

Bushfire Hazard Assessment

Planning Proposal for Rezoning 70 Manifold Road, North Casino



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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



	Name	Signature	Date
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Reviewed by	Veronica Silver		04/09/2024
UPR	Description	Issued By	Date Issued
4482-1005	Version 1	Paul Creenaune	18/12/2023
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Executive Summary

This Bushfire Hazard Assessment has been prepared to support a Planning Proposal to amend the Richmond Valley Local Environmental Plan 2012 to rezone the land at 70 Manifold Road, North Casino (Lot 21 DP 601461) for large lot residential development to enable future subdivision into nine lots. The proposed amendment to the LEP would include:

- Changes to the Land Zone Map to change the land zone from Zone RU1 Primary Production to Zone R5 Large Lot Residential.
- Changes to the Lot Size Map to change the minimum lot size from 40 ha to 7,500 m².

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

The following table provides a summary of the recommendations with respect to Chapter 4 and Chapter 5 of Planning for Bush Fire Protection 2019.

Planning Proposal

The Planning Proposal be supported to enable the rezoning of Lot 21 DP 601461, 70 Manifold Road, North Casino from Zone RU1 Primary Production to Zone R5 Large Lot Residential, under the provisions of Richmond Valley Local Environmental Plan 2012.

Bushfire Protection Measure	Recommendation
Asset Protection Zones	<ul style="list-style-type: none">■ Asset Protection Zones are to be established and maintained around each nominated building envelope for the distances specified in Illustration 5.1 of this report.■ Asset Protection Zones are to be managed as an inner protection area in accordance with PBP 2019.
Landscaping	<ul style="list-style-type: none">■ Landscaping is to comply with Appendix 4 of PBP 2019.
Access	<ul style="list-style-type: none">■ Property access is to be in accordance with Table 5.3b (General Requirements), (Non-Perimeter Roads) and (Property Access) of PBP 2019, except that a perimeter road is not required.
Services - Water, Electricity and Gas	<ul style="list-style-type: none">■ A static water supply for fire fighting purposes is to be provided at dwelling development application stage in accordance with Tables 5.3c and 5.3d of PBP 2019.■ Electricity and gas services are to comply with Table 5.3c of PBP 2019.
Construction	<ul style="list-style-type: none">■ If the existing dwelling is retained on the site, it is to be upgraded for ember protection in accordance with Section 5.3.



1. Introduction

1.1 Scope and Purpose

GeoLINK has been engaged by Mr Simon Dougherty of Dougherty Pastoral Company Pty Ltd c/- Newton Denny Chapelle to prepare a Bushfire Hazard Assessment with respect to Lot 21 DP 601461, 70 Manifold Road, North Casino, referred to herein as 'the site'. The report is required to support a Planning Proposal to amend the Richmond Valley Local Environmental Plan (LEP) 2012 to rezone the land at 70 Manifold Road, North Casino (Lot 21 DP 601461) for large lot residential to enable future subdivision into nine lots. The proposed amendment to the LEP would include:

- Changes to the Land Zone Map to change the land zone from Zone RU1 Primary Production to Zone R5 Large Lot Residential.
- Changes to the Lot Size Map to change the minimum lot size from 40 ha to 7,500 m².

This Bushfire Hazard Assessment will accompany the Planning Proposal and serves to:

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

1.2 Legislative Framework

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

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

The *Rural Fires Act 1997* and the *Environmental Planning and Assessment Act 1979* (EP&A Act) institute a framework for environmental planning and assessment to consider bushfire hazard issues.

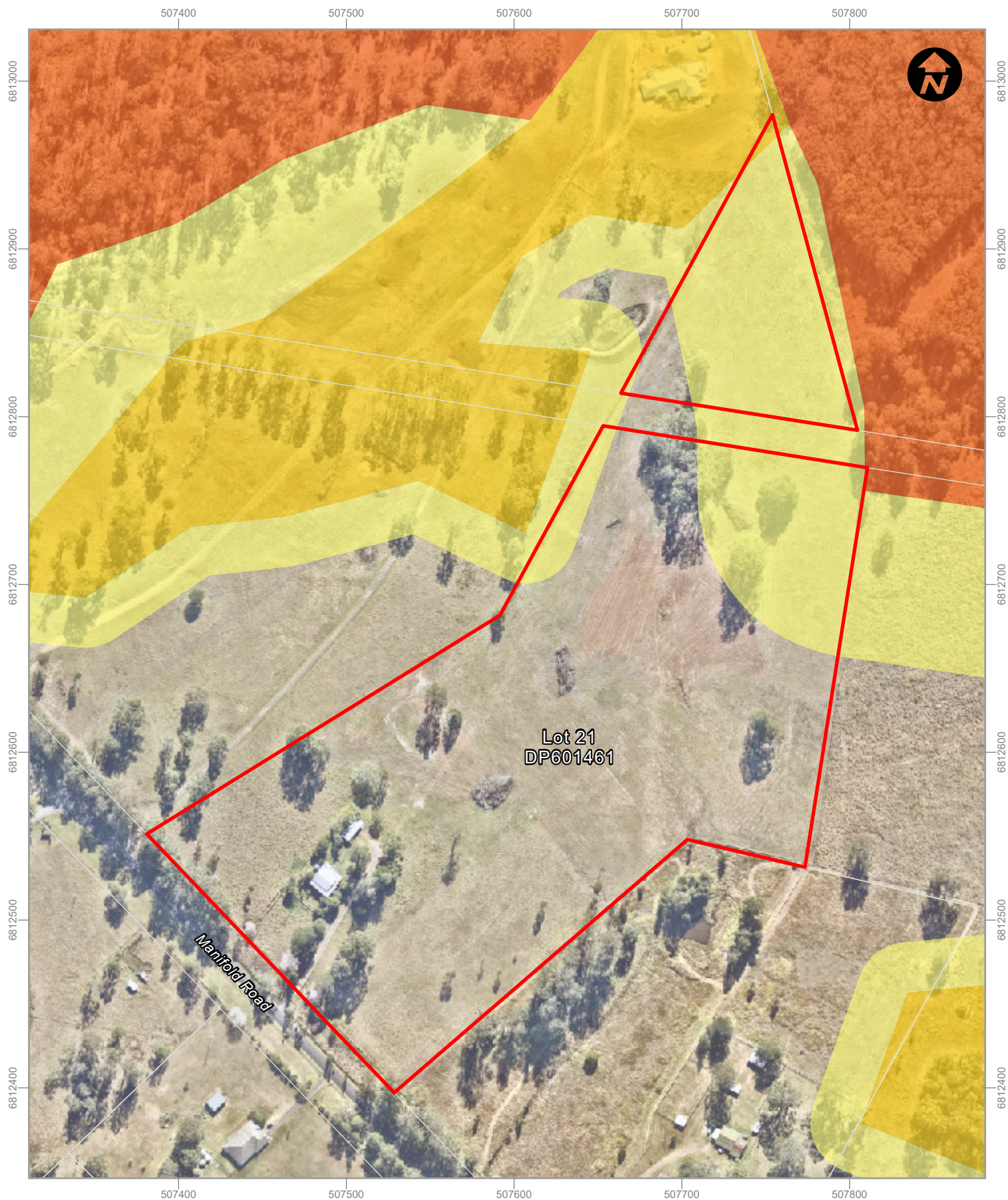
Direction 4.3 Planning for Bushfire Protection, issued by the Minister for Planning under Section 9.1(2) of the EP&A Act, must be considered with respect to the proposed rezoning of the site (refer to **Section 4.1**).

