Bushfire Hazard Assessment

Residential Subdivision – Charlesworth Bay Road, Coffs Harbour

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Prepared for: Brian and Leesa Betts

Bushfire Disclaimer

This report in no way suggests or guarantees that a bushfire or grass fire will not occur at the Project Site and/ or impact the proposed development. Furthermore, the measures recommended in this report do not guarantee that loss of life, injury and/ or property damage will not occur during a bushfire or grass fire event. The severity and impact of a bushfire or grass fire event can be influenced by matters such as vegetation management, human behaviour and extreme weather conditions.

This report advises on matters published by the NSW Rural Fire Service in the guideline Planning for Bushfire Protection 2019 and other advice available from that organisation. Due consideration has been given to site conditions, the nature of the proposed development and to appropriate legislation and documentation available at the time of writing. The report is therefore current at the time of writing only.

Certification

	Name	Signature	Date
Prepared by	Paul Creenaune		29/07/2024
Reviewed by	Veronica Silver		29/07/2024

UPR	Description	Issued By	Date Issued
4970-1001	Bushfire Hazard Assessment	Paul Creenaune	29/07/2024

Table of Contents

Illustrations

Tables

Plates

Appendices

Executive Summary

This Bushfire Hazard Assessment has been prepared to support a Development Application to the City of Coffs Harbour for the proposed residential subdivision of Lot 5 DP 270532, 29 Charlesworth Bay Road, Coffs Harbour NSW. The subdivision will create six lots on bushfire prone land with the potential for future residential development, and therefore requires a Bushfire Safety Authority in accordance with Section 100B of the *Rural Fires Act 1997*.

The Bushfire Hazard Assessment has taken into consideration the proposed development layout, the vegetation creating a bushfire hazard, the effective slope and Fire Danger Index for the site in accordance with Planning for Bush Fire Protection 2019. The Bushfire Hazard Assessment demonstrates that the recommended bushfire protection measures are available and can be implemented to facilitate the proposed development in accordance with the requirements of Planning for Bush Fire Protection 2019.

The proposed development is regarded as Integrated Development under Section 4.46 of the *Environmental Planning and Assessment Act 1979*.

The following table provides a summary of the recommendations for each bushfire protection measure outlined in Chapter 5 of Planning for Bush Fire Protection 2019.

Bushfire Protection Measure	Recommendation
Asset Protection Zones	■ The entire area of each lot is to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of Planning for Bush Fire Protection 2019.
Construction	■ The existing dwelling is to be upgrade for ember protection by: - sealing any gaps around the house, including facias and eaves, vents and weepholes, with appropriate joining strips, flexible silicon based sealant or corrosion resistant mesh (maximum aperture 2 mm); - installing weather strips, draught excluders or draught seals at the base of side hung external doors; and - providing mesh screens with a maximum aperture of 2 mm, made from corrosion resistant steel, bronze or aluminium to all external doors and openable windows.
Access	■ Access is to be provided in accordance with Table 5.3b General Requirements and Non-Perimeter Road requirements of Planning for Bush Fire Protection 2019, except that: - a perimeter road is not required; - alternative access is not required; - a through road is not required; and - a reverse turning area is to be provided in accordance with Planning for Bush Fire Protection 2019 – Figure A3.3 (Type D) in lieu of a turning circle.
Services - Water, Electricity and Gas	■ Water and electricity services are to comply with Table 5.3c of Planning for Bush Fire Protection 2019.

1. Introduction

1.1 Scope and Purpose

GeoLINK has been engaged by Brian and Leesa Betts to prepare a Bushfire Hazard Assessment for the proposed subdivision of 29 Charlesworth Bay Road, Coffs Harbour (Lot 5 DP 270532), referred to herein as 'the site'.

The land on which the proposed development is located is mapped as bushfire prone land.

This Bushfire Hazard Assessment will accompany the Statement of Environmental Effects that informs the development application (DA) lodged under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to the City of Coffs Harbour.

This report serves to:

- identify the proposed development and site characteristics;
- determine and assess the bushfire threat; and
- recommend appropriate bushfire protection measures in accordance with Planning for Bush Fire Protection 2019 to minimise the impact of bushfire on the development.

1.2 Legislative Framework

The assessment contained in this report has been prepared with regard to:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)*;*
- Environmental Planning and Assessment Regulation 2021;
- *Rural Fires Act 1997;*
- Rural Fires Regulation 2022;
- Australian Standard 3959:2018 'Construction of Buildings in Bushfire Prone Areas';
- NASH Standard 'Steel Framed Construction in Bushfire Areas (2021)'; and
- Planning for Bushfire Protection (PBP) 2019.

The *Rural Fires Act 1997* and the EP&A Act institute a framework for environmental planning and assessment to consider bushfire hazard issues.

Section 100B of the *Rural Fires Act 1997* establishes that a 'Bush Fire Safety Authority' (BFSA) is required for *a subdivision of bush fire prone land that could lawfully be used for residential or rural residential purposes.*

This report does not include an assessment of any threatened species or threatened ecological community under the *Biodiversity Conservation Act 2016*, or any Aboriginal object or place within the meaning of the *National Parks and Wildlife Act 1974*. Refer to the Statement of Environmental Effects for further information.

1.3 Bushfire Prone Land

The City of Coffs Harbour's bushfire prone land mapping has been prepared as a requirement of Section 10.3 of the EP&A Act and in accordance with the NSW Rural Fire Services (RFS) *Guideline to Bushfire Prone Land Mapping*. The City of Coffs Harbour's bushfire prone land mapping indicates that the site is classified as bushfire prone land containing predominantly Vegetation Buffer, with a small

area of Category 2 Vegetation extending into the north-east corner. The surrounding land is also classified as bushfire prone land comprising Category 1 Vegetation to the north/ north-west and Category 2 Vegetation to the north-east, east and south-west, with associated Vegetation Buffers. The bushfire prone land mapping for the site and immediate surrounds is shown in **Illustration 1.1**.

