Midcoast
Building and
Environmental

BUSH FIRE ASSESSMENT REPORT

Planning Proposal
Rezoning

Lot 12 DP 243972
No 28 Sugarmill Road
Sapphire Beach

Lot 91 DP 786155
No 35 Sugarmill Road
Sapphire Beach

Lot 17 DP 249273
No 89 Sugarmill Road
Sapphire Beach

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Appendix 5 - Bushfire Assessment

1.0 INTRODUCTION

A Bush Fire Assessment Report has been carried out for a proposed planning rezoning, for the owners of Lot 12 DP 243972 No 28 Sugarmill Road, Sapphire Beach, Lot 91 DP 786155 No 35 Sugarmill Road, Sapphire Beach and Lot 17 DP 249273 No 89 Sugarmill Road, Sapphire Beach.

All current lots have existing dwellings and it is proposed to subdivide each of the lots into two (2) as part of the rezoning.

The development application for the subdivision would be an integrated development and has a requirement for a Bushfire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

NOTE

The report has been prepared with all reasonable skill, care and diligence.

The information contained in this report has been gathered from field survey, experience and has been completed in consideration of the following legislation.

1. Rural Fires Act 1997.
2. Environmental Planning and Assessment Act 1979 No 203.
3. Building Code of Australia (2019).
4. Council Local Environment Plans and Development Control Plans where applicable.
5. NSW Rural Fire Services, Planning for Bushfire Protection, 2019. (PBP, 2019).
6. AS 3959-2018 Construction of Buildings in Bushfire Prone Areas.

The report recognizes the fact that no property and lives can be guaranteed to survive a bushfire attack.

The report examines ways the risk of bushfire attack can be reduced where the rezoning site falls within the scope of the legislation.

The report is confidential and the writer accepts no responsibility of whatsoever nature, to third parties who use this report or part thereof is made known. Any such party relies on this report at their own risk.

1.1 Objectives

The objectives of this report are to:

- Ensure that the proposed rezoning meets the aims and objectives of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019 and has measures sufficient to minimize the impact of bushfires; and
- Reduce the risk to property and the community from bushfire; and
- Comply where applicable with AS3959 – 2018.

1.2 Legislative Framework

In NSW, the bushfire protection provisions of the BCA are applied to Class 1, 2, 3, Class 4 parts of buildings, some Class 10 and Class 9 buildings that are Special Fire Protection Purposes (SFPPs).

The BCA references AS3959 – 2018 as the deemed-to-satisfy (DTS) solution for construction requirements in bushfire prone areas for NSW.

All development on bushfire prone land in NSW should comply with the bushfire protection measures identified within PBP, 2019.

1.3 Location

The site is Lot 12 DP 243972 No 28 Sugarmill Road, Sapphire Beach, Lot 91 DP 786155 No 35 Sugarmill Road, Sapphire Beach and Lot 17 DP 249273 No 89 Sugarmill Road, Sapphire Beach.

Locality – Sapphire Beach
Local Government Area – Coffs Harbour City Council
Closest Rural Fire Service – Solitary Rural Fire Service
Closest Fire Control Centre – Coffs Harbour

Figure 1 – Topographic Map

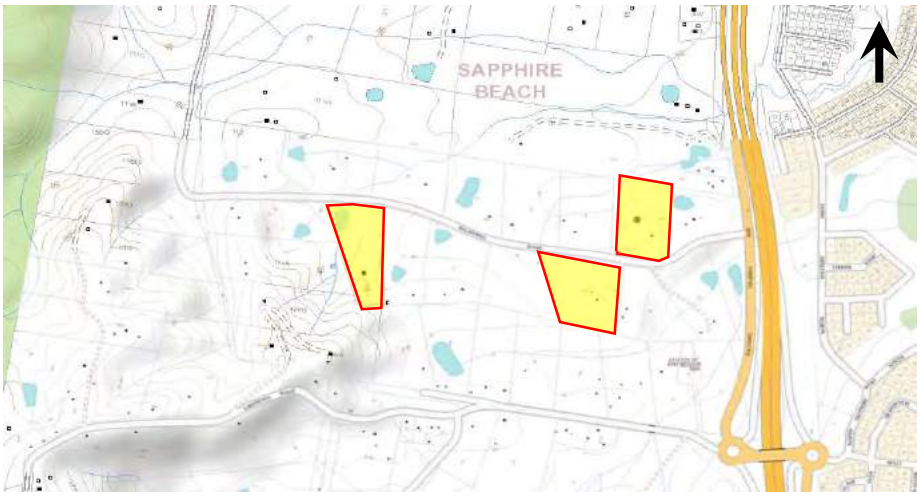


Figure 2 – Aerial View

1.4 Development Proposal and History

The subject sites are:

- No 28 Sugarmill Road – 2.03 hectares into two (2) x lots to be known as Lot 120 + Lot 121.
- No 35 Sugarmill Road – 2.37 hectares into two (2) x lots to be known as Lot 910 + Lot 911.
- No 89 Sugarmill Road – 2.03 hectares into two (2) x lots to be known as Lot 170 + Lot 171.

See **Appendix 1** for the individual layouts.

1.5 Isolated Subdivision

With regards to the travel distance which will be further examined in the report consideration has been given to 5.1.1 of Planning for Bush Fire Protection (Isolated Subdivision).

In regards to the requirements of Isolated Subdivision, the following provisions have been considered:

- Larger APZs outside the range prescribed in PBP and increased Bush Fire Attack Level (BAL) to proposed buildings to create a safer area for occupants and fire fighters remaining on site.
- Firefighting water supply and associated firefighting equipment (ie. pump and hose) for each dwelling in addition to any reticulated water supply.