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*.



1.3 Bushfire Prone Land

Richmond Valley 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 NSW Rural Fire Services (RFS) *Guideline to Bushfire Prone Land Mapping*. Richmond Valley Council's bushfire prone land mapping indicates that the site is classified as bushfire prone land and contains Vegetation Buffer. The surrounding land to the north, east and west is also classified as bushfire prone land and contains Vegetation Category 1 and Vegetation Category 2 as well as Vegetation Buffer. The bushfire prone land mapping for the site and immediate surrounds is shown in **Illustration 1.1**.



LEGEND

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

0 60 Metres



Bushfire Hazard Assessment - 70 Manifold Road, North Casino
4482-1007

Bushfire Prone Land - Illustration 1.1

Information shown is for illustrative purposes only
 Drawn by: AEA Checked by: AB Reviewed by: JSL
 Source of base data: Nearmap 11/07/2023
 Date: 4/12/2023



2. Background

2.1 Location and Description

The site is located at 70 Manifold Road, North Casino, approximately 8 km north-west of the Casino Central Business District (refer to **Illustration 2.1**).

The site has an area of 9.68 ha and is zoned RU1 Primary Production under the Richmond Valley LEP 2012.

Across Manifold Road to the south-west is the large-lot residential area of North Casino, with land parcels generally in excess of 5,000 m². Casino Christian School is also located west of the site.

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

Table 2.1 Site Detail Summary

Site Details	
Lot / DP	Lot 21 DP 601461
Street Address	70 Manifold Road, North Casino
Elevation	40 m AHD
Site Area	9.68 ha
Richmond Valley Local Environmental Plan 2012 Zoning	RU1 – Primary Production
Fire Weather District	Far North Coast
Fire Danger Index (FDI)	80
Fire Control Centre	Northern Rivers Office (Casino)

The site is currently grazed by cattle and has an existing dwelling in the south-western portion, with driveway access from Manifold Road.

There is a drainage depression running from north to south through the site. Historically this contained a dam, which has now been filled in.

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

Refer to **Plate 2.1** to **Plate 2.6** for photographs of the site and surrounds.

Illustration 2.1 and **Illustration 2.2** provides an overview of the site locality and analysis of environmental features present on the site.



Plate 2.1 Existing dwelling on the site



Plate 2.2 Existing dwelling and land to the north-west



Plate 2.3 Vegetation lining the existing driveway



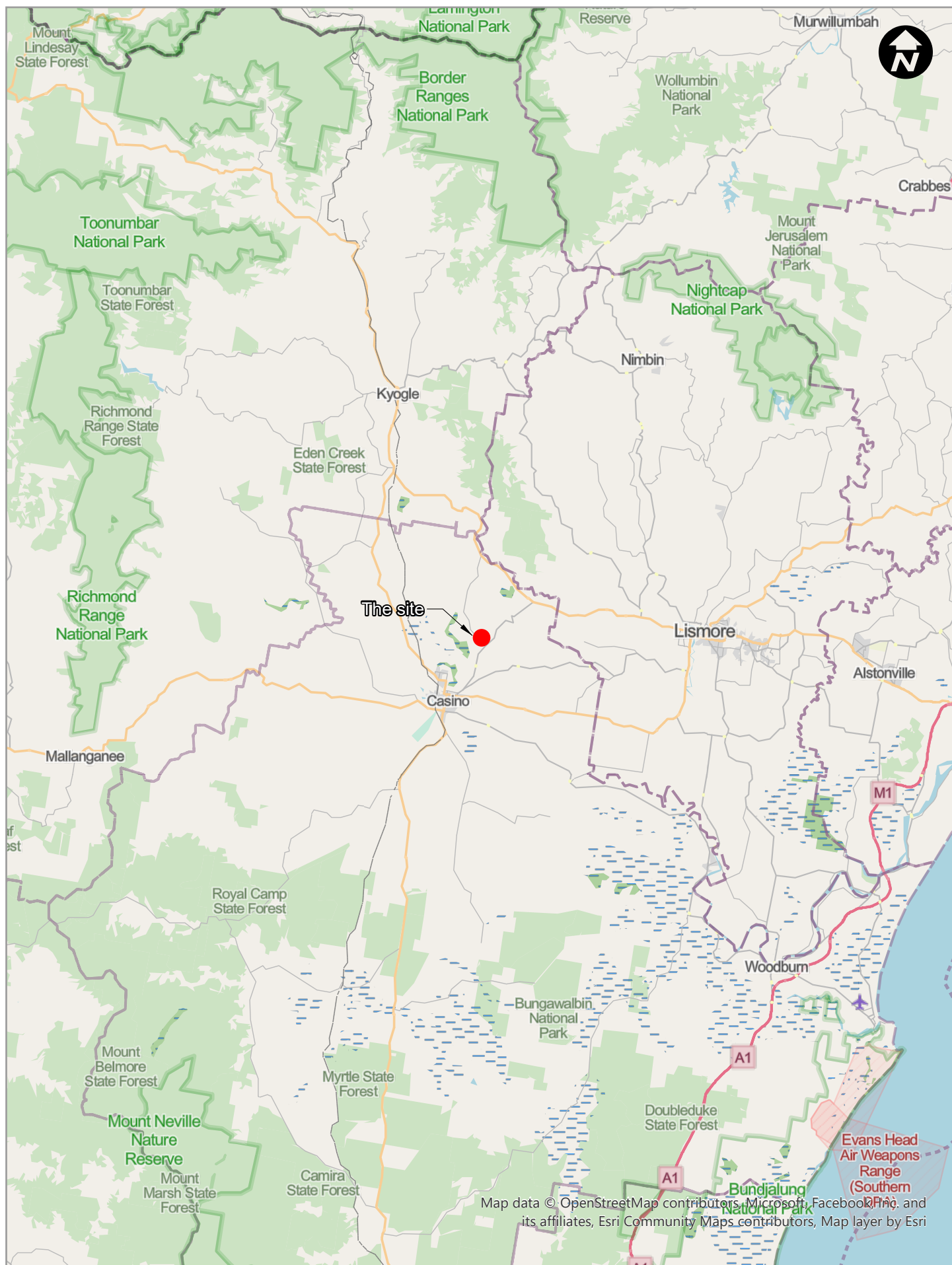
Plate 2.4 View across the site to the north-east



