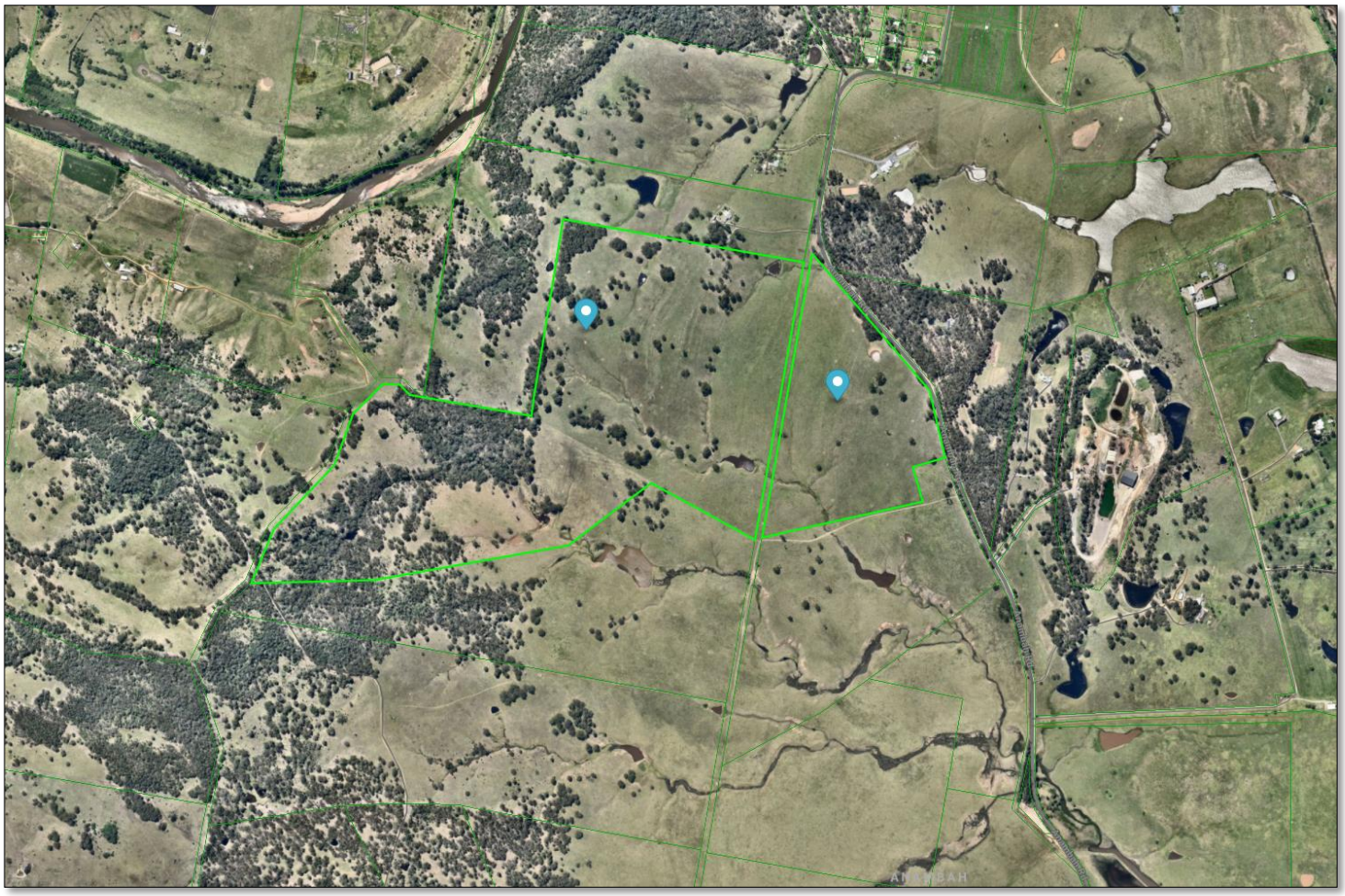
BUSHFIRE ASSESSMENT REPORT

MANFACTURED HOME ESTATE

559 Anambah Road, Gosforth

Prepared for Thirdi Pty Ltd



Bushfire Planning Australia

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Disclaimer and Limitation

This report is prepared solely for Thirdi Pty Ltd Property (the 'Client') for the specific purposes of only for which it is supplied (the 'Purpose'). This report is not for the benefit of any other person; either directly or indirectly and is strictly limited to the purpose and the facts and matters stated in it and will not be used for any other application.

This report is based on the site conditions surveyed at the time the document was prepared. The assessment of the bushfire threat made in this report is made in good faith based on the information available to Bushfire Planning Australia at the time.

The recommendations contained in this report are considered to be minimum standards and they do not guarantee that a building or assets will not be damaged in a bushfire. In the making of these comments and recommendations it should be understood that the focus of this document is to minimise the threat and impact of a bushfire.

Finally, the implementation of the adopted measures and recommendations within this report will contribute to the amelioration of the potential impact of any bushfire upon the development, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

Document Status: 2477 - SFPP Manufactured Home Estate

Version	Status	Purpose	Author	Review Date
1	Draft	Draft for Review	Katrina Greville	23 August 2024
2	Draft	Draft for Client Review	Stuart Greville	17 January 2025
3	Final	Final for Submission	Stuart Greville	17 January 2025

Certification

As the author of this Bushfire Threat Assessment (BAR), I certify this BAR provides the detailed information required by the NSW Rural Fire Service under Clause 45 of the Rural Fires Regulation 2022 and Appendix 1 of Planning for Bushfire Protection 2019 for the purposes of an application for a bush fire safety authority under section 100B(4) of the Rural Fires Act 1997.

Stuart Greville

Accredited Bushfire Practitioner

BPAD-26202

Date: 17 January 2025

In signing the above, I declare the report is true and accurate to the best of my knowledge at the time of issue.

Executive Summary

Bushfire Planning Australia (BPA) has been engaged by Thirdi Pty Ltd (the 'Proponent') to undertake a Bushfire Assessment Report (BAR) for the proposed staged manufactured home estate (MHE) located at 559 Anambah Road, Gosforth; legally known as Lot 177 DP874171 and Lot 55 DP874170.

The Proponent is seeking:

- concept development approval for the staged development of approximately 332 sites, clubhouses and associated infrastructure and
- development consent for the creation of the first 291 sites, clubhouses and community facilities and associated ancillary services. Each site will be utilised for long-term occupation and any subsequent building installation (the subject of a separate application) will be undertaken to the appropriate construction standard.

This BAR demonstrates the proposed development, including the concept masterplan and both Stages 1 and 2, complies with the specifications and requirements of the NSW Rural Fire Service (RFS) document Planning for Bushfire Protection 2019 (PBP 2019) including Special Fire Protection Purpose (SFPP) developments.

This BAR is to support the application for a Bush Fire Safety Authority for both Stages 1 and 2 and has been prepared in accordance with the submission requirements detailed in Appendix 2 of PBP 2019.

This assessment found the site was exposed to a medium to high bushfire hazard located primarily to the west of the site which is mapped as Category 1 Vegetation in the Maitland City Council Bush Fire Prone Land Map.

The following key recommendations have been designed to enable the proposed development to achieve Performance Criteria for SFPP developments detailed in Section 6.8 of PBP 2019:

Asset Protection Zones

1. The areas within the site identified as an Asset Protection Zone in **Figure 13** shall be managed as an Inner Protection Area (IPA) as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*.

Construction Standards

2. All future buildings to be constructed on the proposed sites shall have due regard to the specific considerations given in the National Construction Code: Building Code of Australia (BCA) which makes specific reference to Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas (AS3959-2018) and the NASH Standard Steel Framed Construction in Bushfire Prone Areas.
3. The proposed Clubhouse shall be constructed in accordance with Section 3 and 5 (BAL-12.5) of Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas (AS3959-2018).
4. Where the new dwellings are not required to be comply with the BCA, each dwelling shall be constructed in accordance with the relevant Bushfire Attack Level (BAL) identified on **Figure 13** and shown in **Table 4**. Any Approval to Operate (issued under Section 68 of the Local Government Act 1993) shall include the BAL Contour Plan and require each new dwelling to be constructed to the nominated BAL rating. Furthermore, a suitably worded instrument(s) must be created pursuant to section 88 of the Conveyancing Act 1917 clearly outlining the require BAL ratings for each dwelling.

Access - Internal Roads

5. The internal access road is to be designed and constructed in accordance with section 6.8.2 of PBP 2019 **or** as shown in the plans contained in **Appendix A.** Where perimeter roads are less than 8m wide, passing and/or parking bays shall be provided to increase the road width to 8m wide for a minimum of 20m in length for each passing bay.

Water and Utility Services

6. The provision of water, electricity and gas must comply with the requirements detailed in Table 6.8c of PBP 2019.
7. All new sites are to be connected to a reliable water supply network and that suitable fire hydrants are located throughout the development site that are clearly marked and provided for the purposes of bushfire protection. Fire hydrant spacing, sizing and pressure shall comply with AS2419.1 2005 and section 6.8.3 of PBP 2019.
8. The provision of water, electricity and gas must comply with the requirements detailed in Table 6.8c of PBP 2019.

Landscaping

9. Consideration should be given to landscaping and fuel loads on site to decrease potential fire hazards on site. Landscaping shall be completed in accordance with the *Landscape Development Application Documentation* prepared by Moir Studio Project No. 2529 Rev C dated 13 December 2024. All new and revegetated detention and water quality basins shall be replanted commensurate with a *Freshwater Wetland*.

Emergency and Evacuation Planning

10. A Bushfire Emergency Management and Evacuation Plan (BEMEP) shall be prepared that is consistent with the RFS Guidelines 'Development Planning – A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan December 2014'.

This assessment has been made based on the bushfire hazards observed in and around the site at the time of inspection (April 2024) and production (January 2025) and demonstrates the development has satisfied the aims and objectives of Planning for Bushfire Protection 2019 (PBP 2019).

Finally, should the above recommendations be implemented, the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the site, but they do not and cannot guarantee that the area will not be affected by bushfire at some time and that property and life damage/loss will not occur.

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Appendix E: NBC Bushfire Attack Assessor V4.1 Report

Terms and Abbreviations

Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419-2005	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BAR	Bushfire Assessment Report
BCA	Building Code of Australia
BC Act	NSW Biodiversity Act 2016
BDAR	Biodiversity Development Assessment Report
BMP	Bush Fire Management Plan
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPL	Bush Fire Prone Land
BPLM	Bush Fire Prone Land Map
BPM	Bush Fire Protection Measures
DoE	Commonwealth Department of the Environment
DPI Water	NSW Department of Primary Industries – Water
EPA Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
MCC	Maitland City Council
NPWS	NSW National Parks and Wildlife Service
OPA	Outer Protection Area
OEH	NSW Office of Environment and Heritage
PBP 2019	Planning for Bushfire Protection 2019
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service
VMP	Vegetation Management Plan

1. Introduction

Bushfire Planning Australia (BPA) has been engaged by Thirdi Pty Ltd (the 'Proponent') to undertake a Bushfire Assessment Report (BAR) for the proposed manufactured home estate (MHE) located at 559 Anambah Road, Gosforth, legally known as Lot 177 DP874171 and Lot 55 DP874170.

The assessment aims to consider and assess the bushfire hazard and associated potential bushfire threat relevant to the proposed development, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the New South Wales Rural Fire Service (RFS) publication *Planning for Bushfire Protection 2019* (PBP 2019) that has been released and adopted through the *Environmental Planning and Assessment Amendment* (Planning for Bushfire Protection) *Regulation 2007* and the *Rural Fires Regulation 2022*.

2. Site Description

Table 1: Site Details

Address	559 Anambah Road, Gosforth
Title	Lot 177 DP874171 Lot 55 DP874170
LGA	Maitland City Council
Site Area	124.08 ha
Land Use Zone	R1 General Residential and RU2 Rural Landscape (**Figure 1**)
Context	The subject site is located to the west of Anambah Road and majority of the site has historically been used for grazing purposes. The south-western corner of the site is largely vegetated which scatters along the northern and western boundaries in isolated sections. Part of the RU2 zoned land within Lot 177 DP874171 forms the development site whilst the remaining R1 zoned land and the adjoining Lot 55 DP874170 is a future residential subdivision submitted under a separate development application. Similarly, surrounding sites have historically been used for grazed, contain vegetation or rural residential properties.
Fire History	The site lies within a local government area with a Fire Danger Index (FDI) rating of 100.

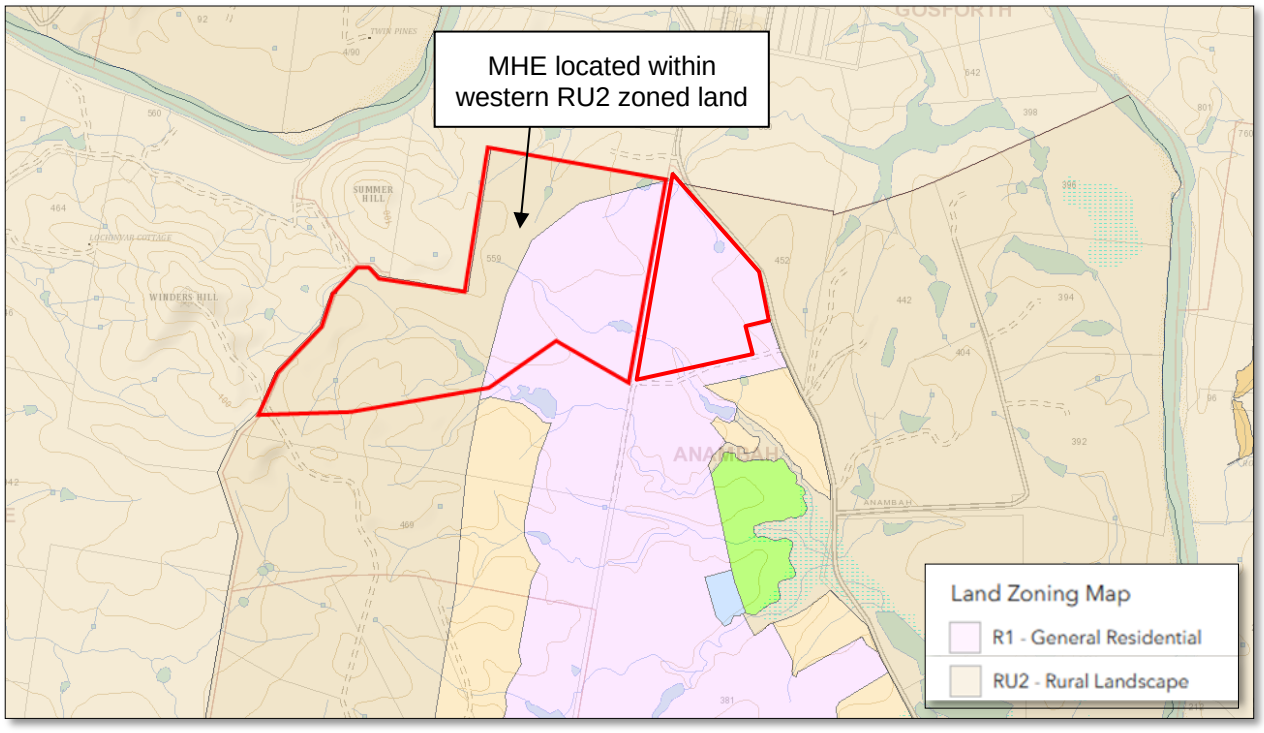

Figure 1: Maitland Local Environmental Plan 2011 (Land Zoning Map Sheet)

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Figure 2

Site Location

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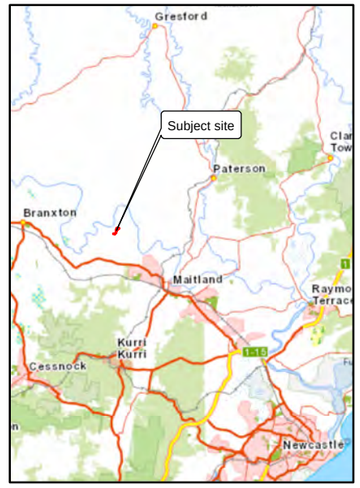

Subject site
100m buffer
140m buffer
Study area (Stage 1 & 2 development footprint)

SOURCE:

Basemap: NSW Department of Customer Service 2023

N
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Meters

A3 Scale: 1:15,000

File:2477-Anambah-LLC-RE-Fig1-SiteLocation-250106 Date: 6/01/2025

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2.1. Bushfire Prone Land

Bushfire activity is prevalent in landscapes that carry fuel and the two predominant bushfire types are grassland and forest fires. Factors such as topographic characteristics and quantity of fuel loads influence the intensity and spread of fire. The scale of a bushfire hazard is tailored to the characteristics of the hazard, the size and characteristics of the affected population, types of land use exposed to bushfire, predicted development growth pressures and other factors affecting bushfire risk.

Figure 3 demonstrates the entire site is mapped as bushfire prone land.

There are multiple isolated sections of Vegetation Category 1 bushfire prone land within the subject site which extend to the west within and beyond 140m of the site, particularly in the south-west corner of the site identified as the primary bushfire hazard. Otherwise, majority of the site is mapped as Vegetation Category 3 bushfire prone land.

There are isolated sections of Vegetation Buffer within the site restricted namely to dams, whilst an isolated portion of Vegetation Category 2 bushfire prone land exists within the mid-east section of the site.

Within 140m of the site, Vegetation Category 3 largely exists to the north and south and also to the west although this transitions to Vegetation Category 1 bushfire prone land. Vegetation Category 1 bushfire prone land also exists to the east, although separated by Anambah Road and to the south-west of the site, being the primary bushfire hazard.

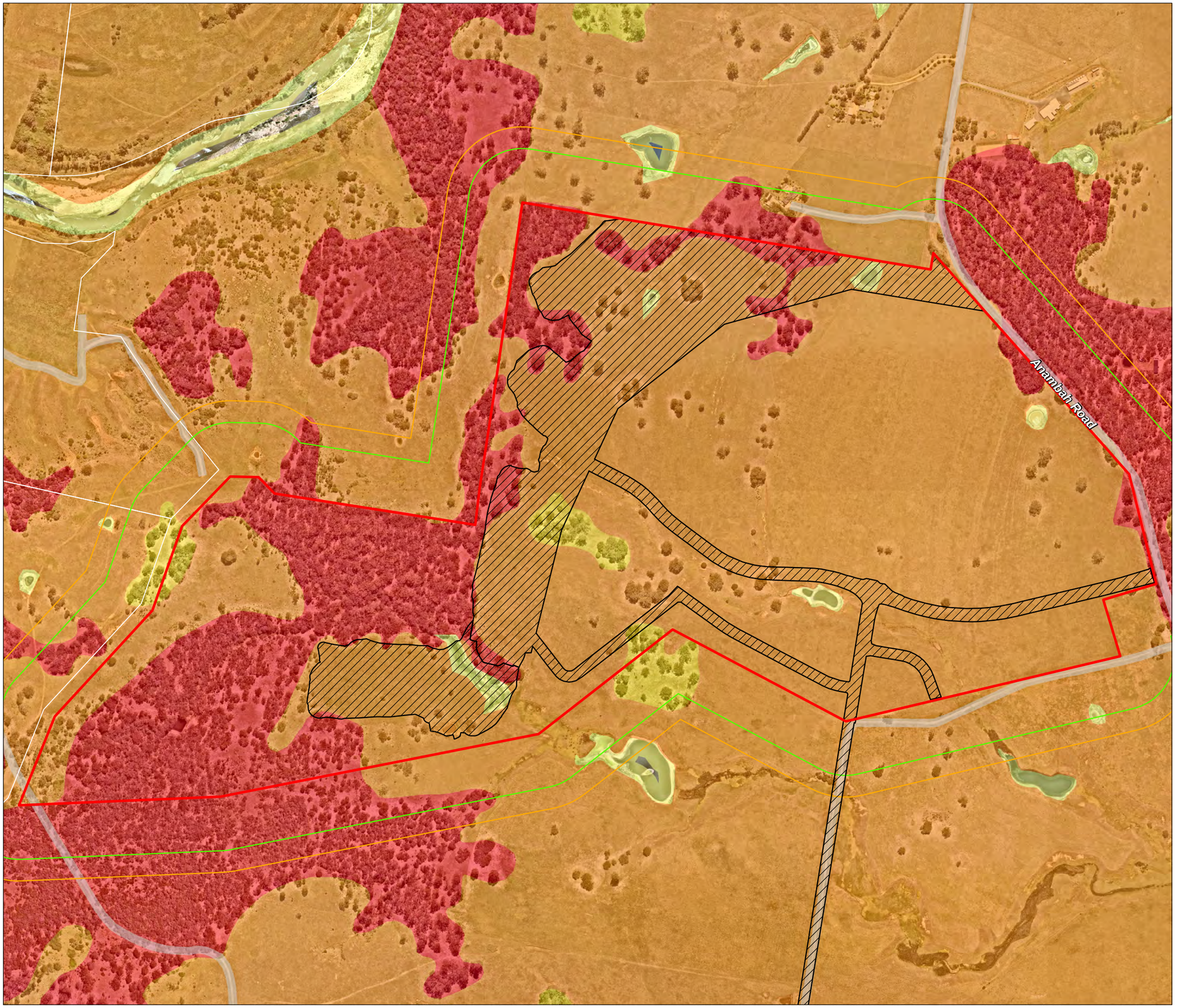

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Figure 3

NSW Bush Fire Prone Land

BUSHFIRE PLANNING AUSTRALIA

- Subject site
- 100m buffer
- 140m buffer
- Study area (Stage 1 & 2 development footprint)

Bushfire Prone Land

- Vegetation Category 1
- Vegetation Category 2
- Vegetation Category 3
- Buffer

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024
NSW Bush Fire Prone Land: NSW Rural Fire Service 2023
Aerial Photo: Nearmap 26/02/2024

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0 50 100 150 200 250 300
Meters

A3 Scale: 1:6,500

File:2477-Anambah-LLC-RE-Fig2-BFPL-250106 Date: 6/01/2025

2.2. Proposed Development

In accordance with Section 4.22 in Division 4.4 of the EP&A Act 1979, the Proponent is seeking concept development approval for the multi-staged development of approximately 332 sites, clubhouses and associated infrastructure.

The initial development consent is sought for the first stage of the subdivision being 291 sites, a clubhouse and community facilities, and associated ancillary services. Each site will be utilised for long term occupation and any subsequent building installation (the subject of a separate application) will be undertaken to the appropriate construction standard.

Also included within Stage 1 of the proposed development is the construction of two (2) roads connecting to and constructed within the adjoining residential subdivision (currently under assessment DA/2024/763 and RFS CNR-79930) within Lot 55 DP874170 that connect to the existing River Road which provides a new emergency access road.

A bushfire hazard assessment has been completed for the entire area affected by the concept development application, including both Stage 1 and Stage 2, and this BAR will demonstrate all are able to comply with the relevant specifications and requirements of PBP 2019.

Plans of the proposed development are contained in **Appendix A** and shown in **Figure 4**.

