve. The Site is to the right. Note the overhead transmission powerline running along the eastern boundary of the Site



**Plate 11.** Looking west across Site from the Solitary Islands Way road reserve



**Plate 12.** Looking north east from southern Site boundary across marshy swamp land to the SE of the Site



**Plate 13 (top) & 14 (right).** Land to the south of the Site earmarked for the Woolgoolga Sporting Fields (under construction)



### 1.3 Proposed Development & Agencies Feedback

According to CHCC (2019), the purpose of this Planning Proposal is to amend LEP 2013 to allow low density residential development on part of Lot 202 DP 874273. The Planning Proposal will:

- rezone the subject land from Zone RU2 Rural Landscape to Zone R2 Low Density Residential,
- amend the relevant lot size map accordingly,
- create an additional “key sites” clause within LEP 2013 and create a new key sites map accordingly, and
- enable the development of the land for low density residential purposes, subject to the preparation of a development control plan that will ensure that any development of the area occurs in an orderly, logical and sustainable manner.

A Biodiversity Impact Assessment (BIA) was included in Pre – Exhibition version of Planning Proposal (CHCC 2019). The BIA found that the Site contains small areas of low and moderate conservation value, although it was found to be largely dominated by highly disturbed and cleared lands that do not present any ecological conservation value. No threatened species, ecological communities, mapped regional corridors or key habitat linkages exist on the Site. However, secondary and tertiary koala habitat is present on the subject land. The BIA further found that the secondary and tertiary koala habitat that occur on the Site has moderate conservation value and will need further environmental assessment at the development application stage. Based on the BIA findings a conceptual master plan layout was formulated, which did not include retention of the vegetation occurring to the north west, west and south west of the Site as an intact Forest structure. In fact, an Asset Protection Zone (APZ) was overlayed over the current Forest vegetation. Furthermore, the road reserve adjacent to the eastern boundary of the Site was also earmarked as an APZ.

However, the feedback received from Biodiversity Conservation Department (BCD) did not support the aforementioned conceptual master plan layout. Specifically, the BCD recommendations are summarised as follows:

1. Vegetated areas (PCT 1262) to the north west and south west adjoining Council reserve should:
  - a. Be zoned E2 or E3
  - b. Not have any development including APZ or infrastructure locate within them,
  - c. Be dedicated to council or if retained in private land be subject to planning agreement ensuring protection and management
2. All APZs are to be contained with the planning area in land zoned R2. There should be no requirement to clear roadside vegetation along Bark Hut Road or for vegetation along Solitary Islands Way to be managed as an outer protection area

Given the above, the Forest vegetation will be retained within an environmental protection zone and a new bushfire assessment has been undertaken to ensure all APZs are contained with the planning area in land zoned R2.

In addition, the *Aboriginal Cultural Heritage Assessment* (ACHA) Report undertaken as part of the Pre – Exhibition version of Planning Proposal (CHCC 2019) identified two artefacts (Bark Hut Road IF 01 #22-1-0503 and Bark Hut Road IF 02 #22-1-0504) on the access trail immediately south of the Bark Hut Road entrance to the Project Area (refer to Fig. 5). The ACHA further stated: *‘These consisted of stone flakes derived from Greywacke and Rhyolite, which are common in the Woolgoolga area. Given the location of the artefacts on an area of upper slope, it is likely that the artefacts are a secondary deposit from the main campsite, which is identified in the Council Reserve to the immediate west of the access road. This area will not be part of the rezoning application and as such this ridge crest was not surveyed.’*



**Figure 5.** Location of identified two artefacts

Given the comments from BCD and the need to protect the two artefacts shown on Fig. 5, a new conceptual master plan layout has been devised as shown on Fig. 6. The new conceptual layout includes an environmental protection zone aimed at protecting the vegetated areas (PCT 1262) to the north west and south west adjoining Council reserve, as well as retaining the artefacts within the environmental protection zone. The conceptual layout further ensures the required APZ are wholly contained within the Site's residential zoned land and do not impact on the proposed environmental protection zone.

Concerning the BCD comments presented at point 2 (road reserve cannot be used as APZ) it should be noted that currently a cleared setback to powerlines within the roadside reserve is already in place. Thus, no additional clearing would be required and because of the required clearance around transmission power lines, the setback will be managed in perpetuity. Nevertheless, Council has indicated that it would also generally not support an APZ within the road reserve; although it may be able to look at it on a case by case basis.

At the subdivision level it is required to demonstrate that proposed dwellings can be accommodate so that potential building footprint is not exposed to radiant heat levels exceeding 29kW/m<sup>2</sup> for each proposed lot. In other words, the proposed dwellings need to be able to have sufficient separation from the classified vegetation to achieve a construction level of BAL-29. BAL = Bushfire Attack Level. Fig. 6 demonstrate that there is plenty of room available to meet such requirement. In addition, at least two entry points from the public road network to a future subdivision of the Site are catered for in the conceptual master plan layout.





**Figure 6.** Proposed conceptual masterplan layout-please refer to Fig. 8 for correct APZ plan



## 1.4 Site & Surrounding Vegetation, Topography and Slope

As noted in s. 1.2 and shown on Figs. 7 & 8, the Planning Proposal area is predominantly cleared with scattered trees (Plates 1-7). Denser stands of predominantly Dry Sclerophyll Forest (i.e. Forest vegetation formation) are found along the western portion of the Site extending to the north west and south west. This Forest vegetation spreads into the adjacent Council Reserve found to the west of the Site (Figs. 3 & 7). A stand of Forest (~0.7 ha in size) on a knoll is found to south of the Site (Fig. 7). A marshy swamp area is found to the south east. Disturbed Dry Sclerophyll Forest and Grassland is also found to the west of the Site along the Solitary Islands Way road reserve. A wide spaced windbreak is found along the northern boundary.