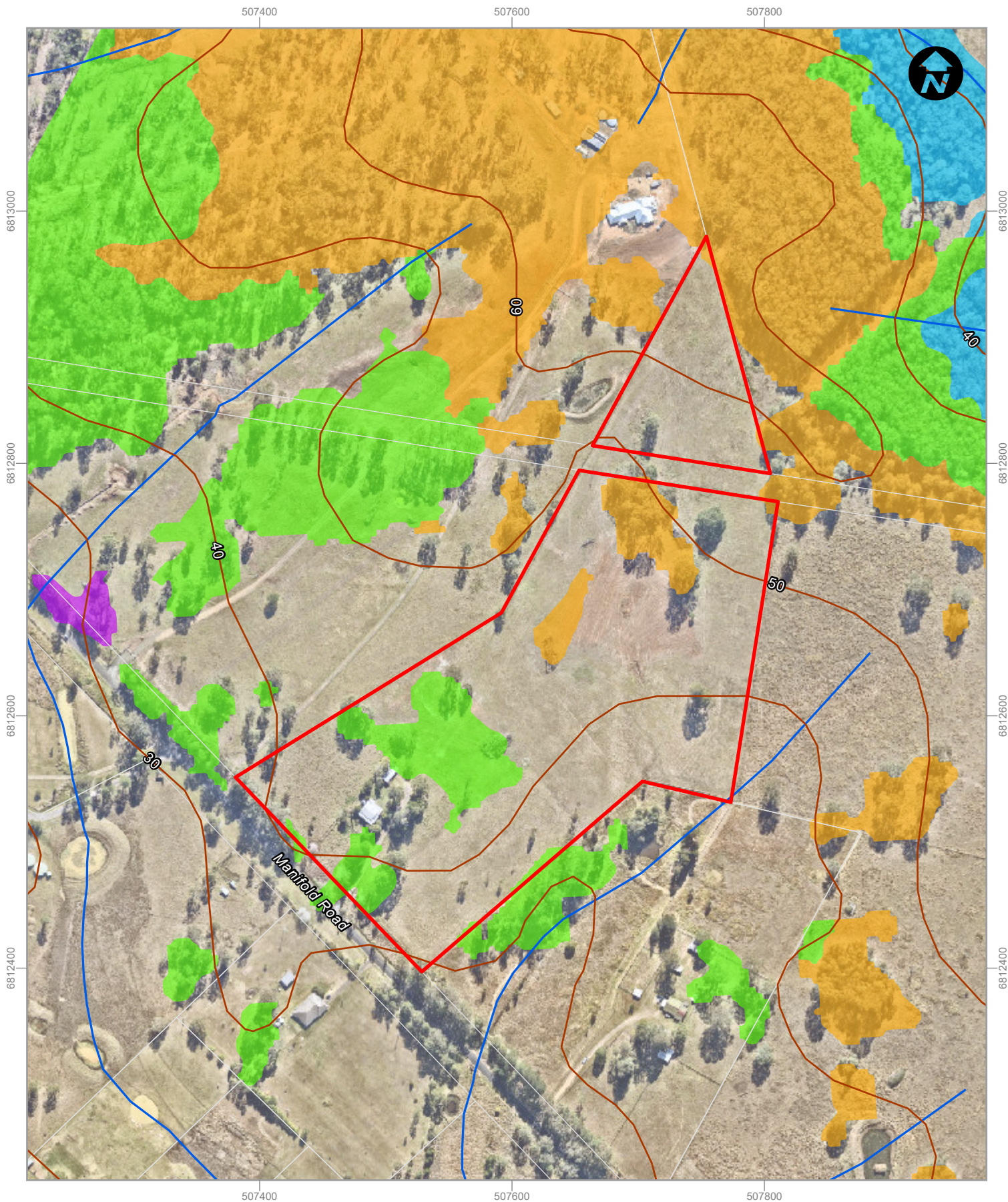
Plate 2.5 Forest vegetation with the neighbouring property to the north-east



Plate 2.6 View south-west towards forest vegetation adjacent Manifold Road



Site Locality - Illustration 2.1



LEGEND

- | | | |
|--|---|---|
| Site boundary | Dry Sclerophyll Forests (Shrub/grass sub-formation) | Contours at 10m intervals |
| Cadastre | Forested Wetlands | ~ Watercourse |
| | Grassy Woodlands | |
| | Rainforests | |

0 80 Metres

Site Analysis - Illustration 2.2



2.2 Zoning and Land Use

The site is zoned RU1 Primary Production under the Richmond Valley LEP 2012.

The site contains a single dwelling with associated outbuildings. The remainder of the site is used for grazing.

2.3 Proposed Development

The proposal involves an amendment to the LEP to rezone the land at 70 Manifold Road, North Casino (Lot 21 DP 601461) to large lot residential to enable future subdivision into nine lots. The proposed amendment to the LEP would include:

- Changes to the Land Zone Map to change the land zone from Zone RU1 Primary Production to Zone R5 Large Lot Residential.
- Changes to the Lot Size Map to change the minimum lot size from 40 ha to 7,500 m².

Appendix A contains plans of the proposed subdivision layout, including the proposed location of a building envelope on each lot.



3. Bushfire Hazard Assessment

The following subsections were informed by a site visit undertaken by GeoLINK on 6 November 2023.

3.1 Vegetation

Vegetation classifications for the purpose of assessing bushfire hazard are based on vegetation formations and fuel loads outlined in PBP 2019. **Table 3.1** lists the Plant Community Types (PCT) that are present within the site.

Table 3.1 Plant Community Types Within the Site

PCT Number	PCT Name
3323	Far North Lowland Basalt Grassy Forest
3427	Northern Hills Bloodwood – Red Gum Grassy Forest

Vegetation within and surrounding the site has been assessed in terms of potential bushfire hazard over a distance of 140 m from each nominated building envelope, using the formation classes provided within Figure A1.2 of PBP 2019. The dominant vegetation formation in each relevant direction of the proposed rezoning is outlined in **Table 3.2**.

Vegetation within the site is predominantly Grassland. There is a small area of Grassy Woodland north of the filled-in dam. Trees in the curtilage of the dwelling comprise a mown understorey and form Managed Land. A row of planted trees line the north-west edge of the driveway, and are regarded as low threat vegetation (in accordance with A1.10 of PBP) (refer to **Plate 3.1** to **Plate 3.4**). The trees to the south-east of the existing driveway have been classed as Grassy Woodland.

The neighbouring property to the north-east contains Forest vegetation, and to the east is Grassland. The neighbouring property to the south-east is predominantly Grassland but also contains Grassy Woodland. To the south-west, Manifold Road is bordered by a row of trees with an unmanaged understorey, classed as Forest. The property to the north-west contains a combination of Grassland and Grassy Woodland (refer to **Plate 3.5** to **Plate 3.8**).



