

A stylized, light grey topographic map with concentric contour lines, resembling a mountain range, is positioned on the left side of the page, extending from the top to the bottom.

# Bushfire Protection Assessment

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**Residential subdivision and Construction**

**Fern Creek Road, Warriewood**

**Morehuman Warriewood Pty Ltd**

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## DOCUMENT TRACKING

<b>Project Name</b>	Bushfire Protection Assessment – Residential Subdivision and Construction - Fern Creek Road, Warriewood
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<b>Status</b>	<b>Final</b>
<b>Version Number</b>	<b>1</b>
<b>Last saved on</b>	<b>1 July 2021</b>

This report should be cited as ‘Eco Logical Australia (ELA). 2021. *Bushfire Protection Assessment – Residential Subdivision and Construction - Fern Creek Road, Warriewood*. Prepared for Morehuman Warriewood Pty Ltd.’

## LIMITATIONS

The bushfire protection measures recommended in this report do not completely remove the risk to life and property, and they do not guarantee that a development will not be impacted by a bushfire event. This is substantially due to the degree of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions.

## ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Craig & Rhodes.

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Template 2.8.1

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# Abbreviations

Abbreviation	Description
AS 3959	Australian Standard AS 3959-2018 <i>Construction of buildings in bushfire prone areas</i>
APZ	Asset protection zone
BAL	Bushfire attack level
BFPL	Bush fire prone land
DA	Development application
DtS	Deemed-to-Satisfy
FDI	Fire danger index
IPA	Inner protection area
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
PBP	Planning for Bush fire Protection 2019
RFS	NSW Rural Fire Service

## 1. Property and proposal

**Table 1** identifies the subject property and outlines the type of development proposed.

**Table 1: Subject site and development proposal summary**

Street address:	Fern Creek Road, Warriewood
Postcode:	2102
Lot/DP no:	Lot 7 DP 1251955, Lot 1 DP 1266557, Lot 4 DP1251955
Local Government Area:	Northern Beaches
Fire Danger Index (FDI)	100
Current land zoning:	RE1 – Public Recreation, R3 – Medium Density Residential
Type of development proposed:	Residential subdivision and construction of 31 dwellings

### 1.1 Description of proposal

The proposal is for subdivision of 3 super lots into 33 lots and the construction of 31 dwellings (**Figure 1**).

The subdivision will consist of three (3) stages:

- Stage DA01 – 2 lot Torrens Title subdivision only;
- Stage DA02 – 19 lot integrated housing development;
- Stage DA03 – 12 lot integrated housing development.

The subdivision is located on land identified as bush fire prone land (BFPL) on the Bushfire Prone Land layer within the ePlanning Spatial Viewer<sup>1</sup>.

### 1.2 Assessment process

The proposal was assessed in accordance with Section 100B of the *Rural Fires Act 1997*, Clause 44 of the *Rural Fires Regulation 2013* and *Planning for Bush Fire Protection* (RFS 2019), herein referred to as PBP.

This assessment is based on the following information sources:

- Background documentation provided by Morehuman Warriewood Pty Ltd;
- Information contained within the site plan from Craig & Rhodes, No.251-20-SK-0008 dated 18 June 2021;
- GIS analysis including online spatial resources (i.e. Google Earth, SIX Maps, Nearmaps and the NSW Government Planning Portal); and
- Site Inspection undertaken on the 2 June 2021.

**Table 2** identifies the bushfire protection measures assessed and whether an acceptable or performance-based solution is proposed.

<sup>1</sup> <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>

**Table 2: Summary of bushfire protection measures assessed**

Bushfire Protection Measure	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.1
Landscaping	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Water supply	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Electrical services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Gas services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7

### 1.3 Significant environmental features

An assessment of significant environmental features, threatened species, populations or ecological communities under the *Biodiversity Conservation Act 2016* that may potentially be affected by the proposed bushfire protection measures has been undertaken as part of this development proposal and addressed in a separate report (18SYD\_9978).

### 1.4 Aboriginal cultural heritage

An assessment of any Aboriginal cultural heritage objects (within the meaning of the *National Parks and Wildlife Act 1974*) that may potentially be affected by the proposed bushfire protection measures has not been undertaken in this report as it is covered by other parts of the Development Application (DA) process.

The impact footprint of the bushfire protection measures (e.g. APZ) is identified within this report and therefore capable of being assessed by a suitably qualified person. <Council name> is the determining authority for this development; they will assess more thoroughly any potential Aboriginal cultural heritage issues.