2.0 BUSH FIRE ASSESSMENT

2.1 Assessment Methodology

Several factors need to be considered in determining the bushfire hazard.

These factors are slope, vegetation type, and distance from hazard, access/egress and fire weather. Each of these factors has been reviewed in determining the bushfire protection measures.

The assessment of slope and vegetation being carried out in accordance with NSW Rural Fire Service, *Planning for Bushfire Protection*, 2019.

2.2 Slope Assessment

Slope is a major factor to consider when assessing the bushfire risk.

The slopes were measured using a Suunto PM-5/360 PC Clinometer.

The dominant hazard vegetation was identified and the slopes within the vegetation measured.

Table 1 – Hazard Vegetation Slopes for Rezoning

No 28

	Hazard Aspect	Slope	Upslope/Downslope or Flat
No 28	North	5-10°	Downslope
	West	0-5°	Downslope

No 35

	Hazard Aspect	Slope	Upslope/Downslope or Flat
No 35	North	5-10°	Downslope
	South	5-10°	Downslope
	East	0-5°	Downslope
	West	0°	Upslope

No 89

	Hazard Aspect	Slope	Upslope/Downslope or Flat
No 89	North	5-10°	Downslope
	East	5-10°	Downslope
	West	0-5° 0°	Downslope Upslope

2.3 Vegetation Assessment

The vegetation on and surrounding the subject site was assessed over a distance of 140m.

The vegetation formations were classified using the system adopted as per Keith (2004) and considering the fuel loads as documented in Planning for Bush Fire Protection, 2019.

2.3.1 Vegetation on the Subject Lots

The subject lots in general are a mixture of remnant forest vegetation and mostly grassland that is currently managed.

The remnant forest vegetation positioned on No 35 is currently being managed similar to a woodland hazard.

2.3.2 Vegetation on the adjoining lots

The adjacent areas to the north, south and west are of similar vegetation types.

There is residential development to the east of the sites.

The larger hazards include the Orara State Forest approximately 700m from No 89 and the Coffs Regional Park approximately 700m from No 28.

The following table details the hazards for the proposed lots:

Table 2 – Hazard Vegetation

No 28

Hazard Aspect	Vegetation
North	Forest
West	Grassland

No 35

Hazard Aspect	Vegetation
North	Woodland
South	Forest
East	Woodland
West	Grassland

No 89

Hazard Aspect	Vegetation
North	Forest
East	Grassland
West	Forest Grassland

The report assumes that all grassland on the proposed lots will be managed as Asset Protection Zone (IPA)

2.4 Hazard

The aerials for the hazards for the proposed lots:

Figure 3: Hazards

No 28

Appendix 5 - Bushfire Assessment

No 35

Appendix 5 - Bushfire Assessment

No 89

With respect to the hazards:

1. The single row of trees between No 28 and the adjoining dwelling to the west have not been considered a hazard, however it is recommended that any dwelling is located a minimum 5m from any canopy. The report assumes that the area under these trees will be continued to be managed. The location and management of this area can be seen in **Photos 2 and 3**. To build a factor of safety into the report the adjoining lot has been considered a grassland hazard, however this area is currently managed.

2. With regards to Lot 35, the area to the north and the area nominated to the south in the hazard mapping has managed ground cover and shrub layer. To build a factor of safety into the report these areas have been considered as a woodland hazard and the hazard to the west has been conservatively assessed as grassland.

3. The vegetation in the northern part of No 89 has been conservatively assessed as forest.

Figure 4 - Bushfire Hazard Mapping

Table 3 – Summary of Hazard Characteristics for Rezoning

No 28

Hazard Aspect	Hazard	Slope
North	Forest	5-10° Downslope
West	Grassland	0-5° Downslope

No 35

Hazard Aspect	Hazard	Slope
North	Woodland	5-10° Downslope
South	Forest	5-10° Downslope
East	Woodland	0-5° Downslope
West	Grassland	0° Upslope

No 89

Hazard Aspect	Hazard	Slope
North	Forest	5-10° Downslope
East	Grassland	5-10° Downslope
West	Forest Grassland	0-5° Downslope 0° Upslope

2.5 Fire Danger Index

The fire weather for the site is assumed on the worst-case scenario. In accordance with NSW Rural Fire Services, the fire weather for the site is based upon the 1:50 year fire weather scenario and has a Fire Danger Index (FDI) of 80.

3.0 BUSHFIRE THREAT REDUCTION MEASURES

3.1 NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019

The following provisions of PBP 2019 have been identified:

3.1.1 Defendable Space/Asset Protection Zone (APZ)

To ensure that the aims and objectives of NSW Rural Fire Services, PBP, 2019, a defendable space between the asset and the hazard should be provided. The defendable space provides for, minimal separation for safe firefighting, reduced radiant heat, reduced influence of convection driven winds, reduced ember viability and dispersal of smoke.

The proposed development is not considered to be subject to the Special Fire Protection Purpose requirements which are applicable to schools etc, (the proposed development is not a SFPP).

It is recommended that the defendable space for the proposed development be based upon the minimum requirements for Asset Protection Zones as set out in NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019.

Table 4 - APZ Requirements (PBP 2019)

No 28

Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)
North	Forest	5-10° Downslope	16m	15m	31m
West	Grassland	0-5° Downslope	11m	-	11m

No 35

Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)
North	Woodland	5-10° Downslope	17m	-	17m
South	Forest	5-10° Downslope	16m	15m	31m
East	Woodland	0-5° Downslope	13m	-	13m
West	Grassland	0° Upslope	10m	-	10m

No 89

Hazard Aspect	Vegetation Type	Slope	IPA	OPA	Total APZ Required (IPA + OPA)
North	Forest	5-10° Downslope	16m	15m	31m
East	Grassland	5-10° Downslope	12m	-	12m
West	Forest Grassland	0-5° Downslope 0° Upslope	15m 10m	10m -	25m 10m

See **Appendix 2** for the likely Asset Protection Contour lines (i.e. BAL contour lines) and photos.