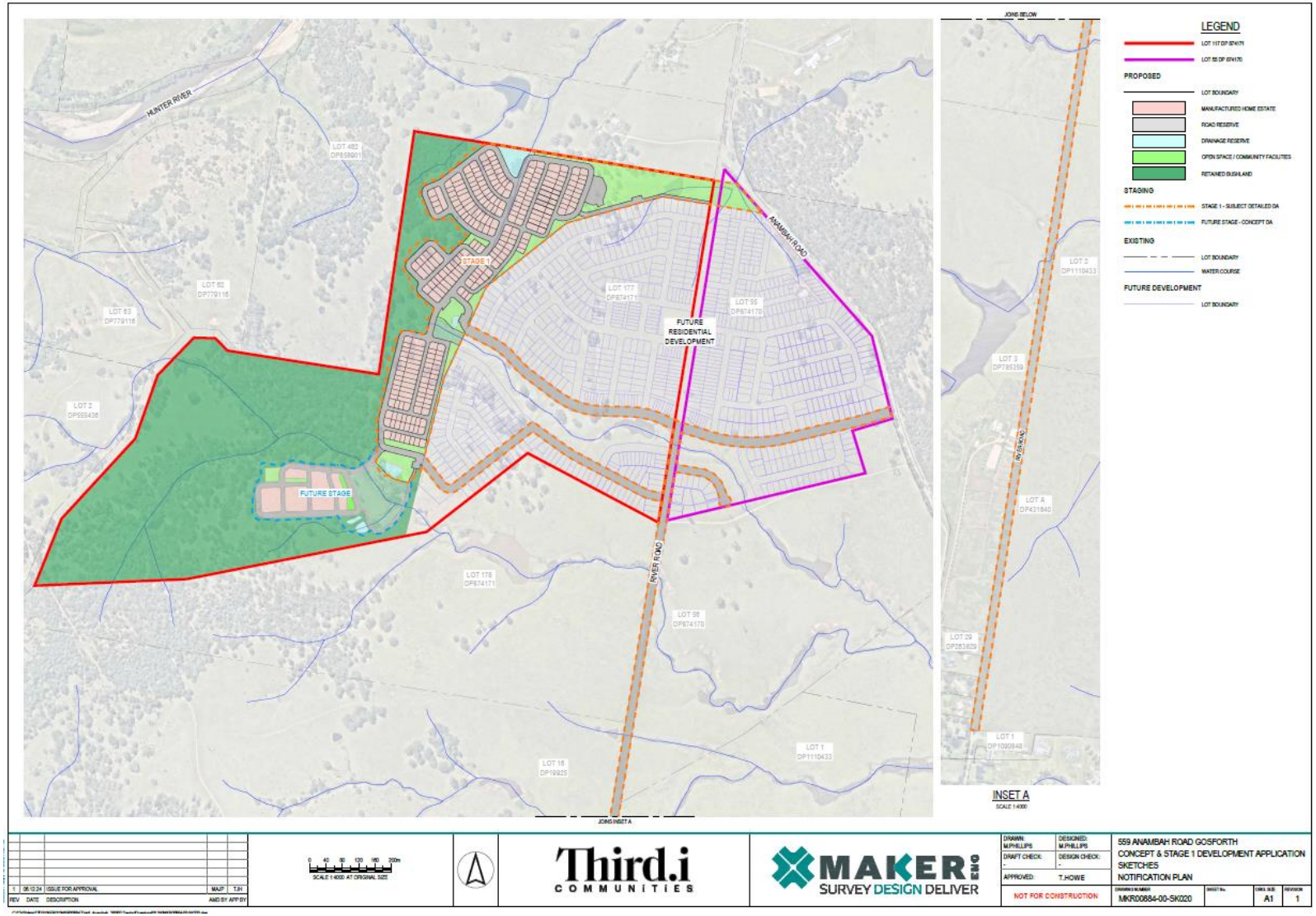

Figure 4: Plan of the Proposed Development

2.3. Aims and Objectives

The assessment aims to consider and assess the bushfire hazard and associated potential bushfire threat relevant to the proposed development, and to outline the minimum mitigative measures which would be required in accordance with the provisions of the New South Wales Rural Fire Service (RFS) publication *Planning for Bushfire Protection 2019* (PBP 2019) and the *Rural Fires Regulation 2022.*

This BAR also addresses the aims and objectives of PBP 2019, being:

- Afford buildings and their occupants protection from exposure to a bushfire
- Provide a defendable space to be located around buildings
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings
- Ensure that appropriate operational access and egress for emergency service personnel and occupants is available
- Provide for ongoing management and maintenance of bushfire protection measures (BPMs) and
- Ensure that utility services are adequate to meet the needs of firefighters.

A compliance table demonstrating compliance with PBP 2019 is provided in **Appendix B**.

2.4. Specific Objectives for Special Fire Protection Purposes

The aims and objectives listed in section 1.1 of PBP 2019 remain applicable to Special Fire Protection Purposes (SFPP) developments, however further consideration has been given to SFPP developments due to the nature of these environments and the occupants they accommodate. Occupants of SFPP developments are generally more vulnerable to bushfire attack therefore specific objectives have been put in place to ensure greater protection is provided (section 6.2 PBP 2019). Specific objectives include:

- Minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting
- Provide for an appropriate operational environment for emergency service personnel during firefighting and emergency management
- Ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development and
- Ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.

As a manufactured home estate is classified as a SFPP development, the specific objectives and acceptable solutions for a SFPP development have been considered.

2.4.1. Specific Residential-Based SFPP

Whilst manufactured homes can be built to achieve all levels of construction required under the NCC, they are not required to obtain separate development consent for each dwelling. Instead, dwellings must comply with the design, construction and installation requirements of Part 3 of the *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation* 2005 ('the Regulation'). A Notice of Completion of Installation is required by Clause 68 of the Regulation and can be used to require evidence of construction standards, including BAL and AS3959-2018.

The acceptable solution for manufactured housing is the provision of an APZ which achieves 10kW/m^2; being commensurate with the SFPP development.

However, evidence can be provided with the Notice of Completion of Installation, which confirms that all dwellings have been constructed to the appropriate construction standards under AS3959-2018 or NASH standard, and an APZ has been established which meets 29kW/m^2, being for a standard residential dwelling.

3. Bushfire Hazard Assessment

3.1. Vegetation Assessment

Vegetation classification over the site and surrounding area has been carried out as follows:

- Aerial Photograph Interpretation to map the vegetation classification
- Reference to NSW State Vegetation Type, Department of Planning and Environment 2023 (**Figure 5**);
- Landscape Masterplan completed by Moir Studio Landscape Architecture dated 23 October 2024 (**Appendix C**); and
- Site inspection completed by Stuart Greville on 17 April 2024 (**Plates 1-8**).

In accordance with PBP 2019, an assessment of the vegetation over a distance of 100m in all directions from the site was undertaken. Vegetation that may be considered a bushfire hazard was identified in all directions from the development footprint. The vegetation classification is based on the revised Table 2.3 in AS3959-2018 and Appendix 1 of PBP 2019. The unmanaged fuel loads detailed in the *RFS Comprehensive Fuel Loads Fact Sheet* (March 2019) have been adopted for the purpose of assessing the bushfire hazard. The findings of the site inspection were compared to the available vegetation mapping. The inconsistencies between the mapping sources and hazardous vegetation mapped on the NSW RFS Bushfire Prone Land maps were quantified during the site inspection.

3.1.1. Reliability Assessment

Although the bushfire prone land mapping is intended to be regularly updated, land use and vegetation cover that contribute to bushfire hazards are subject to change. A reliability assessment was undertaken for the subject site and all land within 140m. In this instance the bushfire prone land mapping is not consistent with existing vegetation present within the site.

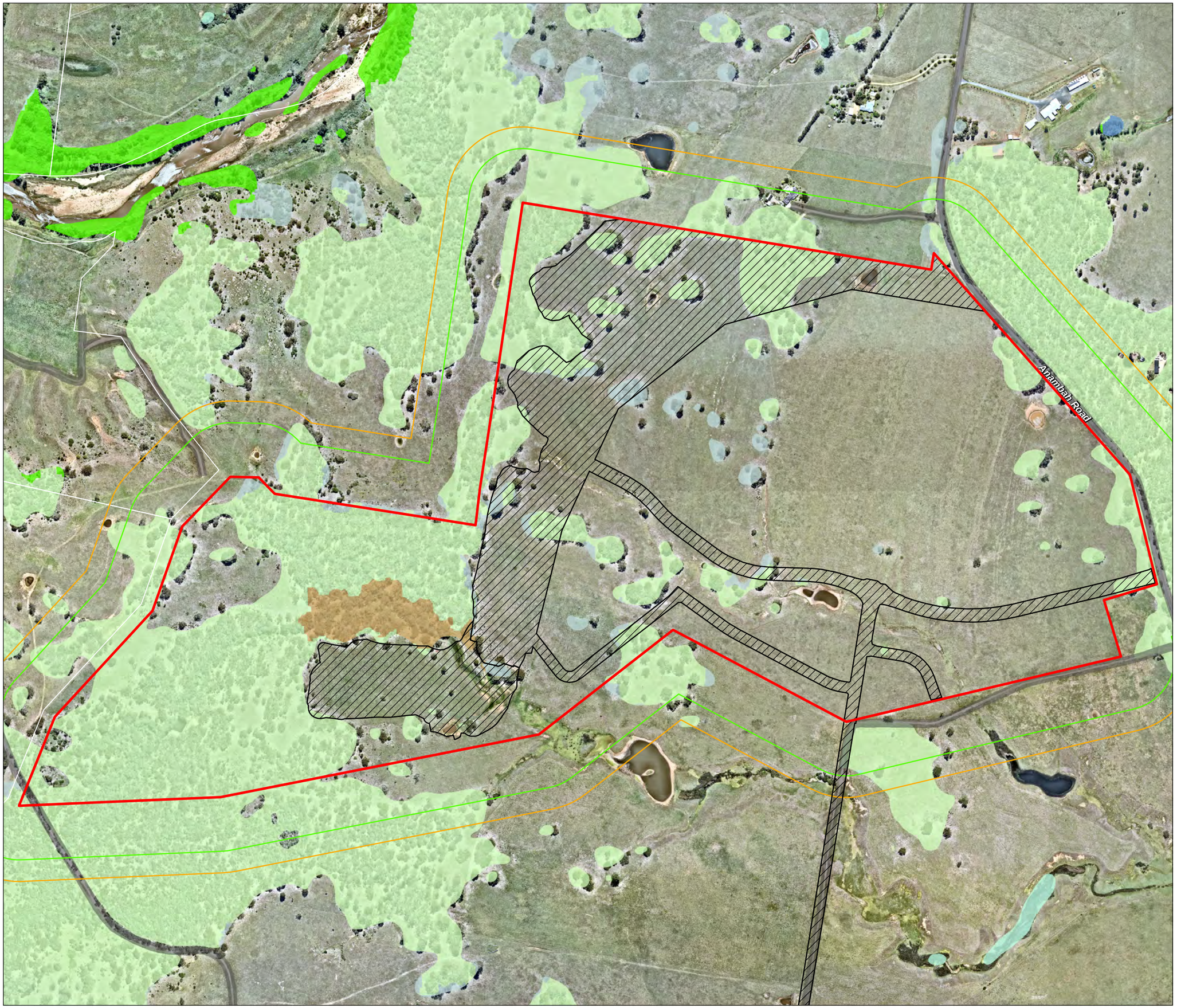

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Figure 5

NSW State Vegetation Type (Class)

BUSHFIRE PLANNING AUSTRALIA

- Subject site
- 100m buffer
- 140m buffer
- Study area (Stage 1 & 2 development footprint)

Vegetation Class

- Coastal Floodplain Wetlands
- Coastal Freshwater Lagoons
- Coastal Valley Grassy Woodlands
- Hunter-Macleay Dry Sclerophyll Forests
- Northern Hinterland Wet Sclerophyll Forests
- Dry Rainforests

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024
NSW Vegetation Type: NSW Department of Planning, Industry and Environment 2023
Aerial Photo: Nearmap 26/02/2024

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A3 Scale: 1:6,500

File:2477-Anambah-LLC-RE-Fig3-Vegetation-NSW-SVT-250m.mxd Date: 6/01/2025

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Plate 1: Majority of site cleared for grazing - looking south-east

Plate 2: Access to MHE provided by 2 separate roads through the residential subdivision

Plate 3: Northern boundary looking south over several transects

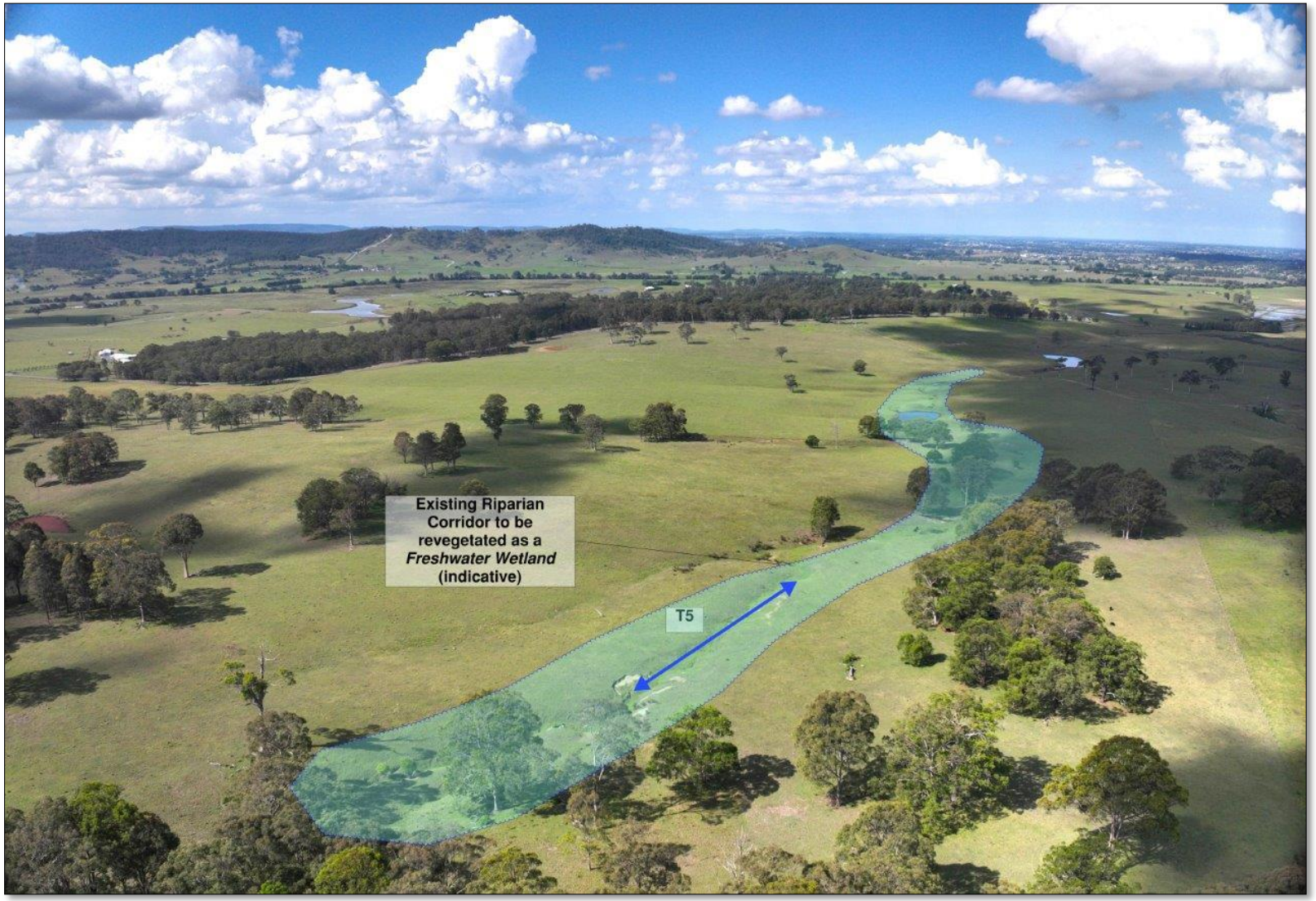

Plate 4: The existing watercourse is heavily degraded and will be revegetated as a *Freshwater Wetland*

Plate 5: T3 looking north-east towards grazing paddock with tree cover

Plate 6: T6 looking south across grazing paddock

Plate 7: T10 looking across slope into *Forest*

Plate 8: Looking north along western boundary of site - adjoining property grazing with tree cover

3.2. Slope Assessment

The slope assessment was undertaken as follows:

- Review of LiDAR point cloud data – including DEM (NSW LPI)
- Detail survey of existing and design contours and
- Site inspection completed by Bushfire Planning Australia (Stuart Greville) on 17 April 2024.

An assessment of the slope over a distance of 140m in the hazard direction from the site boundary was undertaken. The effective slope was then calculated under the classified vegetation where there was a fire run greater than 50m. The topography of the site has been evaluated to identify both the average slope and by identifying the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the site.

The effective slope in all directions is shown in **Figure 6, Figure 7** and **Table 2.**

The final bushfire hazard assessment defining vegetation classifications and effective slope is shown in **Figure 8.**

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Figure 6

Digital Elevation Model

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Anambah Road

- Subject site
- 100m buffer
- 140m buffer
- Study area (Stage 1 & 2 development footprint)
- Contour (10m)
- Contour (2m)

Elevation (AHD)

High : 133m

Low : 5m

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024
Surface analysis: Derived from CESSNOCK 1m resolution LiDAR: © Department Finance, Services and Innovation 2012

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0 50 100 150 200 250 300 350
Meters

A3 Scale: 1:6,959

File:2477-Anambah-LLC-RE-Fig4-DEM-250106 Date: 6/01/2025

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Figure 7

Slope Analysis: LiDAR

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Anambah Road

- Subject site
- 100m buffer
- 140m buffer
- Study area (Stage 1 & 2 development footprint)
- Contour (10m)

Slope

- 0° - 5°
- 5° - 10°
- 10° - 15°
- 15°- 20°
- >20°

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024
Surface analysis: Derived from CESSNOCK 1m resolution LiDAR: © Department Finance, Services and Innovation 2012
Aerial photo: Nearmap 26/02/2024

N W E S

0 50 100 150 200 250 300 350
Meters

A3 Scale: 1:6,500

File:2477-Anambah-LLC-RE-Fig5-SlopeLiDAR-250106 Date: 6/01/2025

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3.4. Slope & Vegetation Assessment Results

All vegetation identified within the current Bush Fire Prone Land map was confirmed during the site inspection and in this instance is not consistent. This includes vegetation within 140m of the proposed Stage 1 and Stage 2 developments.

The proposed development is located within the RU2 zoned land within Lot 177 DP874171, north-west and west of a proposed residential subdivision (subject to approval under DA/2024/763) and includes the construction of three roads within Lot 55 DP874170.

The majority of Stage 1 and Stage 2 and its surrounds has been highly modified for farming and grazing and is dominated by a mixture of exotic and native *grasslands* with some scattered trees or isolated *forest* vegetation spread across the existing pastures. The existing riparian corridor that separates a portion of the proposed development and all proposed detention basins, will be revegetated as a *freshwater wetland* and has been assessed accordingly.

Within and beyond 140m west of the Stage 1 and Stage 2 development footprint, *forest* vegetation identified as *Hunter Macleay Dry Sclerophyll Forest* exists. This continues and extends to the south / south-west of the proposed development and within the subject site and is identified as the primary bushfire hazard. Additionally, an isolated *woodland* exists to the south-west of the development site.

The results of hazard assessment are detailed in **Table 2** and shown in **Figure 8**.

Table 2: Slope and Vegetation Assessment Results

	Transect	Vegetation or Other Infrastructure	Vegetation Classification (PBP 2019)	Slope
Stage 1	T1 North	Vegetation north of the subject site boundary in the adjoining rural residential property	*Grassland*	2.4° Downslope
	T2 North	Vegetation north of the subject site boundary in the adjoining rural residential property	*Grassland*	4.0° Downslope
	T3 North	Isolated forest vegetation north of the subject site	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	1.6° Downslope
	T4 East	Proposed caravan parking within the development footprint transitioning to grassland vegetation east of the site	*Grassland*	6.3° Downslope
	T5 East	Existing riparian corridor east of the site to be revegetated as freshwater wetland vegetation	*Freshwater Wetland*	4.3° Downslope
	T6 South-east	Grassland vegetation south-east of the site within the neighbouring residential subdivision (subject to approval)	*Grassland*	3.4° Downslope
	T7 On-site	Revegetated freshwater wetland within the adjoining site and proposed clubhouse	*Freshwater Wetland*	1.5° Downslope
	T8 On-site	Proposed road from dwelling lot to the proposed detention basin	*Excluded* (Managed land)	-4.2° Upslope
	T9 West	Ecotone of forest vegetation west of the development site identified as the primary bushfire hazard	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	7.0° Downslope
	T10 West	Forest vegetation west of the development site identified as the primary bushfire hazard	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	0.1° Downslope
	T11 West	Grassland transitioning to an ecotone of forest vegetation west of the subject site	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-3.3° Upslope
	T12 West	Existing riparian corridor east of the site to be revegetated as freshwater wetland vegetation	*Freshwater Wetland*	-5.4° Upslope
	T13 West	Existing riparian corridor east of the site to be revegetated as freshwater wetland vegetation	*Freshwater Wetland*	7.0° Downslope
	T14 West	Revegetated freshwater wetland transitioning to forest vegetation lining the sites western boundary	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-0.3° Upslope
	T15 West	Grassland vegetation from the development footprint continuing west of the site	*Grassland*	2.2° Downslope

	Transect	Vegetation or Other Infrastructure	Vegetation Classification (PBP 2019)	Slope
Stage 1	T16 West	Isolated forest vegetation within the subject sites north-western corner, external to the development footprint	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-4.6° Upslope
	T17 West	Forest vegetation between the development footprint and the subject sites western boundary	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-0.1° Upslope
	T18 North-west	Grassland transitioning to isolated forest vegetation between the development footprint and the subject sites western boundary	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-2.9° Upslope
	T19 North-west	Grassland transitioning to isolated forest vegetation between the development footprint and the subject sites northern boundary	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	1.0° Downslope
	T20 North	Grassland from the development footprint north of the subject sites boundary	*Grassland*	1.7° Downslope
	T21 On-site	Northern detention basin extending north of the site	*Freshwater Wetland*	-0.6° Upslope
Stage 2	T22 On-site	Open grassland that separates Stage 1 and Stage 2	*Grassland*	11.7° Downslope
	T23 On-site	Open grassland that separates Stage 1 and Stage 2	*Grassland*	6.9° Downslope
	T24 South	Grassland vegetation south of the proposed Stage 2 perimeter road	*Grassland*	1.7° Downslope
	T25 South-west	Forest vegetation west of Stage 2 and identified as the primary bushfire hazard	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	2.8° Downslope
	T26 South-west	Ecotone of forest and woodland vegetation from the Stage 2 newly proposed road	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	9.1° Downslope
	T27 On-site	Grassland vegetation from the Stage 2 perimeter road to the development boundary	*Grassland*	7.5° Downslope
	T28 South-west	A narrow strip of grassland and forest transitioning to an ecotone of woodland north of Stage 2	*Woodland* (Coastal Valley Grassy Woodland)	8.7° Downslope
	T29 South-west	An isolated ecotone of woodland north of Stage 2 development boundary	*Woodland* (Coastal Valley Grassy Woodland)	12.6° Downslope

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Figure 8

Slope & Vegetation Assessment

BUSHFIRE PLANNING AUSTRALIA

- Subject site
- 100m buffer
- 140m buffer
- Study area (Stage 1 development footprint)
- Stage 2
- Contour (10m)
- Contour (2m)
- DCDB
- Future lot
- Future development
- Manufactured home estate
- Open space / community facilities
- Drainage reserve
- RL
- Downslope transect
- Upslope transect
- 50m Temporary APZ

Vegetation Class

- Grassland
- Coastal Floodplain Wetlands
- Coastal Freshwater Lagoons
- Coastal Valley Grassy Woodlands
- Hunter - Macleay Dry Sclerophyll Forests
- Northern Hinterland Wet Sclerophyll Forests
- Dry Rainforests
- Drainage Basin

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024
Vegetation: BPA 2014 based on SVTM NSW Department of Planning, Industry and Environment 2023
Surface analysis: Derived from CESSNOCK 1m resolution LiDAR: © Department Finance, Services and Innovation 2012
Aerial Photo: Nearmap 26/02/2024

N W E S

0 50 100 150 200 250 300
Meters

A3 Scale: 1:6,500

File:2477-Anambah-LLC-RE-Fig6-SlopeVeg-250111 Date: 11/01/2025

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Anambah Road

New Emergency Access Road connecting to River Road

3.6. Significant Environmental Features

The recommended bushfire protection measures have been designed to minimise any unacceptable impacts on a significant environmental feature. The recommended APZs are located within cleared land that has historically been used for intensive agricultural.