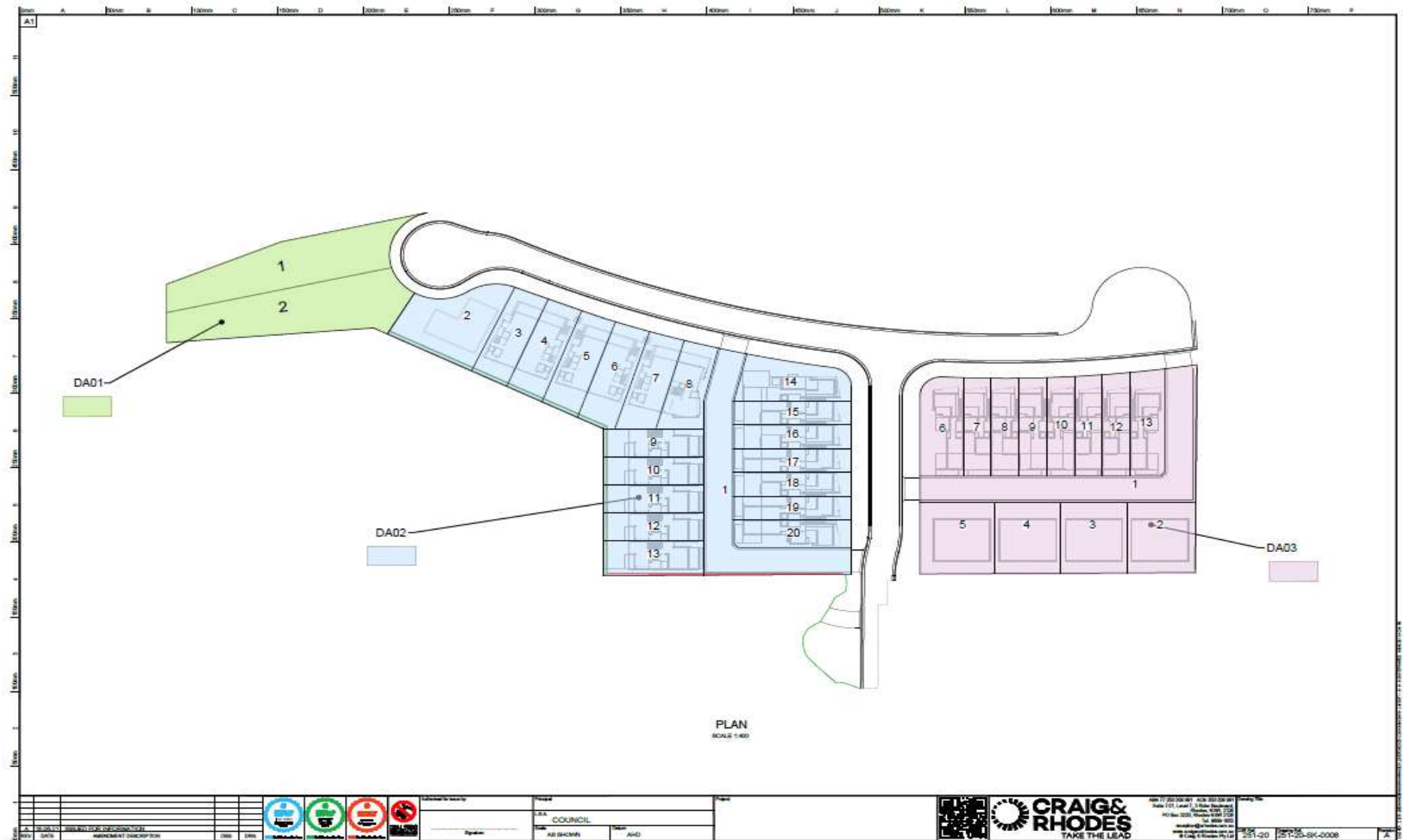


Figure 1: Subdivision layout



## 2. Bushfire hazard assessment

### 2.1 Process

The site assessment methodology from Appendix 1 of PBP has been applied in this assessment to determine the required APZ and construction requirements.

**Figure 2** and **Table 3** show the effective slope and predominant vegetation representing the highest bushfire threat potentially posed to the subdivision and dwellings from various directions.

### 2.2 Vegetation assessment

In accordance with PBP, the predominant vegetation formation has been assessed for a distance of at least 140 m from the subject land in all directions.

The predominant vegetation has been determined from the Department of Planning, Industry and Environment (DPIE 2018) vegetation maps and revised where required by site assessment.

### 2.3 Slope assessment

In accordance with PBP, the slope that would most significantly influence fire behaviour was determined over a distance of 100 m from the boundary of the proposed development under the classified vegetation.

The effective slope has been determined from 2 m contour data and revised where required by site assessment.

### 2.4 Summary of assessment

As shown in **Figure 2**, there is bushfire prone vegetation to the north, north-east, west and south-west.

To the west and south-west the vegetation is identified as *Smooth-barked Apple - Red Bloodwood open forest on enriched sandstone slopes around Sydney and the Central Coast* and *Smooth-barked Apple - Turpentine - Blackbutt tall open forest on enriched sandstone slopes and gullies of the Sydney region* (DPIE 2018) which is classified as 'Forest' under PBP. The effective slope under this hazard falls within 'all upslopes and flat land'.

The vegetation within the riparian corridor to the north and north-east is less than 50 m wide and classified 'low hazard' which is assigned the equivalent hazard as 'rainforest' under PBP. The effective slope under the vegetation falls into the slope category of '>0-5 degrees downslope'.

The land north of Dove Lane is dedicated to Council for future construction of public open space under Warriewood Valley Release Area Masterplan. The future open space is managed by Council to Inner Protection Area (IPA) standards in perpetuity.

In all other directions, there are managed lands in the form of land cleared for future residential development, managed residential allotments and road reserves associated with the subdivision construction.

Photos of the site and adjoining land can be found in **Section 7** of this report.

