

Bushfire Strategic Study

Proposed Rezoning – 241 Grafton Road, Armidale



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Bushfire Disclaimer

This report in no way suggests or guarantees that a bushfire or grass fire will not occur at the Project Site and/ or impact the proposed development. Furthermore, the measures recommended in this report do not guarantee that loss of life, injury and/ or property damage will not occur during a bushfire or grass fire event. The severity and impact of a bushfire or grass fire event can be influenced by matters such as vegetation management, human behaviour and extreme weather conditions.

This report advises on matters published by the NSW Rural Fire Service in the guideline Planning for Bushfire Protection 2019 and other advice available from that organisation. Due consideration has been given to site conditions, the nature of the proposed development and to appropriate legislation and documentation available at the time of writing. The report is therefore current at the time of writing only.

Certification

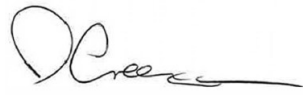
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Appendix A Asset Protection Zone Standards (PBP 2019)



Executive Summary

This Bushfire Strategic Study has been prepared to support a Planning Proposal to amend the Armidale Regional Local Environmental Plan 2012 (the LEP) with respect to Lot 1 DP 1209469, Lot 69 DP 755808, Lot 70 DP 755808 and Lot 8 DP240862 located at 241 Grafton Road, Armidale. The Planning Proposal seeks to:

- rezone part of the site from R2 Low Density Residential to R1 General Residential to permit a higher density of residential development;
- provide a minimum lot size of 800 m² for the R2 zoned land and 500 m² for the R1 zoned land;
- zone land within the Flood Planning Area (FPA) along Dumaresq Creek as RE1 Public Recreation and C3 Environmental Management;
- zone an area of remnant vegetation along the southern boundary as RE1 Public Recreation; and
- zone an area of high environmental value land adjacent to the riparian area as C2 Environmental Conservation.

This Bushfire Strategic Study has taken into consideration the proposed zoning and potential future land use, the vegetation creating a bushfire hazard, the effective slope and Fire Danger Index for the site in accordance with Planning for Bush Fire Protection 2019 (PBP 2019). The Bushfire Strategic Study demonstrates that the site is suitable for rezoning as outlined in the Planning Proposal, with future development able to incorporate appropriate bushfire protection measures in accordance with the requirements of PBP 2019.

It is therefore recommended that the Planning Proposal be supported to enable the rezoning and corresponding land use amendments with respect to 241 Grafton Road, Armidale under the provisions of Armidale Regional LEP 2012.



1. Introduction

1.1 Scope and Purpose

GeoLINK has been engaged by Knox Corp to prepare a Bushfire Strategic Study with respect to Lot 1 DP 1209469, Lot 69 DP 755808, Lot 70 DP 755808 and Lot 8 DP 240862 located at 241 Grafton Road, Armidale, referred to herein as ‘the site’.

The Planning Proposal seeks to rezone part of the site from R2 Low Density Residential to R1 General Residential to permit a higher density of residential development, to zone land within the Flood Planning Area (FPA) along Dumaesq Creek as RE1 Public Recreation and C3 Environmental Management, zone an area of remnant vegetation along the southern boundary as RE1 Public Recreation and to zone an area of high environmental value land adjacent to the riparian area as C2 Environmental Conservation.

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

- identify the proposed development and site characteristics;
- determine and assess the bushfire threat;
- determine the suitability of the site for rezoning; and
- outline appropriate bushfire protection measures for future subdivision in accordance with PBP 2019 to minimise the impact of bushfire on the development.

1.2 Legislative Framework

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

- *Environmental Planning and Assessment Act 1979 (EP&A Act)*;
- Environmental Planning and Assessment Regulation 2021;
- *Rural Fires Act 1997*;
- Rural Fires Regulation 2022; and
- Planning for Bushfire Protection (PBP) 2019.

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

Section 4 of PBP 2019 outlines the requirement to consider bushfire during the strategic planning phase of development, with the broad principles being to:

- ensure land is suitable for development in the context of bushfire risk;
- ensure new development on bushfire prone land will comply with PBP 2019;
- minimise reliance on performance-based solutions;
- provide adequate infrastructure associated with emergency evacuation and firefighting operations; and
- facilitate appropriate ongoing land management practices.

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

This report does not include an assessment of any threatened species or threatened ecological community under the *Biodiversity Conservation Act 2016*, or any Aboriginal object or place within the meaning of the *National Parks and Wildlife Act 1974*.

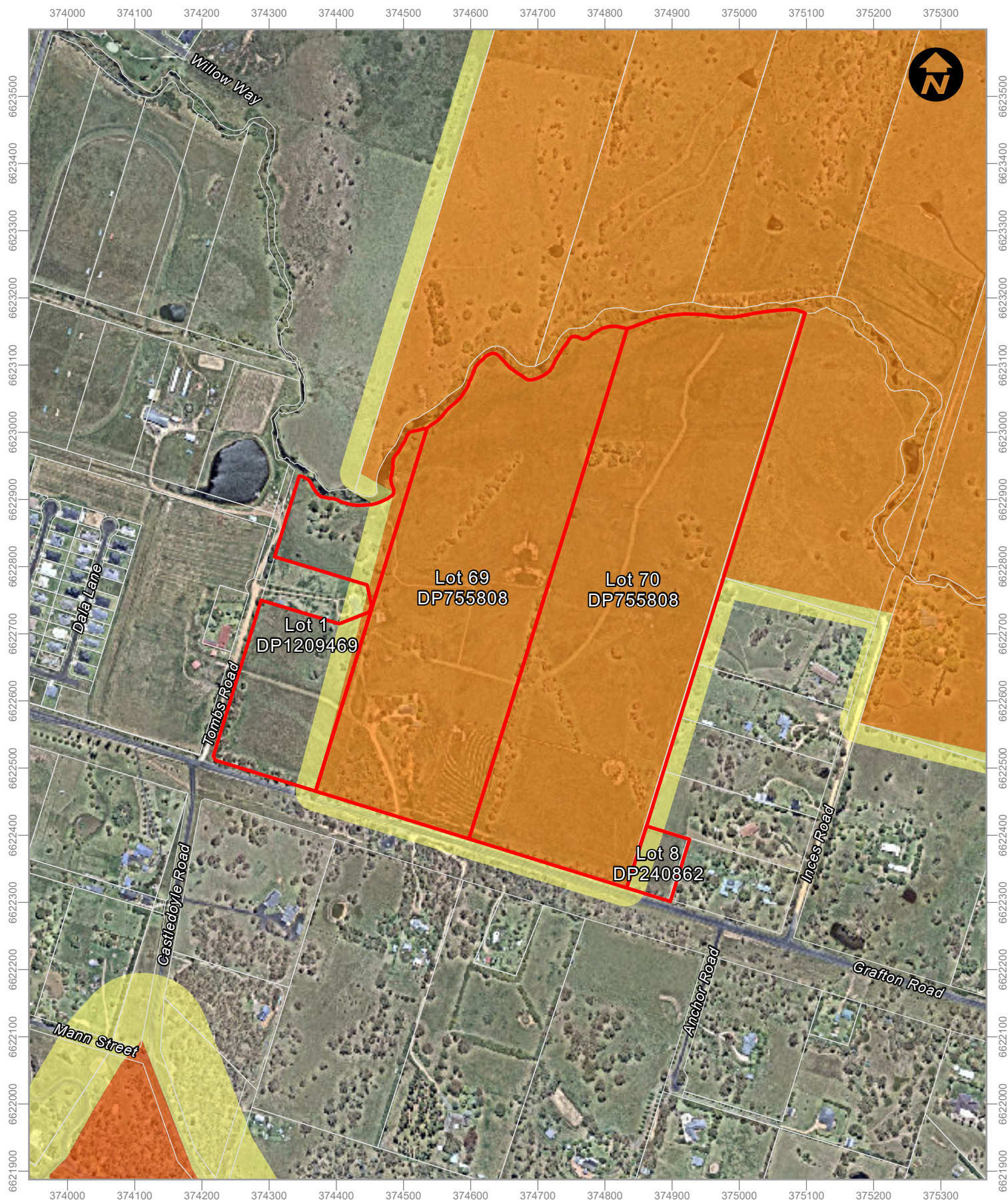


1.3 Bushfire Prone Land

Armidale Regional Council's bushfire prone land mapping has been prepared as a requirement of Section 10.3 of the EP&A Act and in accordance with the NSW Rural Fire Services (RFS) *Guideline to Bushfire Prone Land Mapping*. The current Armidale Regional Council bushfire prone land map was endorsed by the Commissioner of the NSW RFS on 28 November 2025 and maps the majority of the site as bushfire prone land. The western perimeter and south-east corner of the site are not mapped as bushfire prone land.

