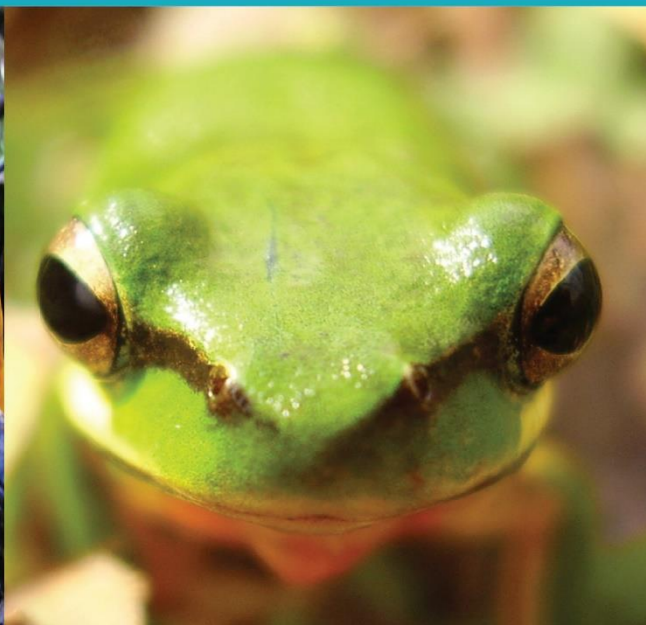




TRAVERS BUSHFIRE & ECOLOGY

A TBE ENVIRONMENTAL COMPANY



BUSHFIRE PROTECTION ASSESSMENT

Proposed Residential Subdivision – ‘Stage 5’

Lot 123 DP 1063357

598 Gresford Road, Vacy

Under Section 100B of the Rural Fires Act (1997)

11 June 2025

(REF: CORN06INT)



BUSHFIRE PROTECTION ASSESSMENT

Proposed Residential Subdivision – Stage 5

Lot 123 DP 1063557

598 Gresford Road, Vacy

Report Author:	Jess Bowditch - Bushfire Consultant
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Date:	11/06/25
File:	CORN06INT
Version	2.0



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The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features is to be confirmed by a registered surveyor.

This report has been produced in accordance with the PRACTICE NOTE - Use of Generative Artificial Intelligence (Gen AI) dated 28 November 2024.

EXECUTIVE SUMMARY

Travers bushfire & ecology (TBE) has been engaged by Cornish Group to undertake a bushfire protection assessment for a proposed rural- residential subdivision located at 598 Gresford Road, Vacy. The development involves the construction of two stages of lot residential subdivision, Stage 4 and Stage 5. This report will assess Stage 5 only.

Bush Fire Prone Land (BFPL) mapping was certified on the 7 March 2025 and as such, the development site is situated on BFPL (Category 3), mapped by the Dungog Shire Council. This triggers a formal assessment by the Council in respect of the NSW Rural Fire Service (RFS) policy against the provisions of *Planning for Bush Fire Protection 2019 (PBP)*. Under *S100B* of the *Rural Fires Act 1997 (RF Act)* the development is required to obtain a Bush Fire Safety Authority (BFSA) from the NSW RFS prior to the granting of development consent.

The assessment takes into consideration minimum building setbacks as per Dungog Development Control Plan (DCP) 2019. These building setbacks align with the required Asset Protection Zones (APZs) and will need to be further addressed in the Statement of Environmental Effects (SoEE) to ensure capacity for residential dwellings, specifically for Lots 1, 2, 3, 4, and 5 (Schedule 1).

The proposed rural-residential development must ensure that the extent of bushfire attack that can potentially impact a building envelope should not exceed a radiant heat flux of 29kW/m². This rating assists in determining the size of the APZs, which provides the necessary defendable space between vegetation that could potentially produce a bushfire and a building. The assessment found that adequate APZs are provided, with proposed perimeter roads, and prescribed building envelope setbacks can act as APZs.

In recognition of the requirements of *PBP* and the bushfire threat posed to the site by the nearby vegetation; *TBE* proposes the following combination of bushfire measures.

