

Bushfire Hazard Assessment

Large Lot Residential Subdivision

110A Finlays Road, Korora



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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

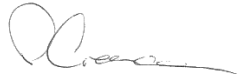
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Executive Summary

Development consent is sought from Coffs Harbour City Council for a proposed six lot subdivision of bushfire prone land at Lot 1 DP 202028 and Lot 2 DP 819807, 110A Finlays Road, Korora, NSW. The subdivision will create lots with the potential for future residential development and therefore requires a Bushfire Safety Authority in accordance with s100B of the *Rural Fires Act 1997*.

This Bushfire Hazard Assessment has taken into consideration the proposed subdivision 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*. This Bushfire Hazard Assessment includes a combination of acceptable solutions and performance solutions to demonstrate that the recommended bushfire protection measures are available and can be implemented to facilitate the proposed development and satisfy the relevant performance criteria 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 Bushfire Protection 2019*.

Bushfire Protection Measure	Recommendation
Asset Protection Zones	■ The building envelope and minimum APZ distances for the respective lots outlined in Table 4.1 be managed as an Inner Protection Area in accordance with Appendix 4 of Planning for Bushfire Protection 2019. ■ The area of proposed Lots 1 – 5 outside the minimum APZ and south of the community title access road to the southern boundary be managed as an Outer Protection Area in accordance with Appendix 4 of Planning for Bushfire Protection 2019. ■ The area of Lot 6 outside the minimum APZ for a distance of 20 m west of the building envelope be managed as an Outer Protection Area in accordance with Appendix 4 of Planning for Bushfire Protection 2019.
Access	■ Access is to be provided on a community title lot in accordance with the relevant General Requirements and Non-Perimeter Road Requirements of Planning for Bush Fire Protection 2019 – Table 5.3c, except that: - An alternative / secondary access is not required; and - The access road may be greater than 200 m in length.
Services - Water, Electricity and Gas	■ Electricity services are to comply with the relevant requirements of Planning for Bush Fire Protection 2019 – Table 5.3c.



1. Introduction

1.1 Scope and Purpose

GeoLINK has been engaged by Harpreet Singh Ghuman to prepare a Bushfire Hazard Assessment for a proposed six lot subdivision of bushfire prone land, being Lot 1 DP202028 and Lot 2 DP819807 located at 110A Finlays Road, Korora NSW, referred to herein as 'the site'.

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

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; and
- Planning for Bushfire Protection (PBP) 2019.

The *Rural Fires Act 1997* and the *Environmental Planning and Assessment Act 1979* (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' is required for a subdivision of bush fire prone land that could lawfully be used for residential or rural residential purposes.

As the proposal involves subdivision of bushfire prone land that could be used for residential purposes, a Bushfire Safety Authority (BFSA) is required from the NSW Rural Fire Service (RFS) in accordance with s.100B of the *Rural Fires Act 1997*.

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

Coffs Harbour City Council'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 RFS '*Guide for Bush Fire Prone Land Mapping*'. Council's bushfire prone land mapping indicates that the majority of the site is mapped as Category 3 vegetation with small areas of Category 1 vegetation in the east and west (refer to **Illustration 1.1**). The surrounding land is a combination of Category 1 and Category 3 vegetation.



LEGEND

	The site		Vegetation category 1
	Cadastre		Vegetation category 3

GDA 1994 MGA Zone 56

0 40 Metres

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environmental management and design

Bushfire Hazard Assessment - Residential Subdivision Finlays Road, Korora
4218-1008

Bush Fire Prone Land - Illustration 1.1

Information shown is for illustrative purposes only
Drawn by: TJC Checked by: AB Reviewed by: KHP
Source of base data: NearMap (22/03/2022)
Date: 02/05/2022



2. Background

2.1 Location and Description

The site is described as Lot 1 DP 202028 and Lot 2 DP 819807, 110A Finlays Road, Korora, NSW. Korora is located within the Coffs Harbour City Council area, approximately 8 km north of Coffs Harbour CBD (refer to **Illustration 2.1**). The site is located on the western side of the Pacific Highway.

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	Lots 1 DP202028 and Lot 2 DP819807
Street Address	110A Finlays Road, Korora NSW
Elevation	190 m to 40 m AHD
Site Area	7.93 ha
Coffs Harbour Local Environmental Plan 2013	C2 - Environmental Conservation R5 - Large Lot Residential
Fire Weather District	North Coast
Fire Danger Index (FDI)	80
Fire Control Centre	Coffs Harbour (Mid North Coast)