Spatial Reference: GDA2020 MGA Zone 56

LEGEND

- Site boundary
- Cadastre
- Vegetation category 1
- Vegetation category 2
- Vegetation buffer

0 50 Metres

Bushfire Prone Land - Illustration 1.1

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Bushfire Hazard Assessment - Residential Subdivision
Charlesworth Bay Road, Coffs Harbour
4970-1003

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Source of base data: Nearmap 17/06/2024
Date: 29/07/2024

2. Background

2.1 Location and Description

The site is located in the City of Coffs Harbour local government area at Diggers Head, 5 km north-east of the Coffs Harbour CBD (refer to **Illustration 2.1**).

Table 2.1 provides a quick reference for the location and description details of the site.

Table 2.1 Site Detail Summary

Site Details	
Lot/ DP	Lot 5 DP 270532
Street Address	29 Charlesworth Bay Road, Coffs Harbour
Elevation	18 m to 34 m AHD
Site Area	7,321 m^2
Coffs Harbour Local Environmental Plan 2013	R2 – Low Density Residential
Fire Weather District	North Coast
Fire Danger Index (FDI)	80
Fire Control Centre	Mid North Coast Office (Coffs Harbour)

The site is on the north-eastern outskirts of an existing residential area. To the north, east and south-east is a bushland area forming part of Coffs Coast Regional Park, which encompasses Diggers Head.

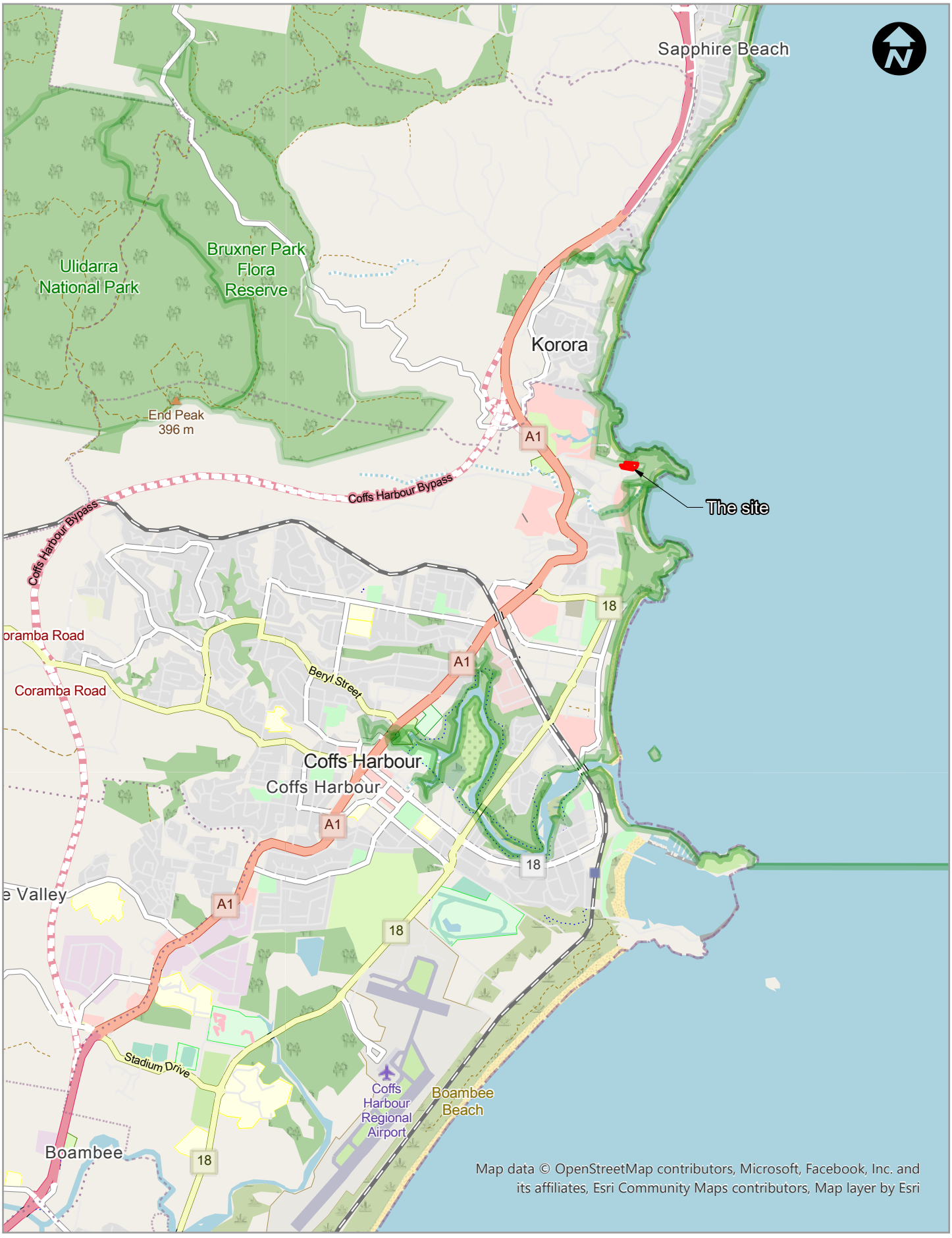
The adjoining land to the south and west contains existing residential development, while further to the south are tourist accommodation/ resort premises. Beyond Diggers Head is the Pacific Ocean (refer to **Illustration 2.2**).