3.7. Threatened Species, populations or ecological communities

The area of the site to be affected by the proposed development has been identified to minimise impact on any threatened species, population or EEC. An independent Biodiversity Development Assessment has been completed by MJD Environmental (December 2024) to demonstrate the site meets the requirements of the Biodiversity Assessment Method 2017 (BAM) established under Section 6.7 of the *NSW Biodiversity Conservation Act 2016*.

All bushfire mitigation measures; including APZs has considered the existing and potential biodiversity values to minimise impact where possible.

3.8. Aboriginal Objects

A search of the AHIMS database (results contained in **Appendix D**) revealed there is potentially one (1) Aboriginal sites or places recorded near the subject site. All bushfire mitigation measures, such as APZs have considered this and been designed to minimise disturbing any artefacts if identified.

4. Bushfire Protection Measures

This Bushfire Assessment Report (BAR) has adopted the methodology to determine the appropriate Bushfire Protection Measures (BPMs) detailed in PBP 2019. As part of the BAR, the recommended BPMs demonstrate the aims and objectives of PBP 2019 have been satisified; includinig the matters considered by the RFS necessary to protect persons, property and the environment from the danger that may arise from a bushfire.

- APZs
- Access
- Water Supply and Utilities
- Building Construction and Design
- Landscaping
- Emergency Management Arrangements

4.1. Asset Protection Zones

An Asset Protection Zone (APZ) is an area surrounding a development that is managed to reduce the bushfire hazard to an acceptable level to mitigate the risk to life and property. The required width of the APZ varies with slope and the type of hazard. An APZ can consist of both an inner protection area (IPA) and an outer protection area (OPA) as shown in **Figure 9** and **Figure 10**.

An APZ can include the following:

- Lawns
- Discontinuous gardens
- Swimming pools
- Roads, driveways and managed verges
- Unattached non-combustible garages with suitable separation from the dwelling
- Open space / parkland and
- Car parking.

The presence of a few shrubs or trees in the APZ is acceptable provided that they:

- Do not touch or overhang any buildings
- Are well spread out and do not form a continuous canopy
- Are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period and
- Are located far enough away from any dwelling so that they will not ignite the dwelling by direct flame contact or radiant heat emission.

Woodpiles, wooden sheds, combustible material storage areas, large areas / quantities of garden mulch, stacked flammable building materials etc. are not recommended in the APZ.

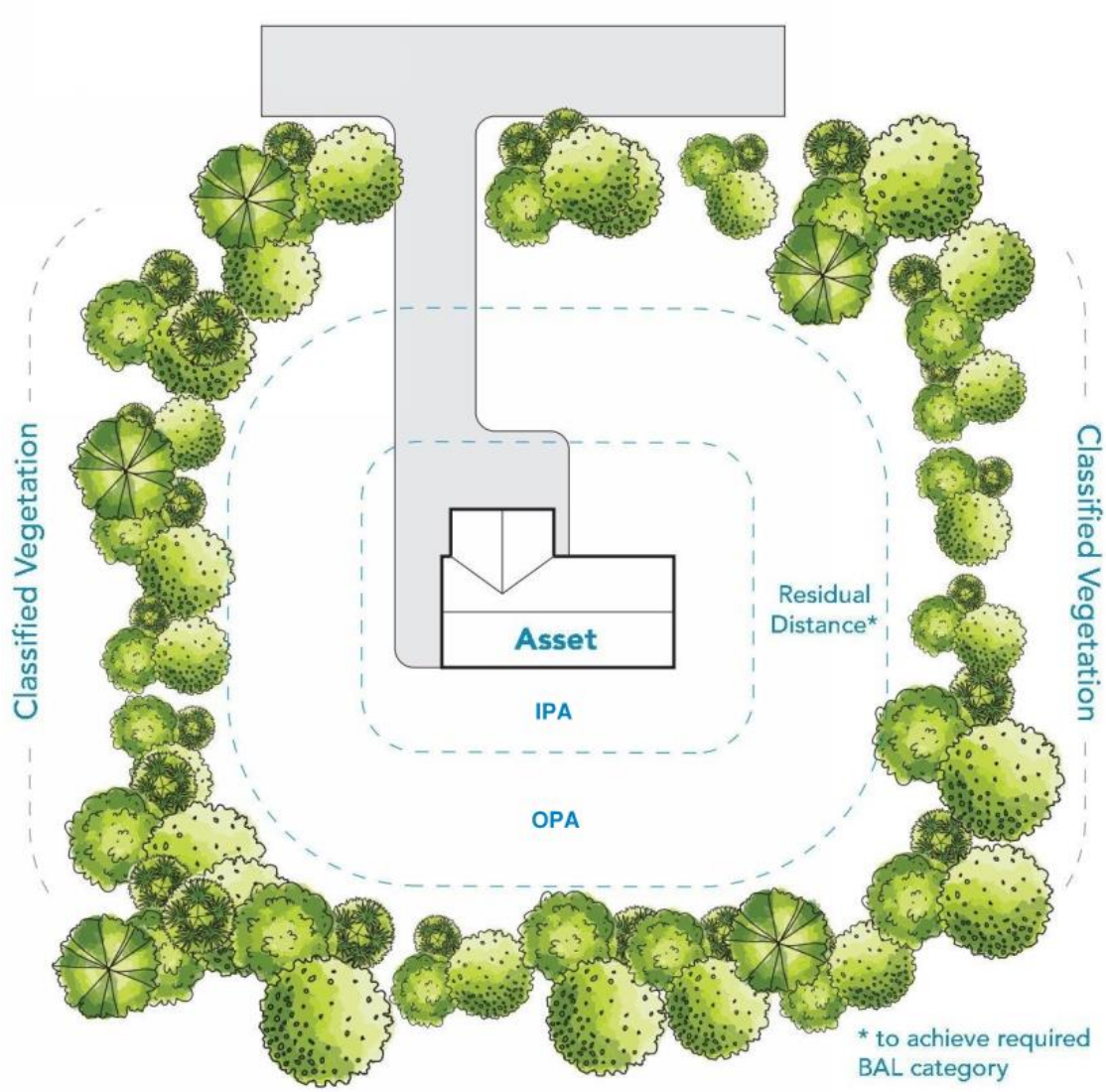

Figure 9: Inner and Outer Asset Protection Zones

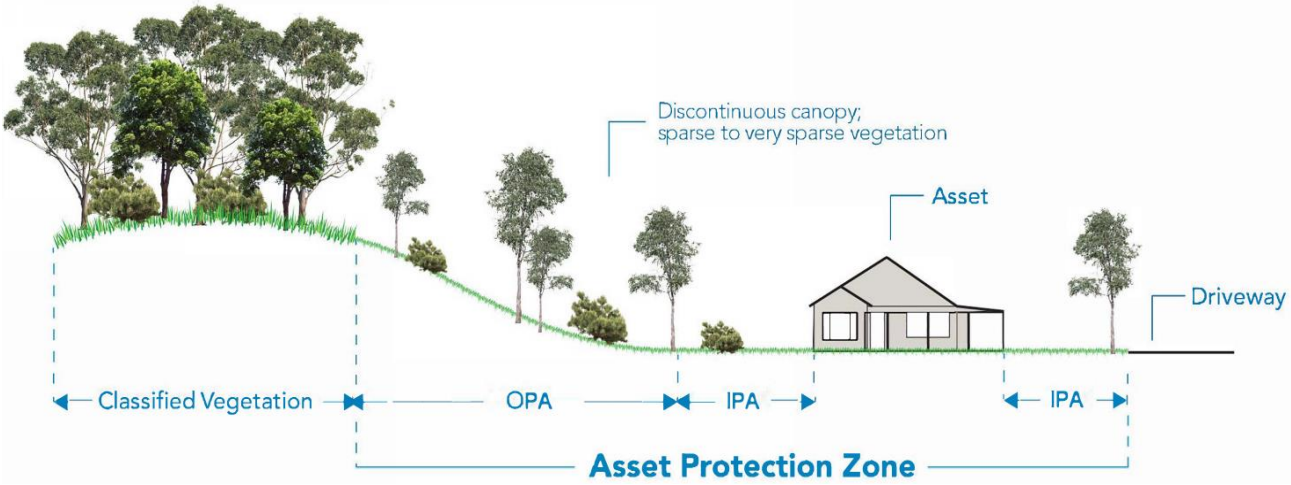

Figure 10: Example of the APZ profile

4.1.1. Special Fire Protection Purposes

Special Fire Protection Purposes (SFPP) developments mean the occupants of the proposed development may be more vulnerable to bush fire attack and therefore may require greater protection from such threats as well as assisted evacuation. SFPPs include schools, seniors housing, childcare centres, hospitals and tourist accommodation.

Section 6.8 of PBP 2019 provides protection measures for SFPP developments. In comparison to a standard residential development where radiant heat levels of no greater than 29kW/m^2 are acceptable, radiant heat levels of greater than 10kW/m^2 must not be experienced by on any part of the buildings. To achieve radiant heat levels of less than 10kW/m^2, APZs of 67m or greater are typically required (based on Table A1.12.1 of PBP 2019) for a *forest* vegetation formation.

Objectives for SFPP developments place emphasis on the space surrounding buildings (as defendable space and APZs) and less reliance on construction standards. SFPP developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bush fire threats.

4.1.2. Determining the Appropriate Setbacks

To achieve compliance with the performance criteria for APZs (Table 6.3a), the Acceptable Solutions outlined in Table A1.12.1 of PBP 2019 may be adopted as a deemed-to-satisify solution.

Alternatively, the appropriate APZ setback may be determined to achieve the Performance Criteria by adopting a performance-based solution. Based on the unique site characteristics identified by the BAR, the intensity of a bushfire event presented as the radiant heat exposure was calculated at several locations throughout the development site using the NBC Bushfire Attack Assessor V4.1. The nominated fuel loads for the respective vegetation classifications as published by the RFS in March 2019 have been used to determine the APZs and the effective slope obtained from the Digital Elevation Model (DEM) for each transect.

As the site lies within the Maitland City Council LGA, it is assessed under a FDI rating of 100. The Detailed Method (Method 2) outlined in Australian Standard *AS3959-2018 Construction of buildings in bushfire prone areas* was used to calculate the potential level of radiant heat flux generated at the nominated locations (see transects T1-T29). To ensure the APZs achieve the intent of Section 6.3 of PBP 2019, the APZs have been determined to ensure all lots are able to accomomodate a dwelling that will not be exposed to radiant heat levels exceeding 29kW/m^2. The NBC Bushfire Attack Assessor report detailing the inputs used is contained in **Appendix E**.

4.1.2.1. Specific Residential-based SFPP: Manufactured Home Estates

Although the proposed development does not include the construction of any dwellings, each future dwelling shall be constructed in accordance with the relevant Bushfire Attack Level (BAL) identified on **Figure 14** and shown in **Table 4**. The Approval to Operate shall include the BAL Contour Plan and require each dwelling to be constructed to the nominated BAL rating (maximum BAL-29). Furthermore, a suitably worded instrument(s) will be created pursuant to section 88B of the *Conveyancing Act 1917* clearly outlining the require BAL ratings for each dwelling. In this regard, each new dwelling will be sited to ensure radiant heat levels do not exceed 29kW/m^2.

Refer to **Table 3** and **Figure 14** for the required APZs.

Table 3: Required APZ setbacks

	Transect	Vegetation Classification (PBP 2019)	Slope	APZ Table A1.12.1	APZ Table A1.12.2	Recommended APZ (29kW/m^2)
Stage 1	T1 North	*Grassland*	2.4° Downslope	40m	12m	**12m**
	T2 North	*Grassland*	4.0° Downslope	40m	12m	**12m**
	T3 North	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	1.6° Downslope	79m	29m	**17m**
	T4 East	*Grassland*	6.3° Downslope	45m	13m	**13m**
	T5 East	*Freshwater Wetland*	4.3° Downslope	22m	6m	**6m**
	T6 South-east	*Grassland*	3.4° Downslope	40m	12m	**12m**
	T7 On-site	*Freshwater Wetland*	1.5° Downslope	22m	6m	**6m**
	T8 On-site	*Excluded* (Managed land)	-4.2° Upslope	N/A	N/A	**N/A**
	T9 West	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	7.0° Downslope	93m	36m	**23m**
	T10 West	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	Flat* (0.1° Downslope)	67m	24m	**16m**
	T11 West	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-3.3° Upslope	67m	24m	**14m**
	T12 West	*Freshwater Wetland*	-5.4° Upslope	19m	5m	**4m**
	T13 West	*Freshwater Wetland*	7.0° Downslope	25m	6m	**6m**
	T14 West	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-0.3° Upslope	67m	24m	**16m**
	T15 West	*Grassland*	2.2° Downslope	40m	12m	**12m**
	T16 West	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-4.6° Upslope	67m	24m	**13m**

	Transect	Vegetation Classification (PBP 2019)	Slope	APZ Table A1.12.1	APZ Table A1.12.2	Recommended APZ (29kW/m^2)
Stage 1	T17 West	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-0.1° Upslope	67m	24m	**16m**
	T18 North-west	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	-2.9° Upslope	67m	24m	**14m**
	T19 North-west	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	Flat* (1.0° Downslope)	67m	24m	**16m**
	T20 North	*Grassland*	1.7° Downslope	40m	12m	**11m**
	T21 On-site	*Freshwater Wetland*	-0.6° Upslope	19m	5m	**5m**
Stage 2	T22 On-site	*Grassland*	11.7° Downslope	50m	15m	**15m**
	T23 On-site	*Grassland*	6.9° Downslope	45m	13m	**13m**
	T24 South	*Grassland*	1.7° Downslope	36m	12m	**12m**
	T25 South-west	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	2.8° Downslope	79m	29m	**18m**
	T26 South-west	*Forest* (Hunter Macleay Dry Sclerophyll Forest)	9.1° Downslope	93m	36m	**25m**
	T27 On-site	*Grassland*	7.5° Downslope	45m	13m	**13m**
	T28 South-west	*Woodland* (Coastal Valley Grassy Woodland)	8.7° Downslope	60m	20m	**19m**
	T29 South-west	*Woodland* (Coastal Valley Grassy Woodland)	12.6° Downslope	72m	25m	**23m**

* Slopes 1 degree or less are considered ineligible and have been assessed as 'Flat'.

4.2. Access

In the unlikely event of a serious bushfire, it will be essential to ensure that adequate ingress / egress and the provision of defendable space are afforded in the layout. The following design specifications detailed in PBP 2019 are relevant to the proposed development:

- Internal roads are two-wheel drive all weather roads;
- internal perimeter roads are provided with a minimum carriageway width of up to 8m;
- be through roads, but if unavoidable then dead ends should be not more than 100 metres in length, incorporate a minimum 12 metres turning circle (either in cul-de-sac or T-head formation) and should be clearly sign posted as dead ends;
- the capacity of road surfaces is sufficient to carry fully loaded fire fighting vehicles (15 tonnes);
- curves of roads (other than perimeter roads) are a minimum inner radius of 6 metres and minimal in number, to allow for rapid access and egress;
- maximum grade for sealed roads do not exceed 12.5^{o};
- have a minimum vertical clearance to a height of four metres at all times;

Primary and Alternate Access

As part of the Stage 1 development, two (2) new roads will be constructed within Lot 55 DP874170 to provide direct access to the proposed sites within Lot 177 DP874171. Both of these roads will connect to the existing Anambah Road. A third emergency access will be constructed along River Road to provide flood free access from the site to the south.

Internal Roads

The proposed development provides a network of internal non-perimeter roads and perimeter roads along all of the site boundaries to provide defendable space between the site and the adjoining hazard to the west. The 50m wide temporary APZ provides sufficient separation from any 'potential' existing bushfire throughout the eastern portion of Lot 177.

All internal roads are a minimum 8m wide. The perimeter roads will be widened at several sections to ensure an unobstructed carriageway suitable for use by firefighting appliances is available along the entire length of the boundary as shown in **Figure 11**. This will require several passing and parking bays which will widen the carriageway to ensure no on-street parking decreases the trafficable width of the perimeter road. This is considered acceptable as the reduced carriageways adjoin areas of low-risk bushfire hazards. Where the hazard is considered a greater risk (Road 03 and 04), some internal parking restrictions may be appropriate between the passing and parking bays. Considering each site will be provided with on site parking, and residents are not permitted to rely on regular on-street parking, on this basis the limited parking restrictions within a privately managed development is considered acceptable and will ensure emergency services are able to travel through the development unimpeded.

In this instance the proposed access arrangements are considered to be acceptable and complies with the relevant Performance Criteria.

Refer to **Appendix A** for proposed development showing access.

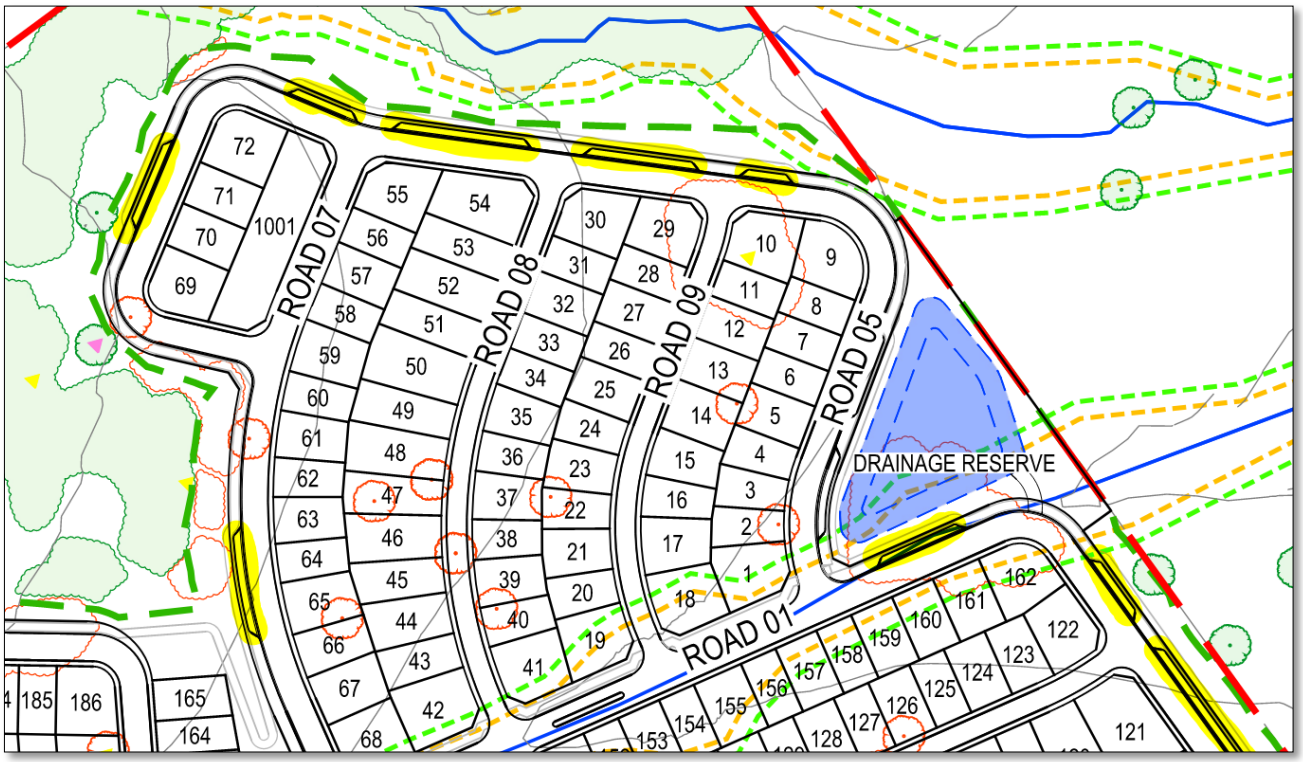

Figure 11: Excerpt of proposed development showing passing and parking bays highlighted yellow

4.3. Services - water, electricity and gas

4.3.1. Water

All lots within the proposed development will be connected to the internal reticulated water supply.

Fire hydrant spacing, sizing and pressure should comply with AS 2419.1-2005. Hydrants are not to be located within any road carriageway.

4.3.2. Electricity

All new electricity services will be located underground.

4.3.3. Gas

Any reticulated or bottled gas should be installed and maintained according to the requirements of the relevant authorities and AS 1596-2002. It is expected that the location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.

4.4. Construction Standards - Bushfire Attack Level

All buildings, including single dwellings (Class 1a buildings), constructed within the site are recommended to satisfy the Performance Requirements of the National Construction Code: Building Code of Australia (BCA).

Accordingly, all forthcoming habitable buildings shall satisfy the requirements of Part 3.7.4 of the BCA. The *Deemed-to-Satisfy* (DTS) provision of the BCA can only be achieved if dwellings in bushfire prone areas are constructed in accordance with Australian Standard *AS3959-2018 Construction of buildings in bushfire prone areas*. Alternatively, the DTS provisions can also be achieved if the habitable building is constructed in accordance with the NASH Standard 'Steel Framed Construction in Bushfire Areas'.

Building design and the materials used for construction of future dwellings should be chosen based on the information contained within AS3959-2018, and accordingly the designer/architect should be made aware of this recommendation.

The determinations of the appropriate bushfire attack level (BAL) is based on the maximum potential radiant heat exposure (**Figure 12**). BALs are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the BAL is derived by assessing the:

- Relevant FDI = *100*
- Flame temperature = *1090K*
- Slope = variable
- Vegetation classification = *forest, grassland* and *freshwater wetland*
- Building location.

The Detailed Method (Method 2) outlined in AS3959-2018 was used to calculate the Bushfire Attack Level (BAL) for the development. The NBC Bushfire Attack Assessor V4.1 was used to model the bushfire radiant heat exposure which determined the applicable BAL. All sites with the development layout are exposed to BAL-29 or less.

The greatest bushfire hazard was found to the west of the site being a *forest*.