Plate 3.1 Pocket of Grassy Woodland within the drainage line



Plate 3.2 Trees south-east of the dwelling



Plate 3.3 Planted trees along the north-west side of the driveway



Plate 3.4 Managed Land in the vicinity of the dwelling



Plate 3.5 Forest vegetation within the neighbouring property to the north-east



Plate 3.6 Grassland within the neighbouring property to the east



Plate 3.7 Grassy Woodland within the neighbouring property to the south-east



Plate 3.8 Grassland and Grassy Woodland within the neighbouring property to the north-west

Table 3.2 Vegetation Formation

Direction	Predominant Vegetation Formation
Lot 1	
North-west	Grassland, Rainforest* (Grassy Woodland < 1 ha)
North-east	Grassland
South-east	Grassland
South	Rainforest* (Grassy Woodland < 1 ha)
South-west	Rainforest* (Forest < 1 ha)
Lot 2	
North-west	Grassland
North-east	Grassland
South-east	Grassland
South-west	Grassland, Rainforest* (Grassy Woodland <1 ha)
Lot 3	
North-west	Grassland
North-east	Grassland
South-east	Grassland
South-west	Grassland
Lot 4	
North-west	Grassland
North-east	Grassland, Rainforest* (Grassy Woodland <1 ha)
South-east	Grassland
South-west	Grassland

Direction	Predominant Vegetation Formation
Lot 5	
North-west	Grassland, Rainforest* (Grassy Woodland <1 ha)
North-east	Grassland, Forest
South-east	Grassland
South-west	Grassland
Lot 6	
North-west	Grassland
North-east	Grassland
South-east	Grassland
South	Grassland, Rainforest* (Grassy Woodland <1 ha)
South-west	Grassland
Lot 7	
North-west	Grassland
North-east	Grassland
South-east	Grassland, Rainforest* (Grassy Woodland <1 ha)
South-west	Grassland
Lot 8	
North-west	Grassland
North-east	Grassland
South-east	Grassland, Rainforest* (Grassy Woodland <1 ha)
South-west	Grassland
Lot 9	
North-west	Grassland, Rainforest* (Grassy Woodland <1 ha)
North-east	Grassland
South-east	Grassland, Rainforest* (Grassy Woodland <1 ha)
South-west	Grassland, Rainforest* (Forest < 1 ha)

* The areas of vegetation less than 1 ha in are classified as 'remnant vegetation' (equivalent to 'rainforest') in accordance with Appendix A1.11.1 of PBP 2019. These are a) in the road reserve for Manifold Road, b) north of the western corner of the site, c) south-east of the site, d) south-east of the existing driveway, e) north of the filled-in dam within the site.


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 from each nominated building envelope.

The effective slope in relation to the development is outlined in **Table 3.3**.

Table 3.3 Effective Slope

Aspect	Slope
Lot 1	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	>0° – 5°
South	>0° – 5°
South-west	>5° – 10°
Lot 2	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	>0° – 5°
South-west	>0° – 5°
Lot 3	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	>0° – 5°
South-west	>0° – 5°
Lot 4	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	>0° – 5°
South-west	Upslope/ flat
Lot 5	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	>0° – 5°
South-west	>0° – 5°



Aspect	Slope
Lot 6	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	Upslope/ flat
South	>0° – 5°
South-west	>0° – 5°
Lot 7	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	>0° – 5°
South-west	Upslope/ flat
Lot 8	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	>0° – 5°
South-west	>0° – 5°
Lot 9	
North-west	Upslope/ flat
North-east	Upslope/ flat
South-east	>0° – 5°
South-west	>0° – 5°

3.3 Fire Weather District

Richmond Valley Council local government area is located within the 'Far North Coast' fire weather district, with a Fire Danger Index (FDI) of 80.

4. Strategic Planning Assessment

The proposal involves an amendment to the LEP to rezone the land at 70 Manifold Road, North Casino (Lot 21 DP 601461) to R5 Large Lot Residential to enable future subdivision into nine lots. The proposed amendment to the LEP would include changes to the Land Zone Map and Lot Size Map.

The following sections outline the matters for consideration under Direction 4.3 Planning for Bushfire Protection, issued pursuant to Section 9.1 of the EP&A Act, and the strategic planning considerations under Chapter 4 of PBP 2019.

4.1 Direction 4.3 - Planning for Bushfire Protection

Direction 4.3 Planning for Bushfire Protection, issued by the Minister for Planning under Section 9.1(2) of the EP&A Act, must be considered with respect to the proposed rezoning of the site. The Direction applies to all local government areas when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to, land mapped as bushfire prone land.

Table 4.1 summarises the matters identified under Direction 4.3 and a description of how these apply to the proposal.

Table 4.1 Direction 4.3 – Planning for Bushfire Protection

Direction (summarised)	Application
The planning authority must consult with the NSW Rural Fire Service following receipt of a gateway determination and take into account any comments so made.	Consultation is required with the RFS as part of the Planning Proposal assessment.
A planning proposal must: <ul style="list-style-type: none"> a. have regard to PBP 2019, b. introduce controls that avoid placing inappropriate developments in hazardous areas, and c. ensure that bushfire hazard reduction is not prohibited within the APZ. 	<ul style="list-style-type: none"> a. This report addresses the requirements of PBP 2019. b. This report demonstrates how the proposal complies with PBP illustrating that the proposal is not inappropriately placed. c. Bushfire hazard reduction is not prohibited under this proposal.
A planning proposal must, where development is proposed, comply with the following provisions: <ul style="list-style-type: none"> a. provide an APZ incorporating at a minimum: i. an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and ii. an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road, b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks, d) contain provisions for adequate water supply for firefighting purposes, 	<ul style="list-style-type: none"> a. APZs are proposed as outlined in Section 5.1. A perimeter road is not required for large-lot rural residential subdivisions. b. N/A - the proposal is not infill development. c. The proposed road networks comply with the performance criteria for access, as outlined in Section 5.3. d. Adequate water supply for firefighting purposes can be provided, as outlined in Section 5.5.

Direction (summarised)	Application
e) minimise the perimeter of the area of land interfacing the hazard which may be developed, f) introduce controls on the placement of combustible materials in the Inner Protection Area.	e. The number of lots interfacing the Category 1 bushfire prone land to the north-east has been kept to the minimum possible. f. APZs will be required to be managed in accordance with PBP 2019 – Appendix 4.

4.2 PBP 2019 – Chapter 4 – Strategic Planning

Chapter 4 of PBP 2019 outlines the strategic planning principles to be considered at rezoning stage to ensure that future land uses are in appropriate locations to minimise the risk to life and property from bushfire attack.


Table 4.2 outlines the broad principles for a strategic bushfire analysis contained in Section 4.1 of PBP 2019 and how the proposal responds to these principles.

Table 4.2 Broad Principles for Strategic Bushfire Analysis

Principles (PBP 2019 – Section 4.1)	Application
Ensuring land is suitable for development in the context of bushfire risk.	The proposed future subdivision of the site complies with PBP 2019, as outlined in this report.
Ensuring new development on BFPL will comply with PBP.	Section 5 of this report demonstrates that future development of the proposed lots can comply with PBP 2019.
Minimising reliance on performance-based solutions.	Future subdivision and development on the proposed lots can comply with the acceptable solution requirements of PBP 2019.
Providing adequate infrastructure associated with emergency evacuation and firefighting operations.	Can comply - refer to Section 5 of this report.
Facilitating appropriate ongoing land management practices.	Can comply - refer to Section 5 of this report.

Chapter 4 of PBP 2019 also outlines the matters that must be considered as part of a Strategic Bush Fire Study.