It is noted that the RFS *Guideline to Bushfire Prone Land Mapping* includes 'grassland' as bushfire prone land. As a conservative measure, the unmapped portions of the site have been assessed as grassland, equivalent to bushfire prone land – Vegetation Category 3.

The current bushfire prone land mapping for the site and immediate surrounds is shown in **Illustration 1.1**.



LEGEND

- | | |
|--|--|
| Site boundary | Vegetation category 1 |
| Cadastre | Vegetation category 3 |
| | Vegetation buffer |

0 150 Metres

Bushfire Prone Land - Illustration 1.1



2. Background

2.1 Location and Description

The site is located at 241 Grafton Road, Armidale, approximately 2.5 km east of the Armidale CBD. The site is an irregular shaped parcel of land contained over four titles with a total area of approximately 44 ha. The site is located on the northern side of Grafton Road with frontage to Grafton Road along its southern boundary and Tombs Road along its south-western boundary. The north-western and northern boundary adjoins Dumaresq Creek, while the eastern boundary adjoins existing rural residential properties access via Inces Road (refer to **Illustration 2.1**).

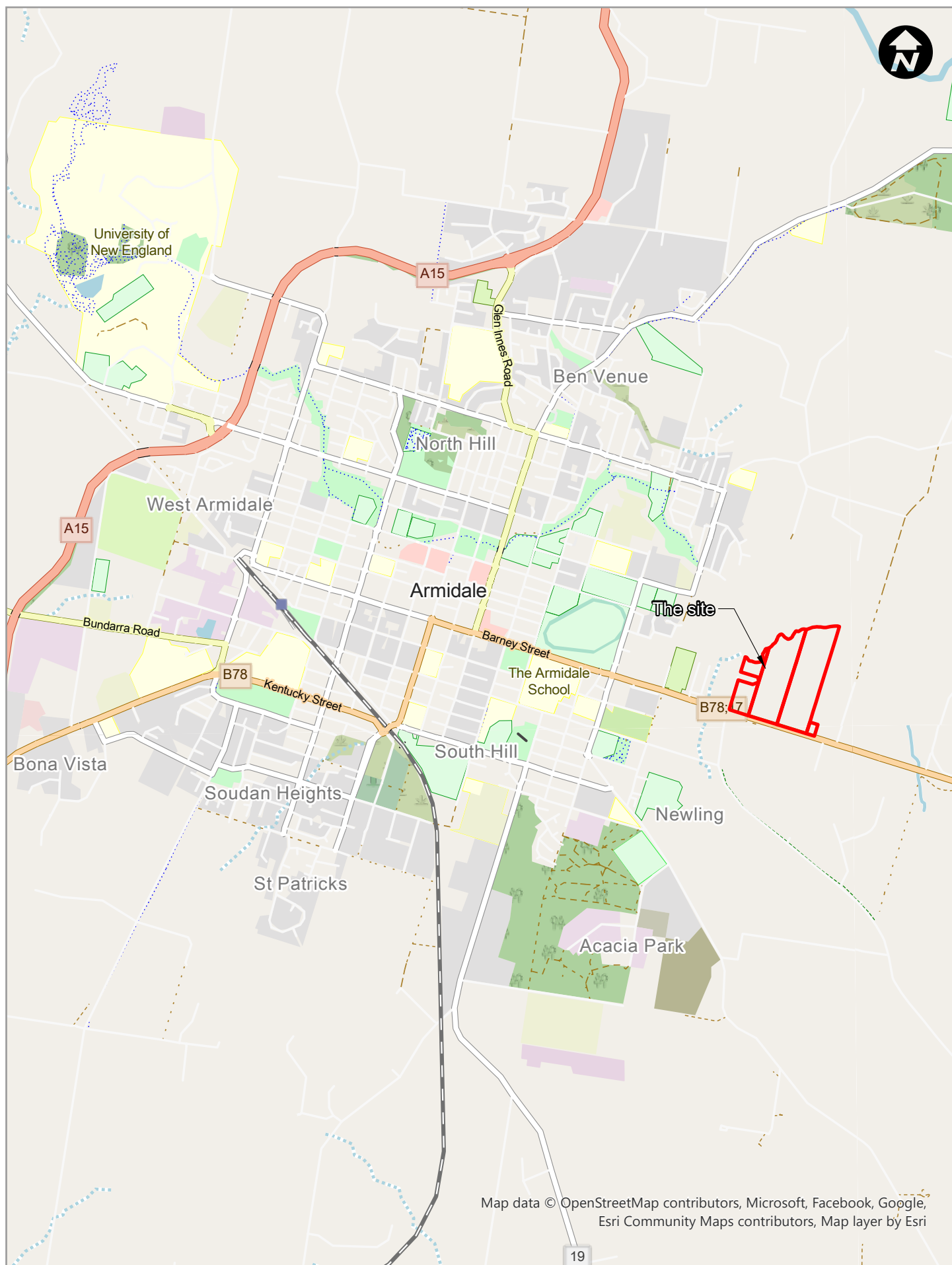
The site is largely cleared and is used primarily for cattle grazing. Several strips and small pockets of native trees occur across the site, along with occasional individual paddock trees. The site is undulating, with a fall generally from south to north, towards Dumaresq Creek. The site also contains a single dwelling and several small sheds in the south-western quadrant (refer to **Plate 2.1** to **Plate 2.4**). **Illustration 2.2** provides an overview of the site locality and analysis of environmental features.

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

Table 2.1 Site Detail Summary

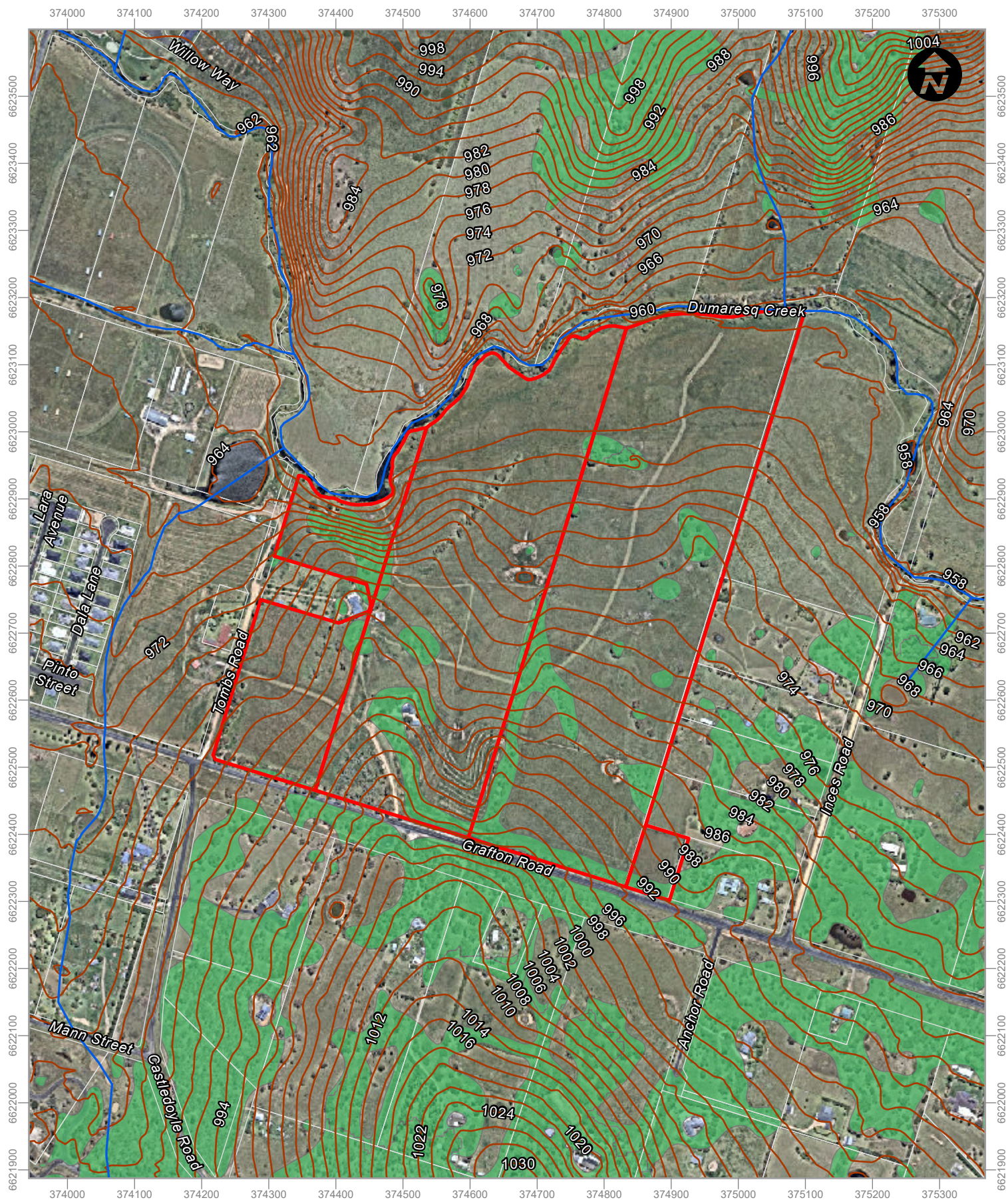
Site Details	
Lot/ DP	Lot 1 DP 1209469 Lot 69 DP 755808 Lot 70 DP 755808 Lot 8 DP240862
Street Address	241 Grafton Road, Armidale
Elevation	960 – 1,000 m AHD
Site Area	44 ha
Armidale Regional Local Environmental Plan 2012	R2 Low Density Residential RU4 Primary Production Small Lots
Fire Weather District	New England
Fire Danger Index (FDI)	80
Fire Control Centre	New England Office (Armidale)