Table 3: Bushfire hazard assessment, APZ requirements and BALs

Transect #	Slope	Vegetation Formation	Required APZ	Proposed APZ	Bushfire Attack Level (BAL)	Comments
1 (West)	All upslope and flat land	Forest	24 m	≥24 m	BAL-29: 24 to <33 m BAL-19: 33 to <45 m BAL-12.5: 45 to <100 m BAL-LOW: >100 m	APZ provided by managed lands within development site.
2 (North)	>0° to 5° downslope	Low Hazard (Rainforest)	14 m	≥14 m	BAL-29: 14 to <21 m BAL-19: 12 to <29 m BAL-12.5: 29 to <100 m BAL-LOW: >100 m	APZ provided by future public open space to be managed by Council and Dove Lane.
3 (South-west)	All upslope and flat land	Forest	24 m	≥24 m	BAL-29: 24 to <33 m BAL-19: 33 to <45 m BAL-12.5: 45 to <100 m BAL-LOW: >100 m	APZ provided by managed residential lands to the south-west.
All other directions				Managed Land		

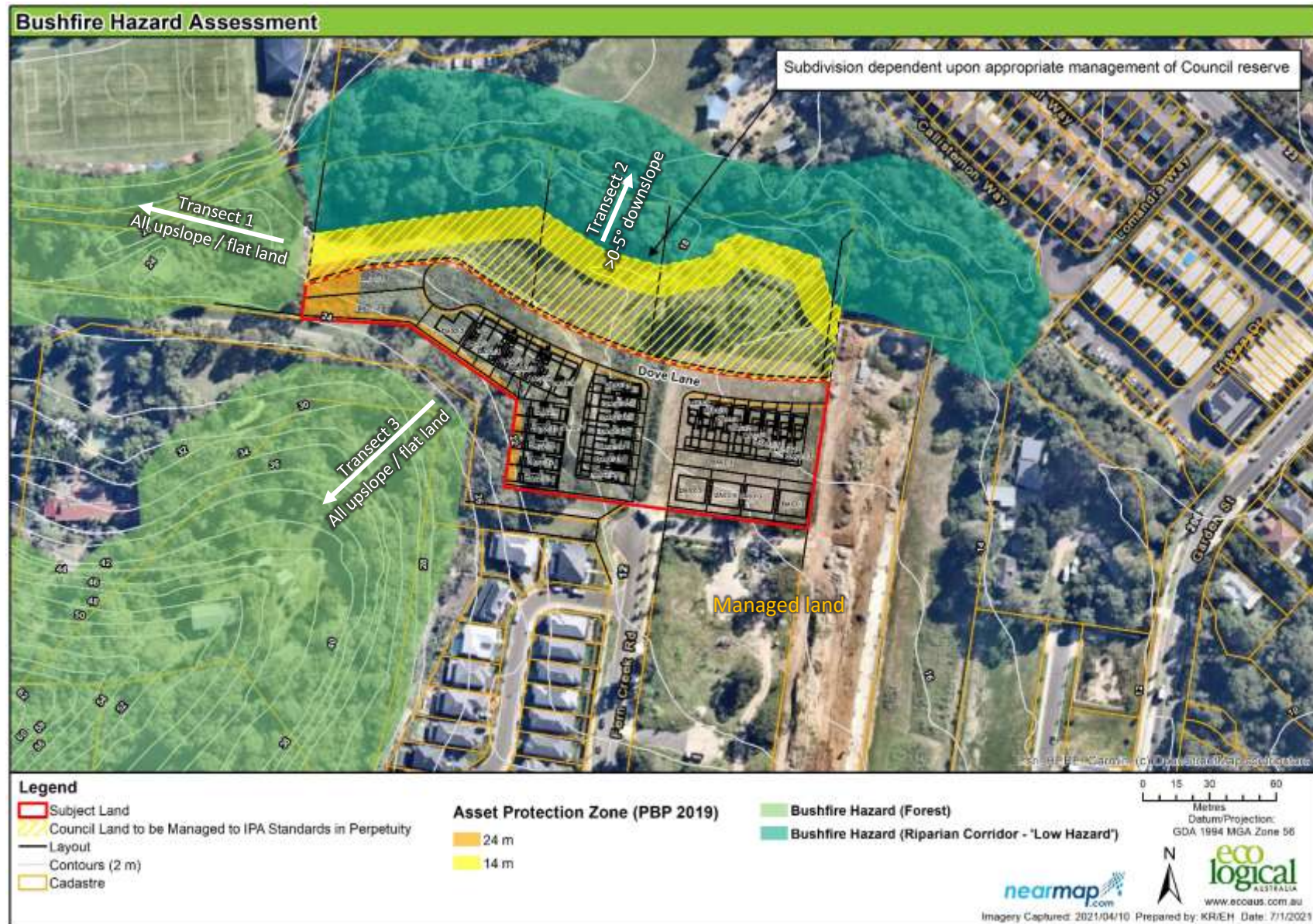


Figure 2: Bushfire hazard assessment

### 3. Bushfire protection measures

#### 3.1 Asset Protection Zones

**Table 3** shows the dimensions of the required APZ and where relevant, information on how the APZ is to be provided is included. The footprint of the APZ is also shown on **Figure 2**.