3.1.2 Operational Access and Egress

Access/egress to the proposed lots will be from the existing Council Road, Sugarmill Road.

The existing dwellings on the subject lots all have access and egress provided from Sugarmill Road.

No 28 and 89 are proposing their own access while No 35 may have a shared access.

All access/egress have the slope and dimensions suitable to comply with the deemed to satisfy provisions of PBP, 2019 for property access.

Table 5

Table 5.3b			
Performance criteria		**Acceptable Solution**	**Comment**
	The intent may be achieved where:		
	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 70m) is provided between the most distant external part of the proposed	N/A

PROPERTY ACCESS		dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles. In circumstances where this cannot occur the following requirements apply: • Minimum 4m carriageway width; • In forest, woodland and heath situations, rural property access roads have passing bays at 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 6m 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 access by dedication of a road and not by right of way.	To comply All driveways less than 200m. To comply To comply – see **Appendix 3.** To comply To comply To comply To comply – all driveways less than 10°. N/A

Sugarmill Road does not provide an alternate access/egress. In regard to possible issues with access/egress, consideration has been given to the provisions of Isolated Subdivision as detailed in 5.1.1 of PBP, 2019.

3.1.3 Services - Water, Gas and Electricity

As set out in NSW Rural Fire Services**,** *Planning for Bushfire Protection*, 2019, developments in bushfire prone areas must maintain a water supply for firefighting purposes.

Electricity supply is available and will be connected to the subject site. It is assumed the power lines will be underground.

Reticulated water supply is not available. It is recommended that a minimum 30,000 litre water supply for firefighting be provided in accordance with PBP, 2019 to the existing dwellings and the proposed dwellings, as seen in **Table 6**.

Bottled gas supplies are to be installed and maintained in accordance AS 1596. Metal piping is to be used. All fixed gas cylinders are to be kept clear of all flammable materials to a distance of 10m and shielded on the hazard side of the installation. If gas cylinders need to be located close to the building, the release valves are to be directed away from the building and at least 2 metres away from any combustible material so they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal.

Table 6

Table 5.3c			
	Performance Criteria	**Acceptable Solutions**	**Comment**
WATER SUPPLIES	**The intent may be achieved where:**		
	Inadequate water supplies are provided for firefighting purposes	• Reticulated water supply is to be provided to the development where available. • A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed. • Static water supplies shall comply with Table 5.3d of the NSW Planning for Bushfire Protection 2019.	Not available Static water supply required To comply
	Water supplies are located at regular intervals The water supply is accessible and reliable for firefighting operations	• Fire hydrant, spacing, design and sizing complies with the relevant clauses of the Australian Standard AS 2419.1 – 2005. • Hydrants are not located within any road carriageway. • Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter road.	N/A N/A N/A

Appendix 5 - Bushfire Assessment

	Flows and pressures are appropriate	• Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	N/A
	The integrity of the water supply is maintained	• All above ground water service pipes are metal, including and up to any taps. • Above ground water storage tanks shall be of concrete or metal.	To comply To comply
ELECTRICITY	Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings Regular inspection of lines is undertaken to ensure they are not fouled by branches	• Where practical, electrical transmission lines are underground. • Where overhead electrical transmission lines are proposed: 1. Lines are installed with short pole spacing (30 metres) unless crossing gullies, gorges or riparian areas; and 2. No part of a tree is closer to a power line than the distance set out in ISSC3 "Guideline for Managing Vegetation near Power Lines.	To comply
GAS SERVICES	Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings	• Reticulated or bottle gas is installed and maintained in accordance with AS 1596:2014 – The storage and handling of LP Gas, the requirements of relevant authorities and metal piping is to be used. • All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. • Connections to and from gas cylinders are metal. • Polymer-sheathed flexible gas supply lines are not used. • Above ground gas service pipes are metal, including and up to any outlets.	To comply

Table 7

STATIC WATER SUPPY	A static water supply is provided for firefighting purposes in areas where reticulated water is not available.	• Where no reticulated water supply is available, water for firefighting purposes is provided in accordance with Table 5.3d;	To comply
		• A connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; 65mm Storz outlet with a ball valve is fitted to the outlet;	To comply
		• Ball valve and pipes are adequate for water flow and are metal;	To comply
		• Supply pipes from tank to ball valve have the same bore size to ensure flow volume;	To comply
		• Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank;	To comply
		• A hardened ground surface for truck access is supplied within 4m;	To comply
		• Above ground tanks are manufactured from concrete or metal;	To comply
		• Raised tanks have their stands constructed from non-combustible material or bush fire resisting timber (See Appendix F of AS3959);	To comply
		• Unobstructed access can be provided at all times;	To comply
		• Underground tanks are clearly marked;	To comply
		• Tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters;	To comply
		• All exposed water pipes external to the building are metal, including any fittings;	To comply
		• Where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bushfire attack; any hose and	To comply

		reel for firefighting connected to the pump shall be 19mm internal diameter; and • Fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005.	

3.1.4 Landscaping

Landscaping is a major cause of fire spreading to buildings, and therefore any landscaping proposed in conjunction with the proposed development will need consideration when planning, to produce gardens that do not contribute to the spread of a bushfire.