The surrounding land is predominantly rural-residential in nature, containing a mixture of rural-residential housing on established and managed lots, small-scale grazing paddocks and pockets of remnant native vegetation, particularly to the south of Grafton Road (refer to **Illustration 2.2**).



0 800 Metres

Site Locality - Illustration 2.1



LEGEND

- Site boundary
- Cadastre
- NSW State Vegetation Formation
Grassy Woodlands
- ~ Watercourse
- ~ Contours at 2 m intervals

0 150 Metres

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Bushfire Strategic Study - Proposed Rezoning – 241 Grafton Road, Armidale
5506-1002

Site Analysis - Illustration 2.2

Information shown is for illustrative purposes only
 Drawn by: AB Checked by: RE Reviewed by: PTC
 Source of base data: Nearmap 16/02/2025
 Spatial Reference: GDA2020 MGA Zone 56
 Date: 17/12/2025

2.2 Zoning and Land Use

The site is currently zoned R2 Low Density Residential and RU4 Primary Production Small Lots under the provisions of Armidale Regional Local Environmental Plan 2012 (refer to **Figure 2.1**).

The site is largely cleared and is used primarily for cattle grazing. The site also contains a single dwelling and several small sheds in the south-western quadrant (refer to **Plate 2.1** to **Plate 2.4**).



Plate 2.1 Typical grazing land within the site



Plate 2.2 Isolated paddock trees



Plate 2.3 Existing dwelling



Plate 2.4 Farm sheds and infrastructure

2.3 Planning Proposal

The Planning Proposal seeks to amend Armidale Regional LEP 2012 by:

- revising the Land Zoning Map to:
 - zone land within the Flood Planning Area (FPA) along Dumaresq Creek as RE1 Public Recreation and C3 Environmental Management;
 - zone an area of remnant vegetation along the southern boundary as RE1 Public Recreation;
 - zone the area of high environmental value land adjacent to the riparian area as C2 Environmental Conservation; and
 - zone the balance of the site as R2 Low Density Residential and R1 General Residential.
- revising the Lot Size Map:
 - to remove the minimum lot size (MLS) from the proposed RE1 and C2 zoned land; and
 - provide a MLS of 800 m² for the R2 zoned land and 500 m² MLS for the R1 zoned land.

- inserting a new Additional Permitted Use provision which:
 - applies to the site;
 - permits 'Multi Dwelling Housing' development within the R2 zoned land;
 - requires the parent lot to have a size of at least 1,000 m² and not be a battleaxe lot for the erection of a 'Multi Dwelling Housing' development, and
 - permits the subdivision of lawfully erected 'Dual Occupancy' and 'Multi Dwelling Housing' developments within the site to provide:
 - Dual Occupancy (attached) and Multi Dwelling Housing development with a MLS of 300 m², and
 - Dual Occupancy (detached) with a MLS of 400 m².

Figure 2.1 and **Figure 2.2** show the current and proposed zoning of the site.

Any proposal for future subdivision of the site would be the subject of a separate Development Application (DA) to Armidale Regional Council and referral of the DA to the RFS under Section 100B of the *Rural Fires Act 1997*, assuming the site is re-mapped as bushfire prone land.