The Council land to the north of Dove Lane is a future public open space and will be managed to IPA standards in perpetuity, refer to agreement in **Appendix D**.

The compliance of the proposed APZ with Section 5.3.1 of PBP is documented in **Table 4**.

**Table 4: APZ requirements and compliance (adapted from table 5.3a of PBP)**

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Potential building footprints will not be exposed to radiant heat levels exceeding 29 kW/m <sup>2</sup> on each proposed lot.	APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FDI.	<b>Complies</b> APZ provided in accordance with Table A1.12.2 as shown in <b>Table 3</b> and <b>Figure 2</b> .
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.	<b>To comply</b> APZ to be managed in accordance with PBP.
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	<b>Complies with performance criterion</b> APZ provided by surrounding urban infrastructure i.e. public roads, private sealed road.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are located on lands with a slope less than 18 degrees.	<b>Complies</b> APZ is not located on slopes greater than 18°.



### 3.2 Landscaping

The compliance of the proposed landscaping with Section 5.3.1 of PBP is documented in **Table 5**.

**Table 5: Landscaping requirements and compliance (adopted from table 5.3a of PBP)**

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
Landscaping is 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 of PBP; and	<b>To comply</b> APZ / Landscaping is to be managed in accordance with PBP. Landscaping specifications provided in <b>Appendix B</b> .
	Fencing is constructed in accordance with Section 7.6 of PBP.	<b>To comply</b> Fencing to be constructed in accordance with Section 7.6 of PBP (see <b>Section 3.3.4</b> for further details).

### 3.3 Construction standards

The building construction standard for the proposed dwellings is determined by their Bushfire Attack Level (BAL) and then applying the appropriate construction specifications. The separation distances for different BALs are provided in **Table 3**.

The compliance of the proposed construction of dwellings with Section 7.4 of PBP is documented in **Table 6**.

**Table 6: Construction requirements (adapted from table 7.4a of PBP)**

Performance Criteria	Acceptable Solutions	Compliance Notes
The intent may be achieved where:		
The proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.	BAL is determined in accordance with tables A1.12.5 of PBP.	<b>Complies</b> BAL determined using table A1.12.5 of PBP.
	Construction provided in accordance with the National Construction Code (NCC) and as modified Section 7.5 of PBP.	<b>Can comply</b> Construction in accordance with AS 3959 / NASH standard as modified by Section 7.5 of PBP is required.
Proposed fences and gates are designed to minimise the spread of bush fire.	Fencing and gates are constructed in accordance with Section 7.6 of PBP.	<b>Can comply</b> Specification detailed in <b>Section 3.3.4</b> of this report.
Proposed Class 10a buildings are designed to minimise the spread of bush fire.	Class 10a buildings are constructed in accordance with Section 8.3.2 of PBP.	<b>Not applicable.</b>

### 3.3.1 Bushfire Attack Level (BAL)

The building construction standard is based on the determination of the BAL in accordance with Appendix 1 of PBP. The BAL is based on known vegetation type, effective slope and managed separation distance between the development and the bushfire hazard.

As demonstrated in **Table 2** and **Figure 3** the proposed development is assessed as requiring construction standards outlined in **Table 12 (Appendix A)**.

### 3.3.2 Construction requirements

The Deemed-to-Satisfy (DtS) provisions of the NCC for construction requirements for buildings in designated bush fire prone areas are specified in:

- AS 3959:2018 Construction of buildings in bushfire prone areas (SA 2018); and
- NASH Standard: Steel Framed Construction in Bushfire Areas 2014 (NASH 2014).

Construction shall comply with Sections 3, Section 5 (BAL-12.5), Section 6 (BAL-19) and Section 7 (BAL-29) and the below identified sections of AS 3959:2018 (SA 2018) or NASH Standard 1.7.14 (NASH 2014) as appropriate as per **Figure 3**.

### 3.3.3 Additional construction requirements

Additional construction measures over and above that required under AS 3959:2018 and NASH, including ember protection provisions, are identified in Section 7.5 of PBP, and may apply.

### 3.3.4 Fences and gates

To comply with Section 7.6 of PBP, all fencing and gates are to be constructed of hardwood or non-combustible material. Where fencing is within 6 m of a building or in areas of BAL-29 or greater, they should be made of non-combustible material only.

### 3.3.5 Class 10a buildings (sheds etc.)

To comply with section 8.3.2 of PBP, future Class 10a structures within 6 m of any proposed dwelling must be constructed in accordance with the NCC. Where the structure is greater than 6 m, no bushfire requirements apply.