A Biodiversity Impact Assessment (BIA) to evaluate the biodiversity values of the proposal has been undertaken by ERM Newcastle (CHCC 2019). The BIA has assessed the subject land as being largely dominated by highly disturbed and cleared lands that do not present any ecological conservation value. Although, the site does contain small areas of low and moderate conservation value. In summary, the Biodiversity Impact Assessment (CHCC 2019) found that:

- No threatened species or ecological communities were observed within the subject land and it does not form part of any mapped regional corridors or key habitat linkages.
- 1.37 ha of Tertiary Koala Habitat and 0.1 ha of Secondary Koala Habitat are mapped within the site. These areas are considered to have moderate conservation value and any future development within these areas must address the provisions of the Coffs Harbour City Council Koala Plan of Management and SEPP 44.
- The 1st Order streams within the lot have no defined bed or bank visible in the field and do not constitute a waterway based on the definitions in Guidelines for riparian corridors on waterfront land. These areas have no conservation value.
- The 2nd Order Stream located on the south-eastern portion of the Subject land does not constitute high conservation value and it does not exhibit the features of a defined channel with bed and banks. This area has limited biodiversity habitat value and does not form part of any vegetated riparian corridor.
- The small inundated 'wetland' area mapped within the south-eastern corner of the site is likely to be the result of water pooling following the installation of a concrete culvert offsite. Although highly disturbed and not naturally occurring, the area of inundation provides habitat opportunities for amphibians. Opportunities may exist to increase the quality of the on-site aquatic and riparian habitats through detailed design and management of surface runoff and water quality parameters, including the use of appropriately designed storm water retention and treatment options to be located within this area as indicated on the concept plan. Council's Water Sensitive Urban Design Guideline will be relevant to any subsequent Development Application lodged over the site.
- Future development will also be required to incorporate kangaroo management measures in accordance with Council's Kangaroo Management Plan for the Coffs Harbour Northern Beaches.

Based on the results of the field investigation and identification of low to moderate conservation values across the site, there are no significant biodiversity constraints to the proposed rezoning of the site and it is considered that future residential development on the site can be appropriately designed.

The vegetation communities mapping undertaken by ERM Newcastle is reproduced as Fig. 9. The field vegetation assessment findings undertaken as part of this bushfire assessment are consistent with the mapping undertaken by ERM.

The potential bushfire hazard vegetation within the assessment area include the Dry Sclerophyll Forest (i.e. Forest vegetation formation) along the eastern, western and south western boundary. A small Forest remnant is found to the south, this remnant is less than 1 Ha in size as shown on Fig. 7, so in accordance with the PBP 2019 provisions specified in A1.11.1, remnant vegetation such as this are

considered low hazard, thus can be downgraded in term of potential bushfire risk and classified as Rainforest.

Accordingly, the Classified vegetation and the applicable slope, as shown on Figs. 7 & 8, are as detailed on Table 1.

**Table 1.** Classified vegetation and slope applicable to the Site

Aspect	Vegetation	Slope	Comments
North west	Forest	downslope 5-10°	Large parcel of Forest predominantly occurring on flat or upslope in immediate proximity to Site then sloping downslope - beyond it is residential development
West	Forest	upslope	This portion is rather narrow and immediately abutting residential development; nevertheless, the vegetation is continuous with the Forest vegetation to the north and south
South west	Forest	downslope 5-10°	This vegetation is hemmed in by residential development and the sporting field
South beyond Site	Managed Land (sporting field)	flat	West Woolgoolga Sporting Field (under construction) abuts the Site to the south. This is considered managed land and thus it is regarded as low threat; therefore, is excluded from the determination of the Bushfire Attack Level (BAL)
South within Site	Rainforest (remnant)	upslope	Forest remnant less than 1 ha in size. In accordance with the PBP 2019 provisions specified in A1.11.1, remnant vegetation such as this are considered low hazard, thus can be downgraded in term of potential bushfire risk and classified as Rainforest.
East	Forest	upslope to downslope 0-5°, some steeper section, thus 0-5° downslope utilised	Road reserve, managed by Council, jammed between the Site and Solitary Islands Way. The Forest occurring here is disturbed and open and includes cleared area where the power transmission line runs along the eastern boundary. An access track and setback clearance to the powerline of approximately 10 m is currently implemented as required for the management of such asset
North	Managed Land (single row windbreak, Bark Hut Road & horticulture)		The planted single row and wide spaced windbreak along the northern boundary, and the managed land (horticulture) to the north of the Site beyond Bark Hut Rd are all considered to be vegetation regarded as low threat (A1.11.1 in PBP 2019); therefore, are excluded from the determination of the Bushfire Attack Level (BAL)





**Figure 7.** Bark Hut Road Parcel (Lot 202 DP874273) - Site assessment area, Vegetation, Slope analysis (arrows point up the slope) using 2m contours intervals (slopes also verified using Nikon Laser Rangefinder). Also showing Council Reserves (mustard shading) - site assessment 18/11/20 Source: CHCC Intramaps







**Figure 8.** Vegetation retention area (yellow dashed line) and Asset Protection Zone (APZ – yellow to red dashed lines) - APZs (not to scale) range from 31m wide to 11m wide. The APZ is measured from the tree base of the retained vegetation edge or the property boundary