Issues (PBP 2019 – Table 4.2.1)	Application
Bushfire landscape assessment	<p>The site of the proposed rezoning is utilised for cattle grazing and is predominantly cleared, whilst the surrounding landscape contains a combination of managed land, woodland and forest vegetation and open grazing land.</p> <p>The site adjoins an area of Forest vegetation to the north-east. Vegetation clearing under the Rural Boundary Clearing Code has been undertaken adjacent to the site boundaries, forming a break with vegetation on neighbouring properties.</p> <p>Further, the site is accessed from the non-hazard side (south-west), and the size of future allotments will allow adequate access for fire suppression.</p> <p>Illustration 1.1 shows the extent of bushfire prone land immediately surrounding the site and Section 3 contains an outline of the predominant vegetation, effective slope and FDI influencing the site.</p>



	This information is assessed in Section 5 with appropriate bushfire protection measures identified in accordance with PBP 2019.
Land use assessment	The predominant bushfire threat is to the north-east due to an area of forest vegetation on the adjacent land. The site is predominantly cleared grazing land. Building envelopes will be easily capable of providing adequate APZs in accordance with PBP 2019.
Access and egress	<p>The site is serviced by Manifold Road, which is a two-lane bitumen sealed public road providing alternative access/ egress routes for the site.</p> <p>Manifold Road extends from Naughtons Gap Road to the south to Bently Road to the north. The site is located approximately 8 km north of Casino, with no forest vegetation along the route. This is the most logical evacuation route. Alternatives include Naughtons Gap Road in a north-east direction connecting to Bently Road, and Manifold Road in a northerly direction to Bently, with access to Summerland Way via Blackmede.</p> <p>Details relating to access for the proposed rezoning and future use as a subdivision are outlined in Section 5.4.</p>
Emergency services	<p>Local RFS brigades are located at North Casino, Casino and Casino East. There is also a Fire and Rescue Station at Casino.</p> <p>While the proposed subdivision will result in more properties within the local area, it also provides the opportunity for increased RFS membership from new residents.</p>
Infrastructure	The site is not connected to a reticulated water supply. On-site water supply for firefighting purposes will need to be provided in accordance with Section 5.5 . The site is not located within close proximity to high voltage power lines or other critical infrastructure.
Adjoining land	<p>Across Manifold Road to the south, west and north-west, the land is established rural-residential area of North Casino. Therefore, the proposed rezoning is a logical expansion of the North Casino rural-residential area.</p> <p>The recommended bushfire protection measures can be contained within the proposed lots.</p>

Table 4.3 summarises the issues for consideration in PBP 2019 Table 4.2.1 and discusses how these apply to the proposal.

Table 4.3 Bush Fire Strategic Study

Issues (PBP 2019 – Table 4.2.1)	Application
Bushfire landscape assessment	<p>The site of the proposed rezoning is utilised for cattle grazing and is predominantly cleared, whilst the surrounding landscape contains a combination of managed land, woodland and forest vegetation and open grazing land.</p> <p>The site adjoins an area of Forest vegetation to the north-east. Vegetation clearing under the Rural Boundary Clearing Code has been undertaken adjacent to the site boundaries, forming a break with vegetation on neighbouring properties.</p> <p>Further, the site is accessed from the non-hazard side (south-west), and the size of future allotments will allow adequate access for fire suppression.</p> <p>Illustration 1.1 shows the extent of bushfire prone land immediately surrounding the site and Section 3 contains an outline of the predominant vegetation, effective slope and FDI influencing the site. This information is assessed in Section 5 with appropriate bushfire protection measures identified in accordance with PBP 2019.</p>
Land use assessment	<p>The predominant bushfire threat is to the north-east due to an area of forest vegetation on the adjacent land. The site is predominantly cleared grazing land. Building envelopes will be easily capable of providing adequate APZs in accordance with PBP 2019.</p>
Access and egress	<p>The site is serviced by Manifold Road, which is a two-lane bitumen sealed public road providing alternative access/ egress routes for the site.</p> <p>Manifold Road extends from Naughtons Gap Road to the south to Bently Road to the north. The site is located approximately 8 km north of Casino, with no forest vegetation along the route. This is the most logical evacuation route. Alternatives include Naughtons Gap Road in a north-east direction connecting to Bently Road, and Manifold Road in a northerly direction to Bently, with access to Summerland Way via Blackmede.</p> <p>Details relating to access for the proposed rezoning and future use as a subdivision are outlined in Section 5.4.</p>
Emergency services	<p>Local RFS brigades are located at North Casino, Casino and Casino East. There is also a Fire and Rescue Station at Casino.</p> <p>While the proposed subdivision will result in more properties within the local area, it also provides the opportunity for increased RFS membership from new residents.</p>
Infrastructure	<p>The site is not connected to a reticulated water supply. On-site water supply for firefighting purposes will need to be provided in accordance with Section 5.5. The site is not located within close proximity to high voltage power lines or other critical infrastructure.</p>
Adjoining land	<p>Across Manifold Road to the south, west and north-west, the land is established rural-residential area of North Casino. Therefore, the proposed rezoning is a logical expansion of the North Casino rural-residential area.</p> <p>The recommended bushfire protection measures can be contained within the proposed lots.</p>

5. Bushfire Protection Measures

5.1 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 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 site.

Lot 2 contains an existing shed and landscaped area. It is proposed to formalise this area as an APZ by providing a 10 m APZ to the north-west of the shed and extending the APZ to the south-western boundary. This will have the additional advantage of providing a benefit to the existing dwelling on Lot 1, which is 5.4 m from the proposed boundary.

Table 5.1 outlines the minimum required perimeter APZ (BAL-29) for each of the respective lots.


Table 5.1 Minimum Asset Protection Zones

Direction	Vegetation Formation	Effective Slope	APZ
Lot 1			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	To boundary
South-east	Grassland	>0° – 5°	To boundary
South	Rainforest	>0° – 5°	To boundary
South-west	Rainforest	>5° – 10°	15 m
Lot 2			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	10 m
South-east	Grassland	>0° – 5°	11 m
South-west	Grassland	>0° – 5°	To boundary
Lot 3			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	10 m
South-east	Grassland	>0° – 5°	11 m
South-west	Grassland	>0° – 5°	11 m



Direction	Vegetation Formation	Effective Slope	APZ
Lot 4			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	10 m
South-east	Grassland	>0° – 5°	11 m
South-west	Grassland	Upslope/ flat	10 m
Lot 5			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	10 m
South-east	Grassland	>0° – 5°	11 m
South-west	Grassland	>0° – 5°	11 m
Lot 6			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	10 m
South-east	Grassland	Upslope/ flat	10 m
South	Rainforest	>0° – 5°	12 m
South-west	Grassland	>0° – 5°	11 m
Lot 7			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	10 m
South-east	Rainforest	>0° – 5°	12 m
South-west	Grassland	Upslope/ flat	10 m
Lot 8			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	10 m
South-east	Rainforest	>0° – 5°	12 m
South-west	Grassland	>0° – 5°	11 m
Lot 9			
North-west	Grassland	Upslope/ flat	10 m
North-east	Grassland	Upslope/ flat	10 m
South-east	Rainforest	>0° – 5°	12 m
South-west	Grassland	>0° – 5°	11 m