When planning any future landscaping surrounding any proposed building or rezoning, consideration should be given to the following:

- The choice of vegetation – consideration should be given to the flammability of the plant and the relation of their location to their flammability and ongoing maintenance to remove flammable fuels.
- Trees as windbreaks/firebreaks – Trees in the landscaping can be used as windbreaks and also firebreaks by trapping embers and flying debris.
- Vegetation management – Maintain a garden that does not contribute to the spread of bushfire.
- Maintenance of property – Maintenance of the property is an important factor in the prevention of losses from bushfire.

Appendix 4 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2019, contains standards that are applicable to the provision and maintenance of Asset Protection Zones.

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.

3.2 Construction of Buildings

3.2.1 General

The relevant Bushfire Attack Level and Construction Requirements have been determined in accordance with PBP, 2019 and AS 3959 (2018).

3.2.2 AS3959 – 2018, PBP 2019, Construction of Buildings in Bushfire Prone Areas

The following construction requirements in accordance with AS 3959 – 2019 Construction of Buildings in Bushfire Prone Areas and PBP 2019 is required for the bushfire attack categories.

Table 8

Bushfire Attack Level (BAL)
BAL - LOW No construction requirements under AS 3959-2018
BAL - 12.5
BAL - 19
BAL - 29
BAL - 40
BAL - FZ

BAL contour lines and photos can be seen in **Appendix 2.**

4.0 ISOLATED SUBDIVISION PROVISIONS

With regards to the no alternate access, consideration has been given to 5.1.1 of Planning for Bush Fire Protection (Isolated Subdivision).

In regards to Isolated Subdivision:

- Larger APZs outside of the range prescribed for in PBP and increased Bush Fire Attack Level (BAL) to proposed buildings to create a safer area for occupants and fire fighters remaining on site.

The factors of safety have been considered with respect to the vegetation and slope analysis as can be seen in the hazard section.

- Firefighting water supply and associated firefighting equipment (ie pump and hose for each dwelling in addition to any reticulated supply.

A 30,000 litre water supply in accordance with PBP, 2019 and RFS Fast Fact 3/08 is recommended with a pump and hose reel to be provided to both the existing and the proposed dwelling, as detailed above to ensure a water supply and firefighting infrastructure in times of fire.

5.0 EXISTING DWELLINGS

As detailed in PBP, 2019 with regards to existing dwellings it is recommended that the existing dwellings be upgraded to provide ember protection and water supplies for firefighting.

The recommendations with respect to water supply has been previously detailed in the report and it is further recommended that the dwellings are upgraded in accordance with the RFS document *Upgrading of Existing Buildings*. **Appendix 4**.

6.0 STRATEGIC PLANNING

Table 4.2.1 of Planning for Bush Fire Protection, 2019 nominated issues with respect to the Strategic Planning considerations.

Appendix 5 - Bushfire Assessment

Table 9

Issue	Detail	Assessment Considerations
Bushfire Landscape Assessment	A bushfire landscape assessment considers the likelihood of a bushfire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape	a) The bushfire hazards in the surrounding area includes: • Vegetation • Topography • Weather b) The potential fire behaviour that might be generated based on the above; c) Any history of bushfire in the area, d) Potential fire runs into the site and the intensity of such fire runs.
Land Use Assessment	The land use assessment will identify the most appropriate locations within the masterplan area or site layout for the proposed land uses	a) The risk profile of different areas of the development based on the above landscape study; b) The proposed land use zones and the resultant permitted land uses; c) The most appropriate siting of different land uses based on risk profiles within the site (i.e not locating development on ridge tops, SFPP development to be located in lower risk areas of the site); and d) The impact of the siting of these uses on APZ provision.
Access and Egress	A study of the existing and proposed road networks both within and external to the masterplan area or site layout	a) The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile; b) The location of key access routes and direction of travel; and c) The potential for development to be isolated in the event of a bushfire.
Emergency Service	An assessment of the future impact of new development on emergency services provision	a) Consideration of the increase in demand for emergency services responding to a bushfire emergency (including the need for new stations/bridges); and b) Impact on the ability of emergency services to carry out fire suppression in a bushfire emergency.
Infrastructure	An assessment of the issues associated with infrastructure provision	a) The ability of the reticulated water system to deal with major bushfire events (particularly in terms of water pressure); and b) life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.

Adjoining Land	The impact of new development on adjoining landowners and their ability to undertake bushfire management	a) Consideration of the implications of a change in land use on adjoining land including; • The ability of adjoining and nearby land to carry a bushfire; and • Consideration of increased pressure on adjoining landowners to introduce or increase Bushfire Planning Methods through the implementation of Bushfire Management Plans as a result of the changes in land use.

Bush Fire Landscape Assessment. The adjacent areas to the north, south and west are of similar vegetation types.