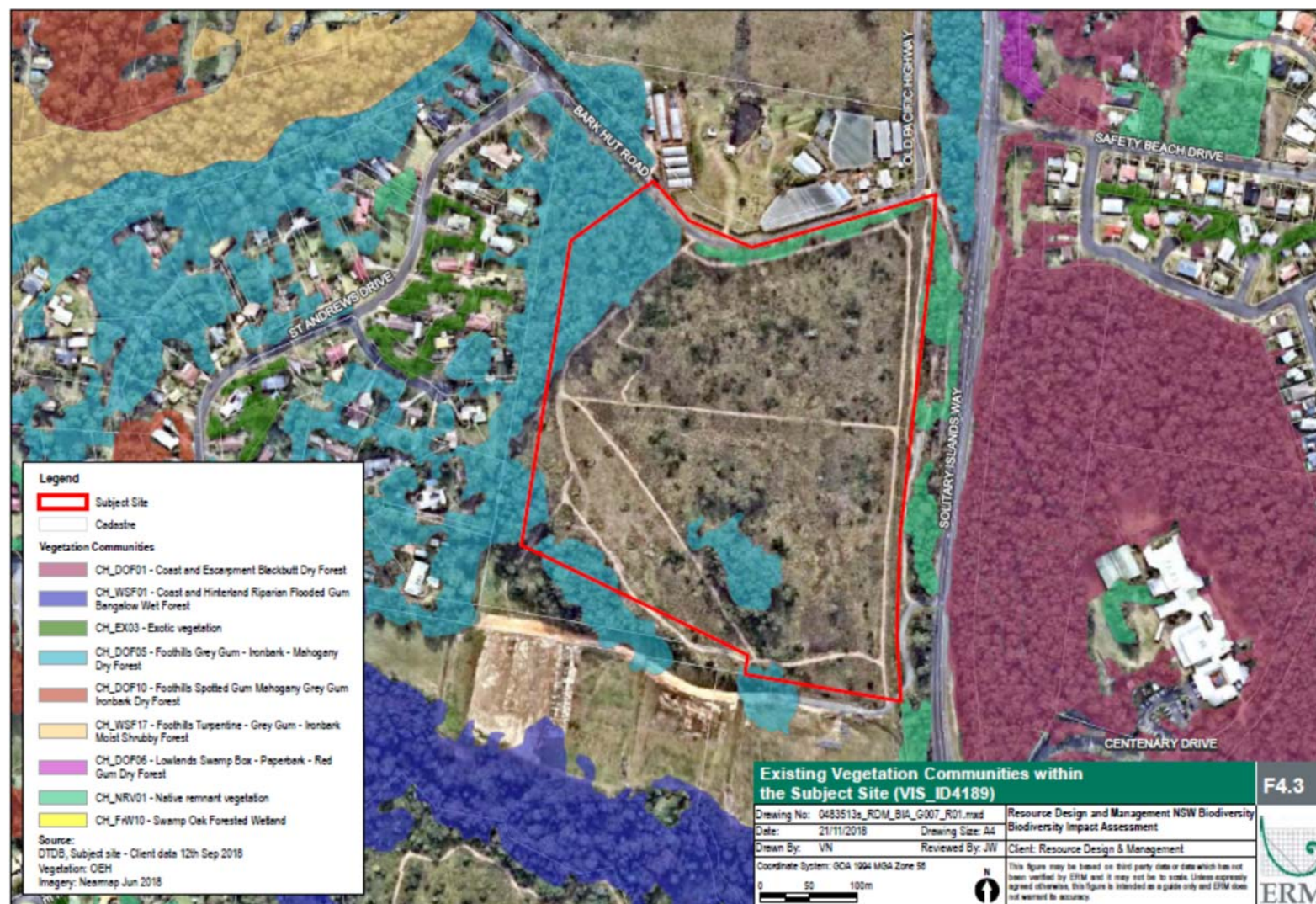


Figure 9. Vegetation communities mapping undertaken by ERM Newcastle. Source CHCC (2019)





## 1.5. Risk Assessment and Consultant Qualifications

The proposed development Site is surrounded by predominantly residential development, public roads, horticulture and sporting fields. However, Forest vegetation is found to west and east of the Site. Therefore, the potential bushfire hazard is considered to be a medium bushfire risk.

This report has been prepared by Paola Rickard.

The Fire Protection Association Australia (FPA) has in place the Bushfire Planning and Design Accreditation Scheme (BPAD), which is recognised by the NSW Rural Fires Services (RFS). Paola Rickard is a **BPAD - Level 3 Accredited Practitioner** (Accreditation no. BPAD 21855) and is listed on the FPA Australia web site register.

BPAD- Level 3 Accredited Practitioner can perform the following:

- *BPAD- Level 3 Accredited Practitioner meet specific requirements in relation to identifying bushfire prone land, assessing potential bushfire impact, and submitting designs and plans, both deemed to satisfy and alternate solution, to meet the performance requirements of the Building Code of Australia and the specific state or territory legislation, for subdivisions, new buildings or modification to existing buildings aiming to minimise the risk to future developments, their occupants and responding emergency services from a bushfire event.*

Paola holds a **Graduate Diploma in Design for Bush Fire Prone Areas with Distinction** from the University of Western Sydney and is a **bronze corporate member of the Fire Protection Association Australia (FPA Australia)**. She is a participating **member of the FPA Technical Advisory Committee (TAC) /20 Bushfire Safety**. The TAC provides a nationally focussed forum for discussion between practitioners, fire services and regulators on the design and construction of property in areas prone to bushfires.

From 2015 to 2019, Paola was appointed as a **BPAD member to the NSW Bushfire Working Group (NSWBWG)** set up by FPA Australia. The NSWBWG provide a forum to discuss the application, interpretation and periodic review of NSW Government-based bushfire related regulatory requirements governing land use planning and building construction in areas subject to bushfire impact.

Paola also holds a **Bachelor Degree in Applied Science, a Certificate in Bushland Regeneration**, and is a member of the **Australian Association Bush Regenerators**. She has over 18 years of experience in flora surveys and vegetation management issues, and **has been undertaking bushfire assessments since 2003**.

Paola has attended the “NSW Consulting Planners Bushfire Training Course” in Sydney in 2003 and has attended the “Planning for Bushfire Protection Short Course” held by the University of Technologies (UTS) Sydney in 2007. She has obtained certification for the short course. In November 2010, Paola attended the “One-day Planning for Bushfire Prone Areas Update Course” conducted by the Centre for Local Government UTS, Sydney. Additionally, Paola has a ‘Basic Bush Fire Awareness’ certificate and has experience in fire control and planning while living on a rural land sharing community.