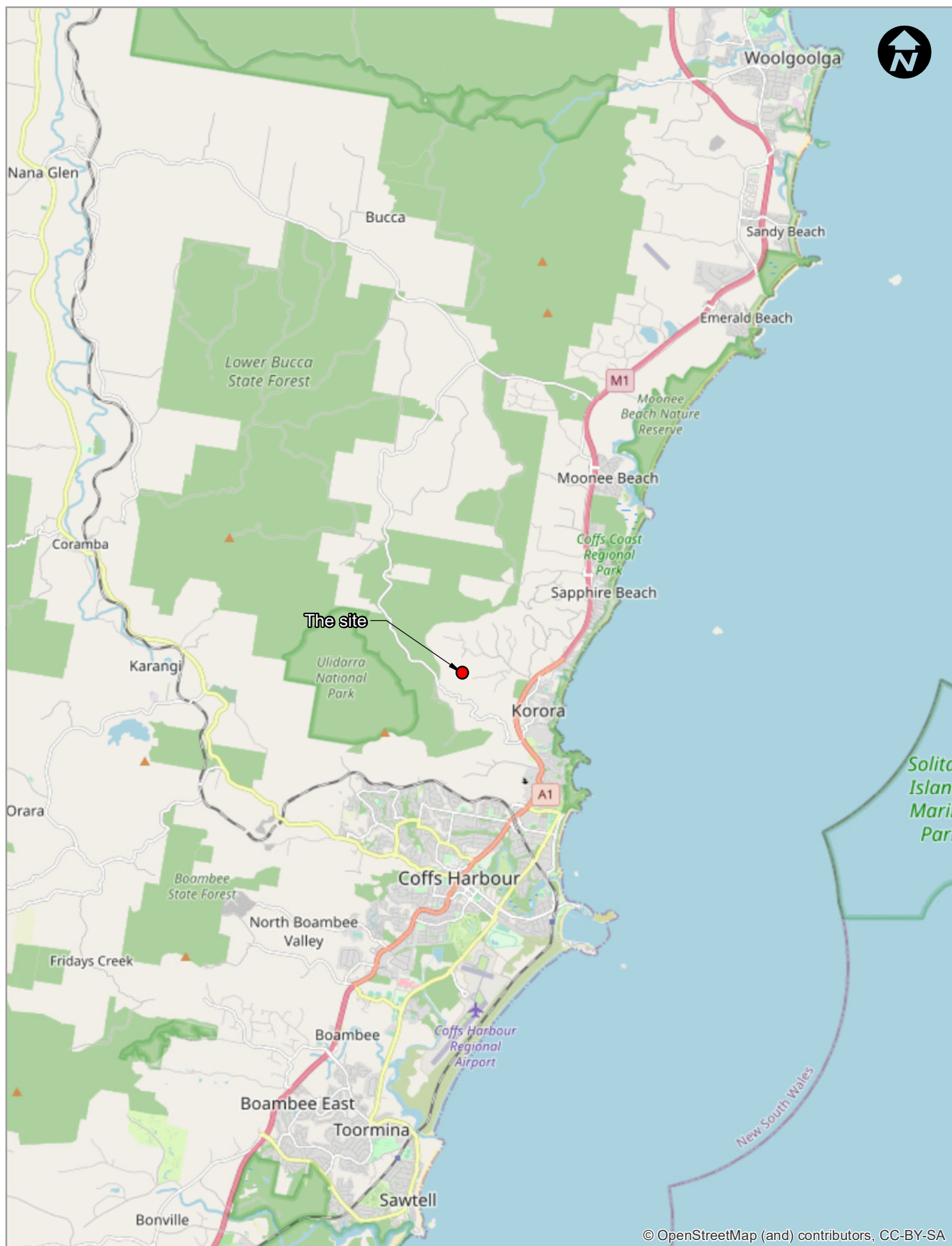
The general locality is bound by a ridgeline to the north, west and south with elevations up to 300 m AHD. The surrounding locality contains a number of east-west ridgelines and is characterised by steep slopes which fall to drainage lines at 20 m AHD. The topography opens to the east and provides views of the Pacific Ocean from the higher elevations. **Illustration 2.2** shows the characteristics of the site and immediately surrounding land.

The land surrounding the site is predominantly large-lot residential/ rural-residential properties, with pockets of open grassland and remnant areas of wet and dry sclerophyll forest, generally in linear strips along road reserves, ridgelines and steep slopes. Orara East State Forest is located to the west of the site.

The site has formerly been used as a banana plantation and more recently transformed into a blueberry farm. There is an existing dwelling in the eastern portion of the site and existing shed along the northern boundary. Vehicular access is to/ from the east via Finlays Road, at the eastern extent of the site.

The site is irregular in shape and is predominantly cleared for blueberry production, with a north-easterly aspect. The southern boundary follows an east-west ridge line, falling from 190 m AHD in the west to 40 m AHD in the east. The northern boundary generally follows a natural drainage line, also falling from west to east. To the north of the site boundary, the land rises again. The eastern portion of the site has a north-easterly aspect with slopes up to 18°, while the western portion of the site is east facing and located at a higher elevation, with slopes up to 26° (refer to **Plate 2.1** and **Plate 2.2**).

Areas of remnant native vegetation occur in the north-west corner and along the western boundary of the site.



Site Locality - Illustration 2.1



LEGEND

 The site	 Watercourse
 Cadastre	 Contour (m)

GDA 1994 MGA Zone 56



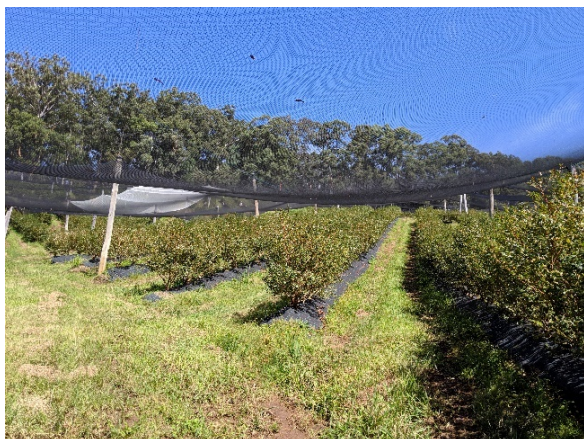


Plate 2.1 Blueberries in the eastern portion of the site



Plate 2.2 Steep slopes in the western portion of the site

2.2 Zoning and Land Use

The site is zoned C2 - Environmental Conservation and R5 - Large Lot Residential pursuant to the Coffs Harbour Local Environmental Plan 2013.