The site contains an existing single dwelling, to be retained on proposed Lot 13.

Access to the site is provided from Charlesworth Bay Road to the west.

The site is serviced by a reticulated water supply and underground electricity.

There are no watercourses or significant landform features on the property.



Spatial Reference: GDA2020 MGA Zone 56

0 1 km

Site Locality - Illustration 2.1

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Bushfire Hazard Assessment - Residential Subdivision
Charlesworth Bay Road, Coffs Harbour
4970-1003

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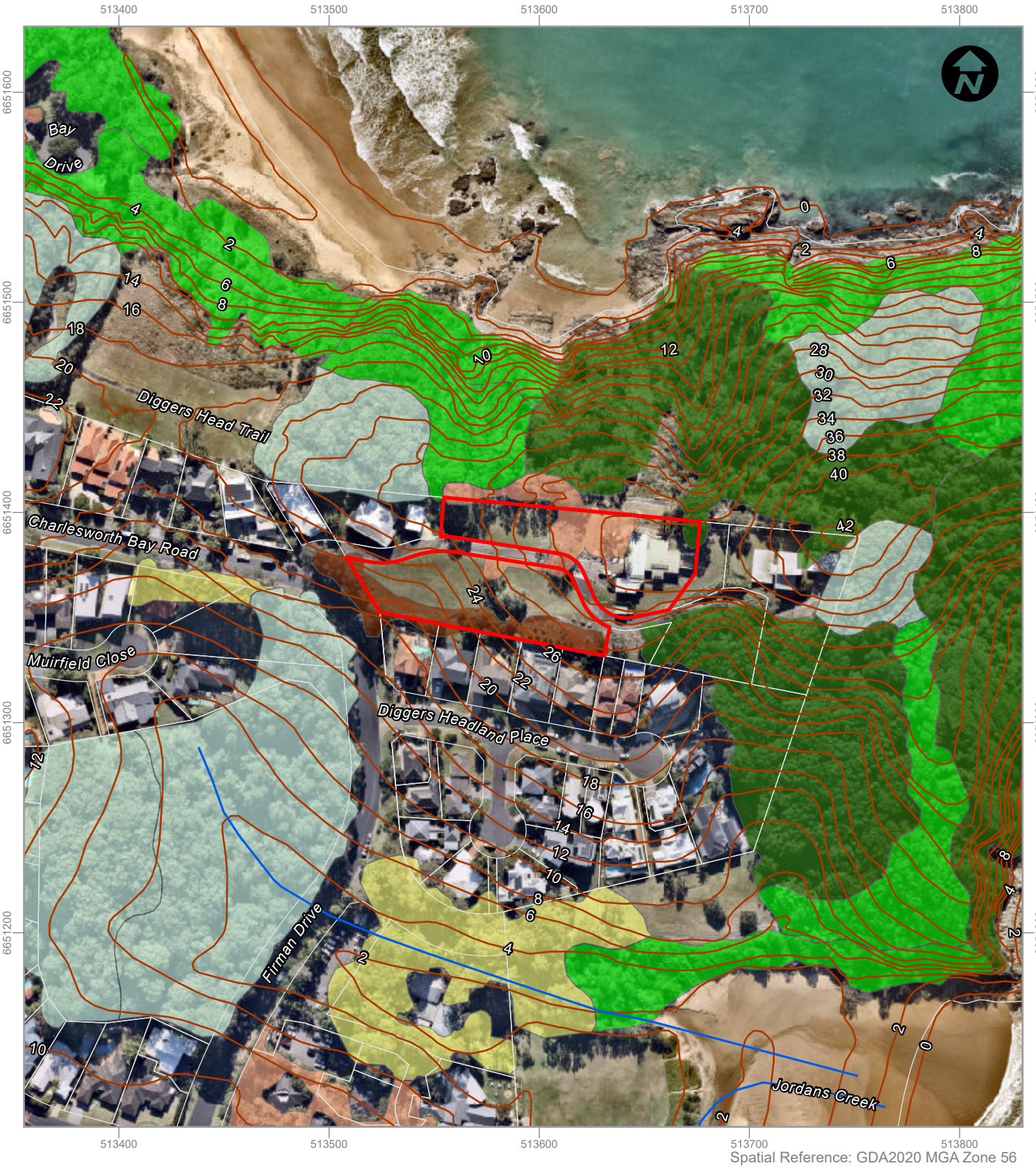
Source of base data: OpenStreet Map
Date: 29/07/2024



Spatial Reference: GDA2020 MGA Zone 56

LEGEND

- Site boundary
- Cadastre
- Coastal Headland Heaths
- Exotic vegetation
- Littoral Rainforest
- Native remnant vegetation
- North Coast Wet Sclerophyll Forest
- Plantation
- Watercourse
- Contours at 2 m intervals

0 50 Metres

Site Analysis - Illustration 2.2

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Bushfire Hazard Assessment - Residential Subdivision
Charlesworth Bay Road, Coffs Harbour
4970-1003

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Source of base data: Nearmap 17/06/2024
Date: 29/07/2024

2.2 Zoning and Land Use

The site is zoned R2 – Low Density Residential under Coffs Harbour Local Environmental Plan 2013.

The site contains an existing dwelling in the north-eastern portion, with the remainder of the site managed as lawn and gardens (refer to **Plate 2.1** and **Plate 2.2**).

Plate 2.1 Existing dwelling on proposed Lot 13

Plate 2.2 Managed area of proposed Lots 8 - 12

2.3 Proposed Development

The proposed development involves a community title subdivision that will result in six residential lots, as follows:

Lot 8 506 m^2
Lot 9 700 m^2
Lot 10 700 m^2
Lot 11 700 m^2
Lot 12 682 m^2
Lot 13 3,671 m^2 (existing dwelling).