## 2. Bushfire Protection Measures for Residential Subdivision

### 2.1 Introduction

Bushfire Protection Measures for Residential and Rural Subdivision are detailed in Chapter 5 of PBP 2019. The specific objectives for 'residential and rural residential subdivision development' are:

- *Minimise perimeters of the subdivision exposed to the bush fire hazard (hourglass shapes, which maximise perimeters and create bottlenecks, should be avoided);*
- *Minimise vegetated corridors that permit the passage of bush fire towards buildings;*
- *Provide for the siting of future dwellings away from ridge-tops and steep slopes, within saddles and narrow ridge crests;*
- *Ensure that APZs between a bush fire hazard and future dwellings are effectively designed to address the relevant bushfire attack mechanism;*
- *Ensure the ongoing maintenance of APZs;*
- *provide adequate access from all properties to the wider road network for residents and emergency services;*
- *provide access to hazard vegetation to facilitate bush fire mitigation works and fire suppression; and*
- *Ensure the provision of an adequate supply of water and other services to facilitate effective firefighting.*

Additionally, PBP identifies the performance criteria and acceptable solutions for the various proposed Bushfire Protection Measures (BPMs). The relevant BPMs criteria and acceptable solutions with regard to residential and rural residential subdivision development are outlined in Sections 2.2 to 2.4 of this report.

### 2.2 Asset Protection Zones/Bushfire Attack Level

Asset Protection Zones (APZs) are buffer areas between development and a fire hazard, which aim to protect human life and property. The APZ comprises an Inner Protection Area (IPA) and an Outer Protection Area (OPA). These areas are to be managed to reduce the bushfire hazard. Appendix A provides guidance concerning the general requirements for APZs and appropriate landscaping and property maintenance.

**Intent of measures:** to provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at the buildings are below critical limits and prevent direct flame contact.

At the subdivision level it is required to demonstrate that proposed dwellings can be accommodated so that potential building footprint is not exposed to radiant heat levels exceeding 29kW/m<sup>2</sup> for each proposed lot.

Accordingly, the Classified vegetation is Forest on upslope, and downslope 0-5° & 5-10° ranges; and Rainforest on upslope as shown on Figs. 7 & 8. According to Table A1.12.3 of Planning for Bushfire Protection 2019 (PBP) for residential subdivisions the minimum APZ distances are calculated to achieve no more than 29kW/m<sup>2</sup> [i.e. Bushfire Attack Level (BAL)-29].

**In this case the setbacks (APZs) requirements are:**

- **Forest vegetation to the north west & south west = 31m** (Classified vegetation on 5-10° downslope)
- **Forest vegetation to the west = 20m** (Classified vegetation on upslope)
- **Forest vegetation on upslope to downslope 0-5°, some steeper section - 0-5° utilised = 25 m** (Classified vegetation on 5-10° downslope) \*



- **Forest Remnant to south, classified as ‘Rainforest’ on upslope = 11m** (Classified vegetation on upslope)

\*The land east of the Site, which is a road reserve managed by Council, is jammed between the Site and Solitary Islands Way. It was noted that a power transmission line runs along the eastern boundary and that an access track and setback clearance to the powerline of approximately 10 m is currently implemented as required for the management of such asset. According to feedback from BCD, it would not support using the road reserve as an APZ. However at least portion of the area in question is managed as an effective vegetation setback because of the required powerlines clearance. Thus, at least part of the required setback (APZ) to the vegetation occurring on the road reserve and beyond Solitary Islands Way, could take advantage of the powerline clearance already implemented. Feedback was sought from Council who is responsible for the management of this land. Council confirmed it manages the road reserve, but it was further noted that use of an unconstructed portion of road reserve as an APZ is generally not supported by Council, although Council may be able to look at it on a case by case basis. In summary, although it may be possible to achieve some reduction of the APZ at the subdivision level, at this point, the APZ is to be wholly contained within the Site (as shown on Figs. 6 & 8).

In summary, the proposed development is capable of complying with the APZ requirements set out in Appendix 4 of PBP 2019. Guidance concerning the general requirements for APZs and appropriate landscaping and property maintenance is provided in Appendix A of this report.

Consideration of specific construction standards applicable to the proposal are not required at the subdivision application stage. As noted, the key requirement is to ensure that future dwellings can be accommodated so that a potential building footprint is not exposed to radiant heat levels exceeding 29kW/m<sup>2</sup>. This proposal can easily achieve such requirement.

## 2.3 Access

The provision of PBP 2019 specify the following criteria concerning access provisions, namely:

- Performance Criteria: to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area

The proposed rezoning will need to demonstrate that the future residential subdivision layouts can comply with the PBP access requirements.

According to CHCC (2019), *‘the site currently has direct vehicular access from Bark Hut Road and Solitary Islands Way. Bark Hut Road is a 6m wide Council sealed rural road within a 15m wide road reserve. A future road intersection is proposed at the southern boundary of the site, to service the site and the proposed West Woolgoolga Sports Complex. The Traffic Impact Assessment prepared by George Stulle provides further detailed information regarding this proposed intersection and expected traffic movements.’* In summary the Traffic Impact Assessment found that:

- The proposed approximate 180 residential dwellings will produce 1332 vehicle movements per day, and 156 vehicle movements during peak hour.
- The expected traffic generated by the residential development will not generate traffic volumes sufficient to warrant a designation larger than local road within the site’s internal road network.
- With the development of the site, it is considered that a new asphalt sealed road network, generally to local road specifications, be constructed in accordance with Council requirements.
- The proposed roads will be constructed to local road standard, being 7m wide carriageway within a 15m wide road reserve. In PBP 2019, these are considered non-perimeter roads and





are required to be a minimum 5.5m carriage way with parking provided to the outside, thus the proposal meets the PBP requirements.

- The perimeter roads will have 8m wide carriageway within a 16m wide road reserve as per PBP requirements.
- All roads will be two-way, 3% (less than 3 degrees) crossfall with roll kerb and gutter on each side of the road. These measures are consistent with PBP 2019 requirements.
- The proposed road network will have a minimum longitudinal gradient of 0.5% and will not exceed 16% (9 degrees). Access gradients to each lot will not exceed 14% (8 degrees). These measures are consistent with PBP 2019 requirements.
- The road network will be designed to ensure service vehicles can undertake all necessary turning movements within the site; thus, meeting PBP requirements.