The site has formerly been used as a banana plantation and more recently transformed into a blueberry farm. There is an existing dwelling in the eastern portion of the site and existing shed along the northern boundary. Vehicular access is to/ from the east via Finlays Road, at the eastern extent of the site (refer to **Plates 2.3** and **2.4**).



Plate 2.3 Existing dwelling on proposed Lot 1



Plate 2.4 Finlays Road to the east of the site

2.3 Proposed Development

The proposal is for a six lot, large-lot residential subdivision of Lot 1 DP 202028 and Lot 2 DP 819807, located at 110A Finlays Road, Korora. The proposed lots range in size from 1.1 ha to 2 ha, as shown on the proposed subdivision plan (refer to **Appendix A**). A proposed building envelope is identified on each lot. Proposed Lot 1 contains an existing dwelling as shown on the proposed subdivision plan. The dwelling areas are generally situated on the higher elevations to take advantage of the northerly aspect and views to the north-east.

Access is proposed via a community title road over proposed Lots 1 – 5 from the eastern site boundary/ Finlays Road, generally along the northern boundary of the property, as shown in **Appendix A** (refer to **Plate 2.5**).

An existing fire trail (Finlays Trail) extends from the end of Finlays Road to the west, running adjacent to the southern property boundary and continuing west to Bruxner Park Road (refer to **Plate 2.6**). Finlays Trail is a single lane gravel formation with varying grades. The existing fire trail will remain.

The proposed lots will be serviced by an extension from the existing overhead electricity services.

Water supply will be provided on-site water tanks to be installed at individual dwelling construction stage.



Plate 2.5 Location of proposed access road (existing right-of-way)



Plate 2.6 View west along Finlays Trail

3. Bushfire Hazard Assessment

The following subsections were informed by a site visit undertaken by GeoLINK on 28 April 2022.

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 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 outlined in **Table 3.1**.

Table 3.1 Vegetation Formation

Direction	Predominant Vegetation Formation
North	Grassland and Exotic Vegetation
North-east	Wet Sclerophyll Forest
South-east	Dry Sclerophyll Forest
South	Dry Sclerophyll Forest and Wet Sclerophyll Forest
West	Dry Sclerophyll Forest
North-west	Dry Sclerophyll Forest

Coffs Harbour City Council's online Fine-Scale Vegetation Mapping identifies vegetation within the site as being predominantly 'exotic vegetation' (i.e. blueberry plantation areas and grassland), with a small area of 'Remnant Native Vegetation' and 'Dry Sclerophyll Forest' located on the upper slopes in the west and north-western corners of the site (refer to **Plates 3.1** and **3.2**). All exotic vegetation and blueberry plantations within the site will be removed upon completion of the subdivision and the proposed lots have therefore been considered to be managed land, except for the areas of native vegetation which will be retained and have been included in the following assessment.



Plate 3.1 View east along southern boundary showing forest interface



Plate 3.2 Forest along ridgeline to south of the site

Vegetation surrounding the site comprises predominantly Wet and Dry Sclerophyll Forest to the east, south, west and north-west, with areas of exotic vegetation and grassland to the north (refer to **Plates 3.3 and 3.4**)



Plate 3.3 Forest surrounding the western extent of the site



Plate 3.4 Grassland and exotic vegetation to north of proposed Lots 1 and 2

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 site has a north-easterly aspect and slopes generally from the west down to the east and south down to north-east. Slopes across the site vary from approximately 12° in the east up to 26° in the west.

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

Table 3.2 Effective Slope

Aspect	Effective Slope
North	>15-20° (on site) Upslope / flat
North-east	Upslope / flat
South-east	Upslope / flat
South	Upslope / flat (to ridgeline) >15-20°
West	Upslope / flat
North-west	Upslope / flat

3.3 Fire Weather District

Coffs Harbour City Council 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

Planning for Bush Fire Protection 2019 describes an asset protection zone (APZ) as a fuel reduced area surrounding a built asset or structure which provides a buffer zone between a bushfire hazard and the asset. 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 are based on a radiant heat threshold of 29 kW/m² 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 relative to the nominated building area on each proposed lot. A performance solution is included for land to the south of proposed Lots 2 – 6 where there is a change in effective slope. The methodology for the performance solution is outlined in **Section 4.1.1**.

Table 4.1 outlines the vegetation formation, effective slope and minimum required APZ (BAL 29), along with the separation distance between the proposed building envelope and the bushfire hazard for the respective lots.

Table 4.1 Minimum Asset Protection Zones

Aspect	Vegetation Formation	Effective Slope	Minimum APZ	Separation Distance
Lot 1 (existing dwelling)				
North to NE	Forest	Upslope / flat	20 m	27 m
East	Forest	>0-5°	25 m	50 m
SE to South	Forest	>5-10°	31 m	40 m
West	Managed Land	Upslope / flat	n/a	>100 m
Lot 2				
North	Managed Land	>15-20°	n/a	
	Grassland	Upslope / flat	10 m	60 m
East	Managed Land	>5-10°	n/a	
South *	Forest	Upslope / flat	20 m	30 m
		>15-20°	48 m	48 m
West	Managed Land	Upslope / flat	n/a	
Lot 3				
North	Managed Land	>15-20°	n/a	
	Forest	Upslope / flat	20 m	80 m
East	Managed Land	>5-10°	n/a	
South *	Forest	Upslope / flat	20 m	30 m
		>15-20°	48 m	48 m
West	Managed Land	Upslope / flat	n/a	