The subdivision will also create proposed Lot 1A (addition to the community association property for drainage) and Lot 1B (addition to the community association property for access).

A copy of the proposed subdivision plan is included in **Appendix A**.

3. Bushfire Hazard Assessment

The following subsections were informed by a site visit undertaken by GeoLINK on 21 May 2024.

3.1 Vegetation

Vegetation classifications for the purpose of assessing bushfire hazard are based on vegetation formations and fuel loads outlined in PBP 2019. Vegetation within the site is classified as 'managed land', comprising mown lawn with isolated trees. A strip of landscape plantings along the southern boundary have largely been removed (refer to **Plate 3.1** to **Plate 3.2**).

Plate 3.1 Managed land in northern portion of the site

Plate 3.2 View west along the southern boundary

Vegetation surrounding the site of the proposed subdivision has been assessed in terms of potential bushfire hazard over a distance of 140 m, using the formation classes provided within Figure A1.2 of PBP 2019. The dominant vegetation formation in each relevant direction of the proposed subdivision is summarised in **Table 3.1**.

Table 3.1 Vegetation Formation

Direction	Predominant Vegetation Formation
North	Forest
	Tall Heath
	Rainforest
East	Managed Land
	Rainforest
South-east	Rainforest
South	Managed Land
South-west	Low Threat Vegetation
	Forest
West	Managed Land

Vegetation within the Coffs Coast Regional Park to the north of the site contains a variety of formations, ranging from forest at the western end of the site, tall heath adjacent to the centre and rainforest to the north of the existing dwelling on proposed Lot 13 (refer to **Illustration 2.2**).

The adjacent land to the east of proposed Lot 13 is managed and contains an existing dwelling. Further east beyond the dwelling is rainforest vegetation within the Coffs Coast Regional Park. The adjacent land to the east of proposed Lot 8 is managed (Pt Lot 4 DP 270532), with rainforest further to the east (refer to **Plate 3.3**). This same rainforest vegetation is situated to the south-east of the existing dwelling on proposed Lot 13.

The adjoining properties to the south contain residential development and are classified as managed land (refer to **Plate 3.4**).

The land to the west of Lot 12 is occupied by Charlesworth Bay Road. A thin strip of She-oak trees have been planted along a steep bank between Charlesworth Bay Road and proposed Lot 12. This strip of trees are <10 m wide at ground level and have a sparse ground cover on the bank. A mid-storey layer of predominantly Lantana along the western edge of proposed Lot 12 will be removed (refer to **Plate 3.4** and **Plate 3.5**). The resulting strip of She-oaks are narrow and separated from other surrounding vegetation by existing managed residential development and Charlesworth Bay Road. Due to the small and isolated nature of this vegetation, it has been classified as 'low threat vegetation'.

Further to the south-west of Charlesworth Bay Road is an area of wet sclerophyll forest.

Land to the west comprises managed residential development and Charlesworth Bay Road.

Plate 3.3 Managed land within Lot 4 to east of proposed Lot 8

Plate 3.4 Managed residential development to the south

Plate 3.5 Lantana along western boundary of proposed Lot 12 to be removed

Plate 3.6 Low threat vegetation along Charlesworth Bay Road

3.2 Slope

The effective slope is the slope of the land beneath the vegetation assessed as being a hazard that will have the greatest influence on bushfire behaviour in relation to the development. The effective slope for the proposal has been assessed over 100 m in each relevant direction.

The effective slope in relation to the development is outlined in **Table 3.2**.

Table 3.2 Effective Slope

Aspect	Effective Slope
North	>5-10°
	>15-20°
	>10-15°
East	-
	>10-15°
South-east	>10-15°
South	-
South-west	-
	>5-10°
West	-

3.3 Fire Weather District

City of Coffs Harbour local government area is located within the ‘North Coast’ fire weather district, with a Fire Danger Index (FDI) of 80.

4. Bushfire Protection Measures

4.1 Asset Protection Zones

PBP 2019 describes an asset protection zone (APZ) as a fuel reduced area surrounding a built asset or structure. The APZ provides:

- a buffer zone between a bushfire hazard and an asset;
- an area of reduced bushfire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

The minimum required APZs for residential subdivision are based on a radiant heat threshold of 29 kW/m^2 and have been determined in accordance with Table A1.12.3 and the methodology outlined in Appendix A1.1 of PBP 2019, using the relevant vegetation formation, effective slope and FDI.

Table 4.1 outlines the site characteristics and the minimum APZ for BAL 29.

Table 4.1 Minimum Asset Protection Zones

Direction	Vegetation Formation	Effective Slope	Minimum APZ
North	Forest	>5-10°	31 m
	Tall Heath	>15-20°	25 m
	Rainforest	>10-15°	20 m
East	Managed Land	-	
	Rainforest	>10-15°	20 m
South-east	Rainforest	>10-15°	20 m
South	Managed Land	-	
South-west	Low Threat	-	
	Forest	>5-10°	25 m *
West	Managed Land	-	

* Refer to performance solution below.

Performance Based Solution

Performance based solutions allow for flexibility in responding to site specific conditions and constraints while still meeting the relevant performance criteria.

The bushfire hazard to the south-west of proposed Lot 12 has an effective slope of 6°. A performance based solution is proposed to determine the minimum required APZ distance from this bushfire hazard vegetation to maximise the potential building envelope on Lot 12. The verification method is based on a site specific calculation using Method 2 from AS 3959:2018 (Appendix B).