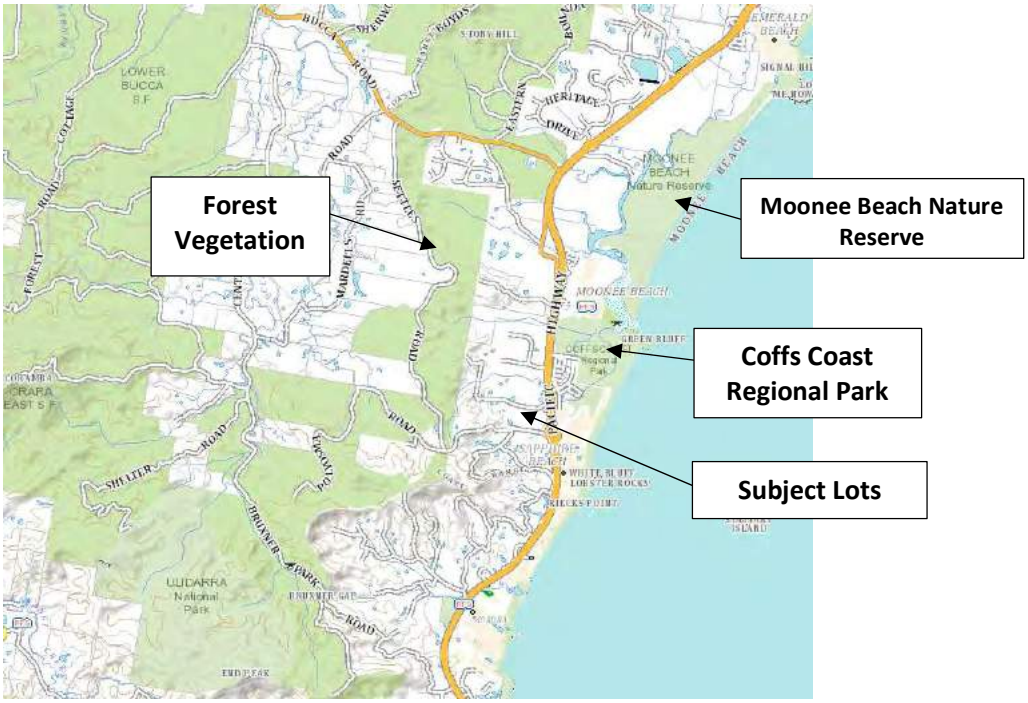
There is residential development to the east of the sites.

The larger hazards include the forest to the west approximately 700m from No 89 and the Coffs Regional Park approximately 700m from No 28.

It is recommended that the adjoining development will provide a buffer from the larger hazards as detailed.

Figure 5

Figure 6



a. **Land Use Assessment.** The sites proposed are equal distance to the road or closer to the road than the existing development. There are no Special Fire Protection Purpose uses identified in the proposal.

b. **Access and Egress.** There is no alternate egress in Sugarmill Road and there are only three (3) new dwellings proposed, however the report has considered the requirements of Isolated Subdivision as detailed in 5.1.1 of PBP 2019.

With regards to the access/egress there is access and egress available beyond the formed road via the road reserve.

Photo 1 – Road adjacent to No 28 and No 35

Photo 2 – Road to No 89

Photo 3 – Road entry to Sugarmill

c. **Emergency Services.** It is noted that only three (3) x dwellings are proposed.

d. **Infrastructure**. The Consultant Planner advises that initial discussions with Council have not indicated infrastructure issues.

e. **Adjoining Land**. It is not expected that there will be any bushfire implications on the adjoining land. The ability of the adjoining land to carry a bush fire will be reduced due to the additional APZ's.

7.0 OTHER CONSIDERATIONS

Table 10

Environmental/Heritage Feature	Comment
Riparian Corridor	Not considered in this report
SEPP 14 – Coastal Wetland	Not considered in this report
SEPP 26 – Littoral	Not considered in this report
SEPP 44 – Koala Habitat	Not considered in this report
Areas of geological interest	Not considered in this report
Environment protection zones	Not considered in this report
Land slip	Not considered in this report
Flood prone land	Not considered in this report
National Park Estate or other reserves	Not considered in this report
Threatened Species, populations, endangered ecological communities and critical habitat	Not considered in this report
Aboriginal Heritage	Not considered in this report

8.0 RECOMMENDATIONS

The following recommendations are considered to be integral to this bush fire risk assessment:

1. An Asset Protection Zones as detailed in Section 3.1.1 of this report are to be provided. The minimum Asset Protection Zones are detailed as BAL 29 in the contour plan.
2. Access and Egress is to be provided as detailed in Section 3.1.2 of this report is to be provided.
3. Services as detailed in Section 3.1.3 of this report is to be provided.
4. Adopt landscaping principles in accordance with Section 3.1.4 of the NSW Rural Fire Services, PBP, 2019.
5. Proposed dwellings are constructed in consideration of BAL Contour Lines and constructed to appropriate BAL's.
6. Existing dwellings are upgraded in accordance with this report.

9.0 CONCLUSION

It is suggested that with the implementation of this report, and its recommendations, that the bushfire risk is manageable and will be consistent with the acceptable bushfire protection measure solutions, provided for in Section 4.3.5 of NSW Rural Fire Services, PBP, 2019.

It is noted that with respect to the rezoning there is an increase in density but we are achieving a better outcome with the upgrades to the existing dwellings and the rationalization in Asset Protection Zones (APZ) across the three (3) subject lots.

This report is however contingent upon the following assumptions and limitations:

Assumptions

1. For a satisfactory level of bushfire safety to be achieved, regular inspection and testing of proposed measures, building elements and methods of construction, specifically nominated in this report, is essential and is assumed in the conclusion of this assessment.
2. There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.
3. The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection.

Limitations

1. The data, methodologies, calculations and conclusions documented within this report specifically relate to the proposed planning rezoning and must not be used for any other purpose.
2. A reassessment will be required to verify consistency with this assessment if there are any alterations and/or additions, or changes to the risk reduction strategy contained in this report.