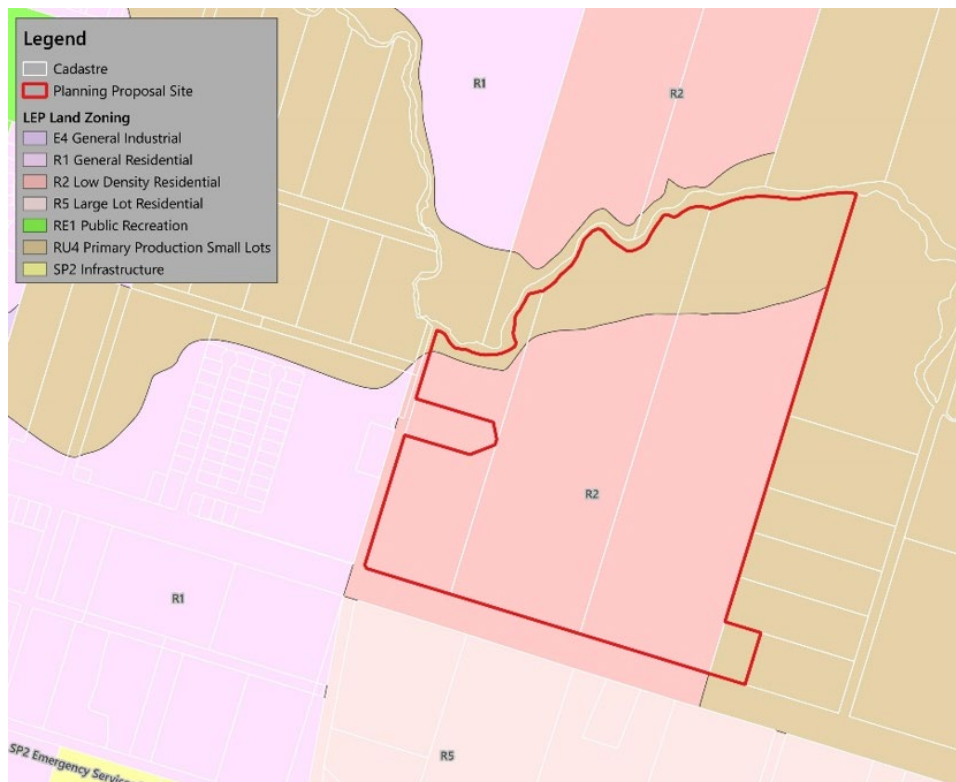


Figure 2.1 Existing Zoning – Armidale Regional LEP 2012

Source: Armidale Regional Council – Ordinary Meeting Agenda – 27 August 2025

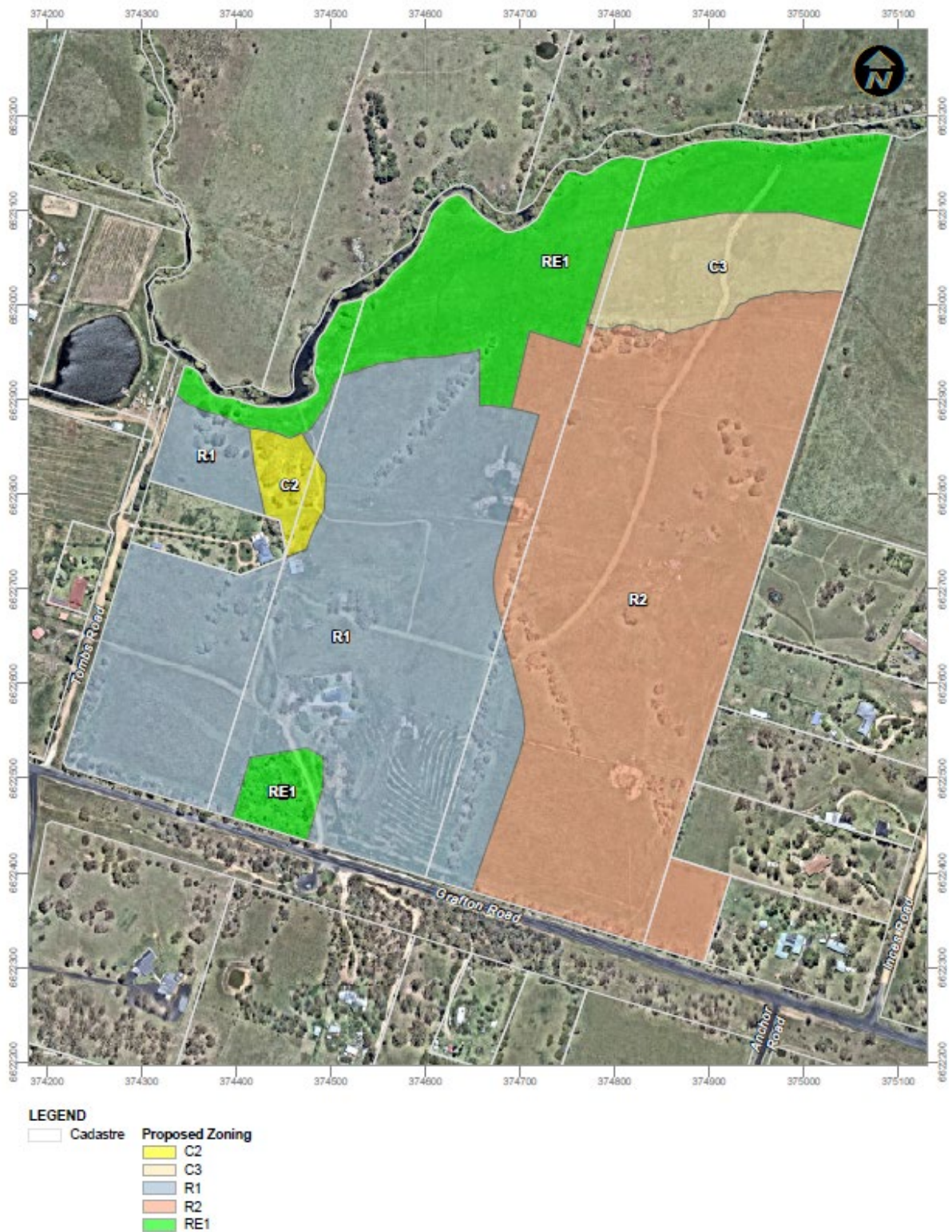


Figure 2.2 Proposed Zoning

2.4 Strategic Context

The following section outlines the strategic context for the Planning Proposal, as outlined in the Planning Proposal report prepared by SKM Planning Pty Ltd (May 2025).

The site was identified in the *Strategic Analysis for the Draft Armidale Dumaresq LEP 2005* as a future low-density residential area and zoned 2(b) Low Density Residential in the *Armidale Dumaresq Local Environmental Plan 2008* (repealed).

The *New England Development Strategy 2010* identified the site as an Urban Release Area required to meet the projected demand for housing up to 2021. The site is also included within the boundaries of Council's Water and Sewer Development Servicing Plans.

The Armidale Local Strategic Planning Statement (LSPS) contains a bold plan to reach 50,000 residents by 2043 and identifies three growth areas to achieve this vision. The site has been identified in the LSPS as part of the Eastern Residential Growth Area (refer to **Figure 2.3**).



Figure 2.3 Armidale LSPS Structure Plan

The site has been identified within the Eastern Growth Area in the Armidale Housing Strategy. A Structure Plan in the Housing Strategy identifies the site for residential development to be zoned R1 – General Residential (refer to **Figure 2.4** – site outlined in red). The Housing Strategy also includes a Staging Plan which identifies the site as ‘Stage 1 – Immediate Release’.

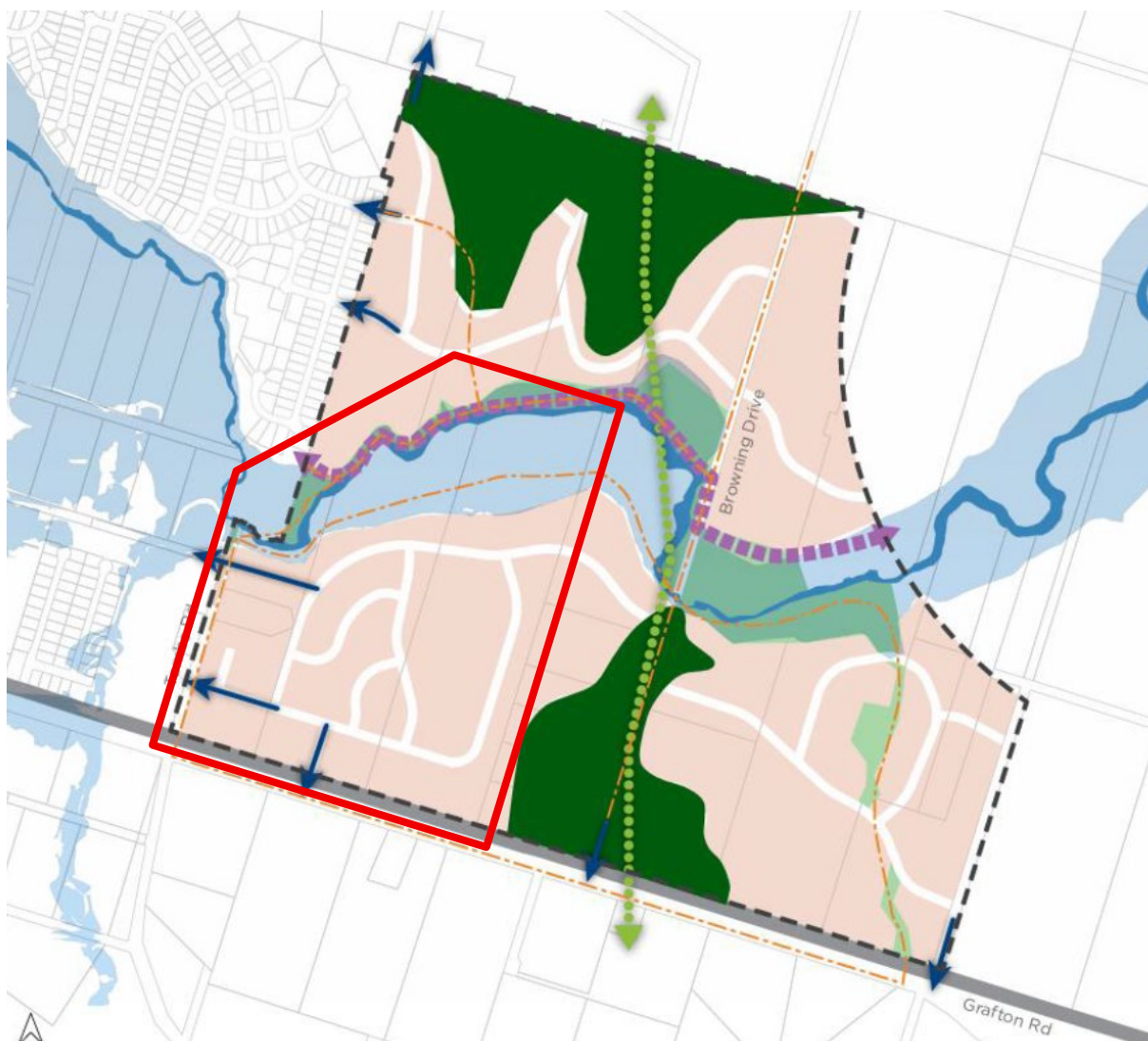


Figure 2.4 Armidale Housing Strategy – Concept Structure Plan – Eastern Growth Area



3. Bushfire Hazard Assessment

The following subsections were informed by a site visit undertaken by GeoLINK on 3 September 2025. The information gathered during site investigations combined with desktop analysis is portrayed in **Illustration 3.1**.