The relevant performance criteria from PBP 2019 – Table 5.3a is that:

> **Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m^2 on each proposed lot.**

The Method 2 calculation has been performed using the Newcastle Bushfire Consulting Bushfire Attack Assessor V4.1 software and includes the following variable inputs:

- vegetation classification – Forest (fuel loads in accordance with PBP 2019 – Table A1.12.8).
- FDI 80
- effective slope – 6 degree downslope.
- site slope – 12 degree downslope.

The calculation result is outlined in **Appendix B** and demonstrates that a separation distance of 25 m is sufficient to ensure that the radiant heat exposure to the new dwelling on proposed Lot 12 will not exceed 29 kW/m^2.

The minimum APZs for a radiant heat threshold of 29 kW/m^2 are shown in **Illustration 4.1**, with each lot capable of accommodating a suitable building envelope. It is recommended that the entire area of each lot is managed as an Inner Protection Area in accordance with Appendix A4.1.1 of PBP 2019 (refer to **Appendix C**).

The northern boundary adjoins the Coffs Coast Regional Park, with a managed walking path located adjacent to the site boundary. The minimum BAL 29 separation distance for the purpose of this report has been measured from the edge of existing unmanaged vegetation and includes the managed land along the path to the north of the existing dwelling on proposed Lot 13.

Table 4.2 outlines the extent to which the proposed APZs comply with the performance criteria and acceptable solution requirements of Table 5.3a of PBP 2019.

Table 4.2 APZ Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Asset Protection Zones		
Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m^2 on each proposed lot.	An APZ is provided in accordance with Table A1.12.2 or A1.12.3 based on the FFDI.	Complies. APZs have been determined in accordance with Table A1.12.3 of PBP 2019 (refer to **Illustration 4.1**).
APZs are managed and maintained to prevent the spread of a fire towards the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	Complies. The entire area of each lot is to continue to be managed in accordance with Appendix 4 of PBP 2019.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	APZs are provided within the proposed lots and over adjoining managed land (e.g. Charlesworth Bay Road).
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZ are located on lands with a slope less than 18 degrees.	Complies. All APZs are located on land with a slope less than 18 degrees.

Spatial Reference: GDA2020 MGA Zone 56

LEGEND

- Site boundary
- Cadastre
- Minimum setback for BAL 29

0 20 Metres

Asset Protection Zone - Illustration 4.1

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Charlesworth Bay Road, Coffs Harbour
4970-1003

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4.2 Landscaping

No specific landscaping or fencing is proposed as part of the subdivision. The proposed lots will be managed as an APZ as outlined in **Table 4.1**.

Table 4.3 assesses compliance with the performance criteria and acceptable solutions of Table 5.3a of PBP 2019 relating to landscaping.

Table 4.3 Landscaping Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Landscaping		
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4.	Landscaping within the APZs is to be managed in accordance with Appendix 4 of PBP 2019 (refer to **Appendix C**).
	Fencing is constructed in accordance with Section 7.6 of PBP 2019.	No new fencing is proposed as part of the subdivision. Any fencing associated with future dwellings can be constructed in accordance with Section 7.6 of PBP 2019.

4.3 Existing Dwelling

The existing dwelling on proposed Lot 13 is currently the subject of proposed alterations and additions under the City of Coffs Harbour application 0721/24DA, which was approved on 18 July 2024, and requires new construction to comply with BAL 40 (eastern and southern elevations) and BAL 29 (northern and western elevations). There is no requirement to upgrade the remainder of the dwelling under application 0721/24DA.

In accordance with PBP 2019 – Section 5.1.3, it is recommended that the remainder of the existing dwelling (i.e. not subject to application 0721/24DA) be upgraded for ember protection as follows:

- sealing any gaps around the house, including facias and eaves, vents and weepholes, with appropriate joining strips, flexible silicon based sealant or corrosion resistant mesh (maximum aperture 2 mm);
- weather strips, draught excluders or draught seals at the base of side hung external doors; and
- mesh screens with a maximum aperture of 2 mm, made from corrosion resistant steel, bronze or aluminium to all external doors and openable windows.

4.4 Access

Access to the proposed subdivision will be via an existing bitumen sealed driveway connecting to Charlesworth Bay Road. The driveway provides access to the existing dwelling on proposed Lot 13 and an adjacent dwelling (Lot 3 DP 270532) via a community title arrangement.

The existing driveway will be widened and incorporated into Lot 1 DP 270532 as a community association lot. A reverse turning area is proposed as an easement over proposed Lot 13 (refer to **Appendix A**). The proposed access has been assessed as a non-perimeter road in accordance with PBP 2019 - Table 5.3b.

Table 4.4 outlines several non-compliances with the Acceptable Solution requirements for access. These non-compliances primarily relate to the single, one-way in/ out access arrangement for the subdivision. In this regard, the access is required to satisfy the performance criteria that:

Fire fighting vehicles are provided with safe, all-weather access to structures.

The existing lot layout and configuration of the site does not allow for provision of a secondary access. The site has a narrow frontage to Charlesworth Bay Road and is otherwise surrounded by residential development or the Coffs Coast Regional Park. The proposed access road has a bitumen sealed surface, is less than 200 m in length, incorporates a turning area in accordance with PBP 2019 and provides access to the frontage of all lots in the subdivision. The road is located approximately 20 m away from the bushfire hazard to the north and passes through managed land for its entire length. Under the circumstances, the proposed access is considered to provide safe, all-weather access for fire fighting vehicles.

Charlesworth Bay Road has sufficient capacity to handle increased volumes of traffic potentially generated by the subdivision in the event of a bushfire emergency. Charlesworth Bay Road provides alternative access/ egress routes, connecting to the Pacific Highway to the west via Bay Drive and to the south-west via Diggers Beach Road.

Table 4.4 outlines the extent to which the proposed subdivision access complies with the relevant acceptable solution requirements of Table 5.3b of PBP 2019.