Regards

Tim Mecham
Midcoast Building and Environmental

10.0 REFERENCES

NSW Rural Fire Services, ***Planning for Bushfire Protection***, 2019
AS 3959-2018 ***Construction of Buildings in Bushfire Prone Areas***
Keith David 2004, Ocean ***Shores to Desert Dunes, The Native Vegetation of New South Wales and the ACT***, Department of Environment and Conservation
NSW State Government (1997) Rural Fires Act 1997
NSW Rural Fire Service – ***Guideline for Bushfire Prone Land Mapping 2002***

APPENDIX 1: Rezoning Layouts

No 28

No 35


SUGARMILL ROAD
910
1.172ha
R5 AREA 6888m²
911
1.195ha
R5 AREA 6393m²
D.P.551884
163.895
179.97
47.51
37.23
28.45
(A) PROPOSED BUILDING ENVELOPE
DENOTES PROPOSED E2 ZONE
DENOTES PROPOSED R5 ZONE
DENOTES BAL 12.5
DENOTES BAL 19
DENOTES BAL 29
MID NORTH COAST SURVEYING
8 TOM ALBERT PLACE
SAWTELL NSW 2452
Doug Alderman M. 0434 438 110
E. doug@midnorthcoastsurveying.com.au
Brock Hyde M. 0408 600 876
E. brock@midnorthcoastsurveying.com.au
MNC
CLIENT: I & S MARTYN
JOB REF: 1442
SURVEYED: M.N.C.S.
DATE: 16.09.2021
DRAWN: B.H.
SCALE: 1:1000
SHEET SIZE: A3
TITLE: PROPOSED 2 LOT TORRENS SUBDIVISION - B
SUGARMILL ROAD RE-ZONING
REV. F
PROJECT: LOT 91 IN D.P.786155
AT 35 SUGARMILL ROAD, SAPPHIRE BEACH
LGA: COFFS HARBOUR CITY COUNCIL

No 89


SUGARMILL ROAD
171
1.2ha
RS AREA 8400m²
170
8325m²
RS AREA 8325m²
233.35
66.12
51.65
26.55
(A) PROPOSED BUILDING ENVELOPE
DENOTES PROPOSED E2 ZONE
DENOTES PROPOSED R5 ZONE
DENOTES BAL 12.5
DENOTES BAL 19
DENOTES BAL 29
D.P.249273
D.P.701023
MID NORTH COAST SURVEYING
8 TOM ALBERT PLACE
SAWTELL NSW 2452
Doug Alderman M. 0434 438 110
E. doug@midnorthcoastsurveying.com.au
Brock Hyde M. 0408 600 876
E. brock@midnorthcoastsurveying.com.au
MNC
CLIENT: C ARIANAYAGAM
JOB REF: 1442
SURVEYED: M.N.C.S.
DATE: 07.09.2021
DRAWN: B.H.
SCALE: 1:800
SHEET SIZE: A3
TITLE: PROPOSED 2 LOT TORRENS SUBDIVISION SUGARMILL ROAD RE-ZONING
REV: C
PROJECT: LOT 17 IN D.P.249273 AT 89 SUGARMILL ROAD, SAPPHIRE BEACH
LGA: COFFS HARBOUR CITY COUNCIL

APPENDIX 2: BAL Contour Lines

No 28

Appendix 5 - Bushfire Assessment

No 35

No 89


Forest
5-10°D 15m
5-10°
Forest APZ
Proposed Subdivision
Boundary
0-5°
Forest APZ
5-10°D
Grassland APZ
Forest
0-5°D
43m
Grassland
Grassland
0-5°D
5-10°D
71m
Lot 171
89
71
Lot 170
Existing
Dwelling
Grassland APZ
0° Upslope
BAL 29
BAL 19
BAL 12.5

No 28

Photo 1 – Hazard to the north of the proposed lot

Photo 2 – Hazard to the west of the proposed lot

Photo 3 – Looking south to the strip of trees on the western boundary of No 28

No 35

Photo 4 – Forest hazard to the south

Photo 5 – Grassland hazard to the west

Photo 6 – Hazard to the north considered as similar to woodland

No. 89

Photo 7 – Grassland hazard to the west

Photo 8 – Forest Hazard to the west

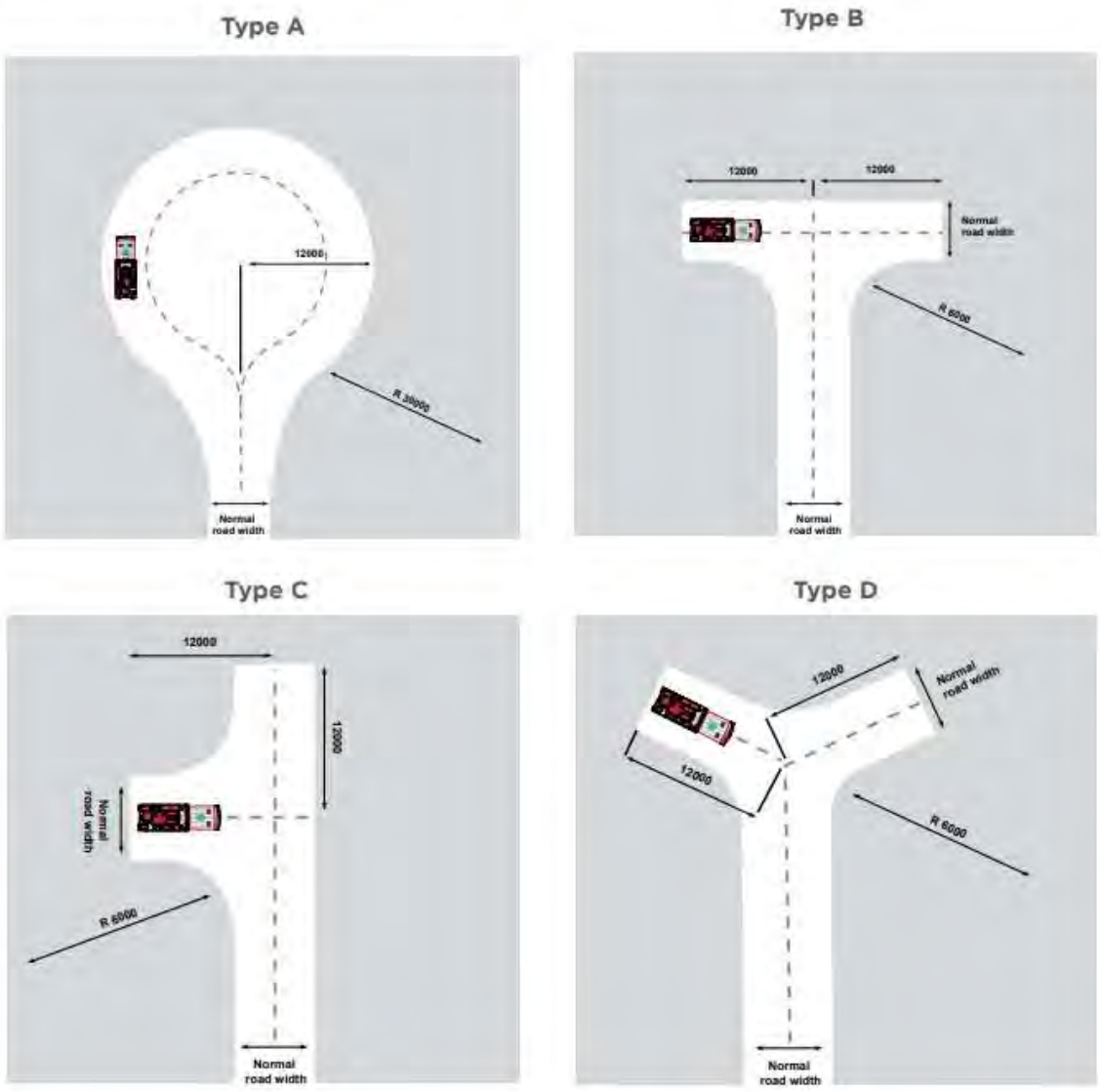
Photo 9 – Separation between forest hazard on No. 89 and hazard to the north