Aspect	Vegetation Formation	Effective Slope	Minimum APZ	Separation Distance
Lot 4				
North	Managed Land	>10-15°	n/a	
	Forest	Upslope / flat	20 m	90 m
East	Managed Land	>10-15°	n/a	
South *	Forest	Upslope / flat	20 m	30 m
		>15-20°	48 m	50 m
West	Managed Land	Upslope / flat	n/a	
Lot 5				
North	Managed Land	>15-20°	n/a	
	Forest	Upslope / flat	20 m	30m
East	Managed Land	>10-15°	n/a	
South *	Forest	Upslope / flat	20 m	30 m
		>15-20°	48 m	55 m
West	Managed Land	Upslope / flat	n/a	
Lot 6				
North	Forest	Upslope / flat	20 m	20 m
East	Managed Land	>15-20	n/a	
South *	Forest	Upslope / flat	20 m	27 m
		>15-20°	48 m	48 m
West	Managed Land / Exotic Vegetation	Upslope / flat	9 m	20 m

* see performance solution in **Section 4.1.1**

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
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.	Minimum APZs comply with Table A1.12.3 (FDI 80), except to the south of proposed Lots 2-6 (refer to Section 4.1.1).
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.	Can comply.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	Complies.
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.	Slopes are generally <18°. Some minor localised areas may exceed 18°, however these areas are currently managed as part of the blueberry plantation and can continue to be managed in the future.



All APZs can be provided within the site (refer to **Illustration 4.1**).

APZs should consist of open areas with minimal fuel at ground level that could be set alight by bushfire. Some trees and shrubs are permissible within the APZ, provided crown separation can be achieved and vegetation does not overhang buildings. No combustible materials should be stored in the APZ.

It is recommended that the building envelope and minimum APZs on Lots 1 – 6 be managed as an Inner Protection Area (IPA) and that the remaining areas of Lots 1 – 5 from the proposed access road to the southern boundary be managed as an Outer Protection Area (OPA) in accordance with Appendix 4 of PBP 2019 (see **Appendix B**), including the following:

Inner Protection Area (IPA)

- 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 2 m above the ground;
 - tree canopies should be separated by 2 to 5 m; 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.

Outer Protection Area (OPA)

- Trees:
 - tree canopy cover should be less than 30%; and
 - canopies should be separated by 2 to 5 m.
- Shrubs
 - shrubs should not form a continuous canopy;
 - shrubs should form no more than 20% of ground cover.
- Grass
 - grass should be kept mown to a height of less than 100 mm; and
 - leaf and other debris should be removed.



LEGEND

The site	BAL 29 APZ	Edge of vegetation
Cadastre	Proposed building envelope	Watercourse
Proposed lot subdivision		Ridge line



Minimum Asset Protection Zones - Illustration 4.1

Information shown is for illustrative purposes only
Drawn by: AB Checked by: AB Reviewed by: PTC
Source of base data: NearMap (22/03/2022)
Date: 03/04/2023

4.1.1 Performance Solution – Asset Protection Zone Calculations

The APZ assessment to the south of proposed Lots 2 - 6 includes a split assessment to determine the influence of the effective slope change along a ridge line to the south of the site.

To the south of the site, a ridge line runs parallel to the southern boundary, off-set from the boundary at varying distances (20 – 30 m). The land has an upslope from the respective building envelopes to the ridge line and then a downslope to the south of the ridge. Forest vegetation is located on the land to the south of the site boundary. Consequently, the proposed dwelling sites are located below the ridge line and the site assessment includes an area of forest vegetation on an upslope to the ridge line, then a downslope beyond the ridge (see **Figure 4.1**).

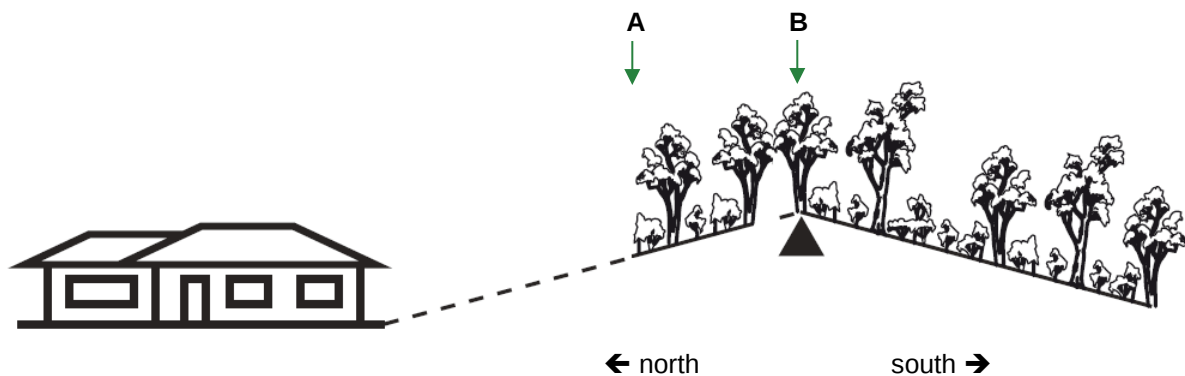


Figure 4.1 Indicative illustration of effective slope change

(Source: adapted from AS 3959:2018)

The performance solution used to determine APZ distances to the south includes a split assessment as outlined in **Table 4.1**, using the following steps:

- Step 1 Determine the required APZ for BAL 29 based on the effective slope south of the ridge and apply that distance from the ridge ('B').
- Step 2 Determine the required APZ for BAL 29 based on the effective slope north of the ridge and apply that distance from the edge of the vegetation ('A').
- Step 3 Determine the required minimum APZ / setback based on the respective distances from Steps 1 and 2.