Table 4.4 Access Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Access (General Requirements)		
Firefighting vehicles are provided with safe, all-weather access to structures	Property access roads are two-wheel drive, all-weather roads.	The existing property access road is sealed.
	Perimeter roads are provided for residential subdivisions of three or more allotments.	**Does not comply**. The existing lot layout and configuration of the site does not allow for provision of a perimeter road. The existing road provides access to within 20 m of the bushfire hazard to the north, to the interface to the south-east and to the adjacent dwelling on Lot 3 DP 270532.
	Subdivisions of three or more allotments have more than one access in and out of the development.	**Does not comply**. The existing lot layout and configuration of the site does not allow for provision of a secondary

Performance Criteria	Acceptable Solution	Application
		access. The site has a narrow frontage to Charlesworth Bay Road and is otherwise surrounded by residential development or the Coffs Coast Regional Park.
	Traffic management devices are constructed to not prohibit access by emergency services vehicles.	N/A
	Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.	Complies.
	All roads are through roads.	**Does not comply**. The existing lot layout and configuration of the site does not allow for provision of a through road.
	Dead end roads are not recommended, but if unavoidable, are not more than 200 m in length, incorporate a minimum 12 m outer radius turning circle, and are clearly sign posted as a dead end.	The proposed lots are less than 150 m from Charlesworth Bay Road. A reverse turning area in accordance with PBP 2019 – Figure A3.3 (Type D) is proposed in lieu of a turning circle (refer to **Appendix A** and **Appendix D**).
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	N/A.
	Where access/ egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.	N/A.
	One way only public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	N/A. No one-way public access roads are proposed.
The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes),	The proposed access can be designed for a 23 tonne load capacity. No bridges/ causeways are proposed.
	Bridges and causeways are to clearly indicate load rating.	

Performance Criteria	Acceptable Solution	Application
There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	The nearest hydrant is located along Charlesworth Bay Road, opposite the site entrance. Any new hydrants within the subdivision can be located outside parking reserves or the road carriageway, and in accordance with AS 2419.1:2021.
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021.	
	There is suitable access for a Category 1 fire appliances to within 4 m of the static water supply where no reticulated supply is available.	The existing dwelling on proposed Lot 13 has a 10,000 litre static water supply tank south of the dwelling adjacent to a garage and the access road.
Perimeter Roads		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Are two-way sealed roads.	N/A. No perimeter road is proposed.
	Minimum 8 m carriageway width kerb to kerb.	
	Parking is provided outside of the carriageway width.	
	Hydrants are located clear of parking areas.	
	Are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	
	Curves of roads have a minimum inner radius of 6 m.	
	The maximum grade road is 15 degrees and average grade of not more than 10 degrees.	
	The road crossfall does not exceed 3 degrees.	
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	
Non-perimeter Roads		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5 m carriageway width kerb to kerb.	Complies
	Parking is provided outside of the carriageway width.	Complies
	Hydrants are located clear of parking areas.	Can comply
	Roads are through roads, and these are linked to the internal road system at an interval of no greater then 500 m.	**Does not comply**. The existing lot layout and configuration of the site does not

Performance Criteria	Acceptable Solution	Application
		allow for provision of a through road.
	Curves of roads have a minimum inner radius of six metres.	Complies.
	The road crossfall does not exceed 3 degrees.	Complies
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	Complies Overhanging vegetation is to be maintained to provide 4 m vertical clearance.
Property Access		
Firefighting vehicles can access the dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70 m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70 kph) that supports the operational use of emergency firefighting vehicles.	The proposed community title access road is accessible for RFS fire fighting appliances and provides access to within 70 m of the furthest part of any proposed lot. No specific property access requirements apply.

4.5 Services – Water, Electricity and Gas

Reticulated water supply is available to the site and will be extended to service the proposed lots.

Electricity supply to the site is via overhead lines to the northern property boundary and then underground. Electricity supply to the proposed lots will be underground.

Bottled gas is not proposed at this stage and will be assessed at dwelling construction stage for the respective lots.

Table 4.5 outlines the extent to which the water, electricity and gas services comply with the relevant acceptable solution requirements of Table 5.3c of PBP 2019.

Table 4.5 Water, Electricity and Gas Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Water Supplies		
An adequate water supply is provided for firefighting purposes.	Reticulated water is to be provided to the development, where available.	Complies.
	A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed.	N/A
	Static water supplies shall comply with Table 5.3d.	

Performance Criteria	Acceptable Solution	Application
Water supplies are located at regular intervals; and The water supply is accessible and reliable for firefighting operations.	Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2021.	Extension of the reticulated water supply will be designed to comply with AS 2419.1:2021.
	Hydrants are not located within any road carriageway.	
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	N/A.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.	As above.
The integrity of the water supply is maintained.	All above-ground water service pipes external to the building are metal, including and up to any taps.	To be applied at dwelling construction stage for the respective lots.
	Above ground water storage tanks shall be of concrete or metal.	N/A
Electricity Services		
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where practicable, electrical transmission lines are underground.	Electricity supply to the proposed lots will be underground.
	Where overhead, electrical transmission lines are proposed as follows: Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and No part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.	N/A.
Gas Services		
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014, the requirements of relevant authorities, and metal piping is used;	Bottled gas is not proposed at this stage and will be assessed at dwelling construction stage for the respective lots.
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side;	
	Connections to and from gas cylinders are metal;	
	Polymer-sheathed flexible gas supply lines are not used; and	
	Above-ground gas service pipes are metal, including and up to any outlets.	