Photo 10 – Grassland hazard to the east

APPENDIX 3 – Turning Head Options

Figure A3.3

Multipoint turning options.



APPENDIX 4

NSW RURAL FIRE SERVICE

NSW GOVERNMENT

DEVELOPMENT ASSESSMENT & PLANNING

Upgrading of Existing Buildings

WORKING TOWARDS A SAFER COMMUNITY

INTRODUCTION

Bush fire is a major challenge for the community. It has been a natural part of our landscape for thousands of years and remains an ever-present threat.

Due to historic settlement patterns and the need to provide housing for people, development has occurred in areas that are bush fire prone placing lives and property at risk.

The NSW Rural Fire Service (NSW RFS) has a statutory obligation to protect life, property and the environment through fire suppression and fire prevention. Improved land use planning and construction of buildings in bush fire prone areas are intrinsic to the fire management strategies of the NSW RFS.

Through a working relationship with local Councils and the NSW Department of Planning, the NSW RFS has been able to refine and implement bush fire protection for new developments through the NSW planning system. Since the introduction of these planning and building regulations in August 2002, all new development on bush fire prone land in NSW must comply with the requirements of *Planning for Bush Fire Protection 2006* and Australian Standard 3959-2009 – *Construction of buildings in bushfire-prone areas* (AS3959).

This means that people who are building or renovating have a clear direction on how to design and build their homes to be better protected from the impacts of bush fires. The types of protection measures include asset protection zones (vegetation management), access, landscaping, water supply, building design and construction. These measures assist building survival during a bush fire. They also contribute to the safety of fire-fighters and members of the community occupying buildings during the passage of a bush fire front.

Unfortunately, the majority of buildings in bush fire prone areas pre-date these regulations, meaning that most existing houses are at an increased risk of damage or loss from a bush fire.

BUSH FIRE INFORMATION LINE
1800 NSW RFS
1800 679 737
www.rfs.nsw.gov.au

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With this in mind, the NSW RFS has developed a practical guide for those living in bush fire prone areas who may wish to take the opportunity to upgrade their existing building to increase its resilience from bush fire attack.

The guide provides a range of options that homeowners may wish to consider in determining the level of protection appropriate for their circumstances and risk. These include minimal protection measures such as basic ember proofing, establishment of Asset Protection Zones (APZs) to higher level protection measures such as re-building or upgrading construction elements of the building.

While this guide identifies protection methods, it is vital that such building enhancements are considered in conjunction with any upgrade works undertaken, consideration of other bush fire protection measures such as maintenance of Asset Protection Zones, services and landscaping.

The guide is not intended to be a comprehensive bush fire assessment of the risk to your property or an indication of compliance with *Planning for Bush Fire Protection 2006* and AS3959-2009. In this regard, home owners are advised to seek professional advice with regards to further upgrades or reconstruction to improve their resistance to bush fire attack.

For further assistance, details regarding suitably qualified consultants can be found on the NSW RFS website **www.rfs.nsw.gov.au**

IS UPGRADING MANDATORY?

Upgrading of existing elements of the building to Planning for Bush Fire Protection is not mandatory. However, in the interests of achieving a better bush fire outcome, the NSW RFS strongly recommends improvement of existing elements including upgrade of buildings.

Anyone whose land is bush fire prone should have regard to this document for practical guidance in protecting your property against bush fire attack. For all new developments on bush fire prone land, following the Development Application process or the Exempt and Complying Development process, the advice in this document should be applied as a minimum standard to the existing situation. This is in addition to any other bush fire protection measures that may be required by the development consent or complying development certificate.