3.1 Vegetation

Vegetation classifications for the purpose of assessing bushfire hazard are based on vegetation formations and fuel loads outlined in PBP 2019.

Vegetation within and surrounding the site has been assessed in terms of potential bushfire hazard over a distance of 140 m, using the formation classes provided within Figure A1.2 of PBP 2019. The dominant vegetation formation in each relevant direction of the site is outlined in **Table 3.1**.

Table 3.1 Vegetation Formation

Direction	Predominant Vegetation Formation
North	Forest (Zone RE1 – potential revegetation)
East	Grassland
	Woodland
South	Dry Sclerophyll Forest
	Grassland
West	Grassland
Within the site	Grassland
	Remnant Vegetation - Zone C2 and RE1 (southern boundary) *

* In accordance with section A1.11.1 of PBP 2019, small parcels of vegetation (<1ha) are considered low hazard vegetation and may be assessed the same as rainforest.

Vegetation within the site comprises predominantly grassland. The existing narrow strips of trees, small clumps and isolated paddock trees are likely to be modified by future subdivision or retained within a largely managed environment and have therefore not been assessed separately. The area identified as high environmental value trees in the north-west corner (proposed Zone C2) contains relatively sparse tree cover with a grassy understorey (refer to **Plate 3.1** to **Plate 3.4**), while the proposed Zone RE1 area along the southern boundary contains remnant dry sclerophyll forest.



Plate 3.1 Grassland with isolated paddock trees



Plate 3.2 Narrow strip of planted shelter trees



Plate 3.3 High environmental value trees to north-west



Plate 3.4 Small clump of trees along south-eastern boundary

The proposed Zone C2 and RE1 land adjacent to Dumaresq Creek may be subject to revegetation at subdivision stage, with any revegetation proposal to be outlined in a Vegetation Management Plan (VMP) for the respective areas. Zone C2 is <1 ha in area and has been assessed as equivalent to 'rainforest' in accordance with Section A1.11.1 of PBP 2019. For this assessment, the Zone RE1 land has been assessed as forest, however it is recognised that this vegetation classification may vary at subdivision stage subject to the extent of any revegetation proposed under the VMP.

Vegetation surrounding the site is also predominantly grassland. A narrow strip of riparian vegetation along Dumaresq Creek is separated from the proposed residential land by low lying grassland area. The northern side of Dumaresq Creek is also predominantly grassland (refer to **Plate 3.5** to **Plate 3.6**).



Plate 3.5 Riparian vegetation along Dumaresq Creek



Plate 3.6 Low lying land near Dumaresq Creek and grassy hills beyond

The adjoining land for the northern half of the eastern boundary is grassland used for grazing, while the southern half adjoins existing rural-residential lots. These lots contain detached dwellings and ancillary sheds that are located generally towards their eastern boundary with Inces Road. Remnant trees and landscape plantings around the existing dwelling create a woodland environment, while the western portion of the rural-residential lots that adjoin the site are predominantly grassland used for small scale grazing (refer to **Plate 3.7** to **Plate 3.8**).



Plate 3.7 View north along eastern boundary



Plate 3.8 Rural residential to east

The southern boundary of the site includes a 10-15 m wide landscape strip of native trees along Grafton Road that will be retained. South of Grafton Road are rural residential properties with areas of dry sclerophyll forest that are fragmented by grassland (refer to **Plate 3.9** to **Plate 3.12**).



Plate 3.9 Buffer strip along Grafton Road



Plate 3.10 Forest to south of Grafton Road – opposite proposed intersection



Plate 3.11 Roadside vegetation to southwest



Plate 3.12 View to south near Castledoye Road

To the west of the site is Tombs Road which separates the site from grassland vegetation (refer to **Plate 3.13** to **Plate 3.14**).



Plate 3.13 View north along Tombs Road



Plate 3.14 Grassland to west of Tombs Road



3.2 Slope

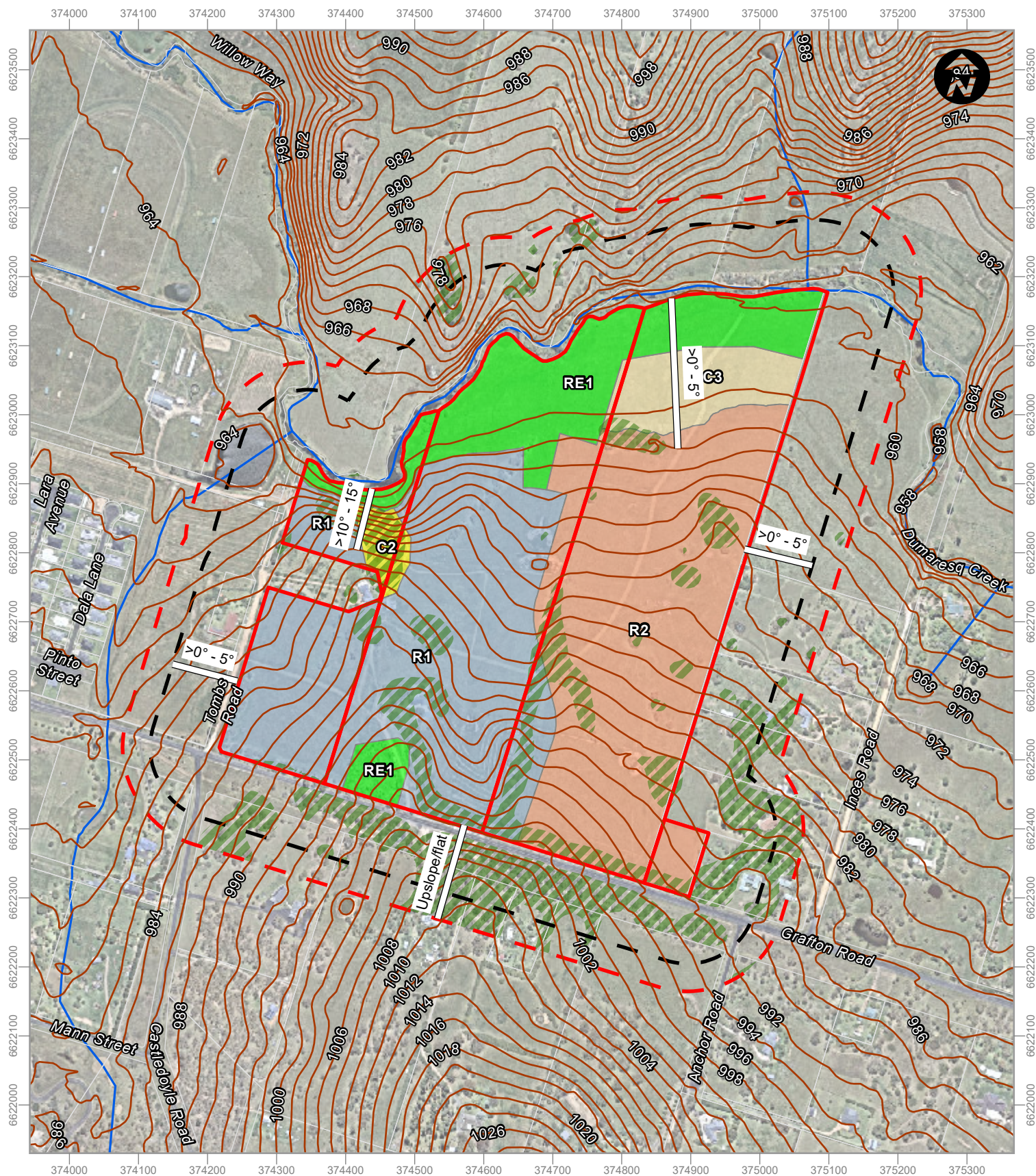
The effective slope is the slope of the land beneath the vegetation assessed as being a hazard that will have the greatest influence on bushfire behaviour in relation to the development. The effective slope has been assessed over 100 m in each relevant direction and is outlined in **Table 3.2**.

Table 3.2 Effective Slope

Aspect	Effective Slope
North (Zone C2)	>10-15°
North (central and east)	>0-5°
East	>0-5°
South	Upslope/ flat
West	>0-5°
Within the site	Maximum >10-15°

3.3 Fire Weather District

The Armidale Regional Council local government area is located within the 'New England' fire weather district, with a Fire Danger Index (FDI) of 80.