In summary, as noted the proposed rezoning will need to demonstrate that the future residential subdivision layouts can comply with the PBP access requirements. The conceptual masterplan layout shown on Fig. 6 includes the required elements to satisfy the RFS subdivision provisions, including:

- perimeter road,
- more than one access in and out of the development
- no dead ends roads
- internal roads (i.e. non-perimeter roads) are through roads, etc

## 2.4 Water, Gas and Electricity Supply

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

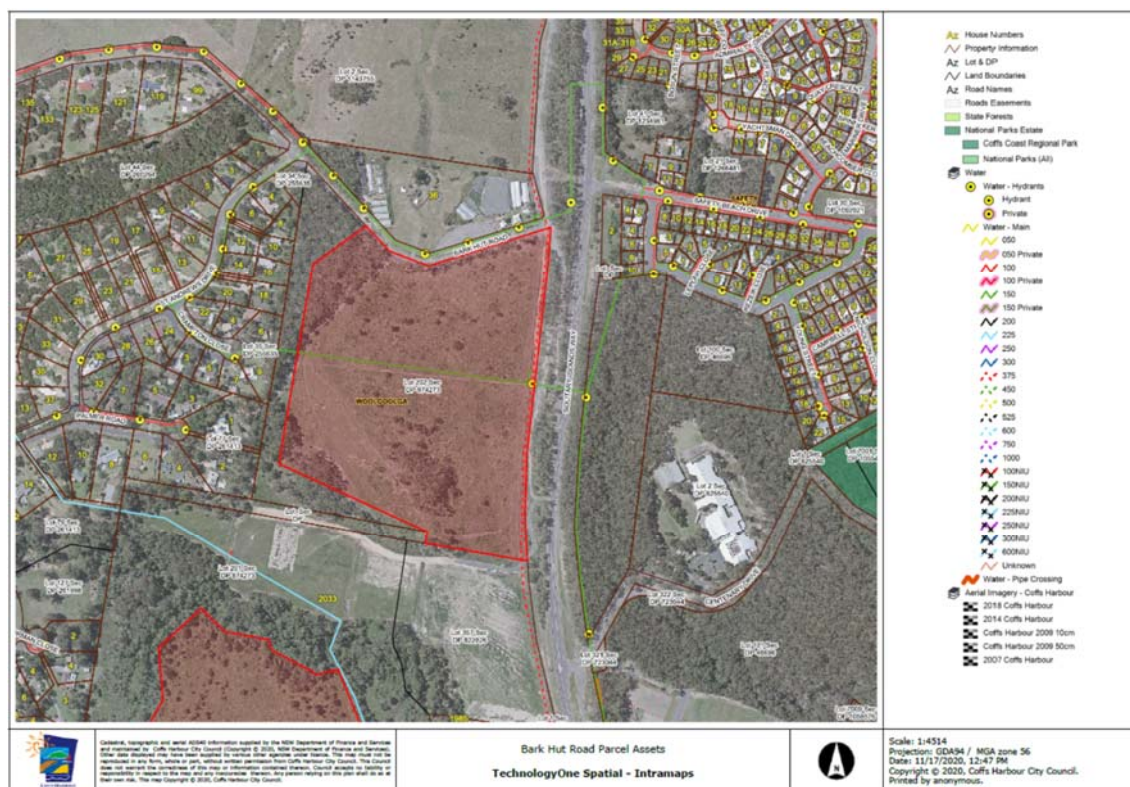
According to CHCC (2019), the adjoining residential developments to the east and west are serviced by Council water infrastructure. Further, a 150mm diameter water main is located along Bark Hut Road along the northern boundary of the Site, and a 375mm diameter trunk water main is located along Solitary Islands Way along the western boundary of the Site, as shown on Fig. 10.

A 150mm diameter water main traverses the centre of the Site, from east to west (Plate 15 & Fig. 10). The valve on this main is permanently closed and is only opened to provide a secondary feed to the subdivisions to the east and west of the site when required.

Therefore, CHCC (2019) concludes that preliminary investigations indicate that adequate water supply is available to the Site from the existing mains surrounding the Site.



**Plate 15.** A 150mm diameter water main traverses the centre of the Site, from east to west



**Plate 10.** Existing reticulated water infrastructure in the locality. Source: CHCC Intramaps

As noted, Council has found that adequate water supply is available to the Site from the existing mains surrounding the Site. Nevertheless, provision of water supply for a proposed future subdivision will need to comply with the acceptable solution detailed on Table 2 applicable to reticulated developments. In terms of electrical transmission lines, existing supply is overhead, and if reticulated or bottled gas is provided it will comply with the relevant requirements stated in Table 2.

**Table 2.** Performance criteria and Acceptable Solutions for water, gas and electricity supply (as per Table 5.3c BPB 2019)

Performance Criteria	Acceptable Solutions
<ul style="list-style-type: none"> <li>Adequate water supply is provided for firefighting purposes</li> <li>water supplies are located at regular intervals</li> <li>the water supply is accessible and reliable for firefighting operations</li> <li>flows and pressure are appropriate</li> <li>the integrity of the water supply is maintained</li> </ul>	<ul style="list-style-type: none"> <li>reticulated water is to be provided to the development where available.</li> <li>A static water and hydrant supply is provided for non- reticulated development or where reticulated water supply cannot be guaranteed; and</li> <li>Static water supply shall comply with table 5.3d.</li> <li>fire hydrant spacing, design and sizing comply with the relevant clauses of Australian Standard AS 2419.1:2005;</li> <li>hydrants are not located within any road carriageway;</li> <li>reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.</li> <li>fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005</li> <li>all above-ground water service pipes are metal, including and up to any taps.</li> </ul>
<b>Electricity Services</b>  Location of electricity services limits the possibility of ignition of surrounding	<ul style="list-style-type: none"> <li>Where practicable, electrical transmission lines are underground.</li> <li>Where overhead electrical transmission lines are proposed:               <ul style="list-style-type: none"> <li>lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas;</li> </ul> </li> </ul>