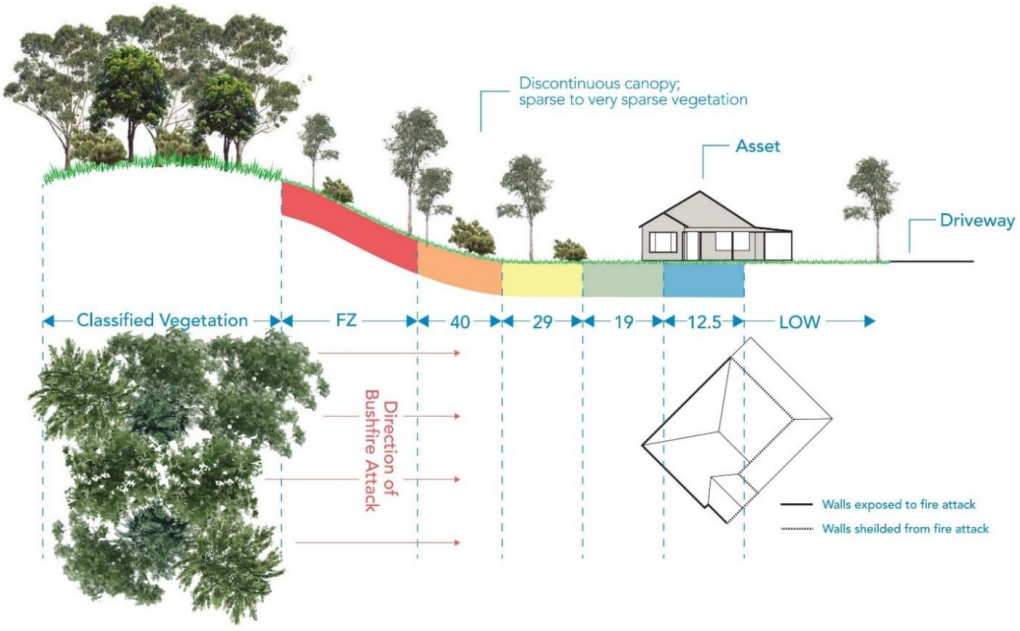

Figure 12: BAL example

Table 4: Bushfire Attack Levels

Transect	Vegetation Classification (PBP 2019)	Slope	APZ Provided	Distance from Hazard	Bushfire Attack Level (BAL)
T1, T2, T6, T15, T20 & T24	*Grassland*	> 0.0° < 5.0° Downslope	**12m**	0m-<9m	BAL-FZ
				9m-<12m	BAL-40
				12m-<17m	BAL-29
				17m-<25m	BAL-19
				25m-<50m	BAL-12.5
				40m	10kW/m^2
T4, T23 & T27	*Grassland*	> 5.0° < 10.0° Downslope	**13m**	0m-<10m	BAL-FZ
				10m-<13m	BAL-40
				13m-<20m	BAL-29
				20m-<28m	BAL-19
				28m-<50m	BAL-12.5
				45m	10kW/m^2
T22	*Grassland*	11.7° Downslope	**15m**	0m-<11m	BAL-FZ
				11m-<15m	BAL-40
				15m-<23m	BAL-29
				23m-<32m	BAL-19
				32m-<50m	BAL-12.5
				50m	10kW/m^2
T8	Excluded	-4.2° Upslope	**N/A**	N/A	BAL-LOW
T3	*Forest* (Hunter Macleay DSF)	1.6° Downslope	**17m**	0m-<16m	BAL-FZ
				16m-<17m	BAL-40
				17m-<25m	BAL-29
				25m-<35m	BAL-19
				35m-<100m	BAL-12.5
				52m	10kW/m^2
T25	*Forest* (Hunter Macleay DSF)	2.8° Downslope	**18m**	0m-<17m	BAL-FZ
				17m-<18m	BAL-40
				18m-<26m	BAL-29
				26m-<36m	BAL-19
				36m-<100m	BAL-12.5
				56m	10kW/m^2

Transect	Vegetation Classification (PBP 2019)	Slope	APZ Provided	Distance from Hazard	Bushfire Attack Level (BAL)
T9	*Forest* (Hunter Macleay DSF)	7.0° Downslope	**23m**	0m-<21m	BAL-FZ
				21m-<23m	BAL-40
				23m-<31m	BAL-29
				31m-<43m	BAL-19
				43m-<100m	BAL-12.5
				65m	10kW/m^2
T26	Excluded/ Managed Land (Open Space/ Park	9.1° Downslope	**N/A**	N/A	BAL-LOW
T10, T14, T17 & T19	*Forest* (Hunter Macleay DSF)	Flat	**16m**	0m-<14m	BAL-FZ
				14m-<16m	BAL-40
				16m-<23m	BAL-29
				23m-<32m	BAL-19
				32m-<100m	BAL-12.5
				50m	10kW/m^2
T11 & T18	*Forest* (Hunter Macleay DSF)	-3.3° Upslope	**14m**	0m-<12m	BAL-FZ
				12m-<14m	BAL-40
				14m-<20m	BAL-29
				20m-<28m	BAL-19
				28m-<100m	BAL-12.5
				45m	10kW/m^2
T16	*Forest* (Hunter Macleay DSF)	-4.6° Upslope	**13m**	0m-<11m	BAL-FZ
				11m-<13m	BAL-40
				13m-<19m	BAL-29
				19m-<26m	BAL-19
				26m-<100m	BAL-12.5
				41m	10kW/m^2
T7, T12 & T21 & Detention Basins	*Freshwater Wetlands* (Coastal Freshwater Lagoons)	Various	**5m**	0m-<4m	BAL-FZ
				4m-<5m	BAL-40
				5m-<7m	BAL-29
				7m-<11m	BAL-19
				11m-<100m	BAL-12.5
				36m	10kW/m^2

Transect	Vegetation Classification (PBP 2019)	Slope	APZ Provided	Distance from Hazard	Bushfire Attack Level (BAL)
T5 & T13	*Freshwater Wetlands* (Coastal Freshwater Lagoons)	>5.0° <10.0° Downslope	**6m**	0m-<5m	BAL-FZ
				5m-<6m	BAL-40
				6m-<10m	BAL-29
				10m-<14m	BAL-19
				14m-<100m	BAL-12.5
				25m	10kW/m^2
T28 & T29	*Woodland* (Coastal Valley Grassy Woodland)	Maximum 12.6° Downslope	**23m**	0m-<21m	BAL-FZ
				21m-<23m	BAL-40
				23m-<32m	BAL-29
				32m-<43m	BAL-19
				43m-<100m	BAL-12.5
				65m	10kW/m^2

* Slopes less than 1 degree are considered ineligible and have been assessed as 'Flat'.

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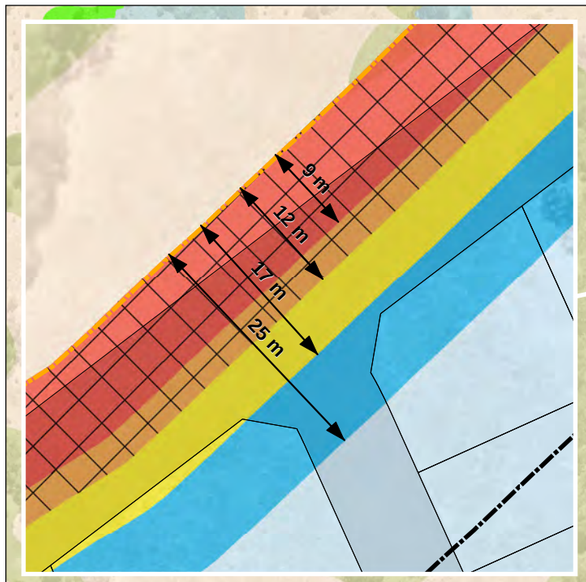
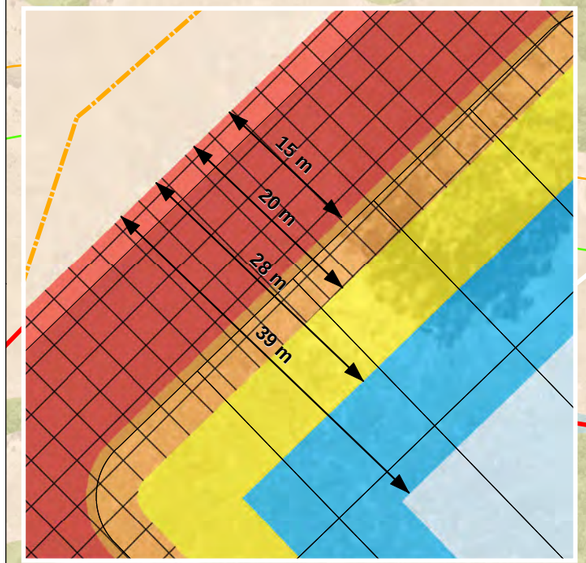
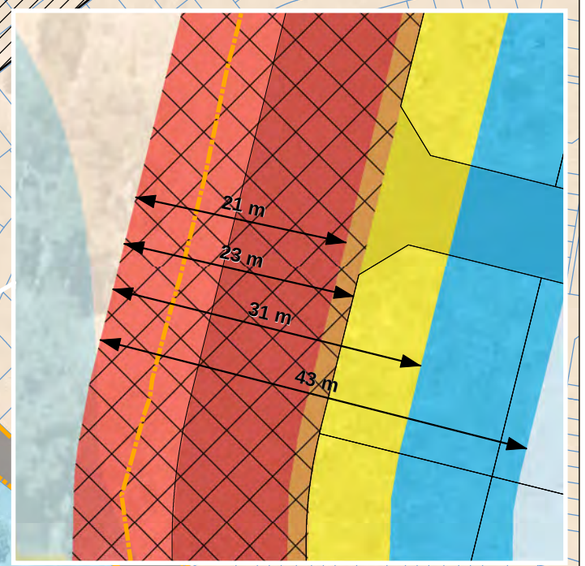
Figure 13

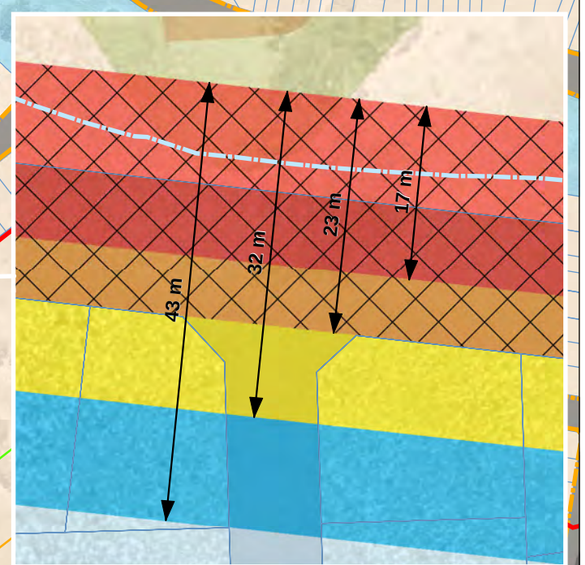
Subdivision BAL Plan

BUSHFIRE PLANNING AUSTRALIA









Subject site
100m buffer
140m buffer
Study area (Stage 1 development footprint)
Stage 2
Future lot
Future development
Manufactured home estate
Open space / community facilities
Drainage reserve
10kW/m² SFPP
50m Temporary APZ
Asset Protection Zone

Vegetation Class

Grassland
Coastal Valley Grassy Woodlands
Hunter - Macleay Dry Sclerophyll Forests
Northern Hinterland Wet Sclerophyll Forests
Dry Rainforests
Drainage Basin

Required Bushfire Attack Levels (PBP 2019 Table A1.12.5)

BAL - FZ
BAL - 40
BAL - 29
BAL - 19
BAL - 12.5

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024
Vegetation: BPA 2014 based on SVTM NSW Department of Planning, Industry and Environment 2023
Aerial Photo: Nearmap 26/02/2024

N
W E
S

0 50 100 150
Meters

A3 Scale: 1:3,500

File:2477-Anambah-LLC-RE-Fig7-BALs-250111 Date: 11/01/2025

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4.5. Landscaping and Vegetation Management

In APZs and IPAs, the design and management of the landscaped areas in the vicinity of buildings have the potential to improve the chances of survival of people and buildings. Reduction of fuel does not require the removal of all vegetation. Trees and plants can provide some bushfire protection from strong winds, intense heat and flying embers (by filtering embers) and changing wind patterns.

Generally landscaping in and around a bushfire hazard should consider the following:

- Priority given to retaining species that have a low flammability;
- Priority given to retaining species which do not drop much litter in the bushfire season and which do not drop litter that persists as ground fuel in the bush fire season;
- Priority given to retaining smooth barked species over stringy bark; and
- Create discontinuous or gaps in the vegetation to slow down or break the progress of fire towards the dwellings.

Landscaping within APZs and IPAs should give due regard to fire retardant plants and ensure that fuel loads do not accumulate as a result of the selected plant varieties.

The principles of landscaping for bushfire protection aim to:

- Prevent flame impingement on dwellings;
- Provide a defendable space for property protection and shelter from radiant heat;
- Reduce fire spread;
- Deflect and filter embers; and
- Reduce wind speed.

Plants that are less flammable have the following features;

- High moisture content and high levels of salt;
- Low volatile oil content of leaves;
- Smooth barks without ‘ribbons’ hanging from branches or trunks; and
- Dense crown and elevated branches.

Avoiding understorey planting and regular trimming of the lower limbs of trees also assists in reducing fire penetration into the canopy. Rainforest species such as Syzygium and figs are preferred to species with high fine fuel and/or oil content. Trees with loose, fibrous or stringy bark should be avoided. These trees can easily ignite and encourage ground fire to spread up to, and then through the crown of trees.

Consideration should be given to vegetation fuel loads present on site with particular attention to APZs. Careful thought must be given to the type and physical location of any proposed site landscaping. Inappropriately selected and positioned vegetation has the potential to ‘replace’ any previously removed fuel load.

Bearing in mind the desired aesthetic and environment sought by site landscaping, some basic principles have been recommended to help minimise the chance of such works contributing to the potential hazard on site. Whilst it is recognised that fire-retardant plant species are not always the most aesthetically pleasing choice for site landscaping, the need for adequate protection of life and property requires that a suitable balance between visual and safety concerns be considered.

It is reiterated again that it is essential that any landscaped areas and surrounds are subject to ongoing fuel management and reduction to ensure that fine fuels do not build up.

4.6. Emergency Services

There is a NSW Fire & Rescue station is located at 2 Mustang Drive, Rutherford approximately 5.4km (5mins) from the site (**Figure 14**). In an emergency, this would likely be the first responder to attend the site.

Figure 14: NSW Fire & Rescue - Rutherford

5. Conclusion and Recommendations

Bushfire Planning Australia has prepared a Bushfire Assessment Report for the proposed staged manufactured home estate located at 559 Anambah Road, Gosforth; legally known as Lot 177 DP874171 and Lot 55 DP874170.

The Proponent is seeking:

- concept development approval for the staged development of approximately 332 sites, clubhouses and associated infrastructure and
- development consent for subdivision of the first stage of 291 sites, clubhouses and community facilities and associated ancillary services. Each site will be utilised for long term occupation and any subsequent building installation (the subject of a separate application) will be undertaken to the appropriate construction standard.

This BAR demonstrates the proposed development, including the concept masterplan and both Stages 1 and 2, complies with the specifications and requirements of the NSW Rural Fire Service (RFS) document Planning for Bushfire Protection 2019 (PBP 2019) including Special Fire Protection Purpose (SFPP) developments.

It is therefore requested the NSW Rural Fire Service issue a Bush Fire Safety Authority for both Stages 1 and 2 in accordance with the recommendations below and consideration of the site-specific bushfire risk assessment.

Asset Protection Zones

1. The areas within the site identified as an Asset Protection Zone in **Figure 13** shall be managed as an Inner Protection Area (IPA) as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*.

Construction Standards

2. All future buildings to be constructed on the proposed sites shall have due regard to the specific considerations given in the National Construction Code: Building Code of Australia (BCA) which makes specific reference to Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas (AS3959-2018) and the NASH Standard Steel Framed Construction in Bushfire Prone Areas.
3. The proposed Clubhouse shall be constructed in accordance with Section 3 and 5 (BAL-12.5) of Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas (AS3959-2018).
4. Where the new dwellings are not required to be comply with the BCA, each dwelling shall be constructed in accordance with the relevant Bushfire Attack Level (BAL) identified on **Figure 13** and shown in **Table 4**. Any Approval to Operate (issued under Section 68 of the Local Government Act 1993) shall include the BAL Contour Plan and require each new dwelling to be constructed to the nominated BAL rating. Furthermore, a suitably worded instrument(s) must be created pursuant to section 88 of the Conveyancing Act 1917 clearly outlining the require BAL ratings for each dwelling.

Access – Internal Roads

5. The internal access road is to be designed and constructed in accordance with section 6.8.2 of PBP 2019 **or** as shown in the plans contained in **Appendix A.** Where perimeter roads are less than 8m wide, passing and/or parking bays shall be provided to increase the road width to 8m wide for a minimum of 20m in length for each passing bay.

Water and Utility Services

6. The provision of water, electricity and gas must comply with the requirements detailed in Table 6.8c of PBP 2019.

7. All new sites are to be connected to a reliable water supply network and that suitable fire hydrants are located throughout the development site that are clearly marked and provided for the purposes of bushfire protection. Fire hydrant spacing, sizing and pressure shall comply with AS2419.1 2005 and section 6.8.3 of PBP 2019.
8. The provision of water, electricity and gas must comply with the requirements detailed in Table 6.8c of PBP 2019.

Landscaping

9. Consideration should be given to landscaping and fuel loads on site to decrease potential fire hazards on site. Landscaping shall be completed in accordance with the *Landscape Development Application Documentation* prepared by Moir Studio Project No. 2529 Rev C dated 13 December 2024. All new and revegetated detention and water quality basins shall be replanted commensurate with a *Freshwater Wetland*.

Emergency and Evacuation Planning

10. A Bushfire Emergency Management and Evacuation Plan (BEMEP) shall be prepared that is consistent with the RFS Guidelines 'Development Planning – A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan December 2014'.

This assessment has been made based on the bushfire hazards observed in and around the site at the time of inspection (April 2024) and production (January 2025) and demonstrates the development has satisfied the aims and objectives of Planning for Bushfire Protection 2019 (PBP 2019).

Finally, should the above recommendations be implemented, the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the site, but they do not and cannot guarantee that the area will not be affected by bushfire at some time and that property and life damage/loss will not occur.

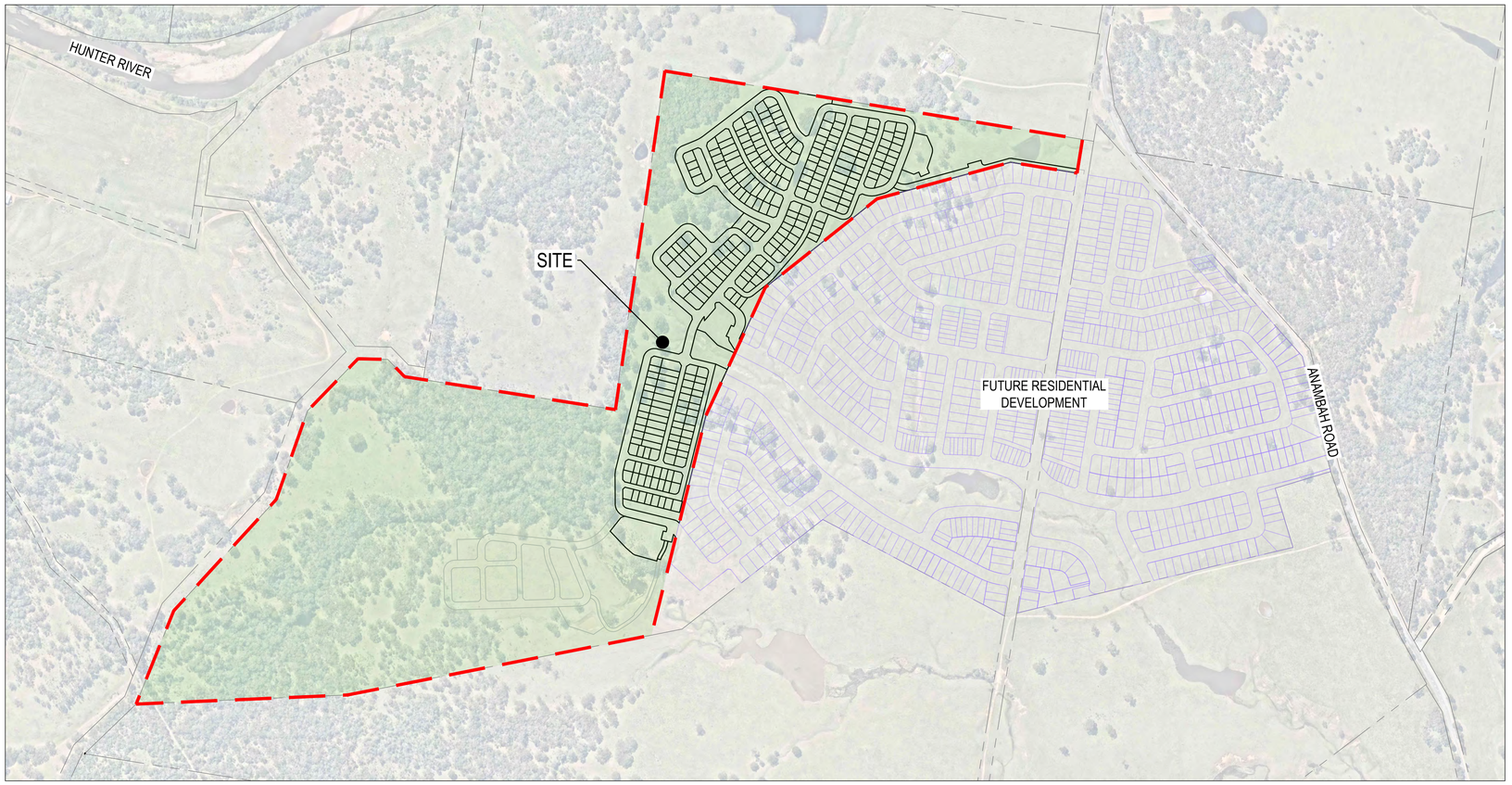
6. References

- Keith, D (2004). Ocean Shores to Desert Dunes - The Native Vegetation of New South Wales and the ACT.
- NSW Rural Fire Service (2005). Standards for Asset Protection Zones. NSW Rural Fire Service.
- NSW Rural Fire Service (2019). Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.
- Ramsay, GC and Dawkins, D (1993). Building in Bushfire-prone Areas – Information and Advice. CSIRO and Standards Australia.
- Rural Fires and Environmental Assessment Legislation Amendment Act 2002.
- Standards Australia (2018). AS 3959 – 2018: Construction of Buildings in Bushfire-prone Areas.