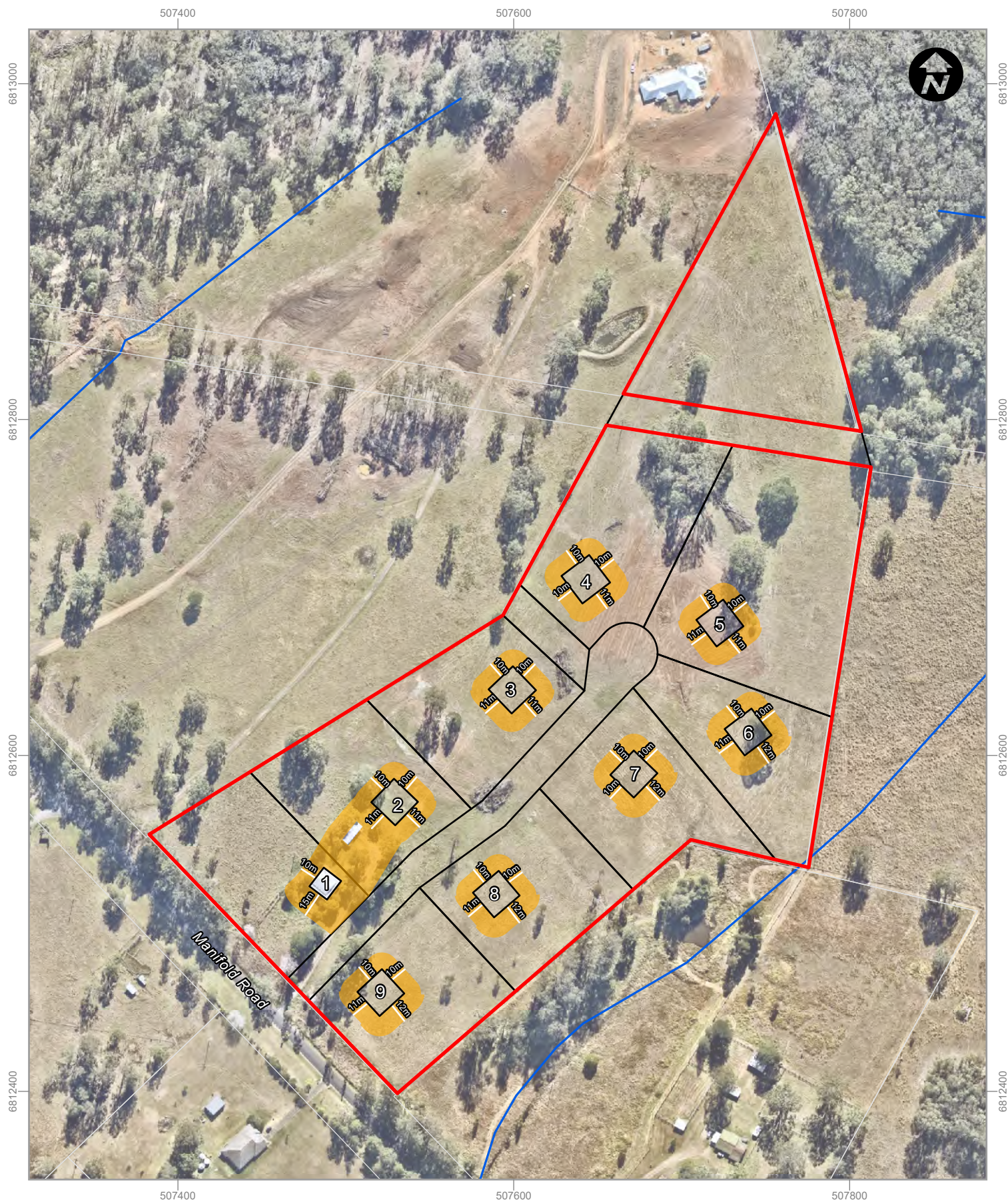
All APZs can be provided within the site (refer to **Illustration 5.1**).



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.

The APZ should be established and managed as an Inner Protection Area (IPA) in accordance with Appendix A4.1.1 of PBP 2019, including the following:

- 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 100 mm in height); and
 - leaves and vegetation debris should be removed.



LEGEND

- Site boundary
- Asset Protection Zone (APZ)
- Proposed subdivision
- Cadastre
- Building envelope
- ~ Watercourse

0 60 Metres

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Bushfire Hazard Assessment - 70 Manifold Road, North Casino
4482-1012

Asset Protection Zone - Illustration 5.1

Information shown is for illustrative purposes only
 Drawn by: AB Checked by: VJS Reviewed by: JSL
 Source of base data: Nearmap 11/07/2023
 Date: 4/09/2024
 Revision: B

Table 5.2 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 5.2 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.	Can comply.
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.	Complies.

5.2 Landscaping

No specific landscaping is proposed as part of the rezoning or subdivision.

Table 5.3 assesses compliance with the acceptable solutions of PBP 2019 relating to landscaping.

Table 5.3 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.	Can comply. Any future fencing within 6 m of a dwelling or in areas of BAL-29 or greater is to be constructed of non-combustible materials. Otherwise, fencing is to be constructed of either hardwood or non-combustible material.

5.3 Upgrade of Existing Dwelling

The existing dwelling within proposed Lot 1 is outside the APZ setback specified in **Table 5.1**. A better bushfire outcome than currently exists will be achieved by formalising an Asset Protection Zone (refer to **Table 5.1**). Given that the existing dwelling pre-dates the requirements of PBP 2019 and was not constructed to any BAL standards, it is recommended that if the dwelling is to be retained, it be upgraded for ember protection as follows:

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

If retained, building upgrades can be undertaken to the existing dwelling as part of the future subdivision.

5.4 Access

Access to the proposed subdivision will be provided by a new road extending from Manifold Road.

Table 5.4 outlines the extent to which the proposed subdivision access complies with the relevant acceptable solution requirements of Table 5.3b of PBP 2019.

Table 5.4 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.	Can comply.
	Perimeter roads are provided for residential subdivisions of three or more allotments.	A perimeter road is not required as per Section 3.4.1 of PBP 2019, which states that a perimeter road should separate bushland from urban areas. As the proposed rezoning will comprise large-lot rural residential allotments (7,500m ²), a perimeter road is not required in order to meet the performance criteria. The allotments will be large enough to accommodate safe, all-weather access to all structures.
	Subdivisions of three or more allotments have more than one access in and out of the development.	The proposed subdivision design contains provision for a road reserve linking to the neighbouring property at 90 Manifold Road. Subject to approval, this will create more than one access in and out of the development. Note that 90 Manifold Road is also proposed to be rezoned to enable rural residential subdivision.