LEGEND

 Site boundary	 Grassy Woodlands	Proposed Zoning	~ Watercourse
 Cadastre	 100 m slope assessment	 C2	— Contours at 2 m intervals
 140 m vegetation assessment	 Effective slope	 C3	
		 R1	
		 R2	
		 RE1	

0 150 Metres

Bushfire Hazard Assessment - Illustration 3.1

4. Strategic Planning Assessment

The Planning Proposal seeks to rezone part of the site from R2 Low Density Residential to R1 General Residential to permit a higher density of residential development, to zone land within the Flood Planning Area (FPA) along Dumaresq Creek as RE1 Public Recreation and C3 Environmental Management, zone an area of remnant vegetation along the southern boundary as RE1 Public Recreation, and to zone the area of high environmental value land adjacent to the riparian area as C2 Environmental Conservation.

The following sections outline the matters for consideration under Direction 4.3, issued pursuant to Section 9.1 of the EP&A Act, and the strategic planning considerations under Chapter 4 of PBP 2019. Any proposal for future subdivision of the site would be the subject of a separate Development Application (DA) to Armidale Regional Council and referral of the DA to the RFS under Section 100B of the *Rural Fires Act 1997*, assuming the site is re-mapped as bushfire prone land.

4.1 Direction 4.3 - Planning for Bushfire Protection

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

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

Table 4.1 Direction 4.3 – Planning for Bushfire Protection

Direction (summarised)	Application
The planning authority must consult with the NSW Rural Fire Service following receipt of a gateway determination and take into account any comments so made.	Consultation is required with the RFS as part of the Planning Proposal assessment.
A planning proposal must: a. have regard to PBP 2019, b. introduce controls that avoid placing inappropriate developments in hazardous areas, and c. ensure that bushfire hazard reduction is not prohibited within the APZ.	This report outlines the requirements of PBP 2019 and demonstrates broadly how the proposal complies. Bushfire hazard reduction is not prohibited under this proposal.
A planning proposal must, where development is proposed, comply with the following provisions: a. provide an APZ incorporating at a minimum: i. an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and ii. an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road,	No development is proposed at this stage, and any future subdivision would be the subject of a separate Development Application. Notwithstanding this, the following is noted: a. APZs and perimeter access can be incorporated into future subdivision stages, as required. b. N/A - the proposal is not infill development. c. Two-way access roads and access to the hazard interface can be incorporated into future subdivision design.

Direction (summarised)	Application
b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks, d) contain provisions for adequate water supply for firefighting purposes, e) minimise the perimeter of the area of land interfacing the hazard which may be developed, f) introduce controls on the placement of combustible materials in the Inner Protection Area.	d. Reticulated water supply will be provided to future subdivision of the site. e. The predominant bushfire hazard to the south is separated from the site by Grafton Road and the hazard to the west is separated from the site by Tombs Road. Large lots to the north minimise the number of perimeter interface lots. f. APZs will be required to be managed in accordance with PBP 2019 – Appendix 4.

4.2 PBP 2019 – Chapter 4 – Strategic Planning

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

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

Table 4.2 Broad Principles for Strategic Bushfire Analysis

Principles (PBP 2019 – Section 4.1)	Application
Ensuring land is suitable for development in the context of bush fire risk	The site is not considered to be in a high risk bushfire area. The site and surrounding land is predominantly grassland, with the fragmented forest vegetation to the south separated from the site by Grafton Road.
Ensuring new development on BFPL will comply with PBP	Any proposal for future subdivision of the site would be the subject of a separate DA to Armidale Regional Council and referral of the DA to the RFS under Section 100B of the <i>Rural Fires Act 1997</i> .
Minimising reliance on performance-based solutions	The site is not significantly constrained by bushfire, and it is anticipated that future subdivision of the site can comply with the acceptable solution requirements of PBP 2019.
Providing adequate infrastructure associated with emergency evacuation and firefighting operations	Future subdivision design can provide alternative access routes and access to bushfire hazard vegetation. The site will be service by a reticulated water supply.
Facilitating appropriate ongoing land management practices.	Future development of the site can be managed to minimise the potential for bushfire.

Chapter 4 of PBP 2019 also outlines the matters that must be considered as part of a Strategic Bush Fire Study. **Table 4.3** summarises the issues for consideration in PBP 2019 Table 4.2.1 and discusses how these apply to the proposal.

Table 4.3 Bush Fire Strategic Study

Issues (PBP 2019 – Table 4.2.1)	Application
Bushfire landscape assessment	The site and surrounding land is predominantly grassland. While grass fires can be fast moving, they are also generally of shorter duration and lower intensity than forest fires. The forest vegetation to the south of the site is fragmented by areas of grassland and is separated from the site by Grafton Road. Fire history information available from The Central Resource for Sharing and Enabling Environmental Data in NSW (SEED) (https://geo.seed.nsw.gov.au) does not indicate any recent fire activity in the locality.
Land use assessment	The site and surrounding land is predominantly grassland. The existing narrow strips of trees, small clumps and isolated paddock trees within the site are likely to be modified by future subdivision or retained within a largely managed residential environment. Appropriate bushfire protection measures can be incorporated into the future subdivision design.
Access and egress	The Servicing Strategy Report (Dykman Consulting, 2025) and concept design incorporate a channelised right-turn and basic left turn treatment at the intersection on Grafton Road to facilitate safe vehicle entry and exit into the site. Furthermore, the Report notes the assessment of the surrounding road network and key intersections revealed that operations will remain efficient, indicating minimal congestion and acceptable traffic flow conditions. The internal road network can be refined at subdivision DA stage to comply with PBP 2019.
Emergency services	It is anticipated that as residential development of the site occurs, the land will be transferred into the NSW Fire and Rescue response area.
Infrastructure	The Servicing Strategy Report (Dykman Consulting, 2025) notes that existing water infrastructure in the area includes a water main along Tombs Road and on the southern side of Grafton Road. The reticulated water supply system will be designed to meet AS 2419.1 including flow rates, hydrant spacing, etc. The site is not located within close proximity to high voltage power lines or other critical infrastructure.
Adjoining land	The proposed future subdivision of the site is not considered likely to increase bushfire management responsibilities of surrounding land or contribute to an increase in bushfire risk to surrounding properties.

5. Bushfire Protection Measures

The following Section outlines the requirements of PBP 2019 – Chapter 5 for residential subdivision of bushfire prone land and how these would apply to future subdivision of the site.

5.1 Asset Protection Zones

PBP 2019 describes an asset protection zone (APZ) as a fuel reduced area surrounding a built asset or structure which provides a buffer zone between a bushfire hazard and the asset. The APZ provides:

- a buffer zone between a bushfire hazard and an asset;
- an area of reduced bushfire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