Appendix A: Plans of Proposed MHE

MANUFACTURED HOME ESTATE (MHE)
559 ANAMBAH ROAD, GOSFORTH
LOT 117 DP 874171

CIVIL WORKS PLANS FOR CONCEPT AND STAGE 1 DEVELOPMENT APPLICATION



LOCALITY DIAGRAM

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 50 100 150 200 250m
SCALE 1:5000 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
COVER SHEET

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0000		A1	1

Matthew Phillips, 6/12/2024 2:17 PM

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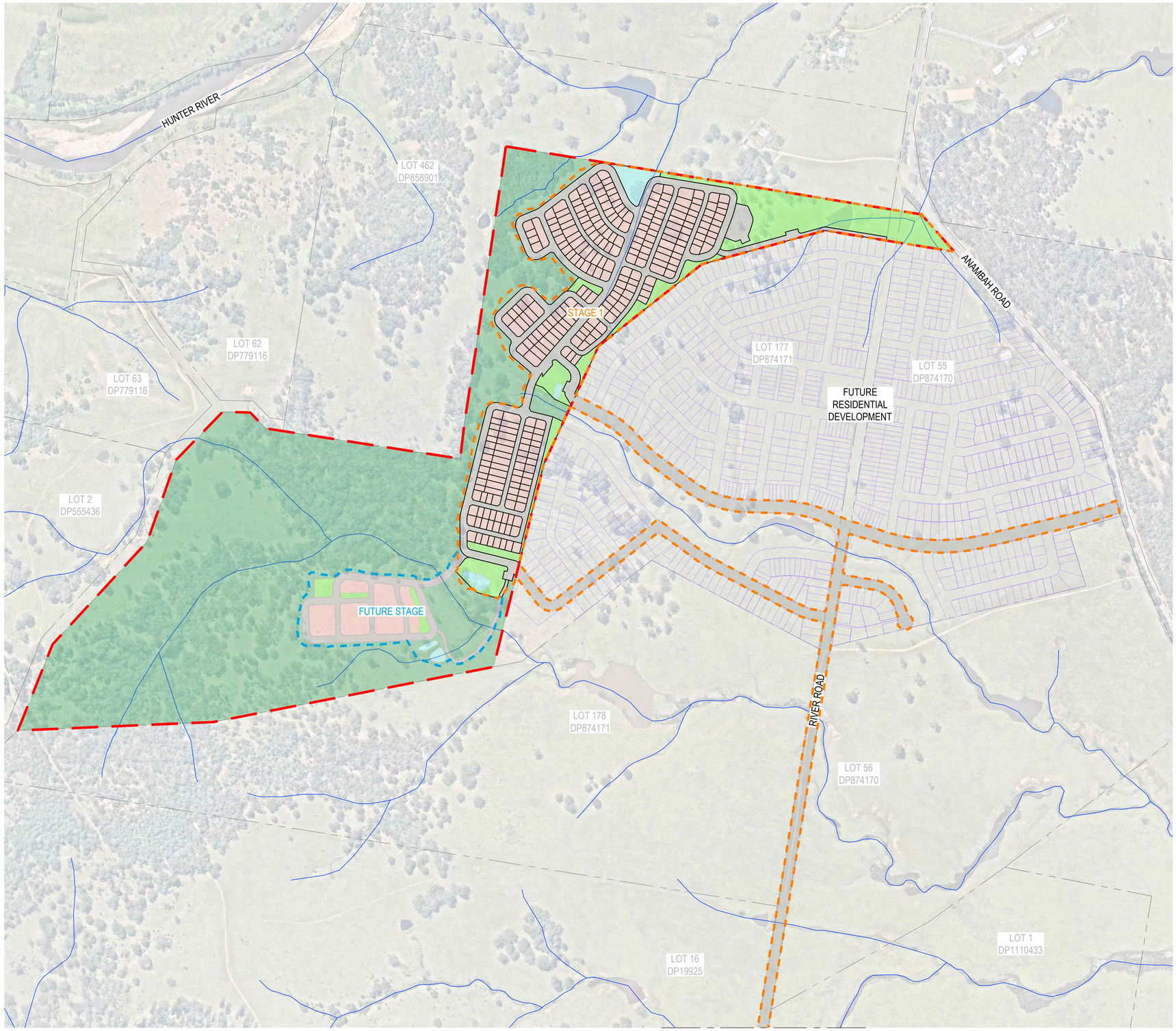

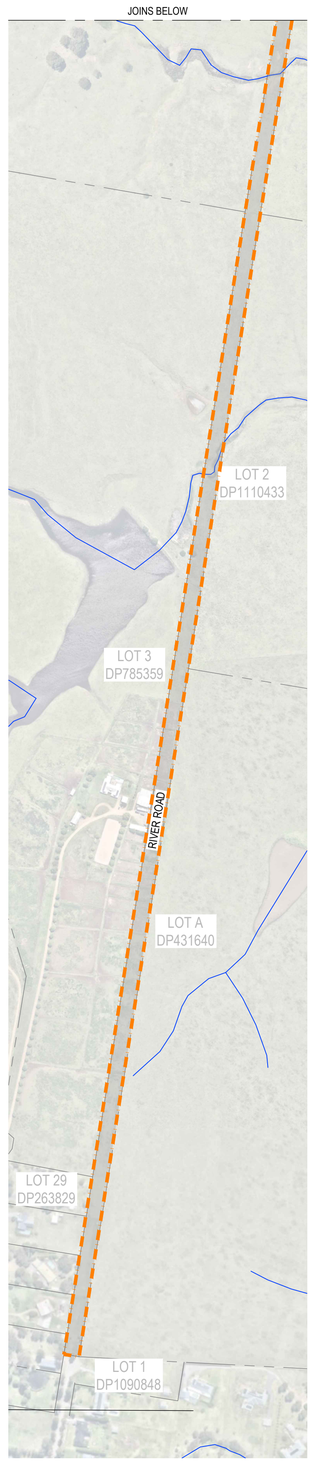

INSET A
SCALE 1:4000

LEGEND

PROPOSED
- LOT BOUNDARY
- SITE BOUNDARY
- MANUFACTURED HOME ESTATE
- ROAD RESERVE
- DRAINAGE RESERVE
- OPEN SPACE / COMMUNITY FACILITIES
- RETAINED BUSHLAND

STAGING
- STAGE 1 - SUBJECT DETAILED DA
- FUTURE STAGE - CONCEPT DA

EXISTING
- LOT BOUNDARY
- WATER COURSE

FUTURE DEVELOPMENT
- LOT BOUNDARY

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 40 80 120 160 200m
SCALE 1:4000 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.PHILLIPS	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
CONCEPT MASTERPLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
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Matthew Phillips, 12/12/2024 8:11 AM

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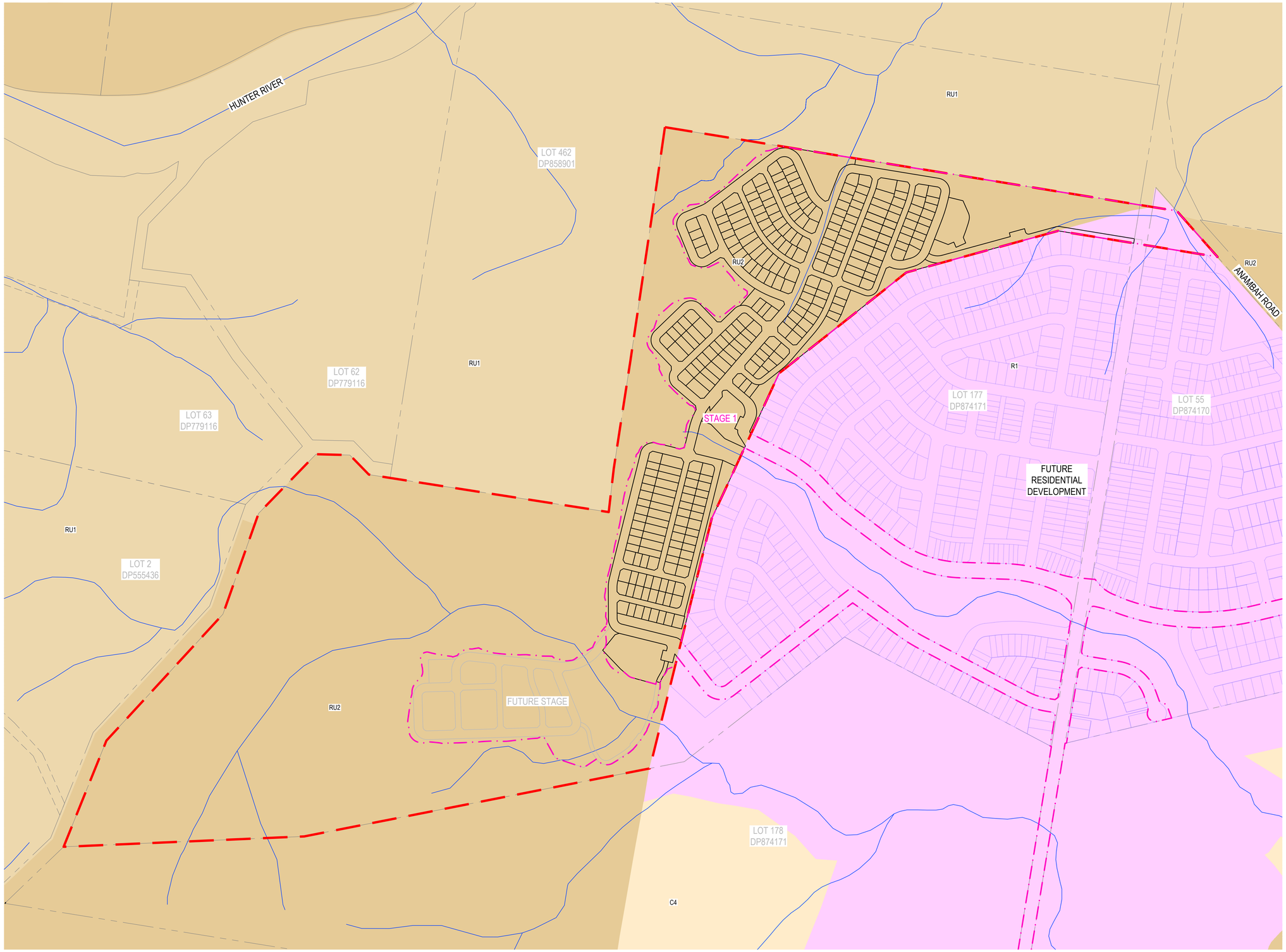

PROPOSED

LEGEND

- SITE BOUNDARY
- STAGING BOUNDARY
- LOT BOUNDARY

PRECINCT ZONING

- C4 - C4 - ENVIRONMENTAL LIVING
- R1 - R1 - GENERAL RESIDENTIAL
- RU1 - RU1 - PRIMARY PRODUCTION
- RU2 - RU2 - RURAL LANDSCAPE

EXISTING

- LOT BOUNDARY
- WATER COURSE

FUTURE DEVELOPMENT

- LOT BOUNDARY

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 30 60 90 120 150m

SCALE 1:3000 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.PHILLIPS	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED:	T.HOWE
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
ZONING PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
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Matthew Phillips, 12/12/2024 8:12 AM

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FUTURE COMMUNITY GARDEN

FUTURE ROAD 13

FUTURE MHE SITES

FUTURE ROAD 04

FUTURE MHE SITES

FUTURE ROAD 04

FUTURE ROAD 14

FUTURE MHE SITES

FUTURE MHE SITES

FUTURE ROAD 18

FUTURE MHE SITES

FUTURE ROAD 13

FUTURE ROAD 04

4001
RESIDUE
361650m²

3001
DRAINAGE RESERVE
13993m²

2001
COMMUNITY FACILITIES
4880m²

LOT 178
DP874171

JOINS SHEET 2

JOINS SHEET 3

LEGEND

PROPOSED

- LOT BOUNDARY
- SITE BOUNDARY
- STAGING BOUNDARY
- SMALL SITE
- MEDIUM SITE
- LARGE SITE
- LARGE CORNER SITE
- OPEN SPACE

EXISTING

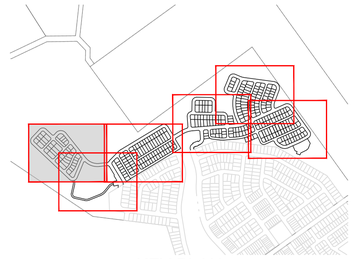
- LOT BOUNDARY

FUTURE DEVELOPMENT

- LOT BOUNDARY

NOTES:

1. EASEMENT RESTRICTIONS MAY APPLY
2. FINAL BOUNDARY AND EASEMENT ARRANGEMENT SUBJECT TO BOUNDARY DEFINITION BY REGISTERED SURVEYOR
3. INDICATIVE DIMENSIONS ROUNDED TO THE NEAREST 0.1m. REFER TO REGISTERED SURVEY PLANS FOR DIMENSIONS



KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
SITE
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0050	1 OF 6	A1	1

Matthew Phillips, 6/12/2024 2:20 PM

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PROPOSED

LEGEND

- LOT BOUNDARY
- SITE BOUNDARY
- STAGING BOUNDARY
- SMALL SITE
- MEDIUM SITE
- LARGE SITE
- LARGE CORNER SITE
- OPEN SPACE

EXISTING

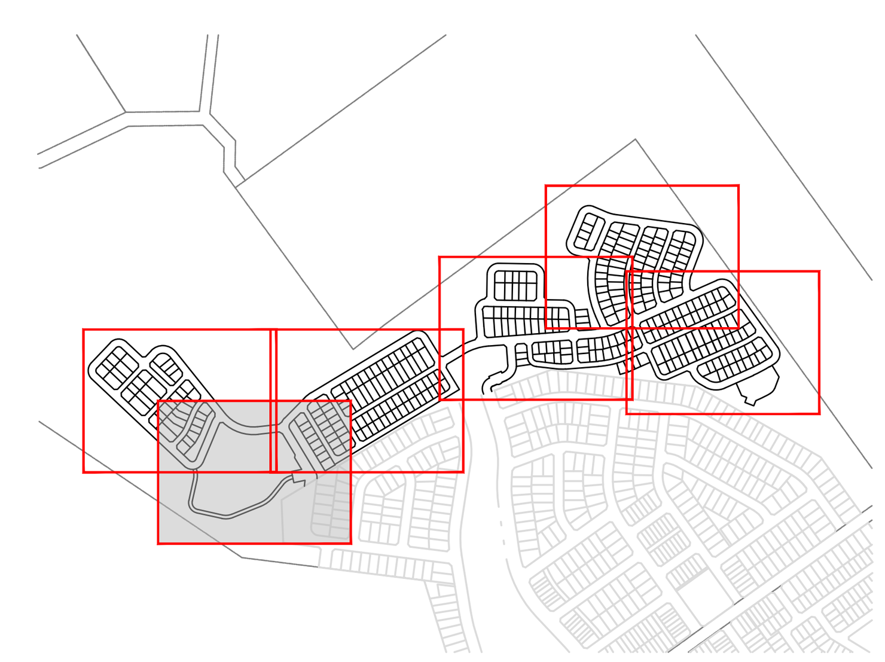
- LOT BOUNDARY

FUTURE DEVELOPMENT

- LOT BOUNDARY

NOTES:

1. EASEMENT RESTRICTIONS MAY APPLY
2. FINAL BOUNDARY AND EASEMENT ARRANGEMENT SUBJECT TO BOUNDARY DEFINITION BY REGISTERED SURVEYOR
3. INDICATIVE DIMENSIONS ROUNDED TO THE NEAREST 0.1m. REFER TO REGISTERED SURVEY PLANS FOR DIMENSIONS



KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m

SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNiTiES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED:	T.HOWE

FOR APPROVAL

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
SITE
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
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Matthew Phillips, 6/12/2024 2:20 PM

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LOT 462
DP858901

4001
RESIDUE
361650m²

ROAD 03

ROAD 01

ROAD 12

ROAD 19

STAGE 1

1001
OPEN SPACE
3668m²

2001
COMMUNITY
FACILITIES
4880m²

3002
DRAINAGE RESERVE
2877m²

FUTURE
RESIDENTIAL
DEVELOPMENT

JOINS SHEET 1

JOINS SHEET 2

JOINS SHEET 4

LEGEND

PROPOSED

- LOT BOUNDARY
- SITE BOUNDARY
- STAGING BOUNDARY
- SMALL SITE
- MEDIUM SITE
- LARGE SITE
- LARGE CORNER SITE
- OPEN SPACE

EXISTING

- LOT BOUNDARY

FUTURE DEVELOPMENT

- LOT BOUNDARY

NOTES:

1. EASEMENT RESTRICTIONS MAY APPLY
2. FINAL BOUNDARY AND EASEMENT ARRANGEMENT SUBJECT TO BOUNDARY DEFINITION BY REGISTERED SURVEYOR
3. INDICATIVE DIMENSIONS ROUNDED TO THE NEAREST 0.1m. REFER TO REGISTERED SURVEY PLANS FOR DIMENSIONS

KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
SITE
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
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Matthew Phillips, 6/12/2024 2:20 PM

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LOT 462
DP858901

4001
RESIDUE
361650m²

JOINS SHEET 5

JOINS SHEET 3

JOINS SHEET 6

ROAD 11

ROAD 10

ROAD 07

ROAD 08

ROAD 01

ROAD16

ROAD 02

ROAD 15

ROAD 12

STAGE 1

2002
COMMUNITY FACILITIES
3068m²

3002
DRAINAGE RESERVE
2877m²

1001
OPEN SPACE
3668m²

1002
OPEN SPACE
4940m²

1003
OPEN SPACE
930m²

FUTURE
RESIDENTIAL
DEVELOPMENT

LEGEND

PROPOSED

- LOT BOUNDARY
- SITE BOUNDARY
- STAGING BOUNDARY
- SMALL SITE
- MEDIUM SITE
- LARGE SITE
- LARGE CORNER SITE
- OPEN SPACE

EXISTING

- LOT BOUNDARY

FUTURE DEVELOPMENT

- LOT BOUNDARY

NOTES:

1. EASEMENT RESTRICTIONS MAY APPLY
2. FINAL BOUNDARY AND EASEMENT ARRANGEMENT SUBJECT TO BOUNDARY DEFINITION BY REGISTERED SURVEYOR
3. INDICATIVE DIMENSIONS ROUNDED TO THE NEAREST 0.1m. REFER TO REGISTERED SURVEY PLANS FOR DIMENSIONS

KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
SITE
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
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LOT 462
DP858901

4001
RESIDUE
361650m²

1004
OPEN SPACE
873m²

1003
OPEN SPACE
930m²

3003
DRAINAGE RESERVE
3509m²

ROAD 05

ROAD 07

ROAD 08

ROAD 09

ROAD 10

ROAD 01

ROAD 02

STAGE 1

13.50

11.00

14.75

9.00

JOINS SHEET 4

JOINS SHEET 6

LEGEND

PROPOSED

- LOT BOUNDARY
- SITE BOUNDARY
- STAGING BOUNDARY
- SMALL SITE
- MEDIUM SITE
- LARGE SITE
- LARGE CORNER SITE
- OPEN SPACE

EXISTING

- LOT BOUNDARY

FUTURE DEVELOPMENT

- LOT BOUNDARY

NOTES:

1. EASEMENT RESTRICTIONS MAY APPLY
2. FINAL BOUNDARY AND EASEMENT ARRANGEMENT SUBJECT TO BOUNDARY DEFINITION BY REGISTERED SURVEYOR
3. INDICATIVE DIMENSIONS ROUNDED TO THE NEAREST 0.1m. REFER TO REGISTERED SURVEY PLANS FOR DIMENSIONS

KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
SITE
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0054	5 OF 6	A1	1

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JOINS SHEET 5

JOINS SHEET 4

ROAD 06

ROAD 01

ROAD 02

ROAD 17

STAGE 1

LOT 462
DP858901

1002
OPEN SPACE
4940m²

2003
CARAVAN CARPARK
2671m²

4002
RESIDUE
21383m²

FUTURE
RESIDENTIAL
DEVELOPMENT

ACCESS 02

LEGEND

PROPOSED

- LOT BOUNDARY
- SITE BOUNDARY
- STAGING BOUNDARY
- SMALL SITE
- MEDIUM SITE
- LARGE SITE
- LARGE CORNER SITE
- OPEN SPACE

EXISTING

- LOT BOUNDARY

FUTURE DEVELOPMENT

- LOT BOUNDARY

NOTES:

1. EASEMENT RESTRICTIONS MAY APPLY
2. FINAL BOUNDARY AND EASEMENT ARRANGEMENT SUBJECT TO BOUNDARY DEFINITION BY REGISTERED SURVEYOR
3. INDICATIVE DIMENSIONS ROUNDED TO THE NEAREST 0.1m. REFER TO REGISTERED SURVEY PLANS FOR DIMENSIONS

KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
SITE
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
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Matthew Phillips, 6/12/2024 2:20 PM

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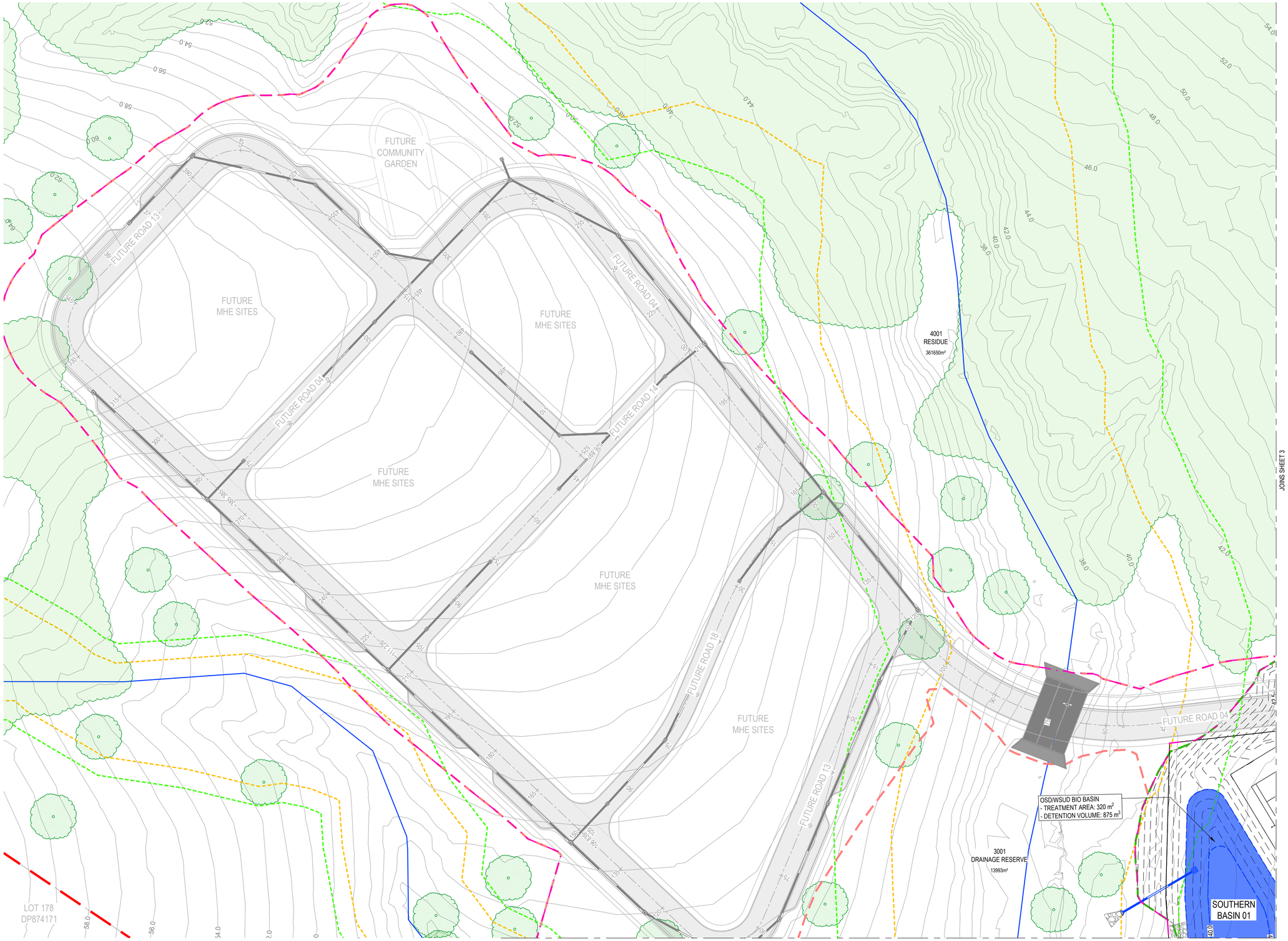


LEGEND

PROPOSED

- SITE BOUNDARY
- CIVIL WORKS BOUNDARY - STAGE 1
- CONCEPTUAL CIVIL WORKS BOUNDARY - FUTURE STAGE
- LOT BOUNDARY
- ROAD CENTERLINE AND CHAINAGE
- KERB TYPE (KG DG KO)
- CONTOURS (0.5m)
- OPEN DRAIN
- BASIN EXTENTS
- STORMWATER
- RIP RAP
- RETAINING WALL
- ROAD PAVEMENT
- UNSEALED ACCESS TRACK
- INTERALLOTMENT VEGETATED BATTER - MAX 1:2
- OPEN SPACE VEGETATED BATTER - MAX 1:2
- CONCRETE SHARED PATH

EXISTING

- LOT BOUNDARY
- CONTOURS (1.0m)
- WATER COURSE
- RIPARIAN ZONE INNER BOUNDARY
- RIPARIAN ZONE OUTER BOUNDARY
- VEGETATION (TO BE RETAINED)
- TREE (TO BE RETAINED)

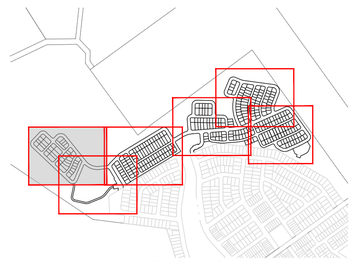
FUTURE DEVELOPMENT

- LOT BOUNDARY

KERB ABBREVIATIONS	
KG	STANDARD KERB AND GUTTER
KO	KERB ONLY
DG	DISH GUTTER
ER	EDGE RESTRAINT
VC	VEHICLE CROSSING

NOTES:

1. REFER TO MAKER ENGINEERING REPORT FOR ADDITIONAL BASIN SIZING AND DETAILS
2. REFER TO MAITLAND CITY COUNCIL STANDARD DRAWINGS FOR KERB PROFILES



KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
CIVIL WORKS
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0100	1 OF 6	A1	1

Matthew Phillips, 6/12/2024 3:35 PM

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JOINS SHEET 1

JOINS SHEET 3

JOINS SHEET 1

JOINS SHEET 3

FUTURE MHE SITES

FUTURE MHE SITES

FUTURE ROAD 18

FUTURE ROAD 13

FUTURE ROAD 04

PARALLEL INDENT PARKING BAYS ALONG PERIMETER ROAD

4001 RESIDUE 36165$0m^2$

OSD/WSUD BIO BASIN
- TREATMENT AREA: 320 m^2
- DETENTION VOLUME: 875 m^3

3001 DRAINAGE RESERVE 13993m^2

SOUTHERN BASIN 01

2001 COMMUNITY FACILITIES 4880m^2

STAGE 1

1001 OPEN SPACE 3668m^2

ROAD 03

ROAD 12

ROAD 19

4.0m WIDE EMERGENCY OVERFLOW WEIR

TWO-WAY IN, ONE-WAY OUT ENTRY WITH VEHICLE GATE

ACCESS 01

FUTURE SOUTHERN BASIN 02A

FUTURE SOUTHERN BASIN 02B

FUTURE PART ACCESS 01

BASIN ACCESS TRACK TO SERVE AS RFS COMPLIANT TYPE C TURNING HEAD

REFER TO LANDSCAPE ARCHITECTS PLANS FOR ADDITIONAL INFORMATION

INSTALL 4.0m WIDE LOCKABLE GATE (PWS SGT/S) OR APPROVED EQUIVALENT SUBJECT TO CONSULTATION WITH NSW RFS.