Performance Criteria	Acceptable Solution	Application
	Traffic management devices are constructed to not prohibit access by emergency services vehicles.	Can comply.
	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.	Can comply.
	All roads are through roads.	The proposed subdivision design contains provision for a road reserve linking to the neighbouring property at 90 Manifold Road. Subject to approval, this will create a through road. Note that 90 Manifold Road is also proposed to be rezoned to enable rural residential subdivision.
	Dead end roads are not recommended, but if unavoidable, are not more than 200 m in length, incorporate a minimum 12 m outer radius turning circle, and are clearly sign posted as a dead end.	Can comply. The proposed subdivision design contains provision for a road reserve linking to the neighbouring property at 90 Manifold Road. Subject to approval, this will create a through road. Note that 90 Manifold Road is also proposed to be rezoned to enable rural residential subdivision. There will be a minor dead end road of approximately 35 m which can accommodate the necessary turning area.
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	N/A. A perimeter road is not required.
	Where access / egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.	N/A. Access road/s will not pass through forest, woodland or heath vegetation.
	One way only public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	N/A. No one-way public access roads are proposed.
The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes),	Can comply.
	Bridges and causeways are to clearly indicate load rating.	N/A. No bridges or causeways are proposed.

Performance Criteria	Acceptable Solution	Application
There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	N/A. Reticulated water is not available to the site.
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021.	N/A. Reticulated water is not available to the site.
	There is suitable access for a Category 1 fire appliances to within 4 m of the static water supply where no reticulated supply is available.	Can comply.
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.	As the proposed rezoning will comprise large-lot residential allotments (minimum 7,500 m ²), a perimeter road is not required in order to meet the performance criteria. The allotments will be large enough to accommodate safe, all-weather access to structures by emergency service personnel. The access road will not pass through forest, woodland or heath vegetation so is unlikely to be blocked by fallen trees in the event of a bushfire.
	Minimum 8 m carriageway width kerb to kerb.	
	Parking is provided outside of the carriageway width.	
	Hydrants are located clear of parking areas.	
	Are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	
	Curves of roads have a minimum inner radius of 6 m.	
	The maximum grade road is 15 degrees and average grade of not more than 10 degrees.	
	The road crossfall does not exceed 3 degrees.	
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	
Non-perimeter Roads		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5 m carriageway width kerb to kerb.	Can comply.
	Parking is provided outside of the carriageway width.	Can comply.
	Hydrants are located clear of parking areas.	N/A. Reticulated water supply is not available to the site.
	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	The proposed subdivision design contains provision for a road reserve linking to the neighbouring property at 90 Manifold Road. Subject to approval, this will create

Performance Criteria	Acceptable Solution	Application
		a through road. Note that 90 Manifold Road is also proposed to be rezoned to enable rural residential subdivision.
	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 dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70 m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70 kph) that supports the operational use of emergency firefighting vehicles. In circumstances where this cannot occur, the following requirements apply:	As the proposed rezoning has a minimum lot size of 7,500 m ² , it is possible that the distance between the road and the most distant part of the dwelling will be greater than 70 m.
	Minimum 4 m carriageway width;	Can comply.
	In forest, woodland and heath situations, rural property access roads have passing bays every 200 m that are 20 m long by 2 m wide, making a minimum trafficable width of 6 m, at the passing bay;	Can comply.
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches;	Can comply.
	Provide a suitable turning area in accordance with Appendix 3;	Can comply.
	Curves have a minimum inner radius of 6 m and are minimal in number to allow for rapid access and egress;	Can comply.
	The minimum distance between inner and outer curves is 6 m;	Can comply.
	The crossfall is not more than 10 degrees;	Can comply.
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and	Can comply.

Performance Criteria	Acceptable Solution	Application
	A development comprising more than three dwellings has formalised access by dedication of a road and not by right of way;	Can comply.
	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.	Can comply.

5.5 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 for each allotment at dwelling construction stage.

The electricity supply to future allotments is to be provided in accordance with PBP 2019.

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

Table 5.5 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 5.5 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. Reticulated water supply is not available to the site.
	A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed.	Can comply.
	Static water supplies shall comply with Table 5.3d.	Can comply. A 10,000 litre water supply will be required for each allotment that is between 1,000-10,000 m ² in size.
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.	Reticulated water is not connected to the development site.
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Static water supply will be required for each allotment in accordance with Table 5.3d of PBP 2019.

Performance Criteria	Acceptable Solution	Application
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.	N/A. Reticulated water is not connected to the development site.
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.
	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.	Can comply.
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.
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side;	
	Connections to and from gas cylinders are metal;	
	Polymer-sheathed flexible gas supply lines are not used; and	
	Above-ground gas service pipes are metal, including and up to any outlets.	

6. Recommendations and Conclusion

6.1 Recommendations

This Bushfire Hazard Assessment has found that the proposed rezoning satisfactorily addresses the principles and requirements of Section 4 of PBP 2019. It is therefore recommended that the Planning Proposal be supported to enable the rezoning of Lot 21 DP 601461, 70 Manifold Road, North Casino from Zone RU1 Primary Production to Zone R5 Large Lot Residential, under the provisions of Richmond Valley Local Environmental Plan 2012.

It is also recommended that the following rezoning of the site, the following bushfire protection measures are applied to future subdivision of the site:

- Asset Protection Zones are to be established and maintained around each nominated building envelope for the distances specified in **Illustration 5.1** of this report.
- Asset Protection Zones are to be managed as an inner protection area in accordance with PBP 2019.
- Landscaping is to comply with Appendix 4 of PBP 2019.
- Property access is to be in accordance with Table 5.3b (General Requirements), (Non-Perimeter Roads) and (Property Access) of PBP 2019, except that a perimeter road is not required.
- A static water supply for fire fighting purposes is to be provided at dwelling Development Application stage in accordance with Tables 5.3c and 5.3d of PBP 2019.
- Electricity and gas services are to comply with Table 5.3c of PBP 2019.
- If the existing dwelling is retained on the site, it is to be upgraded for ember protection in accordance with **Section 5.3**.

6.2 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 subdivision of Lot 21 DP 601461, 70 Manifold Road, North Casino following rezoning of the site. 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 rezoning proceed and that future subdivision is approved and conditioned in accordance with the recommendations provided within this assessment.



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UTS Short Course – Planning for Bushfire Prone Areas