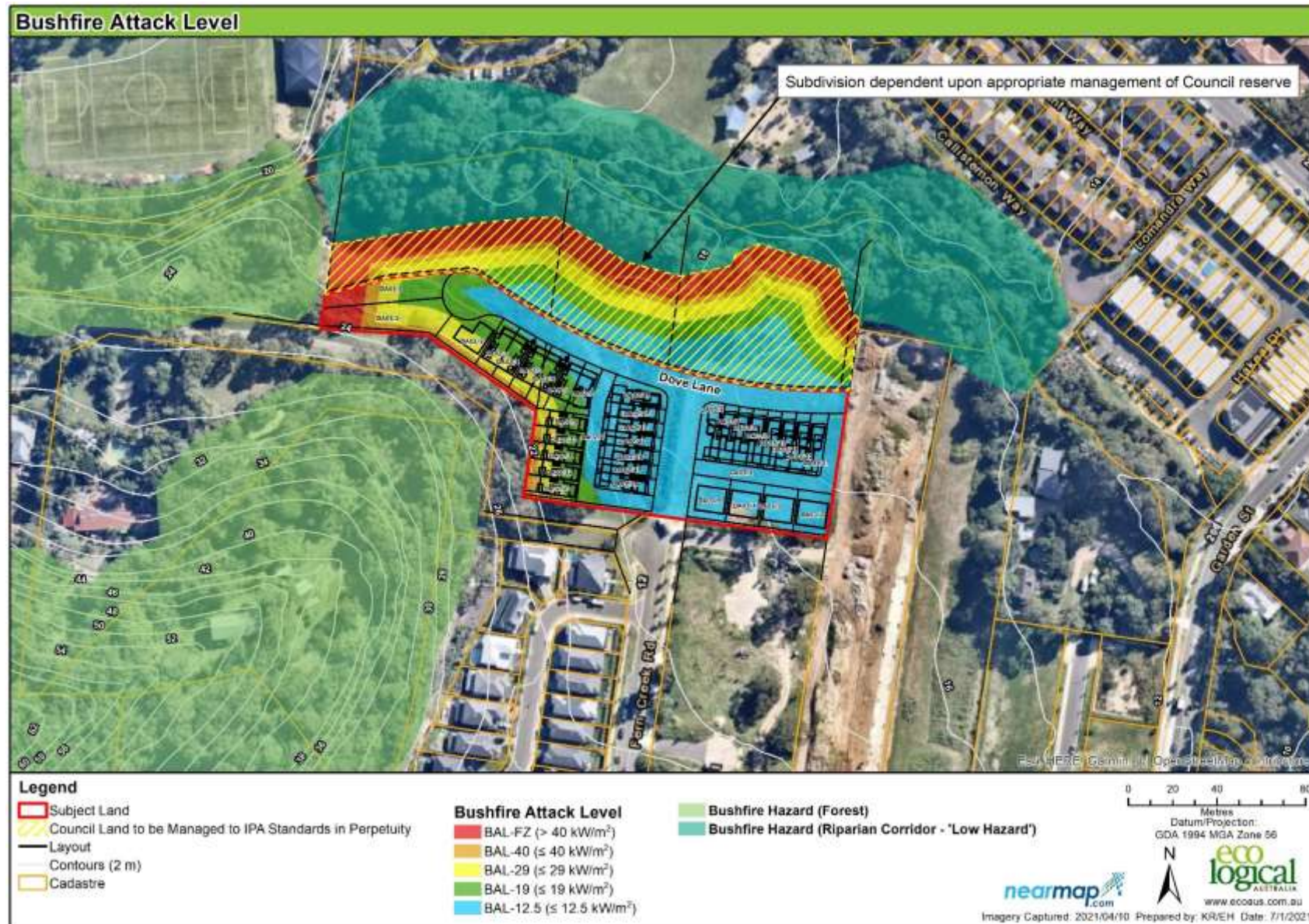


Figure 3: Bushfire Attack Level (BAL)

### 3.4 Access

Public road access to the subdivision is via Fern Creek Road. The construction of the Fern Creek Road extension and Dove Lane are part of a separate DA already approved with construction due to commence in the coming weeks (DA 018/1044).

**Figure 1** and **Figure 2** show the road network within the subdivision. The performance criteria and acceptable solutions for each of these access types are shown in **Table 14** and **Table 15 (Appendix C)**, along with comment on the subdivision design compliance or otherwise.

A summary of the compliance assessment with PBP can be found in **Table 7** below.

**Table 7: Access summary of compliance**

Access type	Acceptable Solution	Performance Solution	Further details
General	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Table 14</b>
Perimeter	N/A	N/A	<b>N/A</b>
Non-perimeter road	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Table 15</b>
Property access	N/A	N/A	<b>N/A</b>

### 3.5 Water supplies

The compliance assessment of the proposed water supply with Section 5.3.3 of PBP is documented in **Table 8**.

**Table 8: Assessment of requirements for the supply of water services (adapted from Table 5.3c of PBP)**

Performance Criteria	Acceptable Solution	Compliance Notes
Adequate water supplies is provided for firefighting purposes.	<p>Reticulated water is to be provided to the development where available;</p> <p>A static water supply and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed; and</p> <p>Static water supplies shall comply with Table 5.3d of PBP.</p>	<p><b>Complies</b></p> <p>Proposal serviced by a reticulated water.</p>
<p>Water supplies are located at regular intervals; and</p> <p>The water supply is accessible and reliable for firefighting operations.</p>	<p>Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1 (SA 2005);</p> <p>Hydrants are not located within any road carriageway; and</p> <p>Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.</p>	<p><b>Can comply</b></p> <p>The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 5.3c and table 5.3d of PBP.</p>
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1 (SA 2005).	
The integrity of the water supply is maintained.	<p>All above-ground water service pipes are metal, including and up to any taps; and</p> <p>Above-ground water storage tanks shall be of concrete or metal.</p>	



### 3.6 Electricity services

The compliance assessment of the proposed supply of electricity services with Section 5.3.4 of PBP is documented in **Table 9**.