LEAD IN ROAD DESIGN BY 'NORTHROP'

4001 RESIDUE 36165$0m^2$

LOT 178 DP874171

FUTURE RESIDENTIAL DEVELOPMENT

252 220m^2 | 251 324m^2 | 283 315m^2 | 269 220m^2 | 282 220m^2 | 270 260m^2 | 291 340m^2 | 281 260m^2 | 271 220m^2 | 290 220m^2 | 280 220m^2 | 272 260m^2 | 289 260m^2 | 279 260m^2 | 273 220m^2 | 288 220m^2 | 278 220m^2 | 274 220m^2 | 287 260m^2 | 277 220m^2 | 275 324m^2 | 286 220m^2 | 276 320m^2 | 285 260m^2 | 284 324m^2

LEGEND

PROPOSED

- SITE BOUNDARY
- CIVIL WORKS BOUNDARY - STAGE 1
- CONCEPTUAL CIVIL WORKS BOUNDARY - FUTURE STAGE
- LOT BOUNDARY
- ROAD CENTERLINE AND CHAINAGE
- KERB TYPE (KG DG KO)
- CONTOURS (0.5m)
- OPEN DRAIN
- BASIN EXTENTS
- STORMWATER
- RIP RAP
- RETAINING WALL
- ROAD PAVEMENT
- UNSEALED ACCESS TRACK
- INTERALLOTMENT VEGETATED BATTER - MAX 1:2
- OPEN SPACE VEGETATED BATTER - MAX 1:2
- CONCRETE SHARED PATH

EXISTING

- LOT BOUNDARY
- CONTOURS (1.0m)
- WATER COURSE
- RIPARIAN ZONE INNER BOUNDARY
- RIPARIAN ZONE OUTER BOUNDARY
- VEGETATION (TO BE RETAINED)
- TREE (TO BE RETAINED)

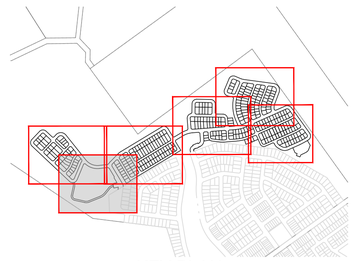
FUTURE DEVELOPMENT

- LOT BOUNDARY

KERB ABBREVIATIONS	
KG	STANDARD KERB AND GUTTER
KO	KERB ONLY
DG	DISH GUTTER
ER	EDGE RESTRAINT
VC	VEHICLE CROSSING

NOTES:

1. REFER TO MAKER ENGINEERING REPORT FOR ADDITIONAL BASIN SIZING AND DETAILS
2. REFER TO MAITLAND CITY COUNCIL STANDARD DRAWINGS FOR KERB PROFILES



KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m

SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
CIVIL WORKS
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0101	2 OF 6	A1	1

Matthew Phillips, 6/12/2024 3:35 PM

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LOT 462
DP858901

PARALLEL INDENT PARKING BAYS ALONG PERIMETER ROAD

PROPOSED MOUNTABLE ROUNDABOUT. REFER TO MKR00884-10-C0351 FOR DETAILS

4001
RESIDUE
361650m²

3002
DRAINAGE RESERVE
2877m²

1001
OPEN SPACE
3668m²

2001
COMMUNITY FACILITIES
480m²

STAGE 1

FUTURE RESIDENTIAL DEVELOPMENT

ROAD 01
ROAD 03
ROAD 12
ROAD 19

JOINS SHEET 1
JOINS SHEET 2
JOINS SHEET 4

LEGEND

PROPOSED

- SITE BOUNDARY
- CIVIL WORKS BOUNDARY - STAGE 1
- CONCEPTUAL CIVIL WORKS BOUNDARY - FUTURE STAGE
- LOT BOUNDARY
- ROAD CENTERLINE AND CHAINAGE
- KERB TYPE (KG DG KO)
- CONTOURS (0.5m)
- OPEN DRAIN
- BASIN EXTENTS
- STORMWATER
- RIP RAP
- RETAINING WALL
- ROAD PAVEMENT
- UNSEALED ACCESS TRACK
- INTERALLOTMENT VEGETATED BATTER - MAX 1:2
- OPEN SPACE VEGETATED BATTER - MAX 1:2
- CONCRETE SHARED PATH

EXISTING

- LOT BOUNDARY
- CONTOURS (1.0m)
- WATER COURSE
- RIPARIAN ZONE INNER BOUNDARY
- RIPARIAN ZONE OUTER BOUNDARY
- VEGETATION (TO BE RETAINED)
- TREE (TO BE RETAINED)

FUTURE DEVELOPMENT

- LOT BOUNDARY

KERB ABBREVIATIONS	
KG	STANDARD KERB AND GUTTER
KO	KERB ONLY
DG	DISH GUTTER
ER	EDGE RESTRAINT
VC	VEHICLE CROSSING

NOTES:

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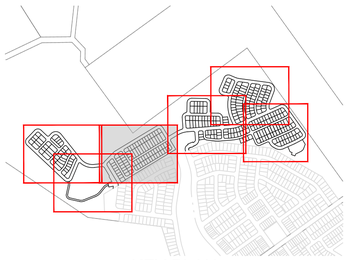
2. REFER TO MAITLAND CITY COUNCIL STANDARD DRAWINGS FOR KERB PROFILES



KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
CIVIL WORKS
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0102	3 OF 6	A1	1

Matthew Phillips, 6/12/2024 3:55 PM

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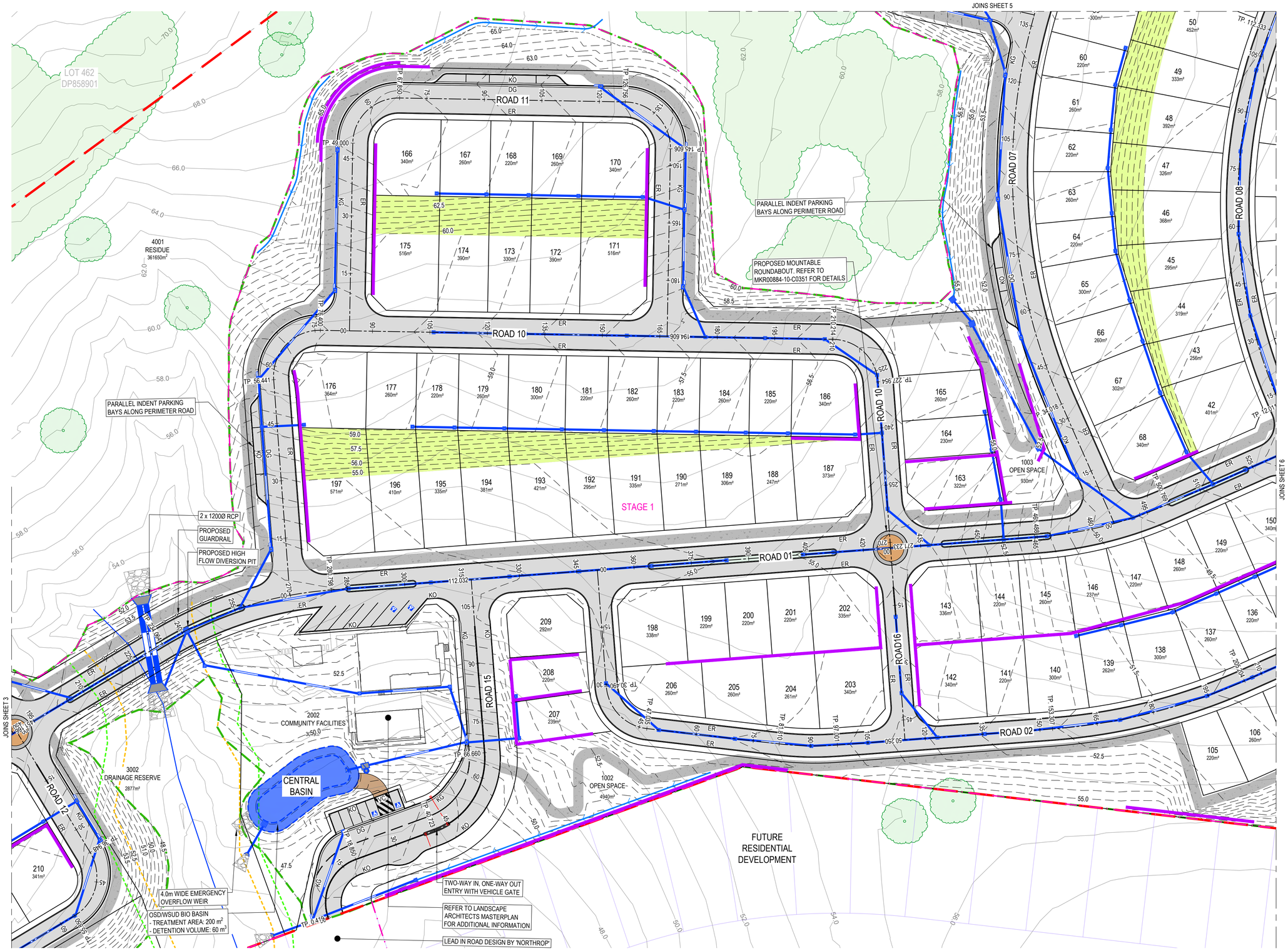

LEGEND

PROPOSED

- SITE BOUNDARY
- CIVIL WORKS BOUNDARY - STAGE 1
- CONCEPTUAL CIVIL WORKS BOUNDARY - FUTURE STAGE
- LOT BOUNDARY
- ROAD CENTERLINE AND CHAINAGE
- KERB TYPE (KG DG KO)
- CONTOURS (0.5m)
- OPEN DRAIN
- BASIN EXTENTS
- STORMWATER
- RIP RAP
- RETAINING WALL
- ROAD PAVEMENT
- UNSEALED ACCESS TRACK
- INTERALLOTMENT VEGETATED BATTER - MAX 1:2
- OPEN SPACE VEGETATED BATTER - MAX 1:2
- CONCRETE SHARED PATH

EXISTING

- LOT BOUNDARY
- CONTOURS (1.0m)
- WATER COURSE
- RIPARIAN ZONE INNER BOUNDARY
- RIPARIAN ZONE OUTER BOUNDARY
- VEGETATION (TO BE RETAINED)
- TREE (TO BE RETAINED)

FUTURE DEVELOPMENT

- LOT BOUNDARY

KERB ABBREVIATIONS	
KG	STANDARD KERB AND GUTTER
KO	KERB ONLY
DG	DISH GUTTER
ER	EDGE RESTRAINT
VC	VEHICLE CROSSING

NOTES:

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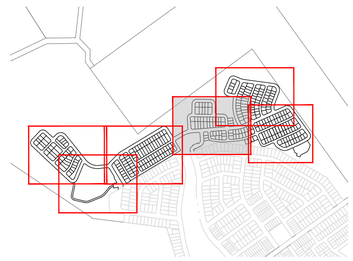

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REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
CIVIL WORKS
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0103	4 OF 6	A1	1

Matthew Phillips, 6/12/2024 3:36 PM

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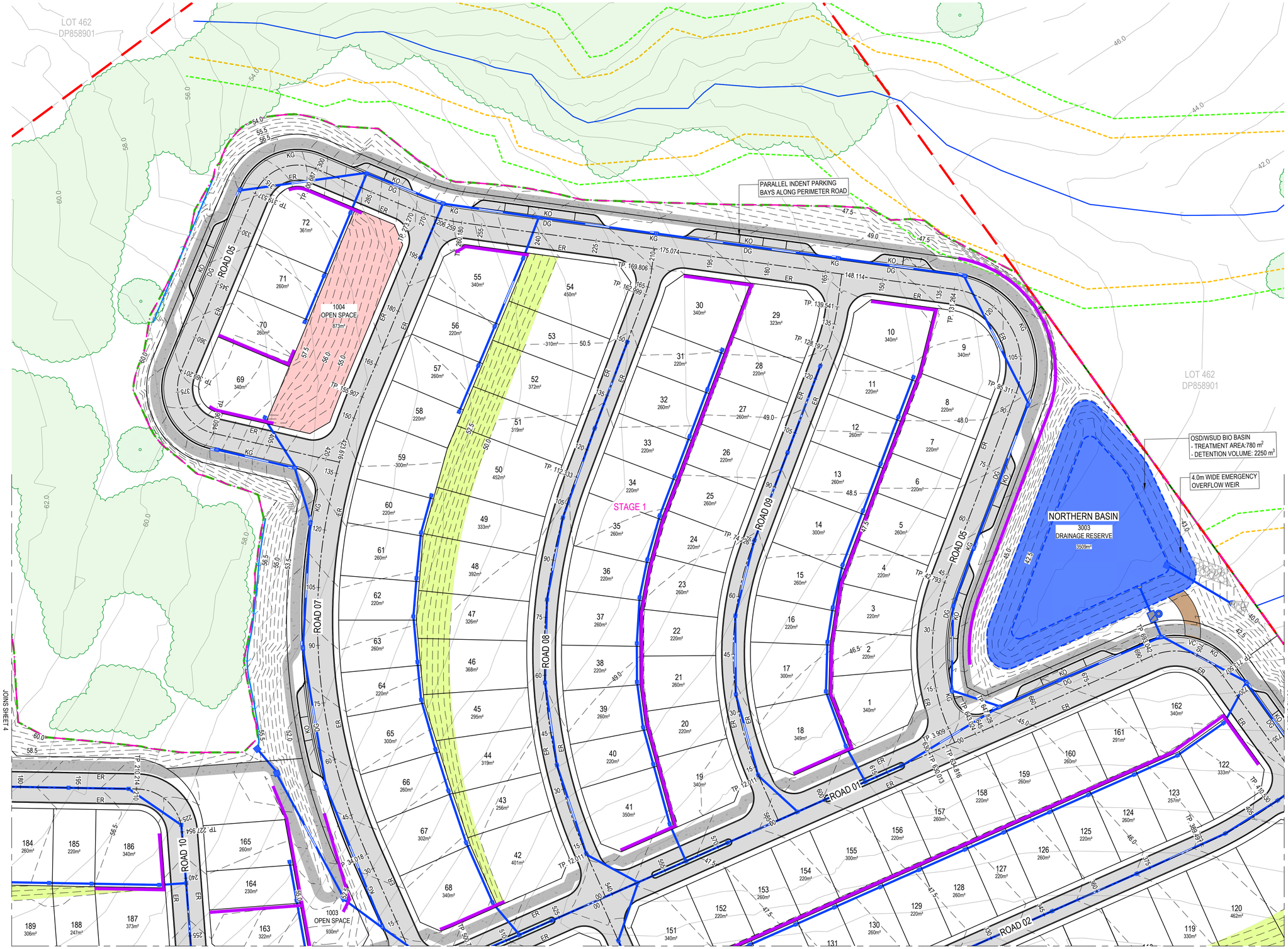

LEGEND

PROPOSED

- SITE BOUNDARY
- CIVIL WORKS BOUNDARY - STAGE 1
- CONCEPTUAL CIVIL WORKS BOUNDARY - FUTURE STAGE
- LOT BOUNDARY
- ROAD CENTERLINE AND CHAINAGE (15 — 30)
- KERB TYPE (KG DG KO)
- CONTOURS (0.5m) (7.0)
- OPEN DRAIN
- BASIN EXTENTS
- STORMWATER
- RIP RAP
- RETAINING WALL
- ROAD PAVEMENT
- UNSEALED ACCESS TRACK
- INTERALLOTMENT VEGETATED BATTER - MAX 1:2
- OPEN SPACE VEGETATED BATTER - MAX 1:2
- CONCRETE SHARED PATH

EXISTING

- LOT BOUNDARY
- CONTOURS (1.0m) (7.0)
- WATER COURSE
- RIPARIAN ZONE INNER BOUNDARY
- RIPARIAN ZONE OUTER BOUNDARY
- VEGETATION (TO BE RETAINED)
- TREE (TO BE RETAINED)

FUTURE DEVELOPMENT

- LOT BOUNDARY

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NOTES:

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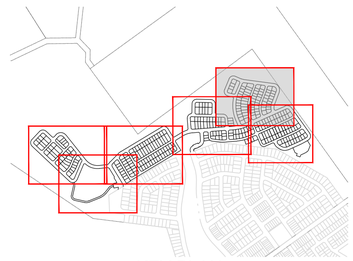

KEY PLAN

SCALE 1:500 AT ORIGINAL SIZE (0 5 10 15 20 25m)

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

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559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
CIVIL WORKS
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0104	5 OF 6	A1	1

Matthew Phillips, 6/12/2024 3:41 PM

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JOINS SHEET 5

JOINS SHEET 4

JOINS BELOW

ROAD 01

ROAD 02

ROAD 06

ROAD 17

STAGE 1

PARALLEL INDENT PARKING BAYS ALONG PERIMETER ROAD

LOT 462
DP858901

2003
CARAVAN CARPARK
2671m²

4002
RESIDUE
21383m²

CARPARK PERIMETER FENCING

ACCESS 02

REFER TO LANDSCAPE ARCHITECTS MASTERPLAN FOR ADDITIONAL INFORMATION

REFER INSET A

FUTURE RESIDENTIAL DEVELOPMENT

EXISTING FARM DAM TO BE RETAINED AND MODIFIED TO SUIT PROPOSED ACCESS TRAIL

FUTURE ACCESS CONNECTION TO BE PROVIDED TO ADJACENT RESIDENTIAL DEVELOPMENT

FUTURE ACCESS 02

INSET A
SCALE @ 1:500

LEGEND

PROPOSED

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EXISTING

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- RIPARIAN ZONE INNER BOUNDARY
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- VEGETATION (TO BE RETAINED)
- TREE (TO BE RETAINED)

FUTURE DEVELOPMENT

- LOT BOUNDARY

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KEY PLAN

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0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
CIVIL WORKS
LAYOUT PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0105	6 OF 6	A1	1

Matthew Phillips, 6/12/2024 3:42 PM

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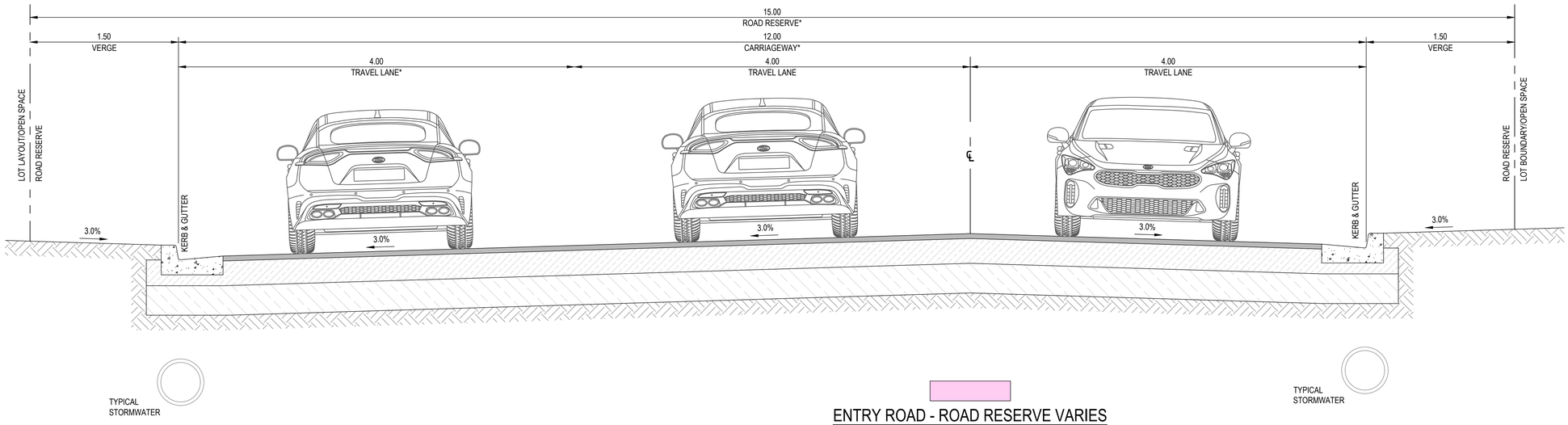
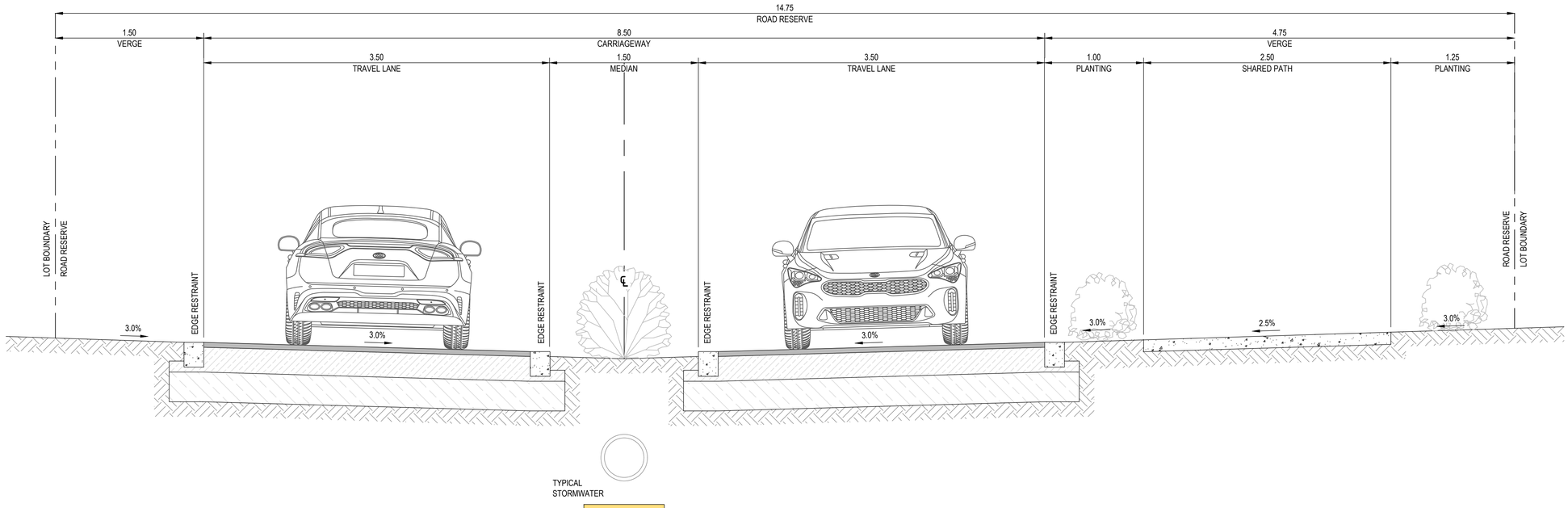


ENTRY ROAD - ROAD RESERVE VARIES

SCALE @ 1:25

*ENTRY ROAD TO BE 2-WAY IN 1-WAY OUT AT GATE ENTRY. REFER TO CIVIL WORKS PLAN FOR MORE DETAILS



BOULEVARD - 14.75m ROAD RESERVE

SCALE @ 1:25

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 0.25 0.5 0.75 1.0 1.25m

SCALE 1:25 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

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559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
TYPICAL ROAD SECTIONS
DETAILS