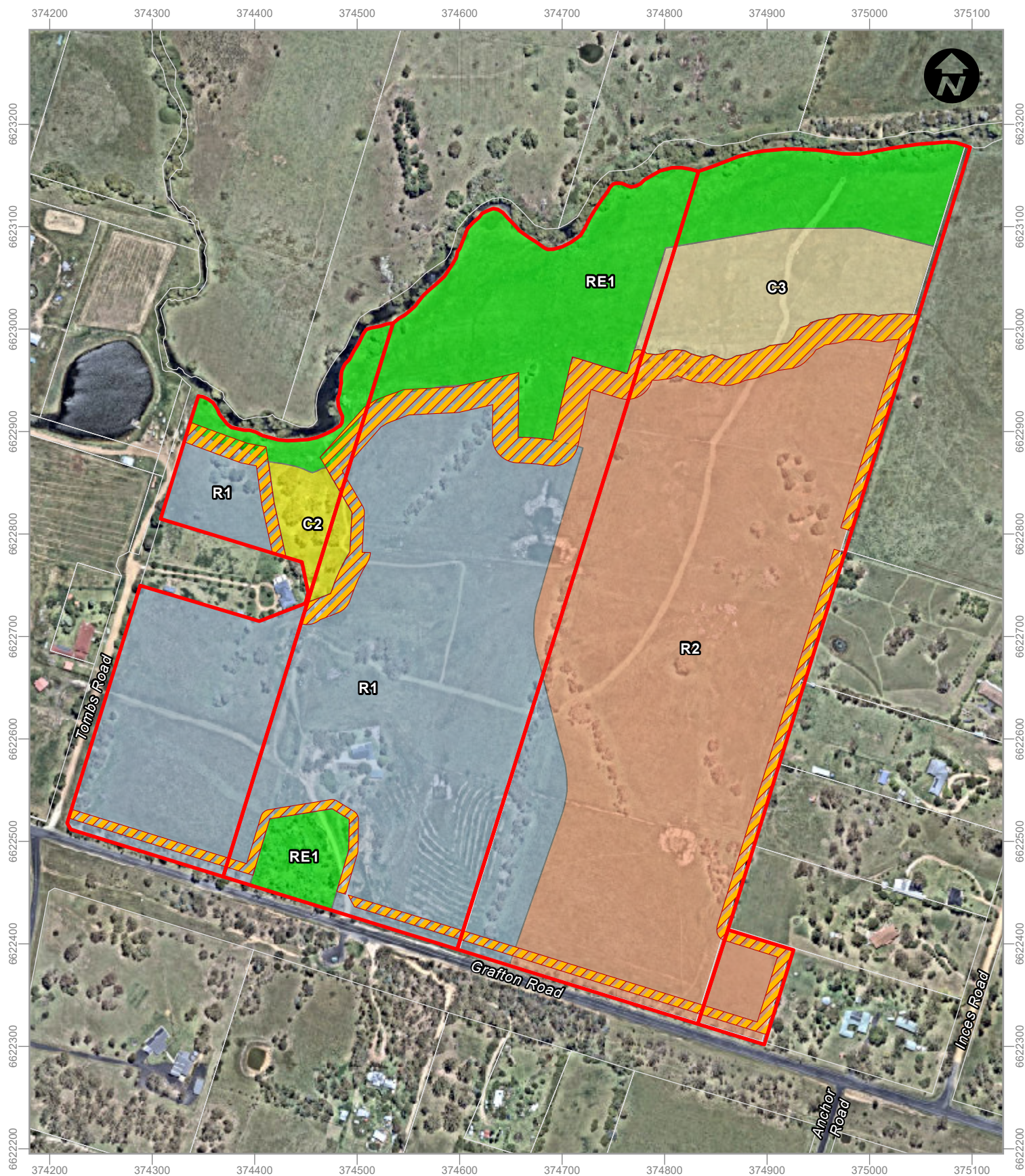
The minimum required APZs for residential subdivision are based on a radiant heat threshold of 29 kW/m² and have been determined in accordance with Table A1.12.3 and the methodology outlined in Appendix A1.1 of PBP 2019, using the relevant vegetation formation, effective slope and FDI.

Due to the size of the site, **Table 5.1** outlines the perimeter characteristics (vegetation classification, effective slope) and the minimum required APZ for BAL-29.

Table 5.1 Minimum Asset Protection Zone

Direction	Vegetation Formation	Effective Slope	Minimum APZ
North	Forest	>0-5°	25 m
East	Grassland	>0-5°	11 m
	Woodland	>0-5°	13 m
South	Narrow Corridor	Upslope/ flat	9 m
	Grassland	Upslope/ flat	10 m
	Forest	Upslope/ flat	20 m
West	Grassland	>0-5°	11 m
Within the site(staging)	Grassland	Maximum >10-15°	14 m
Zone C2	Remnant (Rainforest)	>10-15°	20 m
Zone RE1 (southern boundary)	Remnant (Rainforest)	Upslope/ flat	9 m

The minimum required APZs can be provided within the site (refer to **Illustration 5.1**).



LEGEND

- Site boundary
- Cadastre
- BAL 29 Asset Protection Zone

Proposed Zoning

- C2
- C3
- R1
- R2
- RE1

0 100 Metres

Minimum BAL 29 Asset Protection Zone - Illustration 5.1

Table 5.2 assesses the extent to which the proposed APZs can comply with the performance criteria and acceptable solution requirements of Table 5.3a of PBP 2019.

Table 5.2 APZ Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Potential building footprints must not be exposed to radiant heat levels exceeding 29 kW/m ² on each proposed lot.	An APZ is provided in accordance with Table A1.12.2 or A1.12.3 Based on the FFDI.	The minimum APZs outlined in Table 5.1 can be provided within the site.
APZs are managed and maintained to prevent the spread of a fire towards the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	New residential lots and their surrounding APZs are to be managed as an Inner Protection Area (IPA) in accordance with PBP 2019 – Appendix A4.1.1 (refer to Appendix A).
The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	APZs are proposed to be wholly within the site.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZ are located on lands with a slope less than 18 degrees.	APZs are proposed on slopes <18°.

5.2 Landscaping

No specific landscaping details are available at this stage of the development. Any future revegetation of the Zone C2 and/ or RE1 land would be subject to VMP at subdivision stage.

Table 5.3 assesses the extent to which landscaping can comply with the acceptable solutions of PBP 2019.

Table 5.3 Landscaping Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with Appendix 4.	Landscaping within the APZs is to be managed in accordance with PBP 2019 – Appendix 4.1.1 (refer to Appendix A).
	Fencing is constructed in accordance with Section 7.6 of PBP 2019.	Any proposed fencing associated with the dwellings is to be constructed in accordance with Section 7.6 of PBP 2019 (non-combustible material if within 6 m of a building; otherwise hardwood or non-combustible material).

5.3 Access

Access to the proposed subdivision will be obtained from a new intersection on Grafton Road, with an alternative access available from Tombs Road. Emergency access is also available to Inces Road to the east.

The Servicing Strategy Report (Dykman Consulting, 2025) notes the assessment of the surrounding road network and key intersections revealed that operations will remain efficient, indicating minimal congestion and acceptable traffic flow conditions.

The internal road network can be refined at subdivision DA stage to comply with PBP 2019.

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

Table 5.4 Access Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Access (General Requirements)		
Firefighting vehicles are provided with safe, all-weather access to structures	Property access roads are two-wheel drive, all-weather roads.	Two-wheel drive, all weather access will be provided.
	Perimeter roads are provided for residential subdivisions of three or more allotments.	Grafton Road and Tombs Road act as perimeter roads to the south and west. The internal road network can be refined at subdivision DA stage to provide perimeter roads.
	Subdivisions of three or more allotments have more than one access in and out of the development.	Alternative access is available to the site
	Traffic management devices are constructed to not prohibit access by emergency services vehicles.	Can comply – subject to detailed engineering design.
	Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.	Can comply – subject to detailed engineering design.
	All roads are through roads.	See below.
	Dead end roads are not recommended, but if unavoidable, are not more than 200 m in length, incorporate a minimum 12 m outer radius turning circle, and are clearly sign posted as a dead end.	Can comply – subject to detailed engineering design.
	Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	Can comply – subject to detailed engineering design.

Performance Criteria	Acceptable Solution	Application
	Where access/ egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.	N/A
	One way only public access roads are no less than 3.5 m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	Can comply – subject to detailed engineering design.
The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes),	Can comply – subject to detailed engineering design.
	Bridges and causeways are to clearly indicate load rating.	Can comply – subject to detailed engineering design.
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.	Can comply – subject to detailed engineering design.
	Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2021.	Can comply – subject to detailed engineering design.
	There is suitable access for a Category 1 fire appliance to within 4 m of the static water supply where no reticulated supply is available.	N/A
Perimeter Roads		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Are two-way sealed roads.	Can comply – subject to detailed engineering design.
	Minimum 8 m carriageway width kerb to kerb.	
	Parking is provided outside of the carriageway width.	
	Hydrants are located clear of parking areas.	
	Are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	
	Curves of roads have a minimum inner radius of 6 m.	
	The maximum grade road is 15 degrees and average grade of not more than 10 degrees.	

Performance Criteria	Acceptable Solution	Application
	The road crossfall does not exceed 3 degrees. A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	
Non-perimeter Roads		
Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5 m carriageway width kerb to kerb.	Can comply – subject to detailed engineering design.
	Parking is provided outside of the carriageway width.	
	Hydrants are located clear of parking areas.	
	Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500 m.	
	Curves of roads have a minimum inner radius of six metres.	
	The road crossfall does not exceed 3 degrees.	
	A minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches, is provided.	
Property Access		
Firefighting vehicles can access the dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70 m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70 kph) that supports the operational use of emergency firefighting vehicles. In circumstances where this cannot occur, the following requirements apply:	Can comply – subject to detailed engineering design.
	Minimum 4 m carriageway width;	
	In forest, woodland and heath situations, rural property access roads have passing bays every 200 m that are 20 m long by 2 m wide, making a minimum trafficable width of 6 m, at the passing bay;	
	A minimum vertical clearance of 4 m to any overhanging	



Performance Criteria	Acceptable Solution	Application
	obstructions, including tree branches;	
	Provide a suitable turning area in accordance with Appendix 3;	
	Curves have a minimum inner radius of 6 m and are minimal in number to allow for rapid access and egress;	
	The minimum distance between inner and outer curves is 6 m;	
	The crossfall is not more than 10 degrees;	
	Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and	
	A development comprising more than three dwellings has formalised access by dedication of a road and not by right of way	
	Note: Some short constrictions in the access may be accepted where they are not less than 3.5 m wide, extend for no more than 30 m and where the obstruction cannot be reasonably avoided or removed.	