**Table 9: Assessment of requirements for the supply of Electricity services (adapted from Table 5.3c of PBP)**

Performance Criteria	Acceptable Solution	Compliance Notes
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	<p>Where practicable, electrical transmission lines are underground;</p> <p>Where overhead, electrical transmission lines are proposed as follows:</p> <p>Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and</p> <p>No part of a tree is closer to a power line than the distance set out in ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets (ISSC3 2016).</p>	<p><b>Complies</b></p> <p>Electricity services to the subject site are located underground.</p>

### 3.7 Gas services

The compliance assessment of the proposed supply of gas services (reticulated or bottle gas) with Section 5.3.4 of PBP is documented in **Table 10**.

**Table 10: Assessment of requirements for the supply of gas services (adapted from Table 5.3c of PBP)**

Performance Criteria	Acceptable Solution	Compliance Notes
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	<p>Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 – The Storage and handling of LP gas, the requirements of relevant authorities, and metal piping is used;</p> <p>All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side;</p> <p>Connections to and from gas cylinders are metal;</p> <p>Polymer-sheathed flexible gas supply lines are not used; and</p> <p>Above-ground gas service pipes are metal, including and up to any outlets.</p>	<p><b>Can comply</b></p> <p>The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 5.3c of PBP.</p>

### 3.8 Staged development

The proposed development will be constructed in a staged manner as follows:

1. DA01 - Fern Creek Rd and Dove Lane (existing public road) earthworks, road and drainage works and services (approved DA 018/1044);
2. DA02 – Laneway construction and earthworks on lots and services (concurrent with DA03);
3. DA03 - Laneway construction and earthworks on lots and services (concurrent with DA02);
4. Integrated houses in DA02 and DA03.

## 4. Conclusion

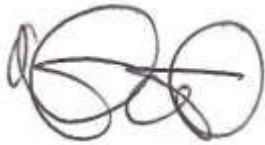
The proposed subdivision and construction of 31 dwellings has been assessed against the specifications and requirements of 'Planning for Bush Fire Protection 2019', as outlined in Table 11.

**Table 11: Development Bushfire Protection Solutions and Recommendations**

Bushfire Protection Measures	Recommendations	Acceptable Solution	Performance Solution	Report Section
Asset Protection Zones	APZ dimensions are detailed in <b>Table 3</b> and shown in <b>Figure 2</b> . Identified APZ to be maintained in perpetuity to the specifications detailed in <b>Appendix B</b> .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.1
Landscaping	Any future landscaping meets the requirements of PBP listed in <b>Appendix B</b> .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.2
Construction standard	The proposed dwellings within development are to be constructed to BALs identified in <b>Table 12</b> and <b>Figure 3</b> based on the construction specifications detailed in either AS 3959-2018 or the NASH standard, including additional ember provisions detailed in Section 7.5 of PBP as required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.3
Access	Access to meet standards summarised in <b>Table 7</b> .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.4
Water supply	Reticulated water supply to meet PBP acceptable solution specifications for a subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.5
Electricity service	Electricity supply located underground.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.6
Gas service	Gas services are to be installed and maintained in accordance with AS/NZS 1596:2014.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.7

## 5. Recommendations

It is recommended that the subdivision be issued a Bush Fire Safety Authority and the dwellings be approved with the BAL ratings determined in **Appendix A**.



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**FPAA BPAD Certified Practitioner No. BPAD29962-L3**



## 6. References

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Industry Safety Steering Committee 3 (ISSC3). 2016. *ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets*. November 2016. NSW.

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## 7. Photos



**Photo 1: Land cleared for residential development to the west of the site**



**Photo 2: Managed residential land to the south-west (T3)**



**Photo 3: Forest hazard to the west (T1)**



**Photo 4: RE1 zoned land to be managed by Council**

## Appendix A – Bushfire Attack Level

**Table 12: Bushfire Attack Level**

Phase	Lot #	Roof/ Sub-floor	Elevation			
			North	South	East	West
DA01	N/A	N/A – no buildings proposed				
DA01	N/A	N/A – no buildings proposed				
DA02	1	N/A – proposed road				
DA02	2	BAL-29	BAL-19	BAL-29	BAL-29	BAL-29
DA02	3	BAL-29	BAL-19	BAL-29	BAL-29	BAL-29
DA02	4	BAL-29	BAL-19	BAL-29	BAL-29	BAL-29
DA02	5	BAL-29	BAL-19	BAL-29	BAL-29	BAL-29
DA02	6	BAL-29	BAL-19	BAL-29	BAL-29	BAL-29
DA02	7	BAL-29	BAL-19	BAL-29	BAL-19	BAL-29
DA02	8	BAL-19	BAL-12.5	BAL-19	BAL-12.5	BAL-19
DA02	9	BAL-29	BAL-29	BAL-29	BAL-19	BAL-29
DA02	10	BAL-29	BAL-29	BAL-29	BAL-19	BAL-29
DA02	11	BAL-29	BAL-29	BAL-29	BAL-19	BAL-29
DA02	12	BAL-29	BAL-29	BAL-29	BAL-19	BAL-29
DA02	13	BAL-29	BAL-29	BAL-29	BAL-19	BAL-29
DA02	14	BAL-12.5				
DA02	15	BAL-12.5				
DA02	16	BAL-12.5				
DA02	17	BAL-12.5				
DA02	18	BAL-12.5				
DA02	19	BAL-12.5				
DA02	20	BAL-12.5				
DA03	1	N/A – proposed road				
DA03	2	BAL-12.5				
DA03	3	BAL-12.5				
DA03	4	BAL-12.5				
DA03	5	BAL-12.5				
DA03	6	BAL-12.5				
DA03	7	BAL-12.5				
DA03	8	BAL-12.5				
DA03	9	BAL-12.5				
DA03	10	BAL-12.5				
DA03	11	BAL-12.5				
DA03	12	BAL-12.5				
DA03	13	BAL-12.5				