These upgrading measures will contribute to making your home safer against the impact of the different elements of attack in the event of a bush fire; however, they form only part of the solution. Undertaking routine property maintenance and preparing a Bush Fire Survival Plan are other important parts to your bush fire protection and survival.

UPGRADE PROVISIONS

85% of houses are lost from ember attack.
The following provisions are designed to give existing buildings improved protection from ember attack during a bush fire event. Ember attack can occur over distances greater than 100 metres from the bush fire front. Any gaps, cracks or areas where embers and fuel can lodge (leaves, twigs, debris) significantly reduces a building's resistance to bush fire attack.

To mitigate against ember attack you should consider the minimal upgrades as detailed in the table below. Additional protection measures may also be considered and this will be dependent on the individual circumstances of the building commensurate with the level of threat from bush fire attack. The potential level of threat to the property from bush fire attack should also be taken in to account when deciding what level of protection should be used. Factors to be taken in to consideration include the isolation of the development and how easily you can react in the event of a bush fire.

Owners are cautioned that existing buildings may contain materials made from asbestos or have painted surfaces that contain lead. These materials should be handled in accordance with appropriate guidelines.

BUILDING ELEMENT	MINIMAL PROTECTION MEASURES	ADDITIONAL PROTECTION MEASURES
GENERAL	Seal all gaps (>3mm) around the house (excluding subfloor) with: • appropriate joining strips; • flexible silicon based sealant; or • mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.	• Install a bush fire sprayer system. (Please contact a bush fire consultant or relevant industry expert to discuss options) Seal all gaps (>3mm) around the house (excluding subfloor) with: • appropriate joining strips • flexible silicon based sealant; or mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.
WALLS	Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding when they are being replaced for maintenance or other reasons.	• Replace wall materials with non-combustible materials • Install sarking with a flammability index of not more than 5 behind weatherboards or other external cladding.
SUBFLOOR	Removal of combustible materials and keeping areas clear and accessible.	• Enclose subfloor with non-combustible material.
DOORS	Install weather strips, draught excluders or draught seals at the base of side-hung doors.	• Replace external doors with non-combustible or solid timber doors with minimum thickness of 35mm. • Replace or over-clad parts of door frames less than 400mm above the ground, decks and similar elements or fittings with non-combustible material. • Install weather strips, draught excluders or draught seals at the base of side-hung doors.
VENTS & WEEPHOLES	Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.	• Seal vents and weepholes in external walls with mesh (with an aperture size of 2 mm) of corrosion resistant steel, bronze or aluminium.
ROOFS	Seal around roofing and roof penetrations with a non-combustible material. Install sarking with a flammability index of not more than 5 beneath existing roofing when it is being replaced for maintenance or other reasons. If installed, gutter and valley leaf guards shall be non-combustible.	• Replace fascia and roof materials with non-combustible materials. • Seal around roofing and roof penetrations with a non-combustible material. • Install sarking with a flammability index of not more than 5 beneath existing roofing. • If installed, gutter and valley leaf guards shall be non-combustible.
WINDOWS	Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and openable windows	• Installing appropriately tested shutters to doors and windows • Install mesh with a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium to all external doors and windows • Replacing glass with toughened or laminated safety glass • Replace overhead glazing with 'grade a' safety glass
EXTERNAL STRUCTURES		• External structures to be located >10 metres from the main dwelling.
DECKING		• Replace decking with non-combustible material

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OTHER REQUIREMENTS

ASSET PROTECTION ZONES

Development on bush fire prone land requires suitable separation from the bush fire hazard. This separation is referred to as an asset protection zone (APZ) and should be located wholly within the development property.

The APZ separates the building from the hazard. It is designed to minimize the presence of fuels, which could burn in a fire. Therefore, the impact of direct flame contact, radiant heat and ember attack on the development is reduced.

In order to ensure appropriate levels of safety, the NSW RFS recommends that an APZ is always provided. Where a building has been newly developed or alterations and additions have been undertaken, recommended levels of construction are reliant upon the ongoing maintenance of the APZ. In this regard, the suitability of the design and construction of the building will be significantly compromised should the APZ not be maintained or implemented as intended.

APZ should be managed in accordance with section 4.1.3 and Appendix 5 of '*Planning for Bush Fire Protection 2006*' and the NSW Rural Fire Service's document *Standards for asset protection zones.*

SERVICES

During major bush fire events, the preparedness of the dwelling and its occupants may be seriously jeopardised with the loss of basic services, particularly water and electricity.

Adequate water supply is critical for any firefighting operation, particularly where property protection is envisaged. A reticulated water supply should be provided which is easily accessible and located at regular intervals. Where no reticulated water supply is available, a water supply of 5,000L reserve (i.e. water tank or dam) dedicated to firefighting purposes should be installed and maintained.

Electricity services should be located so that the possibility of ignition of the surrounding bushland or fabric of the buildings is limited. Regular inspection of the electricity lines should be undertaken to ensure they are not impacted by branches.

The location of gas services should vent facing away and not lead to the ignition of surrounding bushland or the fabric of the buildings.

LANDSCAPING

Vegetation can burn during a bush fire. With this in mind, careful attention must be paid to species selection, their location relative to their flammability, avoidance of continuity of vegetation (horizontally and vertically), and ongoing maintenance to readily remove flammable fuels (leaf litter, twigs and debris).

Homeowners are advised to contact their local Council before undertaking any work that involves modifying or removing existing trees.

The following additional information relating to landscaping is available at www.rfs.nsw.gov.au:

1. Standards for Asset Protection Zones
2. Appendix 5 of *Planning for Bush Fire Protection 2006.*

For more information please visit www.rfs.nsw.gov.au or contact Development Assessment & Planning on 8741 5175 or email development.assessment@rfs.nsw.gov.au.

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