- APZ setbacks required for BAL-29 in accordance with the minimum setbacks outlined in *PBP* for all aspects as shown in table 2-2 and as generally depicted in Schedule 1.
- No gas, water, communications, or sewer utilities are proposed. The electrical services proposed must comply with *PBP* provisions set out in Section 3.4. Dedicated water is also required to meet Section 3.4 of *PBP* at the dwelling DA stage.
- Access to each lot, including on-site parking is to comply with section 3.3 of this report.
- Future dwelling construction in compliance with *PBP* and the appropriate construction sections of *AS3959-2018*.

TBE makes the following recommendations:

Recommendation 1 – The development including APZs is as generally indicated on the attached Schedule 1- Plan of Bushfire Protection Measures and in Table 2-1 of this report.

Recommendation 2 – Ensure compliance with required Dungog DCP setbacks and functional siting for future dwellings.

Recommendation 3 – There is one access point to Stage 5. However, given that this proposal is a rural-residential development, the low-density nature of the site and the planned conversion of lots from grassland to become a managed Inner Protection Area (IPA), the bushfire hazard will be minimised, providing justification to meet the performance criteria (see Section 3.3).

Recommendation 4 – Street landscaping to be managed in accordance with *Appendix 4* of *PBP* and as shown in Schedule 2- Management of Assessment Protection Zones.

Recommendation 5 – Incorporate dedicated static water supply systems meeting *PBP* provisions (20,000L static water tanks per lot for rural residential developments) for each lot at the dwelling DA stage as a restriction to the title. Tanks must include compatible fittings and accessible clear zones for firefighting vehicles and above-ground water pipes must be constructed from non-combustible materials (metal).

Recommendation 6 – Electrical reticulation is proposed and must be in accordance with *PBP* provisions. Implement a restriction on title to prevent the use of bottled gas connections to houses. Small, bottled gas is permissible for BBQs.

Recommendation 7 – Ensure ongoing on-site vegetation management to retain APZ functionality, particularly on steep slopes (e.g. southern and eastern aspects).

Recommendation 8 – Vegetation within the site boundary must be maintained, consistent with Schedule 2, according to *Appendix 4* of *PBP*.

GLOSSARY OF TERMS

AHIMS	Aboriginal Heritage Information System
APZ	asset protection zone
AS1596	<i>Australian Standard – The storage and handling of LP Gas</i>
AS2419	<i>Australian Standard – Fire hydrant installations</i>
AS3745	<i>Australian Standard – Planning for emergencies in facilities</i>
AS3959	<i>Australian Standard – Construction of buildings in bushfire-prone areas 2018</i>
BAL	<i>bushfire attack level</i>
BCA	<i>Building Code of Australia</i>
BPMs	Bush fire protection measures
BFSA	Bush Fire Safety Authority
DA	development application
EP&A Act	<i>Environmental Planning & Assessment Act 1979</i>
FDI	Fire Danger Index
GFDI	Grassland Fire Danger Index
IPA	inner protection area
LEP	Local Environmental Plan
LGA	local government area
m	metres
NCC	<i>National Construction Code</i>
OPA	outer protection area
PBP	<i>Planning for Bush Fire Protection 2019</i>
RF Act	<i>Rural Fires Act 1997</i>
RFS	NSW Rural Fire Service
TBE	<i>Travers bushfire & ecology</i>

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1. INTRODUCTION

Travers bushfire & ecology (TBE) has been engaged by Cornish Group to undertake a bushfire protection assessment for a proposed rural-residential subdivision (zoned R5) located at 598 Gresford Road, Vacy ('the subject site'), described as Stage 5 and located on Lot 123 DP 1063557. The proposal is on land mapped as being bush fire prone under section 10.3 of the *Environmental Planning & Assessment Act 1979 (EP&A Act)*.

An inspection of the proposed development site and surrounds was undertaken by Dr Grahame Douglas on 17 August 2024 to assess the topography, slopes, aspect, drainage, vegetation and adjoining land use. The identification of existing bushfire measures and a visual appraisal of potential bushfire hazards and threats were also undertaken.