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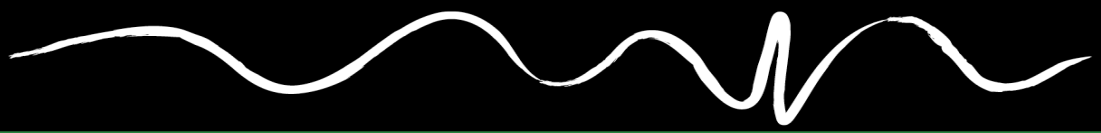
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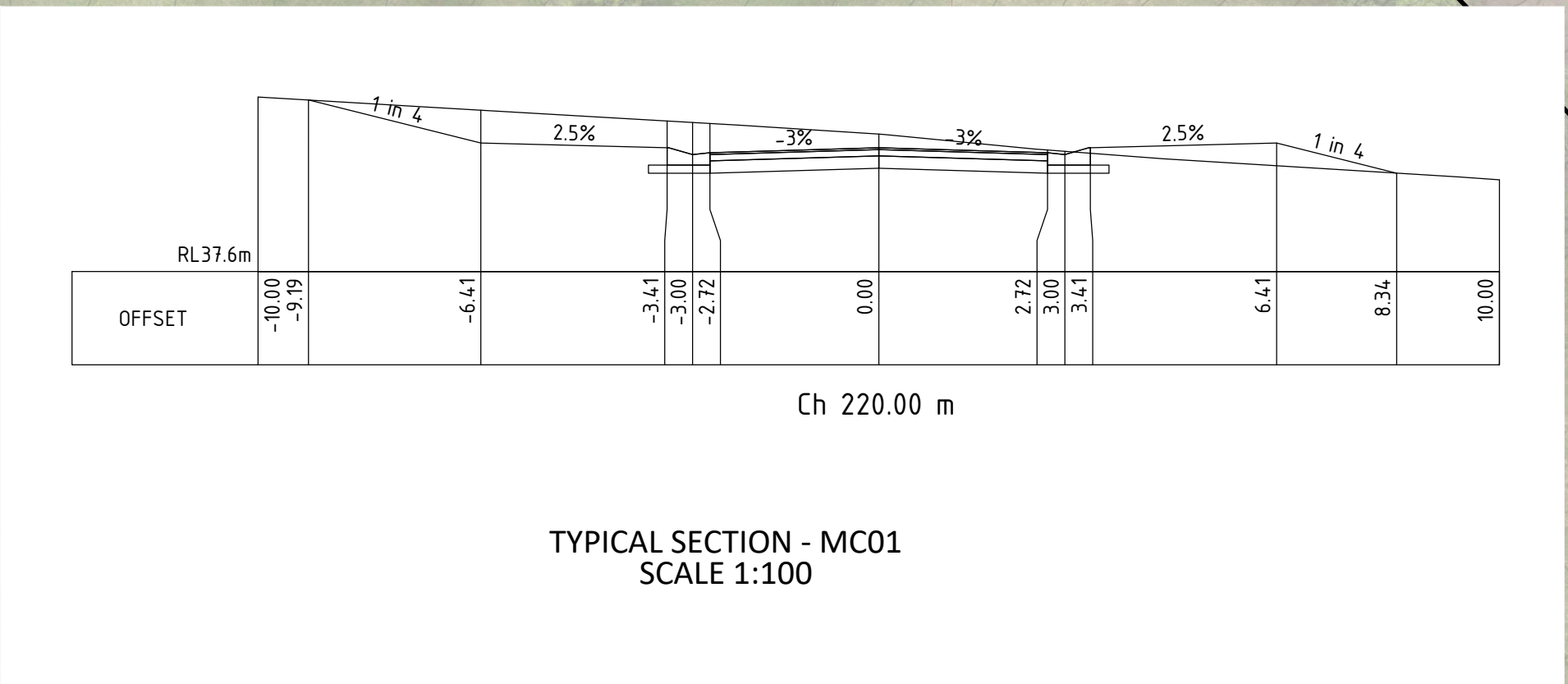
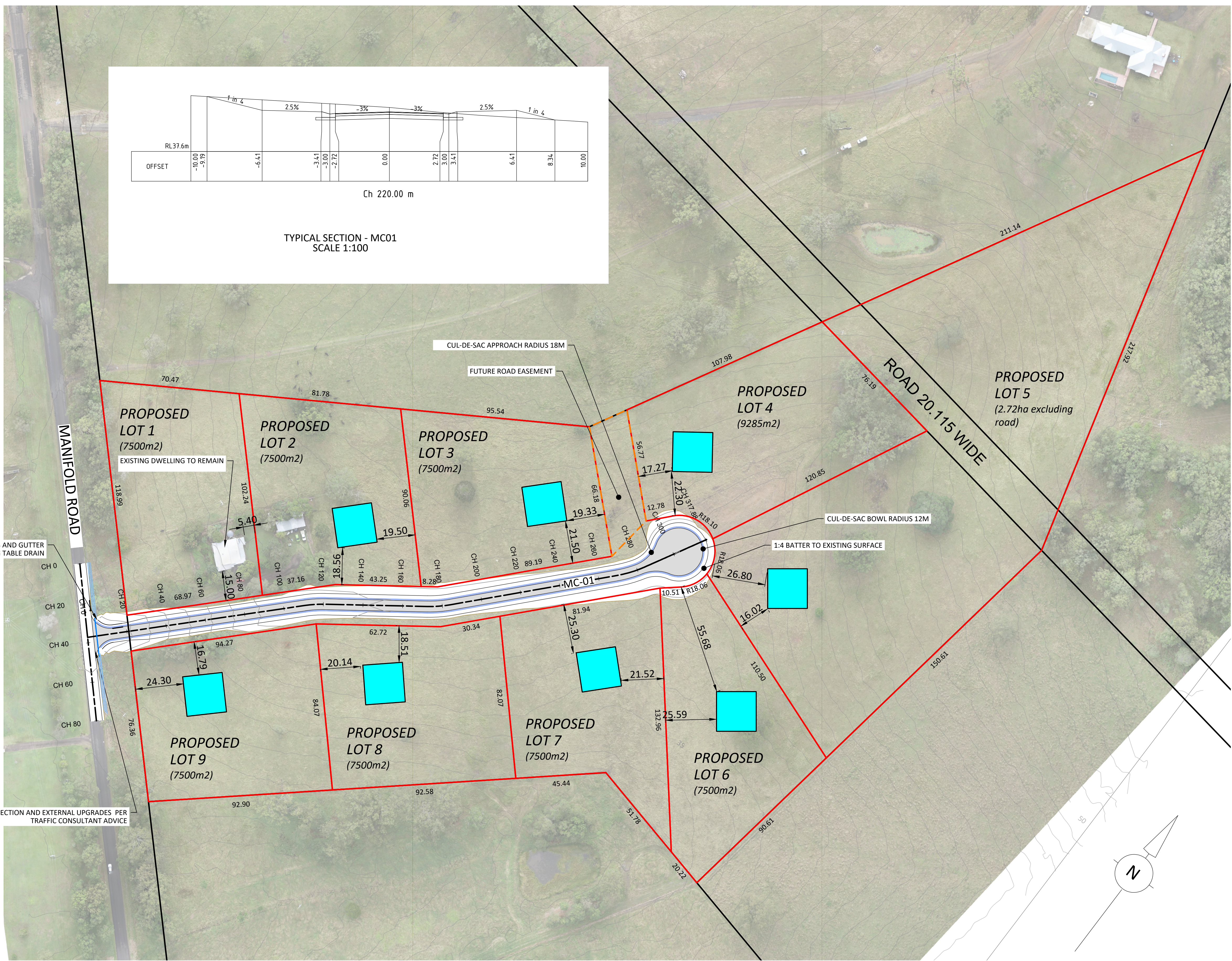
The dimensions, number, size and shape of lots shown on drawings are subject to detailed engineering design, final survey and Council conditions of consent.

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



Appendix A

Proposed Subdivision Plan



- LEGEND:**
- EXISTING BOUNDARIES
 - PROPOSED LOT BOUNDARY
 - FUTURE ROAD EASEMENT
 - ROAD CONTROL LINE
 - ROAD SURFACE
 - DRAINAGE PIPE
 - TABLE DRAIN
 - BATTER
 - PROPOSED BUILDING SITE (20m X 20m INDICATIVE ONLY)
 - CONTOURS
 - DESIGN (1m INTERVALS)
 - EXISTING (1m INTERVALS)

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