## Appendix B - Asset protection zone and landscaping standards

The following APZ management specifications in apply to the entire site. The identified APZ are to be maintained in perpetuity and management undertaken on an annual basis (as a minimum) and prior to the commencement of the fire season.

These APZ management specifications should be considered for any future landscaping and maintenance.

Further details on APZ implementation and management can be found on the NSW RFS website (<https://www.rfs.nsw.gov.au/resources/publications>).

**Table 13: APZ management specifications**

Vegetation Strata	Inner Protection Area (IPA)
Trees	<p>Tree canopy cover should be less than 15% at maturity;</p> <p>Trees (at maturity) should not touch or overhang the building;</p> <p>Lower limbs should be removed up to a height of 2 m above ground;</p> <p>Canopies should be separated by 2 to 5 m; and</p> <p>Preference should be given to smooth barked and evergreen trees.</p>
Shrubs	<p>Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;</p> <p>Shrubs should not be located under trees;</p> <p>Shrubs should not form more than 10% ground cover; and</p> <p>Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.</p>
Grass	<p>Should be kept mown (as a guide grass should be kept to no more than 100 mm in height); and</p> <p>Leaves and vegetation debris should be removed.</p>



## Appendix C - Access Standards

**Table 14: General access requirements (adapted from Table 5.3b of PBP)**

Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Firefighting vehicles are provided with safe, all-weather access to structures.	Property access roads are two-wheel drive, all-weather roads;	<b>Complies</b> Roads are two-wheel drive, all weather-roads.
	Perimeter roads are provided for residential subdivisions of three or more allotments;	<b>Not Applicable</b> Perimeter road exists to the north by Dove Lane (DA 018/1044) and private road to the south-west.
	Subdivisions of three or more allotments have more than one access in and out of the development;	<b>Complies</b>  D02 – community laneway connects to Dove Lane in north, Fern Creek Road in east.  DA03 – Community lane connects to Dove Lane in north, Fern Creek Road in west.
	Traffic management devices are constructed to not prohibit access by emergency services vehicles;	<b>Can comply</b> Details not provided at this stage.
	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;	<b>Can comply</b> Roads do not exceed 15 degrees.
	All roads are through roads;	<b>Complies</b> Proposed community laneways are through roads.
	Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end;	<b>Not applicable</b> No dead-end roads proposed.
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;	<b>Not Applicable</b>
	Where access/egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate point on the existing public road system;	<b>Not applicable</b> Access traverses managed land.



The capacity of access roads is adequate for firefighting vehicles.	One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	<b>Not applicable</b> No one way public access proposed.
	The capacity of perimeter and non-perimeter road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges/causeways are to clearly indicate load rating.	<b>Can comply</b> Details not provided at this stage.
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;	<b>Can comply</b> Details not provided at this stage.
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2017 – Fire hydrant installations system design, installation and commissioning; and	<b>Can comply</b> Details not provided at this stage.
	There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	<b>Not applicable</b> Reticulated water supply proposed.

**Table 15: Non-perimeter road requirements (adapted from Table 5.3b of PBP)**


Performance Criteria	Acceptable Solutions	Compliance notes
The intent may be achieved where:		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5m width kerb to kerb;	<b>Complies</b> Minimum 5.5 m width kerb to kerb.
	Parking is provided outside of the carriageway width;	<b>Can comply</b> Details not provided at this stage.
	Hydrants are located clear of parking areas;	<b>Can comply</b> Details not provided at this stage.
	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	<b>Complies</b> No dead-end roads proposed.
	Curves of roads have a minimum inner radius of 6m	<b>Can comply</b>
	The road crossfall does not exceed 3 degrees;	The advice of a relevant authority or suitably qualified professional should be sought, for certification of design and installation in accordance with relevant legislation, Australian Standards and table 5.3b of PBP.
	A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	

## Appendix D – Council public open space management agreement

## South, Natalie

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**From:** Stanley Lu <slu@crhodes.com.au>  
**Sent:** Tuesday, 29 June 2021 11:50 AM  
**To:** South, Natalie  
**Cc:** Tim Fitzhardinge  
**Subject:** FW: 251-20 - Fern Creek Rd - Council Park Lot Management

 **CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments.



Hi Natalie,

No signed document but email received from Council confirming management of their land in perpetuity.