The proposed layout designs for Stages 5 are illustrated in Figure 1-1. This is a continuation of previously approved developments (Stages 1 to 2).

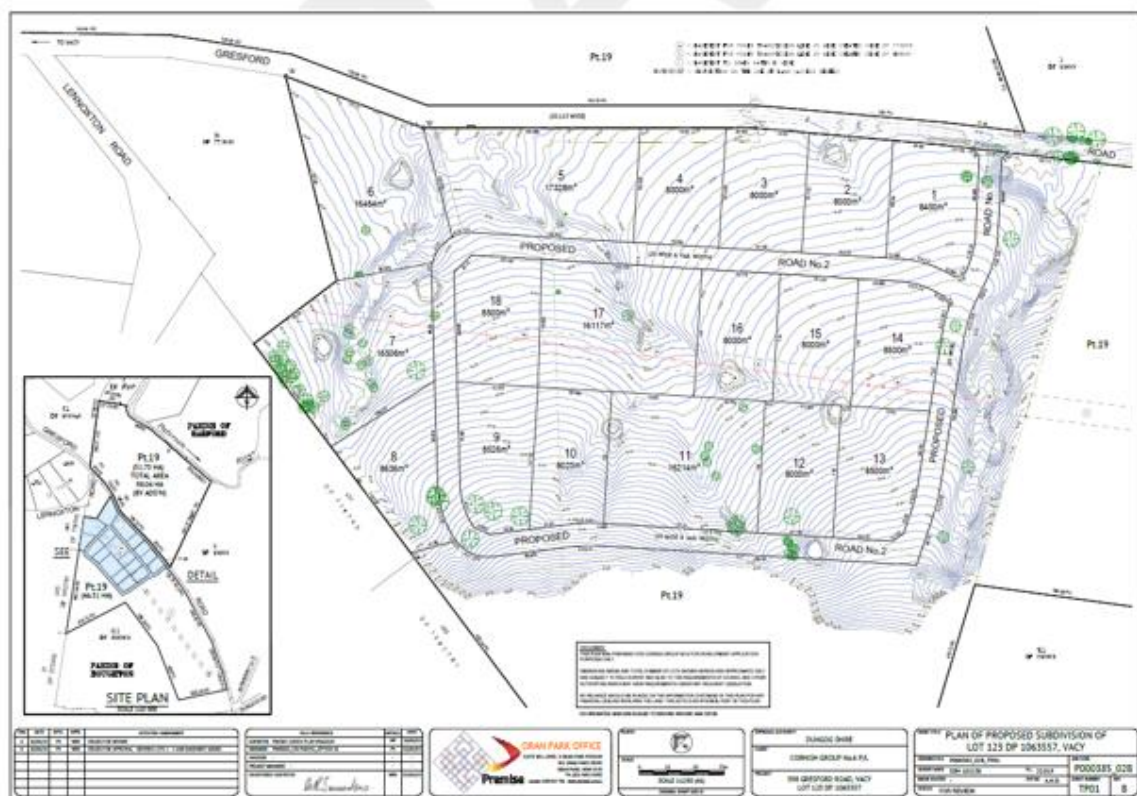


Figure 1-1 – Proposed development layout – Stage 5
(Source: Warren Raymond Saunders, Plan of Subdivision of Lot 123 in DP 1063557, dated October 2024)

1.1 Aims of the assessment

The aims of the bushfire protection assessment are to:

- review the bushfire threat to the development,
- undertake a bushfire attack assessment in accordance with *Planning for Bush Fire Protection 2019 (PBP)*, and
- provide advice on mitigation measures, including the provision of asset protection zones (APZs), construction standards, and other specific fire management issues.