5.4 Services – Water, Electricity and Gas

Future subdivision of the site will be connected to the reticulated water supply system. The Servicing Strategy Report (Dykman Consulting, 2025) notes that existing water infrastructure in the area includes a water main along Tombs Road and on the southern side of Grafton Road. The reticulated water supply system will be designed to meet AS 2419.1 including flow rates, hydrant spacing, etc.

The site is not located within close proximity to high voltage power lines or other critical infrastructure.

Overhead electricity lines are present along Grafton Road and Tombs Road.

There is no reticulated gas available to the site. Bottled gas is not proposed at this stage and will be assessed at dwelling construction stage for the respective lots.

Table 5.5 outlines the extent to which water, electricity and gas services can comply with the relevant acceptable solution requirements of Table 5.3c of PBP 2019.

Table 5.5 Water, Electricity and Gas Compliance with PBP 2019

Performance Criteria	Acceptable Solution	Application
Water Supplies		
An adequate water supply is provided for firefighting purposes.	Reticulated water is to be provided to the development, where available.	Reticulated water supply will be provided.
	A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed.	N/A
	Static water supplies shall comply with Table 5.3d.	N/A
Water supplies are located at regular intervals; and The water supply is accessible and reliable for firefighting operations.	Fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2021.	Can comply – subject to detailed engineering design.
	Hydrants are not located within any road carriageway.	
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2021.	Can comply – subject to detailed engineering design.
The integrity of the water supply is maintained.	All above-ground water service pipes external to the building are metal, including and up to any taps.	To be assessed at dwelling construction stage.
	Above ground water storage tanks shall be of concrete or metal.	N/A
Electricity Services		
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where practicable, electrical transmission lines are underground.	Can comply – subject to detailed engineering design.
	Where overhead, electrical transmission lines are proposed as follows: Lines are installed with short pole spacing (30 m), unless crossing gullies, gorges or riparian areas; and No part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.	



Performance Criteria	Acceptable Solution	Application
Gas Services		
Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014, the requirements of relevant authorities, and metal piping is used;	N/A at rezoning or subdivision stage. To be assessed at dwelling construction stage, if applicable.
	All fixed gas cylinders are kept clear of all flammable materials to a distance of 10 m and shielded on the hazard side;	
	Connections to and from gas cylinders are metal;	
	Polymer-sheathed flexible gas supply lines are not used; and	
	Above-ground gas service pipes are metal, including and up to any outlets.	

6. Recommendations and Conclusion

6.1 Recommendations

Having regard to the assessment and findings of this Bushfire Strategic Study, it is recommended that the Planning Proposal be supported to enable the rezoning and corresponding land use amendments with respect to 241 Grafton Road, Armidale under the provisions of Armidale Regional Local Environmental Plan 2012.

6.2 Conclusion

This Bushfire Strategic Study has taken into consideration the proposed development concept layout, the existing vegetation, effective slope and FDI detailed within Planning for Bush Fire Protection 2019. The study has found that adequate and appropriate bushfire protection measures are available and can be implemented to facilitate the proposed rezoning and corresponding land use amendments with respect to 241 Grafton Road, Armidale under the provisions of Armidale Regional Local Environmental Plan 2012.

The proposal conforms with the standards, performance criteria and intent of measures outlined in Planning for Bush Fire Protection 2019 and complies with Section 100B of the *Rural Fires Act 1997*.

It is therefore recommended that the proposed development is approved and conditioned in accordance with the recommendations provided within this assessment.



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References

Armidale Regional Council (2025). *Ordinary Meeting Agenda - 27 August 2025*.

Dykman Consulting (2025). *Servicing Strategy Report – 241 Waterfall Way, Armidale (Job No. 25002)*. Dykman Consulting, Milton QLD.

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

NSW Rural Fire Service [RFS] (2019). *Planning for Bush Fire Protection*. NSW Rural Fire Service and Department of Planning, Sydney.

SKM Planning Pty Ltd (2025). *Planning Proposal – Waterfall Way*. SKM Planning Pty Ltd, Griffith, NSW.



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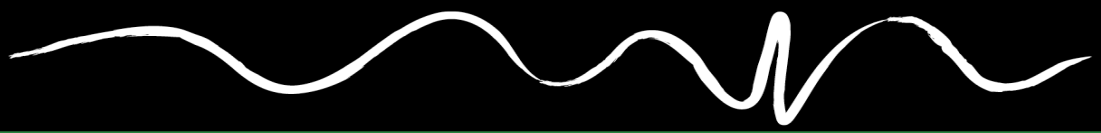
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Appendix A

Asset Protection Zone Standards (PBP 2019)

APPENDIX 4

ASSET PROTECTION ZONE REQUIREMENTS

In combination with other BPMs, a bush fire hazard can be reduced by implementing simple steps to reduce vegetation levels. This can be done by designing and managing landscaping to implement an APZ around the property.

Careful attention should be paid to species selection, their location relative to their flammability, minimising continuity of vegetation (horizontally and vertically), and ongoing maintenance to remove flammable fuels (leaf litter, twigs and debris).

This Appendix sets the standards which need to be met within an APZ.

A4.1 Asset Protection Zones

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard.

For a complete guide to APZs and landscaping, download the NSW RFS document *Standards for Asset Protection Zones* at the NSW RFS Website www.rfs.nsw.gov.au.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows for suppression of fire;
- an area from which backburning or hazard reduction can be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bush fire fuels should be minimised within an APZ. This is so that the vegetation within the zone does not provide a path for the spread of fire to the building, either from the ground level or through the tree canopy.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building;
- damage to the building asset from intense radiant heat; and
- ember attack.

The methodology for calculating the required APZ distance is contained within Appendix 1. The width of the APZ required will depend upon the development type and bush fire threat. APZs for new development are set out within Chapters 5, 6 and 7 of this document.

In forest vegetation, the APZ can be made up of an Inner Protection Area (IPA) and an Outer Protection Area (OPA).

A4.1.1 Inner Protection Areas (IPAs)

The IPA is the area closest to the building and creates a fuel-managed area which can minimise the impact of direct flame contact and radiant heat on the development and act as a defensible space. Vegetation within the IPA should be kept to a minimum level. Litter fuels within the IPA should be kept below 1cm in height and be discontinuous.

In practical terms the IPA is typically the curtilage around the building, consisting of a mown lawn and well maintained gardens.

When establishing and maintaining an IPA the following requirements apply:

Trees

- tree canopy cover should be less than 15% at maturity;
- trees at maturity should not touch or overhang the building;
- lower limbs should be removed up to a height of 2m above the ground;
- tree canopies should be separated by 2 to 5m; and
- preference should be given to smooth barked and evergreen trees.

Shrubs

- create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided;
- shrubs should not be located under trees;
- shrubs should not form more than 10% ground cover; and
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

- grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
- leaves and vegetation debris should be removed.

A4.1.2 Outer Protection Areas (OPAs)

An OPA is located between the IPA and the unmanaged vegetation. It is an area where there is maintenance of the understorey and some separation in the canopy. The reduction of fuel in this area aims to decrease the intensity of an approaching fire and restricts the potential for fire spread from crowns; reducing the level of direct flame, radiant heat and ember attack on the IPA.

Because of the nature of an OPA, they are only applicable in forest vegetation.

When establishing and maintaining an OPA the following requirements apply:

Trees

- tree canopy cover should be less than 30%; and
- canopies should be separated by 2 to 5m.

Shrubs

- shrubs should not form a continuous canopy; and
- shrubs should form no more than 20% of ground cover.

Grass

- grass should be kept mown to a height of less than 100mm; and
- leaf and other debris should be removed.

An APZ should be maintained in perpetuity to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season.

Figure A4.1

Typical Inner and Outer Protection Areas.