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0310	1 OF 4	A1	1

Matthew Phillips, 6/12/2024, 2:26 PM

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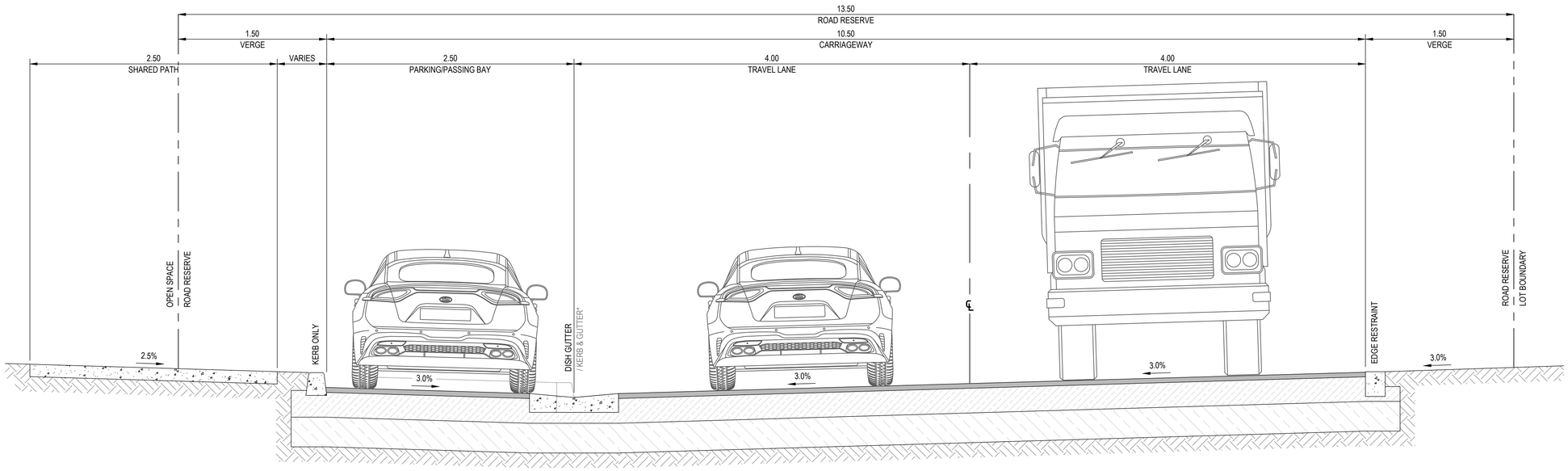
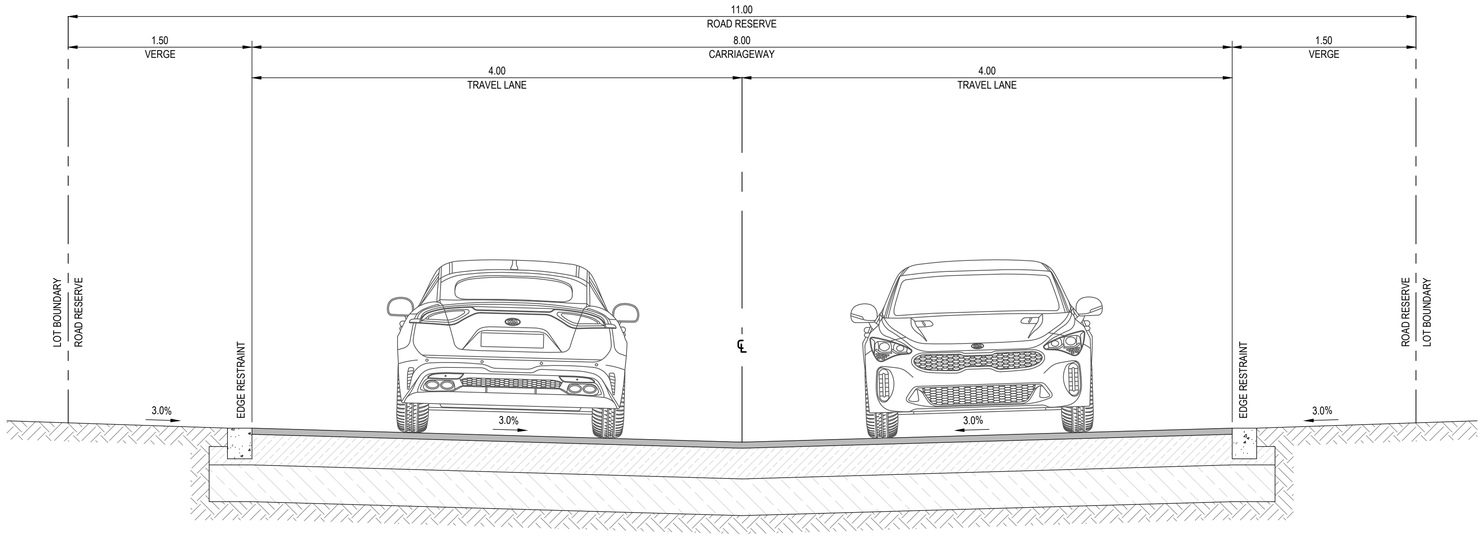


PERIMETER ROAD - 13.5m ROAD RESERVE

SCALE @ 1:25

*KERB AND GUTTER TO REPLACE DISH GUTTER WHERE NO PARKING/PASSING BAY



MODIFIED ACCESS ROAD - 11.0m ROAD RESERVE

SCALE @ 1:25

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0 0.25 0.5 0.75 1.0 1.25m

SCALE 1:25 AT ORIGINAL SIZE

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559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
TYPICAL ROAD SECTIONS
DETAILS

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0311	2 OF 4	A1	1

Matthew Phillips, 6/12/2024 2:26 PM

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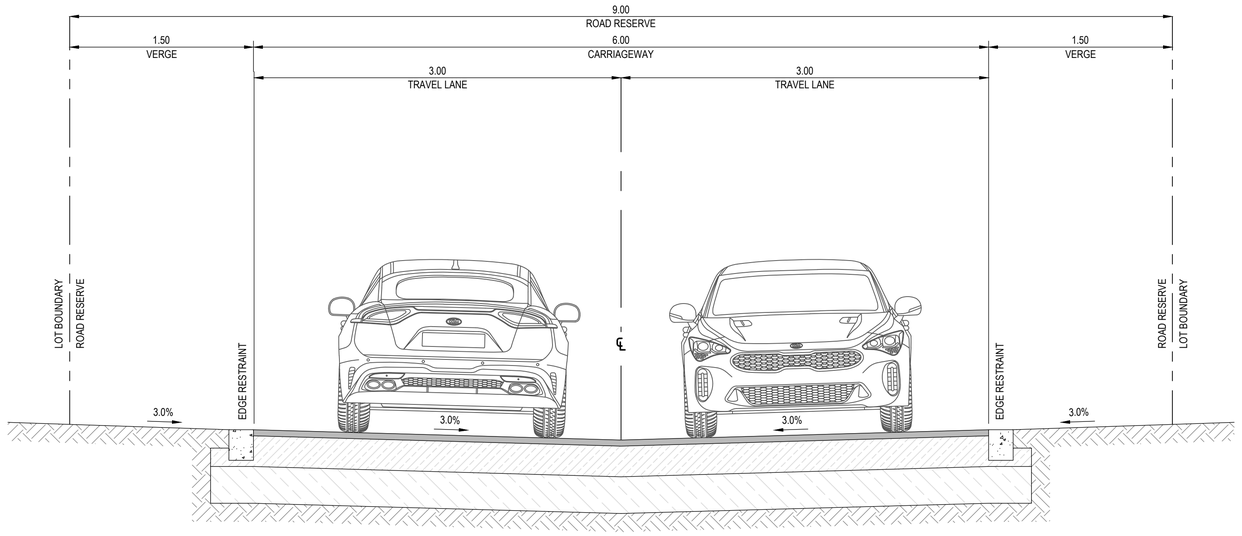
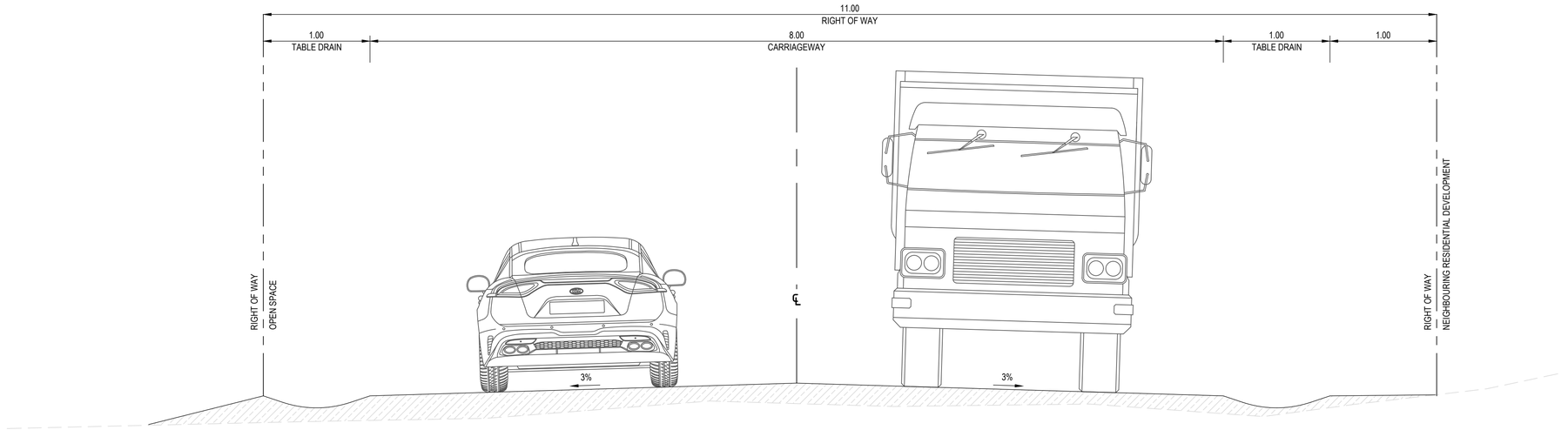


ACCESS ROAD - 9.0m ROAD RESERVE

SCALE @ 1:25



ACCESS TRAIL (TWO WAY) - 11.0m RIGHT OF WAY

SCALE @ 1:25

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 0.25 0.5 0.75 1.0 1.25m

SCALE 1:25 AT ORIGINAL SIZE

Third.i COMMUNITIES

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559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
TYPICAL ROAD SECTIONS
DETAILS

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0312	3 OF 4	A1	1

Matthew Phillips, 6/12/2024 2:25 PM

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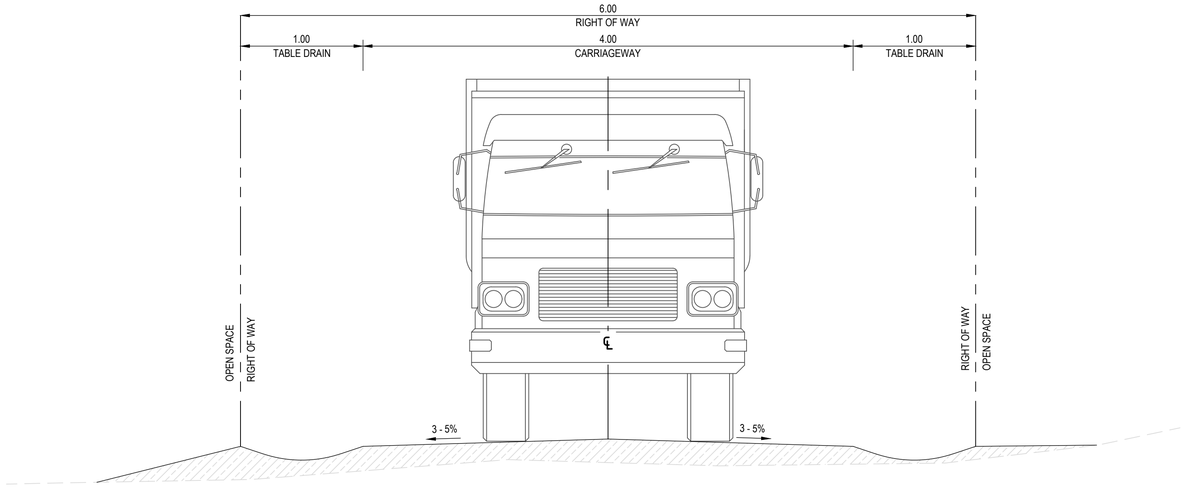

ACCESS TRAIL (ONE WAY) - 6.00m RIGHT OF WAY

SCALE @ 1:25

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 0.25 0.5 0.75 1.0 1.25m

SCALE 1:25 AT ORIGINAL SIZE

Third.i COMMUNiTiES

MAKER ENG SURVEY DESIGN DELIVER

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DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
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CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
TYPICAL ROAD SECTIONS
DETAILS

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C0313	4 OF 4	A1	1

Matthew Phillips, 6/12/2024 2:27 PM

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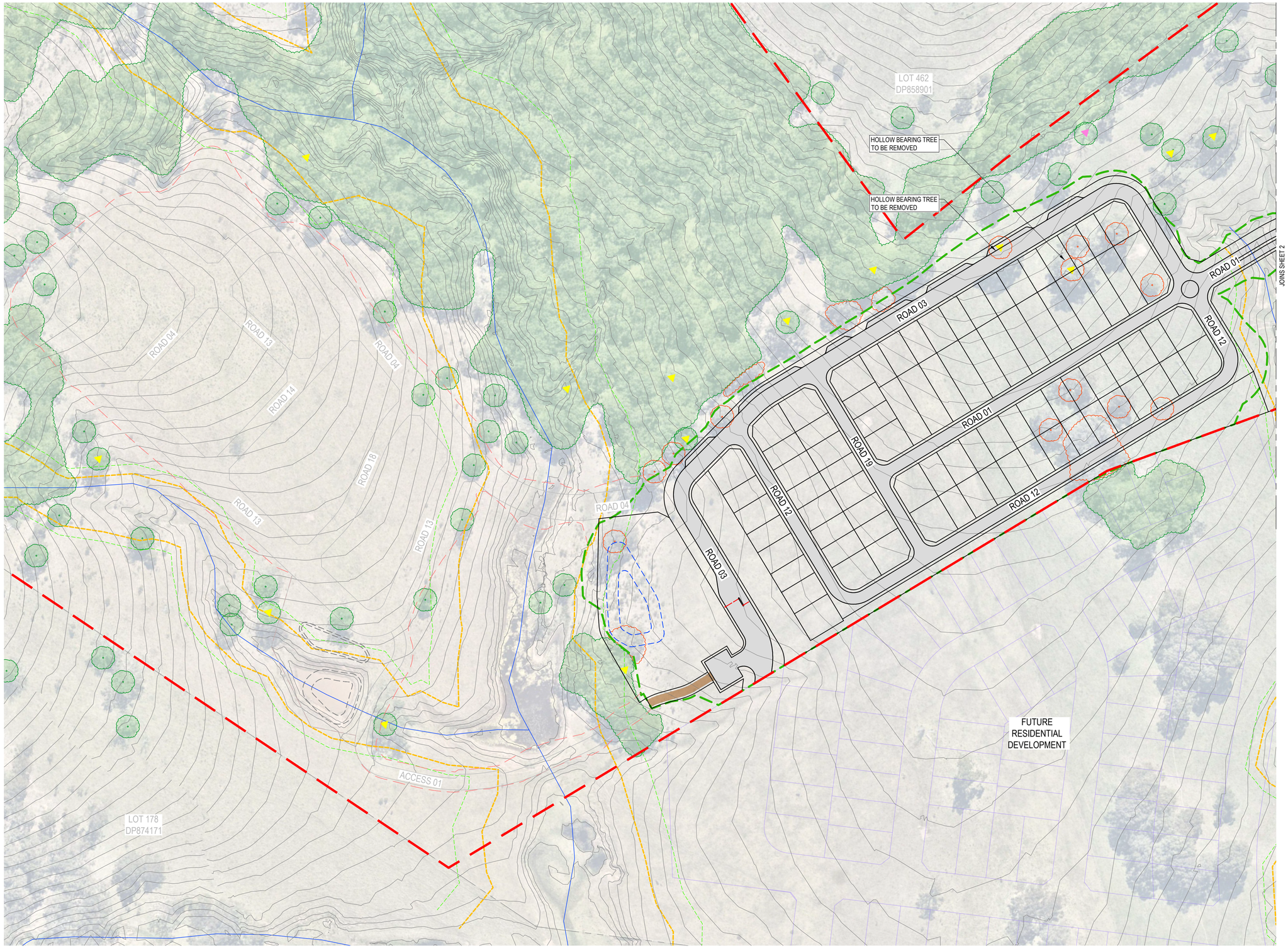

LEGEND

PROPOSED

- SITE BOUNDARY
- CIVIL WORKS BOUNDARY
- LOT BOUNDARY
- ROAD PAVEMENT
- UNSEALED ACCESS TRACK

EXISTING

- LOT BOUNDARY
- CONTOURS (1.0m) (7.0)
- WATER COURSE
- RIPARIAN ZONE INNER BOUNDARY
- RIPARIAN ZONE OUTER BOUNDARY
- FARM DAM TO BE REMOVED
- VEGETATION (TO BE RETAINED)
- VEGETATION (TO BE REMOVED)
- TREE (TO BE RETAINED)
- TREE (TO BE REMOVED)
- HOLLOW BEARING TREES

FUTURE DEVELOPMENT

- LOT BOUNDARY

KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
VEGETATION REMOVAL PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C1400	1 OF 2	A1	1

Matthew Phillips, 6/12/2024 2:55 PM

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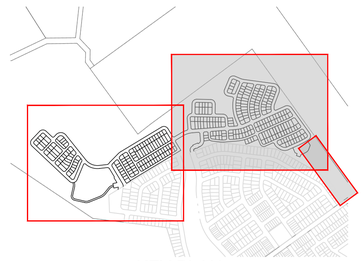
INSET A
SCALE @ 1:1000

LEGEND

PROPOSED
- SITE BOUNDARY
- CIVIL WORKS BOUNDARY
- LOT BOUNDARY
- ROAD PAVEMENT
- UNSEALED ACCESS TRACK

EXISTING
- LOT BOUNDARY
- CONTOURS (1.0m) — 7.0
- WATER COURSE
- RIPARIAN ZONE INNER BOUNDARY
- RIPARIAN ZONE OUTER BOUNDARY
- FARM DAM TO BE REMOVED
- VEGETATION (TO BE RETAINED)
- VEGETATION (TO BE REMOVED)
- TREE (TO BE RETAINED)
- TREE (TO BE REMOVED)
- HOLLOW BEARING TREES

FUTURE DEVELOPMENT
- LOT BOUNDARY



KEY PLAN

REV	DATE	DESCRIPTION	AMD BY	APP BY
1	06.12.24	ISSUED FOR APPROVAL	M.A.J.P.	T.J.H.

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

Third.i COMMUNITIES

MAKER ENG SURVEY DESIGN DELIVER

DRAWN: J.BADI	DESIGNED: M.PHILLIPS
DRAFT CHECK: M.PHILLIPS	DESIGN CHECK: S.WEATHERBY
APPROVED: T.HOWE	
FOR APPROVAL	

559 ANAMBAH ROAD GOSFORTH
CONCEPT & STAGE 1 DEVELOPMENT APPLICATION
VEGETATION REMOVAL PLAN

DRAWING NUMBER	SHEET No.	ORIG. SIZE	REVISION
MKR00884-10-C1401	2 OF 2	A1	1

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Appendix B: Planning for Bushfire Protection 2019 Compliance Tables

Table 1: Aims and Objectives of Planning for Bushfire Protection 2019

Objectives	Satisfied	Comment
➢ Afford buildings and their occupants protection from exposure to a bush fire	✓	APZs along the interface with the vegetation within the site is provided by perimeter roads that separate the sites from the primary threat and adequate setbacks provide defendable space from areas of reduced vegetation. Consequently, there will be no dwellings (long-term occupation) exposed to radiant heat levels greater than 29kW/m^2.
➢ Provide for a defendable space to be located around buildings	✓	Where required, each site is provided with an APZ that accommodates a building footprint that will not be exposed to radiant heat levels exceeding 29kW/m^2. The APZ and road network provides a defendable space that is capable of providing an environment in which a person can undertake property protection after the passage of bushfire with some level of safety.
➢ Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent the likely fire spread to buildings	✓	The APZs have been calculated to provide a suitable buffer between any future dwellings and the bushfire hazard; commensurate with the vegetation formation and slope.
➢ Ensure that safe operational access and egress for emergency service personnel and residents is available	✓	All residents have direct access to multiple internal roads that provide several options to evacuate from the development site. Due to the proposed road widths and road layout within the development site, emergency service personnel will continue to have unobstructed access to the site whilst residents are evacuating in the opposite direction.
➢ Provide for ongoing management and maintenance of BPMs	✓	All APZs are contained with common property and will be maintained by the operator of the MHE in accordance with Appendix 4 of the PBP 2019 and Standards for APZs.
➢ Ensure that utility services are adequate to meet the needs of firefighters	✓	The development includes all essential utility services to meet the needs of firefighters; including a reliable water supply.

Table 2: Performance Criteria and Acceptable Solutions for SFPP Developments (Chapter 6 PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
6.8.1 ASSET PROTECTION ZONES Table 6.8a To provide suitable building design, construction and sufficient space to ensure that radiant heat levels at buildings does not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.	Radiant heat levels of greater than 10kW/m^2 (1200K) are not experienced at any part of the building.	The building is provided with an APZ in accordance with Table A1.12.1. in Appendix 1.	**PS**	The proposed MHE has been designed to ensure APZs are provided to achieve the Performance Criteria for residential infill development.
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.	The APZ is not located on lands with a slope exceeding 18°	✓	All APZs are located on land with slopes 13° or less.
	APZs are managed and maintained to prevent the spread of a fire towards the building. The APZ is provided in perpetuity.	The APZ is managed in accordance with the requirements of Appendix 4 of PBP 2019 and is wholly within the boundaries of the development site.	✓	The APZ will be required to be maintained in accordance with Appendix 4 of the PBP 2019 and Standards for APZs by the operator of the MHE.
		Mechanisms are in place to provide for the maintenance of the APZ over the life of the development.	✓	
		Other structures located within the APZ need to be located further than 6m from the refuge building.	✓	Any ancillary structures will be greater than 6m from the primary structure.
	VARIATIONS: Manufactured Home Estates	An APZ in accordance with Table A1.12.1 in Appendix 1 of this document is provided to all new dwellings; or	✓	The site layout has been designed to ensure all sites are provided with sufficient area to provide a dwelling exposed to 29kW/m^2 or less. Whilst the proposed development does not seek consent for the construction of any new dwellings, the Community Management Statement shall include the BAL Contour Plan (**Figure 13**) and require each dwelling to be constructed to the nominated BAL rating. Furthermore, a suitably worded instrument(s) must be created pursuant to section 88 of the Conveyancing Act 1917 clearly outlining the require BAL ratings for each dwelling.
		An APZ in accordance with Table A1.12.2 in Appendix 1 of this document is provided where it is demonstrated that all new dwellings will be constructed in accordance with BAL-29.		
LANDSCAPING	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with APZ standards (see Appendix 4). Fencing is constructed in accordance with section 7.6.	✓	All new landscaping will be designed and planted in accordance with the guidelines relevant at the time of planting.