1.2 Proposed development

The proposed development forms part of a broader multi-staged rural-residential subdivision at Lot 52 DP 1089481, building on the foundation established by Stages 1 and 2 (refer to Figure 1-3). A Bushfire Protection Assessment (BPA) for these earlier stages was prepared by *TBE* in March 2019, using the methodology outlined in the Pre-release *Planning for Bush Fire Protection* (*PBP* 2018). While *PBP* 2006 was the legally referenced document at the time, *PBP* 2018 was applied on a performance basis. Following its pre-release, *PBP* 2019 was then legislated in mid-2019 to coincide with the enactment of the National Construction Code 2019.

For Stages 1-2, alternative solutions were implemented to remove the need for continuous perimeter roads, through roads, and a secondary access point to the subdivision. These solutions were justified by several considerations. Gresford Road serves as a key perimeter road, providing a buffer against woodland vegetation to the south, while surrounding lands consist of managed and unmanaged grassland with planned future development to the east and west, further mitigating bushfire hazards.

The road design for Stages 1-2 includes Gresford Road to the south and a private access driveway to the west, which provides safe access for firefighting services to hazardous vegetation and the proposed lots. The internal roads are located over 50 meters from grassland and 100 meters from woodland vegetation, allowing for safe evacuation of residents and firefighting vehicle access. While the eastern boundary lacks a perimeter road, the planned development of adjoining land will remove this hazard in the future. In the interim, a turning head at the eastern end of Road No. 2, as per Figure 3.1, is identified for firefighting access and egress.

Stage 5 builds on the infrastructure and bushfire safety measures established in the earlier stages. Stage 5 is proposed to have 18 lots. Gresford Road continues to function as a critical perimeter road, providing a buffer against bushfire risks and serving as the primary access route for residents and emergency services. Internal road layouts and APZ configurations are designed to integrate seamlessly with the prior stages, creating a cohesive and compliant subdivision framework.

Stage 5 has been assessed under *PBP*, which emphasises case-by-case evaluations of access solutions for large-lot rural-residential subdivisions. Continuous perimeter roads are not required for this type of rural-residential development, however, are considered best practice.

TBE is currently preparing the draft Vegetation Management Plan (VMP) and there are proposed restoration plantings that would cover a narrow strip along Gresford Road, along the boundary of proposed Lots 1 to 6. The proposed planting at this stage is *PCT 3433 Hunter Coast Foothills Spotted Gum Ironbark Forest* and is classed as a 'Forest' under *PBP*. The proposed restoration planting has been included on Schedule 1. The restoration planting will not cover the access point in the final VMP plan.

The assessment requires consideration to any long-term bushfire implications and potential triggers for secondary access requirements. Given that the restoration planting does not cover the access point into Stage 5 from Gresford Road, it has been determined that access would not traverse forest, woodland, or heath vegetation, and secondary access requirements are not triggered.

Although vegetation management is proposed to be carried out by bush regenerators (Council) for the first three years, there is a risk that fuel loads will increase beyond this period. To mitigate future bushfire risks as the vegetation matures, extending maintenance obligations

or implementing an adaptive management plan should be considered as a condition of consent.