Regards,

**Stanley Lu**  
Project Manager

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## CRAIG & RHODES

**Mobile: 0426 885 668 | Office Phone: 02 9869 1855**

Suite 7.01 Level 7, 3 Rider Blvd, Rhodes NSW 2138

**PO Box 3220, Rhodes NSW 2138**

**ABN 77 050 209 991**

[www.craigandrhodes.com.au](http://www.craigandrhodes.com.au)

[Facebook](#) [Instagram](#) [LinkedIn](#)

*In the current COVID 19 situation it is still business as usual for Craig & Rhodes in accordance with Federal and State Government directions.*

*We have implemented our Work from Home policy and a majority of our team are now working safely from home.*

*In the event the situation changes we will advise. Thanks for your patience and we look forward to working with you.*

---

**From:** Jeremy Smith <Jeremy.Smith@northernbeaches.nsw.gov.au>

**Sent:** Tuesday, 29 June 2021 9:39 AM

**To:** Stanley Lu <slu@crhodes.com.au>

**Cc:** Tim Fitzhardinge <tFitzhardinge@crhodes.com.au>

**Subject:** RE: 251-20 - Fern Creek Rd - Council Park Lot Management

Hi Stanley

I apologise for missing your call yesterday. I hope you are well.

I confirm that Council will manage the land outlined below in perpetuity. The current area that is grassed will be regularly mowed and the riparian area around the creek will be managed as a natural area.

Kind regards

Jeremy

**Jeremy Smith**

Manager, Park Assets - Planning Design & Delivery

Park Assets - Planning, Design & Delivery

**t** 02 8495 6614 **m** 0458 788 814

[jeremy.smith@northernbeaches.nsw.gov.au](mailto:jeremy.smith@northernbeaches.nsw.gov.au)

[northernbeaches.nsw.gov.au](http://northernbeaches.nsw.gov.au)

---

**From:** Stanley Lu <[slu@crhodes.com.au](mailto:slu@crhodes.com.au)>  
**Sent:** Monday, 28 June 2021 3:43 PM  
**To:** Jeremy Smith <[Jeremy.Smith@northernbeaches.nsw.gov.au](mailto:Jeremy.Smith@northernbeaches.nsw.gov.au)>  
**Cc:** Tim Fitzhardinge <[tFitzhardinge@crhodes.com.au](mailto:tFitzhardinge@crhodes.com.au)>  
**Subject:** RE: 251-20 - Fern Creek Rd - Council Park Lot Management

Hi Jeremy,

I've passed your advice to Eco Logical Australia.

They have asked if it is possible to get the agreement attached signed for them to include in the report.

If signing the document is an issue, they are happy to accept an email confirmation that the land will be managed based on the extent highlighted in the figure below.

Your prompt assistance would be greatly appreciated.



Alternatively, the other option they prefer is to get confirmation

Regards,

**Stanley Lu**  
Project Manager

## CRAIG & RHODES

**Mobile:** 0426 885 668 | **Office Phone:** 02 9869 1855

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*In the event the situation changes we will advise. Thanks for your patience and we look forward to working with you.*

**From:** Jeremy Smith <[Jeremy.Smith@northernbeaches.nsw.gov.au](mailto:Jeremy.Smith@northernbeaches.nsw.gov.au)>

**Sent:** Monday, 21 June 2021 2:26 PM

**To:** Stanley Lu <[slu@crhodes.com.au](mailto:slu@crhodes.com.au)>

**Cc:** Tim Fitzhardinge <[tFitzhardinge@crhodes.com.au](mailto:tFitzhardinge@crhodes.com.au)>

**Subject:** RE: 251-20 - Fern Creek Rd - Council Park Lot Management

Hi Stanley

As discussed Council will start actively managing the site and we will have contractors on site shortly to manage the vegetation.

Jeremy

**Jeremy Smith**

Manager, Park Assets - Planning Design & Delivery

Park Assets - Planning, Design & Delivery

t 02 8495 6614 m 0458 788 814

jeremy.smith@northernbeaches.nsw.gov.au

northernbeaches.nsw.gov.au



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**From:** Stanley Lu <[slu@crhodes.com.au](mailto:slu@crhodes.com.au)>  
**Sent:** Monday, 21 June 2021 11:41 AM  
**To:** Jeremy Smith <[Jeremy.Smith@northernbeaches.nsw.gov.au](mailto:Jeremy.Smith@northernbeaches.nsw.gov.au)>  
**Cc:** Tim Fitzhardinge <[tFitzhardinge@crhodes.com.au](mailto:tFitzhardinge@crhodes.com.au)>  
**Subject:** 251-20 - Fern Creek Rd - Council Park Lot Management

Hi Jeremy,

As per our recent phone discussion, we are finalising DA referral comments with RFS regarding our subdivision at Fern Creek Rd, Warriewood.

One of the items required to be addressed was the management of Lots 1, 2 and 3 DP 1251955, located north of Dove Lane, Warriewood.

According to Eco Logical, the land was previously subdivided on the premise this area would be managed to reduce bushfire hazard.

We would appreciate if the attached letter can be signed so we can finalise our DA response to Council Planning Team and RFS.

I will call as a follow up.

Regards,

**Stanley Lu**  
Project Manager

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**Mobile:** 0426 885 668 | **Office Phone:** 02 9869 1855

Suite 7.01 Level 7, 3 Rider Blvd, Rhodes NSW 2138

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