The above methodology satisfies the relevant performance criteria that *potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m² on each proposed lot.*

4.2 Landscaping

No specific landscaping is proposed as part of the subdivision. The APZ around the building envelope on each lot will be managed as an APZ as outlined in **Section 4.1**.

Table 4.3 assesses compliance with the acceptable solutions of PBP 2019 relating to landscaping.

Table 4.3 Landscaping Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
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.	Can comply.
	Fencing is constructed in accordance with Section 7.6 of PBP 2019.	No fencing is proposed.

4.3 Access

The site is located to the west of the Pacific Highway and is accessed by turning left off the Pacific Highway onto Korora Basin Road and traversing in a westerly direction for approximately 680 m to Finlays Road intersection. This section of Korora Basin Road is bound on both sides by predominantly managed rural-residential properties.

Finlays Road turns to the left off Korora Basin Road and traverses in a generally south-west to westerly direction for approximately 1.1 km to the eastern boundary of the site. Finlays Road is a two-way, bitumen sealed public road terminating at the site. The length of Finlays Road traverses predominantly forest vegetation which is arranged in a linear strip along the length of the road. Either side of Finlays Road are established rural-residential properties with areas of grassland and managed land around the individual dwellings.

At the eastern boundary of the site, Finlays Trail (fire trail) continues in a westerly direction immediately adjacent to the southern site boundary. Finlays Trail is a single lane gravel formation with varying grades that continues to the west for approximately 960 m to an intersection with Bruxner Park Road.

The proposed lots will be accessed by a community title road, extending from Finlays Road along the northern boundary of proposed Lots 1 – 5, as shown in **Appendix A**.

The site is located at the end of a dead-end public road (Finlays Road) with limited ability to provide alternative access. This aspect of the development, and the proposed community title access road have been the subject of a Bushfire Design Brief for pre-DA consultation with the NSW Rural Fire Service (RFS). A copy of the RFS comments are included in **Appendix C** and are outlined as a performance solution for access in **Section 4.3.1**.

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.	Two-wheel drive, all-weather access can be provided between the proposed community title road and the respective building envelopes.
	Perimeter roads are provided for residential subdivisions of three or more allotments.	The proposed community title access road acts as a perimeter road along the northern boundary. The existing fire trail (Finlays Trail) provides perimeter access along the bushland interface on the southern boundary.
	Subdivisions of three or more allotments have more than one access in and out of the development.	The subdivision layout provides for a primary access road along the northern boundary via a community title arrangement. Following consideration of the Bushfire Design Brief presented to the RFS, it was advised that: <i>The NSW RFS would accept a community titled 5.5 metre bitumen sealed internal property access road located along the existing drainage line to the north of the indicative dwelling sites. No alternative access roads would be required.</i>
	Traffic management devices are constructed to not prohibit access by emergency services vehicles.	No traffic management devices are proposed.
	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.	The proposed road design will not exceed grades of 15°.
	All roads are through roads.	The proposed community title road is a dead-end road, terminating approximately 500 m from Finlays Road. Through road access is available for 4WD vehicles and fire fighting appliances via Finlays Trail to Bruxner Park Road along the southern boundary of the site.
	Dead end roads are not recommended, but if unavoidable,	The existing Finlays Road is a dead-end road >200 m in length.



Performance Criteria	Acceptable Solution	Application
	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 new road will continue for approximately 500 m, terminating in a turning area in accordance with PBP 2019, Figure A3.3.
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	Can comply.
	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.	Access within the development is through managed land. The western end of the proposed community title road (over Lots 3 – 5) traverses adjacent to forest vegetation located on an upslope to the north for a distance of approximately 200 m. The eastern end of the community title road traverses predominantly adjacent to managed land and grassland. The layout of the surrounding land does not provide any opportunity for a secondary public road access.
	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.	No one way public 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 road will be designed with adequate load capacity (up to 23 tonnes).
	Bridges and causeways are to clearly indicate load rating.	Load ratings can be provided for any bridges or causeways.
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.	n/a
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021.	n/a
	There is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available.	Access to a static water supply can be incorporated into the design for the respective lots at dwelling construction stage.

Performance Criteria	Acceptable Solution	Application
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.	While the proposed community title road provides perimeter access along the northern boundary, it is not required as a formal perimeter road for large lot / rural-residential subdivision.
	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 6m.	
	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.	The proposed community title road will have a minimum width of 5.5 m.
	Parking is provided outside of the carriageway width.	Can comply.
	Hydrants are located clear of parking areas.	n/a
	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	The proposed community title road is a dead-end road terminating approximately 500 m west of Finlays Road.
	Curves of roads have a minimum inner radius of six metres.	Can comply.
	The road crossfall does not exceed 3 degrees.	Can comply.
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	Can comply.
Property Access		
Firefighting vehicles can access the	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70 m) is provided between the most	n/a



Performance Criteria	Acceptable Solution	Application
dwelling and exit the property safely.	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. In circumstances where this cannot occur, the following requirements apply:	
	Minimum 4 m carriageway width;	No property access roads between the community title road and building envelopes are proposed to be constructed as part of the subdivision. A property access road for each lot can be provided from the community title road to the respective building areas at future dwelling construction stage in accordance with the Acceptable Solution requirements.
	In forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m, at the passing bay;	
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;	
	Provide a suitable turning area in accordance with Appendix 3;	
	Curves have a minimum inner radius of 6 m and are minimal in number to allow for rapid access and egress;	
	The minimum distance between inner and outer curves is 6m;	
	The crossfall is not more than 10 degrees;	
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and	
	A development comprising more than three dwellings has formalised access by dedication of a road and not by right of way	
	Note: Some short constrictions in the access may be accepted where they are not less than 3.5 m wide, extend for no more than 30 m and where the obstruction cannot be reasonably avoided or removed.	Access from Finlays Road to Lots 1 – 6 is proposed via a community title road.