Performance Criteria	Acceptable Solutions
bushland or the fabric of buildings.	<ul style="list-style-type: none"> <li>no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 <i>Guideline for Managing Vegetation Near Power Lines</i>.</li> </ul>
<b>Gas Services</b>  Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	<ul style="list-style-type: none"> <li>Reticulated or bottled is installed and maintained in accordance with AS/NZS 1596:2014 <i>-the storage and handling of LP Gas</i>, the requirements of relevant authorities, and metal piping is used;</li> <li>All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side;</li> <li>connections to and from gas cylinders are metal;</li> <li>polymer-sheathed flexible gas supply lines are not used; and</li> <li>above-ground gas service pipes are metal, including and up to any outlets.</li> </ul>



### 3. Address of Direction 4.4 Planning for Bushfire Protection

The RFS practice note '2/12 - Planning Instruments and Policies' requires that the following be addressed to support a Planning Proposal.

*Part 1 – Objectives or Intended Outcomes relating to bush fire prone land that is:*

*Protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and encourage sound management of bush fire prone areas.*

Response: The Site is in close proximity to the established residential areas of Woolgoolga and Safety Beach and a Large Lot Residential precinct is also located to the west. The Site is included in Council's Local Growth Management Strategy 2008 – Urban Lands Component as a "possible future urban investigation" area. The land is also included in the Coffs Harbour Draft Local Growth Management Strategy currently being prepared by Council and is shown within the growth area boundary for Woolgoolga, as mapped in the *North Coast Regional Plan 2036*. The proposed rezoning is a compatible landuse on this land as the Site occurs in proximity to residential development, and it is serviced by capable road infrastructure and water and electricity services. The proposed development Site is surrounded by predominantly residential development, roads, sport fields and schools. The retained Forest vegetation is limited in extent and the potential bushfire risk can effectively be mitigated by the provisions of suitable APZ, perimeter roads and appropriate building construction standards.

*Part 2 – Explanation of the Provisions - The identified objectives can be achieved by ensuring that new controls imposed on development will:*

- *not increase the risk to life from bush fire,*  
Response: The proposal will not increase the risk to life from bushfire as adequate controls can be implemented in the future subdivision design to minimise such risk.
- *not introduce controls that place inappropriate developments in areas exposed to unacceptable bush fire hazard,*  
Response: As noted previously, the proposal is in close proximity to the established residential areas of Woolgoolga and Safety Beach and a Large Lot Residential precinct found to the west. It is surrounded by predominantly residential development, roads, sport fields and schools. The potential bushfire hazard is limited in extent and the Site is serviced by capable road infrastructure and water and electricity services. Accordingly, the development will not be exposed to unacceptable bush fire hazard.
- *ensure that appropriate bush fire protection measures can be afforded to property at risk of bushfire,*  
Response: Appropriate bushfire protection measures can be accommodated at the proposal Site as demonstrated in s. 2.
- *minimise negative impacts on the surrounding environment,*  
Response: According to the Biodiversity Impact Assessment (BIA), which was included in Pre – Exhibition version of Planning Proposal (CHCC 2019), the proposed rezoning occurs on land containing small areas of low and moderate conservation value, although it was found to be largely dominated by highly disturbed and cleared lands that do not present any ecological conservation value. No threatened species, ecological communities, mapped regional corridors or key habitat linkages exist on the Site. However, secondary and tertiary koala





habitat is present on the subject land. The BIA further found that the secondary and tertiary koala habitat that occur on the Site has moderate conservation value and will need further environmental assessment at the development application stage. In addition, the *Aboriginal Cultural Heritage Assessment* (ACHA) Report (CHCC 2019) identified two artefacts on the access trail immediately south of the Bark Hut Road entrance to the Project Area (refer to Fig. 5). Accordingly, a new conceptual master plan layout has been devised as shown on Fig. 6. The new conceptual layout ensures the Forest vegetation occurring to northwest, west and south west of the Site as well as the artefacts are retained within an environmental protection zoning. Similarly, the required APZ are wholly contained within the Site's proposed residential zoned land without impacting on the proposed environmental protection zone.

- *ensure that provision is made for adequate evacuation/shelter options for the community,*  
Response: The Site occurs in proximity to residential development, and it is serviced by capable road infrastructure and water and electricity services. The proposed development Site is surrounded by predominantly residential development, roads, sport fields and schools. The retained Forest vegetation is limited in extent and the potential bushfire risk can effectively be mitigated by the provisions of suitable APZ, perimeter roads and building construction standards. Accordingly, the rezoning does not increase the potential bushfire risk and existing measures are already in place at the locality level.
- *and ensure that development is capable of complying with Planning for Bush Fire Protection 2006 (PBP).*  
Response: The development is capable of complying with the relevant Residential and Rural Residential provisions detailed in Chapter 5 of PBP 2019 as demonstrated in s. 2. Notably, PBP 2019 is the currently legislated document, and it provides updated and more robust provisions than those detailed in PBP 2006.

*Part 3 – Justification - The level of justification should be proportionate to the impact that the planning proposal will have.*

Response: The proposed rezoning will not have an undue impact on the locality in terms of bushfire risk. This assessment has found that the proposal can comply with the Direction 4.4 Planning for Bushfire Protection and is capable of complying with PBP.



## 4. Recommendations & Compliance

This Bushfire Assessment report has been prepared by LFA in accordance with the relevant provisions of PBP 2019 to support the **Planning Proposal of Part Lot 202 DP 874273, Bark Hut Road, Woolgoolga, NSW**. The Planning Proposal applies to the Bark Hut Road Planning Area (the Site) only, which is zoned RU2 Rural Landscape under the Coffs Harbour Local Environmental Plan (LEP) 2013. The purpose of this Planning Proposal is to amend LEP 2013 to allow low density residential development on part of Lot 202 DP 874273. The proposal area is wholly affected by the Bush Fire Prone Land mapping.