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
CONSTRUCTION	The proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact.	A construction level of BAL-12.5 under AS3959 or NASH and Table 6.8a is applied	✓	Whilst the proposed development does not seek consent for the construction of any new dwellings, the Community Management Statement shall include the BAL Contour Plan (**Figure 13**) and require each dwelling to be constructed to the nominated BAL rating. Furthermore, a suitably worded instrument(s) must be created pursuant to section 88 of the Conveyancing Act 1917 clearly outlining the require BAL ratings for each dwelling.
	VARIATIONS: Manufactured Home Estates	Where an APZ in accordance with Table A1.12.1 in Appendix 1 of this document the construction standards for BAL-12.5 shall apply; or		
		Where an APZ in accordance with Table A1.12.2 in Appendix 1 of this document the construction standards for BAL-29 shall apply.		
6.8.2 ACCESS Table 6.8b To provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area. **FIREFIGHTING VEHICLES**	Firefighting vehicles are provided with safe all weather access to structures and hazard vegetation.	SFPP access roads are two-wheel drive, all-weather roads	✓	All roads are all-weather, sealed roads allowing safe and direct access for fire fighting vehicles to all lots.
		Access is provided to all structures and hazard vegetation.	✓	
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	✓	
		Access roads must provide suitable turning areas in accordance with Appendix 3.	✓	
ACCESS ROAD CAPACITY	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); bridges and causeways are to clearly indicate load rating.	✓	All new roads will have sufficient capacity to carry fully loaded fire fighting vehicles.
ACCESS TO WATER	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.	✓	All new sites will be connected to a new water supply main.
		Hydrants are provided in accordance with AS2419.1:2005.	✓	
		There is suitable access for Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	✓	

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
PERIMETER ROADS	Perimeter access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	There are two-way sealed roads.	✓	The proposed internal road network provides perimeter roads and a secondary egress to Anambah Road.
		8m carriageway width kerb to kerb.	✓	
		Hydrants are to be located clear of parking areas.	✓	
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	✓	
		Curves of roads have a minimum inner radius of 6m.	✓	
		The maximum grade road is 15° and average grade is 10°.	✓	
		The road crossfall does not exceed 3°.	✓	
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches.	✓	
NON-PERIMETER ROADS	Non-perimeter access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while occupants are evacuating.	Minimum 5.5m width kerb to kerb.	✓	The proposed new internal roads provide safe circulation throughout the MHE offering multiple egress routes from every site.
		Parking is provided outside of the carriageway.	✓	
		Hydrants are to be located clear of parking areas.	✓	
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	✓	
		Curves of roads have a minimum inner radius of 6m.	✓	
		The maximum grade road is 15° and average grade is 10°.	✓	
		The road crossfall does not exceed 3°.	✓	
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches.	✓	

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
6.8.3 SERVICES Table 6.8c To provide adequate services for water for the protection of buildings during and after the passage of a bushfire, and not to locate gas and electricity so as not to contribute to the risk of fire to a building. **WATER**	A water supply is provided for firefighting purposes	Reticulated water is to be provided to the development, where available	✓	A reticulated water supply is provided.
		A static water supply is provided where no reticulated water is available	**N/A**	
	Water supplies are located at regular intervals The water supply is accessible and reliable for firefighting operations	Fire hydrant spacing, design and sizing comply with AS2419.1:2005;	✓	A series of fire hydrants will be located throughout the MHE.
		Hydrants are not located within any road carriageway;	✓	
		Reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads.	✓	A new water supply ring main will be provided throughout the new component of the MHE.
	Flows and pressures are appropriate	Fire hydrant flows and pressures comply with AS2419.1:2005.	✓	
	The integrity of the water supply is maintained	All above ground water service pipes are metal, including and up to any taps.	**N/A**	
ELECTRICITY	Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings.	Where practicable, electrical transmission lines are underground.	✓	All transmission lines will be located underground.
		Where overhead electrical transmission lines are proposed as follows: - lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and - no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines	**N/A**	

Intent of Measure	Performance Criteria	Acceptable Solution	Complies	Comment
GAS	Location 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 1596:2014 and the requirements of relevant authorities, metal piping is to be used.	✓ **Able to comply**	
		All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side;	✓	All tanked gas stored on site will be sited and secured with appropriate shielded from the bushfire hazard.
		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.	✓	
6.8.4 EMERGENCY MANAGEMENT PLANNING **Table 6.8d** To provide suitable emergency and evacuation arrangements for occupants of SFPP developments	A bush fire emergency and evacuation management plan is prepared.	Bush fire emergency management and evacuation plan is prepared consistent with the: ❑ the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan; and ❑ AS3745:2010 Planning for emergencies in facilities.	✓ **Able to comply**	A Bushfire Management Plan is recommended to be prepared for the MHE.
		The emergency and evacuation management plan should include a mechanism for the early relocation of occupants.	✓ **Able to comply**	
	Appropriate and adequate management arrangements are established for consultation and implementation of the bush fire emergency and evacuation management plan.	An Emergency Planning Committee is established to consult with residents and staff in developing and implementing an Emergency Procedures Manual.	✓ **Able to comply**	Where required, consultation with staff and residents will be undertaken during the preparation of the Bushfire Management Plan.
		Detailed plans of all emergency assembly areas including 'on-site' and 'off-site' arrangements as started in AS3745 are clearly displayed, and an annual (as a minimum) trial emergency evacuation is conducted.	✓ **Able to comply**	

Appendix C: Landscape Masterplan - Moir Studio Landscape Architecture

REFER TO MAITLAND COUNCIL DA TRACKER

Appendix D: AHIMS Report

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 2477 Anambah MHE

Client Service ID : 962238

Katrina Greville

21 Costata Crescent
Adamstown New South Wales 2289

Attention: Katrina Greville

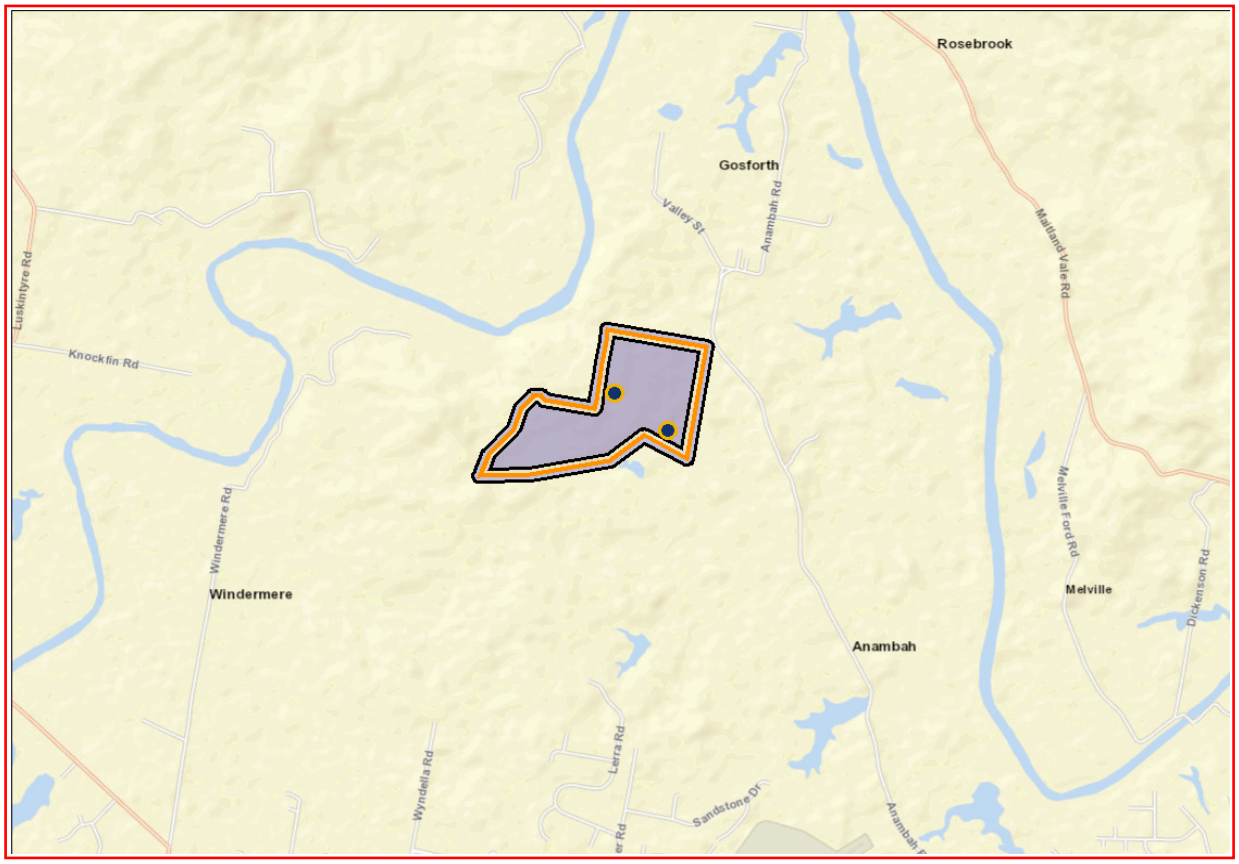
Email: klmukevski@bigpond.com

Date: 19 December 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 177, DP:DP874171, Section : - with a Buffer of 50 meters, conducted by Katrina Greville on 19 December 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

2	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Appendix E: NBC Bushfire Attack Assessor V4.1 Report

NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 16/01/2025 **Assessment Date:** 19/12/2024

Site Street Address: 2477 559 Anambah Road, Gosforth

Assessor: Stuart Greville; Bushfire Planning Australia

Local Government Area: Maitland **Alpine Area:** No

Equations Used

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

Run Description: T1 North

Vegetation Information

Vegetation Type: Grassland
Vegetation Group: Grassland
Vegetation Slope: 2.4 Degrees **Vegetation Slope Type:** Downslope
Surface Fuel Load(t/ha): 6 **Overall Fuel Load(t/ha):** 6
Vegetation Height(m): 0 Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees **Site Slope Type:** Downslope
Elevation of Receiver(m): Default **APZ/Separation(m):** 11

Fire Inputs

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

Calculation Parameters

Flame Emissivity: 95 **Relative Humidity(%):** 25
Heat of Combustion(kJ/kg) 18600 **Ambient Temp(K):** 308
Moisture Factor: 5 **FDI:** 130

Program Outputs

Level of Construction: BAL 29 **Peak Elevation of Receiver(m):** 4.21
Radiant Heat(kW/m2): 29 **Flame Angle (degrees):** 64
Flame Length(m): 9.37 **Maximum View Factor:** 0.439
Rate Of Spread (km/h): 19.94 **Inner Protection Area(m):** 0
Transmissivity: 0.869 **Outer Protection Area(m):** 0
Fire Intensity(kW/m): 61825

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T10 West

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 0 Degrees

Vegetation Slope Type: Level

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 16

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 6.18

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 13.87

Maximum View Factor: 0.446

Rate Of Spread (km/h): 1.68

Inner Protection Area(m): 0

Transmissivity: 0.856

Outer Protection Area(m): 0

Fire Intensity(kW/m): 21353

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	12	16	23	32	50	6

Run Description:	T11 West		
Vegetation Information			
Vegetation Type:	Hunter Macleay DSF		
Vegetation Group:	Dry Sclerophyll Forests (Shrub/Grass)		
Vegetation Slope:	3.3 Degrees	**Vegetation Slope Type:**	Upslope
Surface Fuel Load(t/ha):	14	**Overall Fuel Load(t/ha):**	24.6
Vegetation Height(m):	0.9	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	14
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	5.2
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	63
Flame Length(m):	11.66	**Maximum View Factor:**	0.442
Rate Of Spread (km/h):	1.34	**Inner Protection Area(m):**	0
Transmissivity:	0.862	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	17005		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	10	14	20	28	45	6

Run Description:	T12 West		
Vegetation Information			
Vegetation Type:	Coastal Freshwater Lagoons		
Vegetation Group:	Freshwater Wetlands		
Vegetation Slope:	5.4 Degrees	**Vegetation Slope Type:**	Upslope
Surface Fuel Load(t/ha):	4.4	**Overall Fuel Load(t/ha):**	4.4
Vegetation Height(m):	1	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	4
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	1.52
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	65
Flame Length(m):	3.35	**Maximum View Factor:**	0.428
Rate Of Spread (km/h):	1.59	**Inner Protection Area(m):**	0
Transmissivity:	0.891	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	3605		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T13 West

Vegetation Information

Vegetation Type: Coastal Freshwater Lagoons

Vegetation Group: Freshwater Wetlands

Vegetation Slope: 7 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 4.4

Overall Fuel Load(t/ha): 4.4

Vegetation Height(m): 1

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 6

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 2.23

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 64

Flame Length(m): 4.97

Maximum View Factor: 0.431

Rate Of Spread (km/h): 3.73

Inner Protection Area(m): 0

Transmissivity: 0.885

Outer Protection Area(m): 0

Fire Intensity(kW/m): 8483

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T14 West

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 0.3 Degrees

Vegetation Slope Type: Upslope

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 16

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 6.09

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 13.68

Maximum View Factor: 0.446

Rate Of Spread (km/h): 1.65

Inner Protection Area(m): 0

Transmissivity: 0.856

Outer Protection Area(m): 0

Fire Intensity(kW/m): 20915

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	12	16	23	32	50	6

Run Description: T15 west

Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 2.2 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 6

Overall Fuel Load(t/ha): 6

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 11

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 130

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 4.18

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 64

Flame Length(m): 9.31

Maximum View Factor: 0.438

Rate Of Spread (km/h): 19.67

Inner Protection Area(m): 0

Transmissivity: 0.869

Outer Protection Area(m): 0

Fire Intensity(kW/m): 60978

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T16 West

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 4.6 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 20

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 7.92

Radiant Heat(kW/m2): 28.41

Flame Angle (degrees): 62

Flame Length(m): 17.95

Maximum View Factor: 0.443

Rate Of Spread (km/h): 2.31

Inner Protection Area(m): 16

Transmissivity: 0.844

Outer Protection Area(m): 4

Fire Intensity(kW/m): 29329

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	15	20	28	39	60	6

Run Description: T17 West

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 0.1 Degrees

Vegetation Slope Type: Upslope

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 16

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 6.15

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 13.81

Maximum View Factor: 0.446

Rate Of Spread (km/h): 1.67

Inner Protection Area(m): 0

Transmissivity: 0.856

Outer Protection Area(m): 0

Fire Intensity(kW/m): 21206

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	12	16	23	32	50	6

Run Description: T18 North-west

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 2.9 Degrees

Vegetation Slope Type: Upslope

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 14

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 5.31

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 11.92

Maximum View Factor: 0.443

Rate Of Spread (km/h): 1.38

Inner Protection Area(m): 0

Transmissivity: 0.861

Outer Protection Area(m): 0

Fire Intensity(kW/m): 17480

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	10	14	20	29	45	6

Run Description: T19 North-west

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 0 Degrees

Vegetation Slope Type: Level

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 16

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 6.18

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 13.87

Maximum View Factor: 0.446

Rate Of Spread (km/h): 1.68

Inner Protection Area(m): 0

Transmissivity: 0.856

Outer Protection Area(m): 0

Fire Intensity(kW/m): 21353

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	12	16	23	32	50	6

Run Description: T2 North

Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 4 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 6

Overall Fuel Load(t/ha): 6

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 12

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 130

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 4.45

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 64

Flame Length(m): 9.9

Maximum View Factor: 0.44

Rate Of Spread (km/h): 22.27

Inner Protection Area(m): 0

Transmissivity: 0.867

Outer Protection Area(m): 0

Fire Intensity(kW/m): 69042

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T20 North

Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 1.7 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 6

Overall Fuel Load(t/ha): 6

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 11

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 130

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 4.11

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 64

Flame Length(m): 9.15

Maximum View Factor: 0.438

Rate Of Spread (km/h): 19

Inner Protection Area(m): 0

Transmissivity: 0.87

Outer Protection Area(m): 0

Fire Intensity(kW/m): 58910

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description:	T21 Onsite		
Vegetation Information			
Vegetation Type:	Coastal Freshwater Lagoons		
Vegetation Group:	Freshwater Wetlands		
Vegetation Slope:	0.6 Degrees	**Vegetation Slope Type:**	Upslope
Surface Fuel Load(t/ha):	4.4	**Overall Fuel Load(t/ha):**	4.4
Vegetation Height(m):	1	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	5
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	1.77
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	65
Flame Length(m):	3.91	**Maximum View Factor:**	0.429
Rate Of Spread (km/h):	2.21	**Inner Protection Area(m):**	0
Transmissivity:	0.889	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	5021		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T22 Onsite

Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 11.7 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 6

Overall Fuel Load(t/ha): 6

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 15

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 130

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 5.76

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 12.92

Maximum View Factor: 0.444

Rate Of Spread (km/h): 37.89

Inner Protection Area(m): 0

Transmissivity: 0.858

Outer Protection Area(m): 0

Fire Intensity(kW/m): 117450

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T23 Onsite

Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 6.9 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 6

Overall Fuel Load(t/ha): 6

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 13

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 130

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 4.88

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 10.95

Maximum View Factor: 0.441

Rate Of Spread (km/h): 27.21

Inner Protection Area(m): 0

Transmissivity: 0.864

Outer Protection Area(m): 0

Fire Intensity(kW/m): 84337

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T24 south

Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 1.7 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 6

Overall Fuel Load(t/ha): 6

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 11

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 130

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 4.11

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 64

Flame Length(m): 9.15

Maximum View Factor: 0.438

Rate Of Spread (km/h): 19

Inner Protection Area(m): 0

Transmissivity: 0.87

Outer Protection Area(m): 0

Fire Intensity(kW/m): 58910

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description:	T25 South-west		
Vegetation Information			
Vegetation Type:	Hunter Macleay DSF		
Vegetation Group:	Dry Sclerophyll Forests (Shrub/Grass)		
Vegetation Slope:	2.8 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	14	**Overall Fuel Load(t/ha):**	24.6
Vegetation Height(m):	0.9	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	18
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	7.16
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	62
Flame Length(m):	16.21	**Maximum View Factor:**	0.449
Rate Of Spread (km/h):	2.04	**Inner Protection Area(m):**	0
Transmissivity:	0.85	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	25904		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	14	18	26	36	56	6

Run Description: T26 South-west

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 9.1 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 25

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 10.14

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 60

Flame Length(m): 23.43

Maximum View Factor: 0.458

Rate Of Spread (km/h): 3.15

Inner Protection Area(m): 0

Transmissivity: 0.834

Outer Protection Area(m): 0

Fire Intensity(kW/m): 40008

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	19	25	35	47	70	6

Run Description: T27 Onsite

Vegetation Information

Vegetation Type: Grassland

Vegetation Group: Grassland

Vegetation Slope: 7.5 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 6

Overall Fuel Load(t/ha): 6

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 13

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 130

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 4.98

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 11.18

Maximum View Factor: 0.441

Rate Of Spread (km/h): 28.36

Inner Protection Area(m): 0

Transmissivity: 0.864

Outer Protection Area(m): 0

Fire Intensity(kW/m): 87901

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description:	T28 South-west		
Vegetation Information			
Vegetation Type:	Coastal Valley Grassy Woodland		
Vegetation Group:	Woodlands		
Vegetation Slope:	8.7 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	10	**Overall Fuel Load(t/ha):**	18.07
Vegetation Height(m):	0.9	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	19
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	7.24
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	62
Flame Length(m):	16.4	**Maximum View Factor:**	0.449
Rate Of Spread (km/h):	2.19	**Inner Protection Area(m):**	0
Transmissivity:	0.849	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	20420		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	14	18	26	37	56	6

Run Description:	T29 south-west isolated		
Vegetation Information			
Vegetation Type:	Coastal Valley Grassy Woodland		
Vegetation Group:	Woodlands		
Vegetation Slope:	12.6 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	10	**Overall Fuel Load(t/ha):**	18.07
Vegetation Height(m):	0.9	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	23
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	9.08
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	61
Flame Length(m):	20.76	**Maximum View Factor:**	0.455
Rate Of Spread (km/h):	2.86	**Inner Protection Area(m):**	0
Transmissivity:	0.839	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	26725		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	17	22	32	43	65	6

Run Description: T3 North

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 1.6 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 17

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 6.76

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 63

Flame Length(m): 15.17

Maximum View Factor: 0.448

Rate Of Spread (km/h): 1.88

Inner Protection Area(m): 0

Transmissivity: 0.852

Outer Protection Area(m): 0

Fire Intensity(kW/m): 23845

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	13	17	25	35	52	6

Run Description:	T4 East		
Vegetation Information			
Vegetation Type:	Grassland		
Vegetation Group:	Grassland		
Vegetation Slope:	6.3 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	6	**Overall Fuel Load(t/ha):**	6
Vegetation Height(m):	0	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	13
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	130
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	4.78
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	63
Flame Length(m):	10.72	**Maximum View Factor:**	0.441
Rate Of Spread (km/h):	26.1	**Inner Protection Area(m):**	0
Transmissivity:	0.865	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	80916		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description:	T5 East		
Vegetation Information			
Vegetation Type:	Coastal Freshwater Lagoons		
Vegetation Group:	Freshwater Wetlands		
Vegetation Slope:	4.3 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	4.4	**Overall Fuel Load(t/ha):**	4.4
Vegetation Height(m):	1	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	6
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	2.05
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	64
Flame Length(m):	4.56	**Maximum View Factor:**	0.43
Rate Of Spread (km/h):	3.1	**Inner Protection Area(m):**	0
Transmissivity:	0.886	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	7041		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description:	T6 South-east		
Vegetation Information			
Vegetation Type:	Grassland		
Vegetation Group:	Grassland		
Vegetation Slope:	3.4 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	6	**Overall Fuel Load(t/ha):**	6
Vegetation Height(m):	0	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	12
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	130
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	4.36
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	64
Flame Length(m):	9.7	**Maximum View Factor:**	0.439
Rate Of Spread (km/h):	21.37	**Inner Protection Area(m):**	0
Transmissivity:	0.868	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	66242		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description:	T7 On-site		
Vegetation Information			
Vegetation Type:	Coastal Freshwater Lagoons		
Vegetation Group:	Freshwater Wetlands		
Vegetation Slope:	1.5 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	4.4	**Overall Fuel Load(t/ha):**	4.4
Vegetation Height(m):	1	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	0 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	5
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	1.89
Radiant Heat(kW/m2):	29	**Flame Angle (degrees):**	65
Flame Length(m):	4.17	**Maximum View Factor:**	0.429
Rate Of Spread (km/h):	2.55	**Inner Protection Area(m):**	0
Transmissivity:	0.888	**Outer Protection Area(m):**	0
Fire Intensity(kW/m):	5804		

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	0

Run Description: T8 On-site - proposed road

Vegetation Information

Vegetation Type: Non-Hazard

Vegetation Group: Non-Hazard

Vegetation Slope: 4.2 Degrees

Vegetation Slope Type: Upslope

Surface Fuel Load(t/ha): 0

Overall Fuel Load(t/ha): 0

Vegetation Height(m): 0

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 1

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 0

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 0

Flame Length(m): 0

Maximum View Factor: 0

Rate Of Spread (km/h): 0

Inner Protection Area(m): 1

Transmissivity: 0.905

Outer Protection Area(m): 0

Fire Intensity(kW/m): 0

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	0	0	0	0	0	6

Run Description: T9 West

Vegetation Information

Vegetation Type: Hunter Macleay DSF

Vegetation Group: Dry Sclerophyll Forests (Shrub/Grass)

Vegetation Slope: 7 Degrees

Vegetation Slope Type: Downslope

Surface Fuel Load(t/ha): 14

Overall Fuel Load(t/ha): 24.6

Vegetation Height(m): 0.9

Only Applicable to Shrub/Scrub and Vesta

Site Information

Site Slope: 0 Degrees

Site Slope Type: Downslope

Elevation of Receiver(m): Default

APZ/Separation(m): 23

Fire Inputs

Veg./Flame Width(m): 100

Flame Temp(K): 1090

Calculation Parameters

Flame Emissivity: 95

Relative Humidity(%): 25

Heat of Combustion(kJ/kg) 18600

Ambient Temp(K): 308

Moisture Factor: 5

FDI: 100

Program Outputs

Level of Construction: BAL 29

Peak Elevation of Receiver(m): 9.02

Radiant Heat(kW/m2): 29

Flame Angle (degrees): 61

Flame Length(m): 20.63

Maximum View Factor: 0.455

Rate Of Spread (km/h): 2.72

Inner Protection Area(m): 0

Transmissivity: 0.839

Outer Protection Area(m): 0

Fire Intensity(kW/m): 34611

BAL Thresholds

	BAL-40:	BAL-29:	BAL-19:	BAL-12.5:	10 kw/m2:	Elevation of Receiver:
Asset Protection Zone(m):	17	22	31	43	65	6