5. Recommendations and Conclusion

5.1 Recommendations

It is recommended that the following bushfire protection measures are applied to the proposed development and be included in the consent by City of Coffs Harbour:

- The entire area of each lot is to be maintained as an Inner Protection Area in accordance with Appendix A4.1.1 of PBP 2019.

- The existing dwelling is to be upgraded for ember protection by:

  - sealing any gaps around the house, including facias and eaves, vents and weepholes, with appropriate joining strips, flexible silicon based sealant or corrosion resistant mesh (maximum aperture 2 mm);
  - installing weather strips, draught excluders or draught seals at the base of side hung external doors; and
  - providing mesh screens with a maximum aperture of 2 mm, made from corrosion resistant steel, bronze or aluminium to all external doors and openable windows.

- Access is to be provided in accordance with Table 5.3b General Requirements and Non-Perimeter Road requirements of PBP 2019, except that:

  - a perimeter road is not required;
  - alternative access is not required;
  - a through road is not required; and
  - a reverse turning area is to be provided in accordance with PBP 2019 – Figure A3.3 (Type D) in lieu of a turning circle.

- Water and electricity services are to comply with Table 5.3c of PBP 2019.

5.2 Conclusion

This Bushfire Hazard Assessment has taken into consideration the proposed development, existing vegetation, effective slope and FDI detailed within PBP 2019. Adequate and appropriate bushfire protection measures are available and can be implemented to facilitate the proposed subdivision of Lot 5 DP 270532, 29 Charlesworth Bay Road, Coffs Harbour. The proposal conforms with the standards, performance criteria and intent of measures outlined in PBP 2019 and complies with Section 100B of the *Rural Fires Act 1997*.

It is therefore recommended that the proposed development is approved and conditioned in accordance with the recommendations provided within this assessment.

Paul Creenaune
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B. Urb & Reg Planning
Grad Dip (Bushfire Protection)
BPAD – Level 3 (58899)

References

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NSW Rural Fire Service [RFS] (2019). *Planning for Bush Fire Protection.* NSW Rural Fire Service and Department of Planning, Sydney.

Standards Australia (2018). *Construction of buildings in bushfire-prone areas, AS 3959*. Standards Australia International Ltd, Sydney.

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The dimensions, number, size and shape of lots shown on drawings are subject to detailed engineering design, final survey and Council conditions of consent.

Topographic information presented on the drawings is suitable only for the purpose of the document as stated above. No reliance should be placed upon topographic information contained in this report for any purpose other than that stated above.

Appendix A

Proposed Subdivision Plan

[D] PROPOSED EASEMENT TO DRAIN WATER 2 WIDE

[E] EASEMENT FOR ELECTRICITY SUPPLY 1 WIDE (DP270532)

[F] PROPOSED EASEMENT FOR ACCESS VARIABLE WIDTH (RFS & WASTE COLLECTION VEHICLES)

[G] PROPOSED EASEMENT FOR ACCESS 2 WIDE & VARIABLE (DRAINAGE DEVICE MAINTENANCE)

MGA

RESERVE

R1082

2

DP 826334

PATHWAY

1

DP 876588

6

DP 270532

CHARLESWORTH BAY RD

13
3671m²

136.4

18.7

A9

48.4

[E]

[F]

1

DP 270532

25

Pt4

3

1B

8.5

A16.5

6.8

A8.6

A9.9

12.9

1B
(322m²)

21.3

1B

14.85

8.6

6.5

A15

12.7

21.2

16.9

A23.2

[G]

19.75

12
682m²

30.4

11
700m²

32.45

10
700m²

33.2

9
700m²

9.1

4.4

8
506m²

A18.3

20.9

1A
(39m²)

14.05

22

21.3

17.3

[D]

[D]

27.2

Pt4

DP 270532

1

DP 270532

FIRMAN DRIVE

1

2

3

4

5

60

61

7

D P 832824

DP876956

8 3 2 8 2 4

182

D P 843404

DIGGERS HEADLAND PLACE

LARGE TREE

LOT 1 DP270532 IS ACCESS AND COMMUNITY ASSOCIATION PROPERTY

LOT 1A PROPOSED ADDITION TO COMMUNITY ASSOCIATION PROPERTY (DRAINAGE)

LOT 1B PROPOSED ADDITION TO COMMUNITY ASSOCIATION PROPERTY (ACCESSWAY)

DEVELOPMENT APPLICATION PLAN

THIS PLAN WAS PREPARED FOR BRIAN & LEESA BETTS AS A PROPOSED SUBDIVISION TO ACCOMPANY A DEVELOPMENT APPLICATION TO COFFS HARBOUR CITY COUNCIL AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

THE DIMENSIONS, AREAS AND TOTAL NUMBER OF LOTS SHOWN HEREON ARE SUBJECT TO FINAL SURVEY AND ALSO TO THE REQUIREMENTS OF COUNCIL

Reduction Ratio : 1 : 800 AT A3

THIS PLAN IS FOR DA PURPOSES ONLY ALL DIMENSIONS AND AREAS ARE SUBJECT TO FINAL SURVEY	BRIAN AND LEESA BETTS	PLAN OF PROPOSED SUBDIVISION OF LOT 5 DP270532 27 - 29 CHARLESWORTH BAY ROAD COFFS HARBOUR	Drawing Number 03/08 22/07/2024

Appendix B

Performance Solution – Method 2 Calculation

NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 29/07/2024 **Assessment Date:** 29/07/2024

Site Street Address: Charlesworth Bay Road, Coffs Harbour

Assessor: Paul Creenaune; GeoLINK

Local Government Area: Coffs Harbour **Alpine Area:** No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005

Run Description: south-west

Vegetation Information

Vegetation Type: Forest (including Coastal Swamp Forest)