Specifically, this assessment reviewed suitability of the Site for landuse intensification. Direction 4.4 Planning for Bushfire Protection identifies matters for consideration for landuse intensification proposals that will affect, or are in proximity to land mapped as bush fire prone.

A key principle should be to ensure that future development is capable of complying with PBP. To achieve this, it is necessary to undertake a constraint assessment of the Site in respect to bushfire to identify potential bush fire risks to the proposed forms of development (i.e. amend LEP 2013 to allow low density residential development on part of Lot 202 DP 874273).

Thus, this bushfire assessment found that the proposal:

- will not increase the risk to life from bush fire;
- will not introduce controls that place inappropriate developments in areas exposed to unacceptable bush fire hazard;
- can provide for appropriate bush fire protection measures to properties at risk of bushfire;
- does not have adverse impacts on the surrounding environment;
- does not place additional burden to current evacuation/shelter options for the community; and
- the proposed development is capable of complying with Planning for Bush Fire Protection.

A prior bushfire assessment was submitted to the RFS on the 5/11/19 with the Pre – Exhibition version of the Planning Proposal, dated September 2019 (CHCC 2019). The pre-exhibition Bushfire Risk Assessment, which was undertaken by Resource Design & Management Pty Ltd in March 2019 (CHCC 2019), assessed the proposal against the provisions of the draft *Planning for Bushfire Protection 2018*. The RFS response, which was received on the 30 January 2020 stated that *‘Future residential subdivisions are to comply with the requirements of Planning for Bush Fire Protection 2019 and associated documents.’*

Accordingly, this bushfire assessment has been undertaken in accordance with the relevant provisions of Planning for Bushfire Protection (PBP) 2019 in its entirety and the future residential development can comply with all relevant Acceptable Solutions in this version of PBP.

The assessment found that the applicable bushfire protection measures and acceptable solutions as they would apply to future residential subdivision can be met and the following is noted:

- According to Table A1.12.3 of PBP 2019 for residential subdivisions the minimum APZ distances are calculated to achieve a radiant heat of no more than 29kW/m<sup>2</sup> (i.e. BAL- 29). In this case the setbacks (APZs) requirements to achieve BAL - 29 range from 31m to 11m. The proposed conceptual masterplan layout (see Fig. 6) details the identified APZs and demonstrate that there is room available to achieve BAL – 29.
- Direct and multiple access to the public road is already provided. The Traffic Impact Assessment prepared by George Stulle (CHCC 2019), found that the expected traffic generated by the residential development will not generate traffic volumes sufficient to warrant a designation larger than local road within the site’s internal road network. The proposed road network will be fully compliant with the subdivision access provisions





detailed in s. 5.3.2 of PBP 2019. The conceptual masterplan layout shown on Fig. 6 includes the required elements to satisfy the RFS subdivision provisions, including:

- perimeter road,
- more than one access in and out of the development
- no dead ends roads
- internal roads (i.e. non-perimeter roads) are through roads, etc.
- Concerning the provision of adequate reticulated water supply, preliminary investigations undertaken by CHCC (2019) indicate that adequate water supply is available to the Site from the existing mains surrounding the Site.
- In terms of electrical transmission lines, existing supply is overhead, and if reticulated or bottled gas is provided it will comply with the relevant requirements stated in Table 2.

In conclusion, this Assessment has duly considered the bushfire issues identified in s. 4.4.1 of PBP 2019. Accordingly, it has found that the proposed Planning Proposal to amend LEP 2013 to allow low density residential development on part of Lot 202 DP 874273 can comply with the s.9.1(2) Directions (specifically Direction 4.4 Planning for Bushfire Protection), and with the specific objectives for the development type and the performance criteria for the various proposed Bushfire Protection Measures in accordance with PBP 2019.



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## Appendices

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## Appendix A - APZs Requirements and Landscaping

### A.1 General Requirement for Asset Protection Zones

Asset Protection Zones (APZs) are buffer areas between development and a fire hazard, which aim to protect human life and property. The APZ comprises an Inner Protection Area (IPA) and an Outer Protection Area (OPA). These areas are to be managed to reduce the bushfire hazard. The general requirements for APZs are described in Tables 1A and 2A.

**Table 1A.** Inner Protection Area (IPA) General Requirements

Specifications and Management	
<b>Location</b>	The IPA extends from the edge of the OPA to the development.
<b>Purpose</b>	Ensures that the presence of fuel, which could become involved in fire, is minimised.
<b>Depth</b>	Varies from 10 to 100 metres.
<b>Fuel Loading</b>	Minimum fine fuel at ground level, which could be set alight by bushfire.
<b>Vegetation Requirements</b>	Do not touch or overhang the building; Are well spread out and do not form a continuous canopy; Are not species that retain dead material or deposit excessive quantities of ground fuel in a short period; and Are located far enough away from the house so that they will not ignite the house by direct flame contact or radiated heat emissions.
<b>Uses Within the Area</b>	Tennis courts, swimming pools and gardens are permitted. Woodpiles, wooden sheds, combustible material storage areas, large quantities of garden mulch, stacked flammable building materials are not permitted.
<b>Maintenance</b>	This Area should be regularly mowed and all fuel removed e.g. fallen branches, leaf build-up.