4.3.1 Performance Solution – Access

The site is located at the end of a dead-end public road (Finlays Road) with limited ability to provide alternative access. This aspect of the development has been the subject of a Bushfire Design Brief for pre-DA consultation with the NSW Rural Fire Service (RFS). A copy of the RFS comments are included in **Appendix C**.

The proposal is unable to comply with the following acceptable solution requirements for access:

- *Subdivisions of three or more allotments have more than one access in and out of the development.*
- *All roads are through roads.*
- *Dead end roads are not recommended, but if unavoidable, are not more than 200m in length, incorporate a minimum 12m outer radius turning circle, and are clearly sign posted as a dead end.*

The site is constrained by the pattern of surrounding subdivision and the inability to provide alternative access to the public road network.

The proposed subdivision access is in the form of a community title road along the northern boundary of the site. This location follows a natural drainage line and is situated in the valley of relatively steeply sloping surrounding land. The primary bushfire hazard adjacent to the proposed community title road is an area of forest vegetation on an upslope over approximately 200 m at the western end of the road.

The alternative option for access to the subdivision was via an upgrade of Finlays Trail along the southern boundary. Finlays Trail adjoins forest vegetation to the south on steep slopes and was considered to represent a greater risk for fire fighters and occupants than the proposed access along the northern boundary. Access will still be available along the southern boundary for fire fighting operations via Finlays Trail.

Given the constraints of the site, it is considered that the proposed access satisfies the relevant performance criteria, that *firefighting vehicles are provided with safe, all-weather access to structures*.

4.4 Services – Water, Electricity and Gas

As the site is not serviced by reticulated water supply, a static water supply for fire fighting will be required at individual dwelling construction stage on the respective lots.

Electricity supply to the site is currently via an overhead line running north-south through the eastern portion of the site, adjacent to the existing dwelling.

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.	n/a
	A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed.	Static water supply to be provided at individual dwelling construction stage.
	Static water supplies shall comply with Table 5.3d.	Can comply.
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.	n/a
	Hydrants are not located within any road carriageway.	n/a
	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.	n/a
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.	Can comply.
	Above ground water storage tanks shall be of concrete or metal.	Can comply.
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.	Can comply with relevant requirements – subject to detailed design.
	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.	



Performance Criteria	Acceptable Solution	Application
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;	Can comply at individual dwelling construction stage, if relevant.
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m 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 Coffs Harbour City Council:

- The building envelope and minimum APZ distances for the respective lots outlined in **Table 4.1** be managed as an Inner Protection Area in accordance with Appendix 4 of Planning for Bushfire Protection 2019.
- The area of proposed Lots 1 – 5 outside the minimum APZ and south of the community title access road to the southern boundary be managed as an Outer Protection Area in accordance with Appendix 4 of Planning for Bushfire Protection 2019.
- The area of Lot 6 outside the minimum APZ for a distance of 20 m west of the building envelope be managed as an Outer Protection Area in accordance with Appendix 4 of Planning for Bushfire Protection 2019.
- Access is to be provided on a community title lot in accordance with the relevant General Requirements and Non-Perimeter Road Requirements of Planning for Bush Fire Protection 2019 – Table 5.3c, except that:
 - An alternative / secondary access is not required; and
 - The access road may be greater than 200 m in length.
- Electricity services are to comply with the relevant requirements of Planning for Bush Fire Protection 2019 – Table 5.3c.

5.2 Conclusion

This Bushfire Hazard Assessment has taken into consideration the proposed development, existing vegetation, effective slope and FDI detailed within Planning for Bush Fire Protection 2019. Adequate and appropriate bushfire protection measures are available and can be implemented to facilitate the proposed six lot subdivision of Lot 1 DP 202028 and Lot 2 DP 819807, 110A Finlays Road, Korora. The proposal conforms with the standards, performance criteria and intent of measures outlined in Planning for Bush Fire Protection 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
Senior Bushfire Consultant

B. Urb & Reg Planning
Grad Dip (Bushfire Protection)



References

Australian Building Codes Board [ABCB] (2019). *The Building Code of Australia*, ABCB Canberra, Volume 2.

Keith, D., (2004). *Ocean Shores to Desert Dunes*, Department of Environment and Conservation, Hurstville.

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.