Vegetation Group: Forest and Woodland

Vegetation Slope: 6 Degrees **Vegetation Slope Type:** Downslope

Surface Fuel Load(t/ha): 22 **Overall Fuel Load(t/ha):** 36.1

Vegetation Height(m): 2 Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 12 Degrees **Site Slope Type:** Downslope

Elevation of Receiver(m): Default **APZ/Separation(m):** 25

Fire Inputs

Veg./Flame Width(m): 100 **Flame Temp(K):** 1090

Calculation Parameters

Flame Emissivity: 95 **Relative Humidity(%):** 25

Heat of Combustion(kJ/kg 18600 **Ambient Temp(K):** 308

Moisture Factor: 5 **FDI:** 80

Program Outputs

Level of Construction: BAL 29 **Peak Elevation of Receiver(m):** 6.48

Radiant Heat(kW/m2): 28.51 **Flame Angle (degrees):** 70

Flame Length(m): 25.1 **Maximum View Factor:** 0.452

Rate Of Spread (km/h): 3.2 **Inner Protection Area(m):** 13

Transmissivity: 0.829 **Outer Protection Area(m):** 12

Fire Intensity(kW/m): 59595

Appendix C

APZ Standards (PBP 2019 – Appendix 4)

APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMs, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website www.rfs.nsw.gov.au.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defendable space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

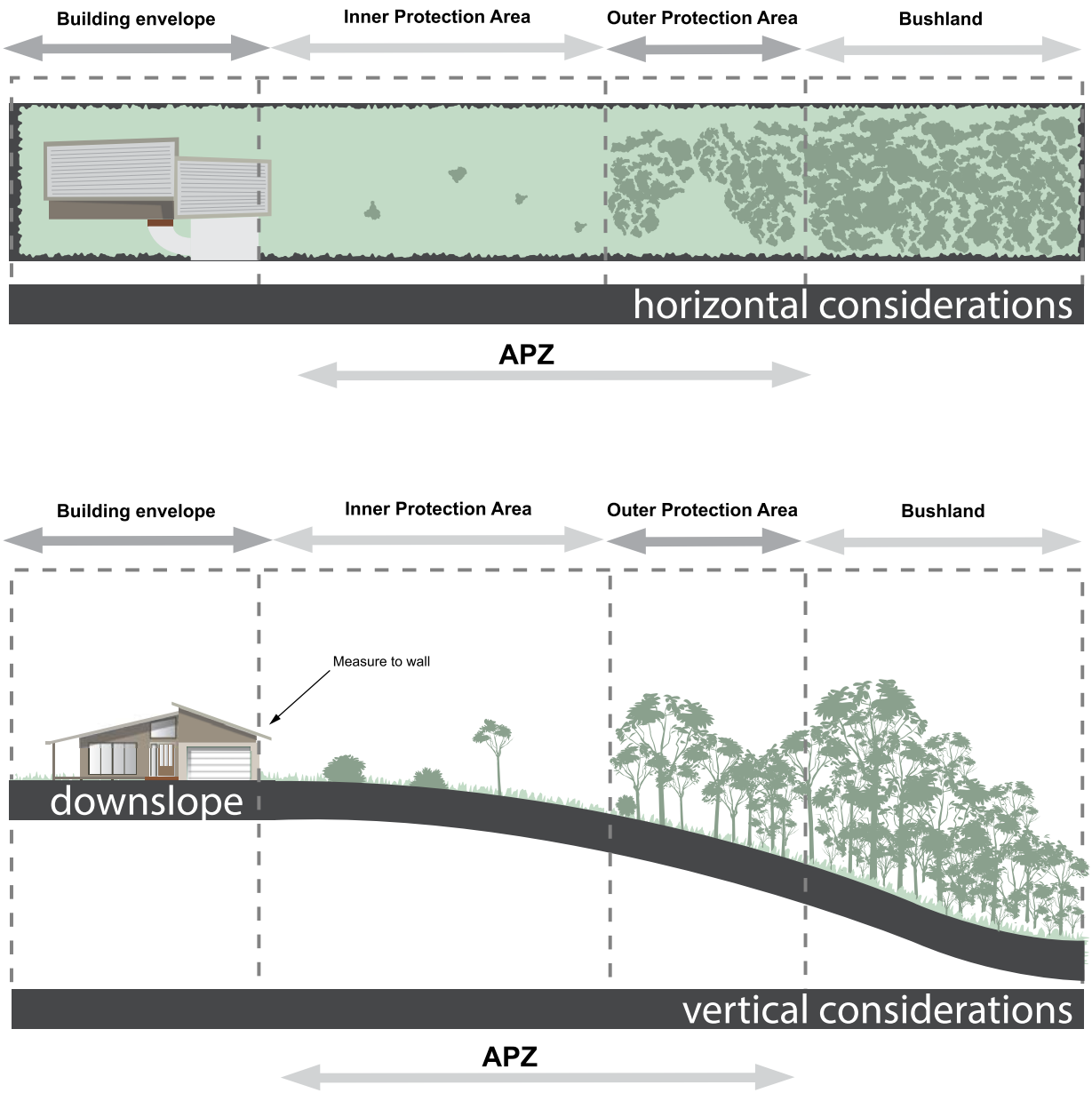
Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

Figure A4.1

Typical Inner and Outer Protection Areas.



Appendix D

Vehicle Turning Head Requirements (PBP 2019)

A3.3 Vehicle turning head requirements

Dead ends that are longer then 200m must be provided with a turning head area that avoids multipoint turns. “No parking” signs are to be erected within the turning head.

The minimum turning radius shall be in accordance with Table A3.2. Where multipoint turning is proposed the NSW RFS will consider the following options:

Figure A3.3

Multipoint turning options.