**Table 2A.** Outer Protection Area (OPA) General Requirements

Specifications and Management	
<b>Location</b>	Located adjacent to the hazard. Originally the OPA would have formed part of the bushfire hazard but becomes an area where the fuel loadings are reduced.
<b>Purpose</b>	Reduction of fuel in this area substantially decreases the intensity of an approaching fire and restricts the pathway of crown fuels; reducing the level of direct flame, radiant heat and ember attack on the IPA.
<b>Depth</b>	Varies from 0 to 25 metres.
<b>Fuel Loading</b>	Fine fuel loads should be kept to a level where the fire intensity expected will not impact on adjacent developments. In the absence of any policy to the contrary, 8 tonnes per hectare of fuel is commonly used. In grasslands, fuel height should be maintained below 10 centimetres.
<b>Vegetation Requirements</b>	Any trees and shrubs should be maintained in such a manner that the vegetation is not continuous.
<b>Maintenance</b>	This Area should be regularly mowed and all excess fuels should be removed e.g. fallen branches, leaf build-up.

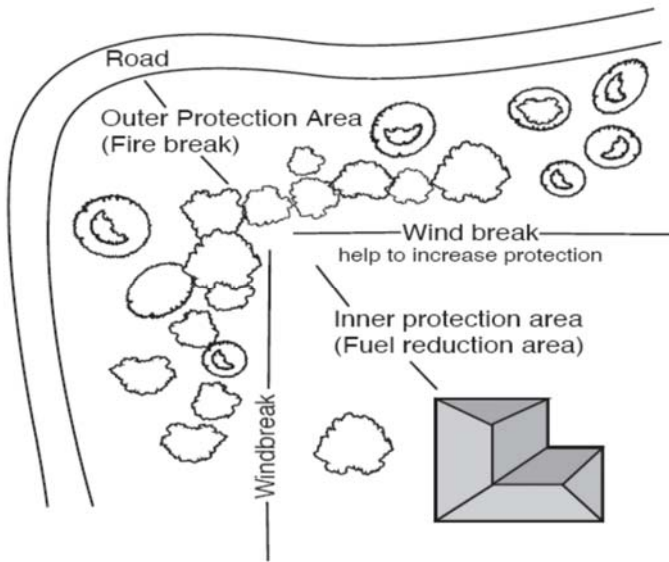
The RFS has also developed “Standards for Asset Protection Zones” which should be consulted for APZ specifications. Standards for Asset Protection Zones can be downloaded from [https://www.rfs.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf](https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0010/13321/Standards-for-Asset-Protection-Zones.pdf)



## A.2 Landscaping and Property Maintenance

### A.2.1 Landscaping Features & Principles

Bushland vegetation provides the fuel which feeds wildfires; however, by providing adequate separation distance between the bush and buildings will effectively prevent the spread of bushfire. Still vegetation is not always the foe when it comes to bushfires and it is possible to use managed vegetation as a tool to reduce fire risk. According to many practitioners and researchers (Ramsay & Rudolph 2006; CFA 2004; RFS 2006; Queensland Government 2000; RFS undated), a well-designed garden can reduce bushfire hazard near buildings. In summary, homes and garden can blend with the natural environment and be landscaped to minimise the impact of fire at the same time.



**Figure 1A.** Example of landscaped design

aimed at minimising the impact of fire. Source RFS (undated)

According to the RFS (undated), this can be achieved by providing an effective Asset Protection Zone (APZ), which incorporates features such as fire-resistant plants, radiant heat barriers and windbreaks in the landscape layout as shown on Fig. 1A. The key features required when using landscaping as tool to reduce bushfire risk are summarised as follows (Ramsay & Rudolph 2006; RFS undated; RFS 2006):

- Plants with low flammability are selected (eg. broad leaves with high moisture and mineral content, smooth-trunk species with high branches, etc.)
- Vegetation does not provide a continuous path to the house
- Vegetation is located far enough away from the asset so that plants will not ignite the asset by direct flame contact or radiant heat emission
- Planted (or cleared) vegetation is into clumps rather than continuous rows
- Planted or retained species possesses attributes which makes them a good barrier against bushfire and wind attack
- Low branches are pruned two metres from the ground to prevent a ground fire from spreading into trees
- Lawn is planted and maintained around the future dwellings as this will slow the fire and reduce fire intensity. Alternatively, non-flammable pathways directly around the dwelling are provided
- Shrubs and other plants do not directly abut the dwelling. Where this does occur, gardens should contain low-flammability plants and non-flammable ground cover such as pebbles and crush tile
- Brush type fencing and planting “pencil pine” type trees next to buildings are avoided, as these are highly flammable.

Therefore, the features noted above and the principles listed in the following section should be applied to the landscaping and property maintenance for future dwellings.

### **A.2.2 Vegetation Management**

Vegetation management is the responsibility of individual landowners and should, as per PBP, include:

- *Maintaining a low cut lawn;*
- *Keeping areas around the garden free of fuel;*
- *Utilising non-combustible fencing materials;*
- *Breaking up tree and shrub canopies by defining garden beds;*
- *Using non-flammable mulch;*
- *Ensuring tree branches do not overhang roofs;*
- *Ensuring tree canopies are not continuous; and*
- *Installing windbreaks in the direction from which fires are likely to approach.*

### **A.2.3 Property Maintenance**

Property maintenance should, as per PBP, include:

- *Removal of material such as litter from the roof and gutters;*
- *Ensure painted surfaces are in good condition with decaying timbers being given particular attention to prevent the lodging of embers within gaps;*
- *Check pumps and water supplies are available and in working order;*
- *Driveways are in good condition with trees not being too close and forming an obstacle during smoky conditions;*
- *Check tiles and roof lines for broken tiles or dislodged roofing materials;*
- *Screens on windows and doors are in good condition without breaks or holes in flyscreen material and frames are well fitting into sills and window frames;*
- *Drenching or spray systems are regularly tested before the commencement of the fire season;*
- *Hoses and hose reels are not perished and fittings are tight and in good order;*
- *Doors are fitted with draught seals and well maintained;*
- *Mats are of non-combustible material or in areas of low potential exposure; Woodpiles, garden sheds and other combustible materials are located downslope and well away from the house; and*
- *Trees and other vegetation in the vicinity of power lines and tower lines should be managed and trimmed in accordance with the specifications in “Vegetation Safety Clearances” issued by Energy Australia (NS179 April 2002).*