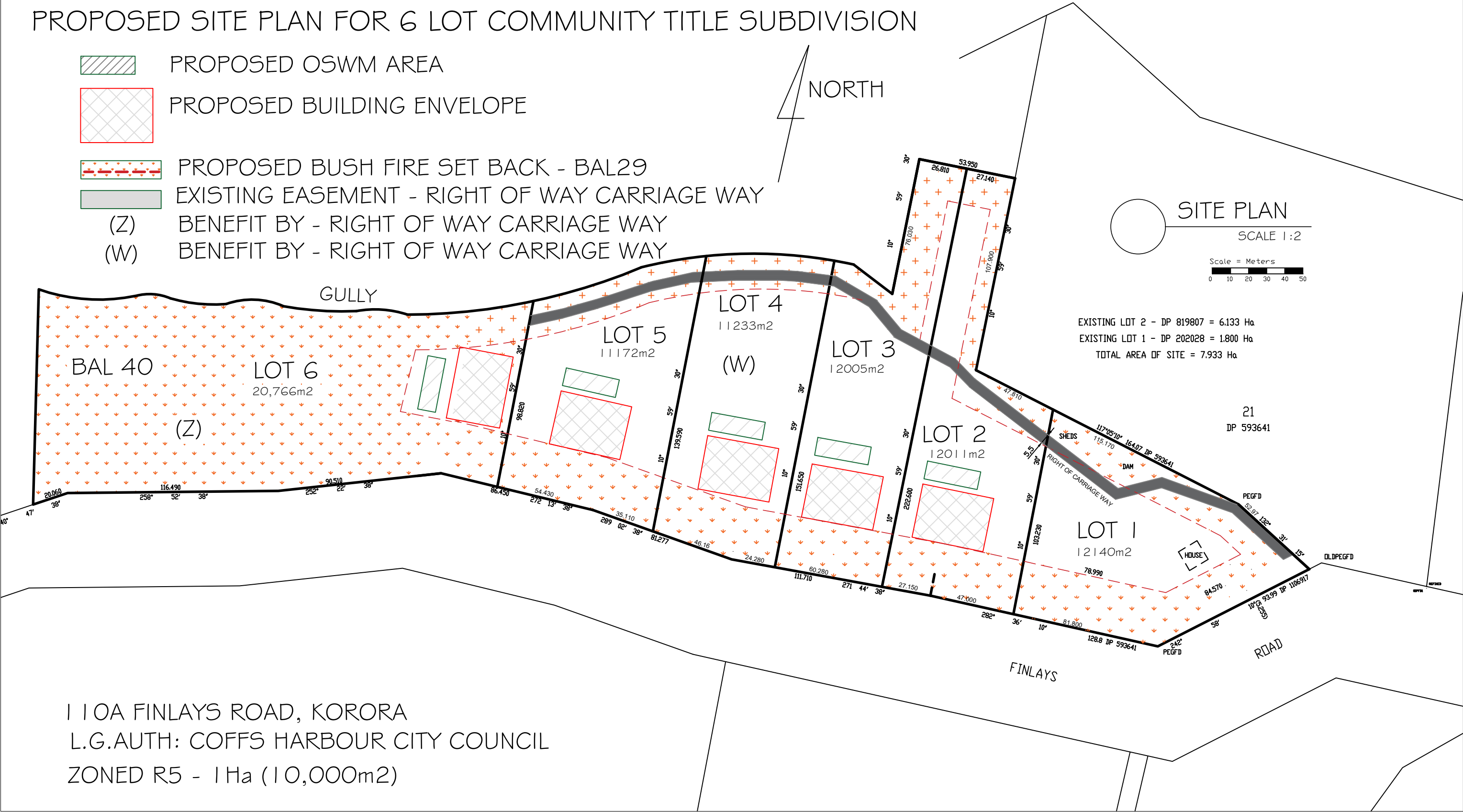


Appendix A

Proposed Plans

PROPOSED SITE PLAN FOR 6 LOT COMMUNITY TITLE SUBDIVISION

- PROPOSED OSMW AREA
- PROPOSED BUILDING ENVELOPE
- PROPOSED BUSH FIRE SET BACK - BAL29
- EXISTING EASEMENT - RIGHT OF WAY CARRIAGE WAY
- (Z) BENEFIT BY - RIGHT OF WAY CARRIAGE WAY
- (W) BENEFIT BY - RIGHT OF WAY CARRIAGE WAY



EXISTING LOT 2 - DP 819807 = 6.133 Ha
EXISTING LOT 1 - DP 202028 = 1.800 Ha
TOTAL AREA OF SITE = 7.933 Ha

21
DP 593641

OLD PEGFD

ROAD

FINLAYS

110A FINLAYS ROAD, KORORA
L.G.AUTH: COFFS HARBOUR CITY COUNCIL
ZONED R5 - 1Ha (10,000m2)

CLIENT:

Mr H. Ghuman (Singh)
C/- 110A Finlay Road
KORORA NSW 2450

Attention: Harpreet

VERIFICATION

Verify all dimensions, siting, window sizes,
positioning, and setting out on site before
commencing construction or manufacture. Do NOT
scale from drawings. Refer any discrepancy
immediately to Harpreet 0416 986555 for instruction.

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in part or used other than for the specific uses,
licence and site for which it has been prepared and
issued.

BUILDER

BUILDER: TBA

LICENCE NO.

PROJECT

NEW 7 LOT SUBDIVISION

LOCATION

LOT 1 DP202028 & LOT 2 DP819807 110A FINLAY ROAD, KORORA

PROJECT NO.

PRO No. 189

DATE

AUG 21

SCALE

NTS

STAGE/STATUS

DA SUBMISSION

DRAWING TITLE

LOCATION - BUILDING ENVELOPES & OSMW AREAS

DRAWING NO.

A1.102

ISSUE

A

DATE

14 DEC 22

DRAWN

DCS-DB



Appendix B

Asset Protection Zone Requirements

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 defensible 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.

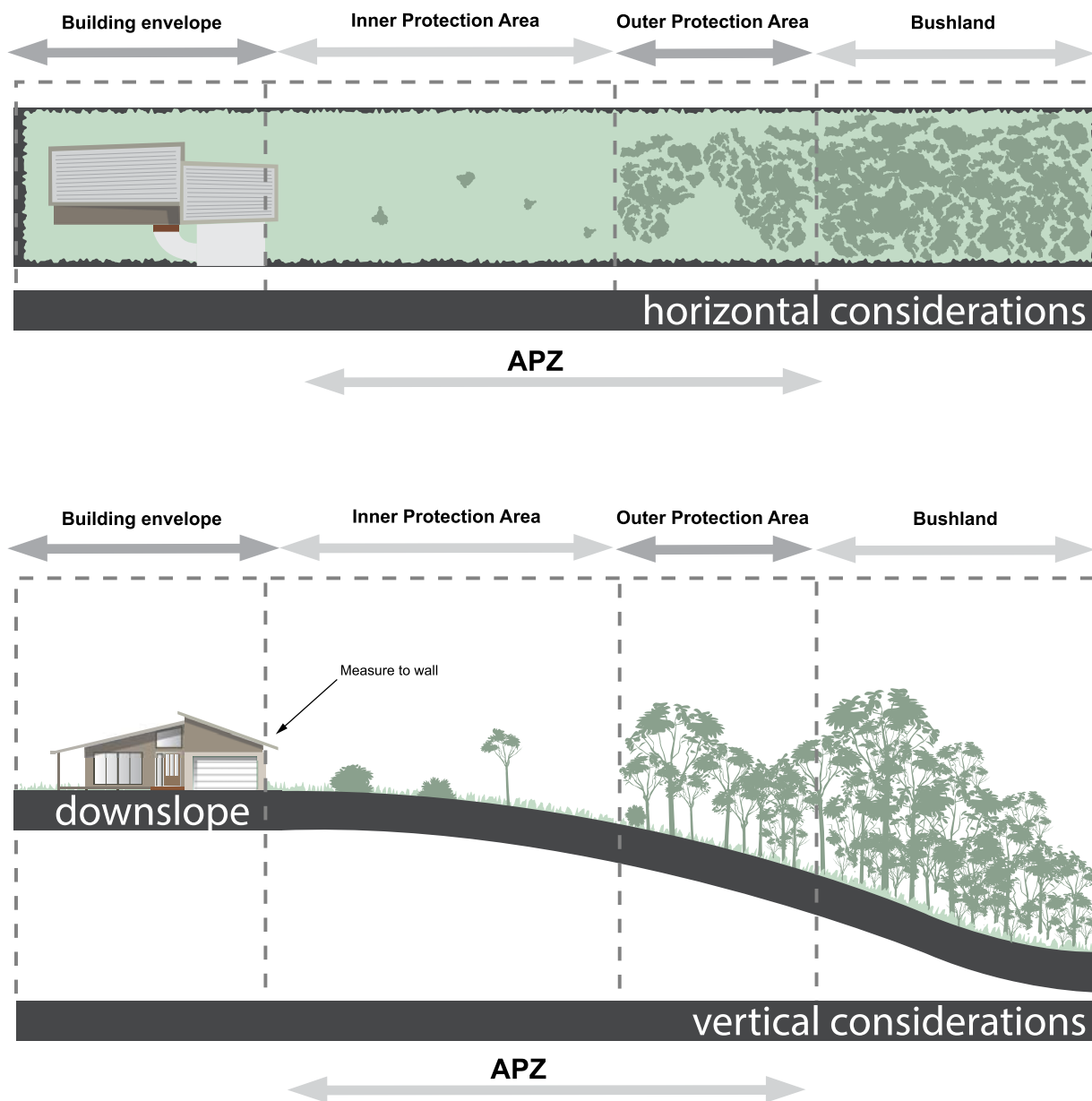
Grass

- 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 C

RFS Correspondence

From: [Alan Bawden](#)
To: [Paul Creenaune](#)
Subject: RFS: pre- DA advice- 110A Finlays Road, Korora
Date: Thursday, 10 November 2022 8:03:41 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[RFS Pre-DA Form.pdf](#)
[4218-1016 Bushfire Design Brief.pdf](#)

Good morning Paul

The NSW RFS has received and reviewed your comments below and the attached documents.

Following on from our meeting on 9/11/22, the NSW RFS provides the following comments

Access to the proposed lots is via Finlays road which will exceed the criteria for public road requirements in PBP19.

Based on the draft subdivision design presented, the NSW RFS accepts that the proposed lots can be serviced by a community titled 5.5 metre bitumen sealed internal property access road.

Where that access road is located on the ridgeline to the south, then a secondary access road shall be constructed along the existing drainage line to the north of the indicative dwelling sites.

A link road connecting both roads shall be required at the western end from said roads. Further an additional property access roads will be required for each lot to the secondary access road. This will ensure, in times of fire emergency, residents can egress way from the primary hazards located along the ridgeline to the south.

Alternatively, the NSW RFS would accept a community titled 5.5 metre bitumen sealed internal property access road located along the existing drainage line to the north of the indicative dwelling sites. No alternative access roads would be required.

Regards



Alan Bawden

Supervisor - Development Assessment and Planning

Planning and Environment Services (North)

NSW RURAL FIRE SERVICE

51 Moonee Street Coffs Harbour

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PREPARE.ACT.SURVIVE

From: Paul Creenaune <PCreenaune@geolink.net.au>

Sent: Friday, 21 October 2022 8:21 AM

To: Planning & Environment Services <CustomerService.Centre@rfs.nsw.gov.au>

Subject: pre- DA - 110A Finlays Road, Korora

Hi Meg,

Please find attached a pre-DA application form and Bushfire Design Brief relating to a proposed subdivision at 110A Finlays Road, Korora.

Please ring me on 6651 7666 if you have any queries.

Regards,

Paul Creenaune

Senior Bushfire Consultant

GeoLINK

Quality Solutions Sustainable Future

P 6651 7666 W www.geolink.net.au