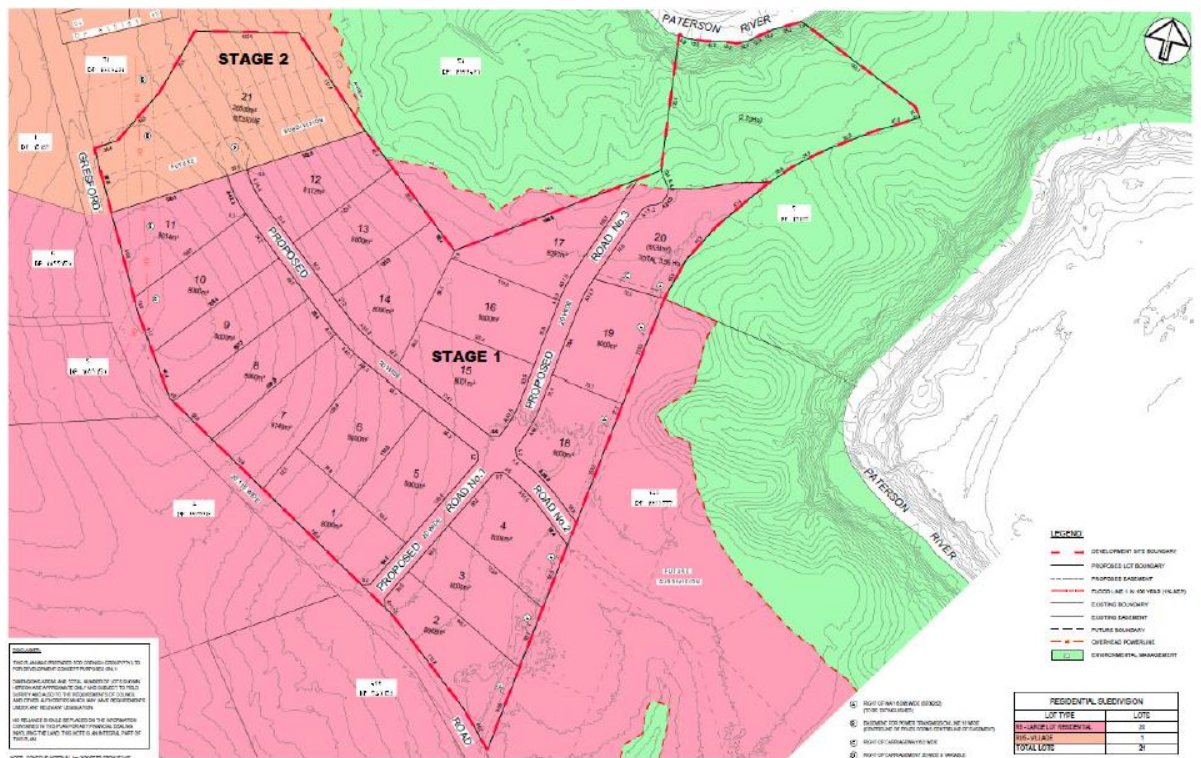


Figure 1-2 – Stage 1 and Stage 2 Vacy Subdivision
(Source: TBE, 2019, Bushfire Protection Assessment, Geolyse dated 12/09/2018, ref. 319001)

1.3 Site description

The site is located within the Dungog Shire Council local government area (LGA) and is situated 1.2 kilometres south of Vacy township and 5.6 kilometres northwest of Paterson. The site is predominantly rural, featuring a mix of cleared agricultural land and patches of native vegetation. The existing vegetation mainly consists of grasslands maintained through grazing practices. Within 140m of the site, there is a mix of forest and forested wetlands vegetation formations.

Topographically, the site displays gentle undulations, with steeper gradients evident along the natural watercourses and drainage lines. A central ridgeline runs eastward, contributing to the varied slopes extending north and south. Elevations across the site range between 10 and 190 meters above sea level. To the south and east, the terrain transitions into expansive farmland, interspersed with clusters of trees, while the northern and western sections are characterized by denser vegetation, connecting to larger tracts of bushland in the broader landscape.

1.3.1 Surrounding environment

The surrounding environment reflects a blend of rural residential properties, active agricultural operations, and significant natural bushland. Vacy's temperate climate and the flammable nature of the local vegetation, coupled with the area's varied topography, contribute to a heightened bushfire risk, particularly during dry seasons. The broader landscape's combination of open fields, forested hills, and waterways forms a complex bushfire landscape, underscoring the need for comprehensive bushfire protection planning.

1.4 Legislation and planning instruments

Table 1-1 – Legislation and planning instruments

Is the site mapped as bush fire prone?	Yes (Refer to figure 1-3).
Proposed development type	Rural-residential subdivision.
Is the development considered integrated for the purposes of Section 100B of the <i>Rural Fires Act 1997</i> ?	Yes
Is the proposal located in an Urban Release Area as defined under Clause 273 of the EP&A Regulations?	No.
Zoning	C3 - Environmental Management R5 - Large Lot Residential
Does the proposal rely on a performance solution?	No.

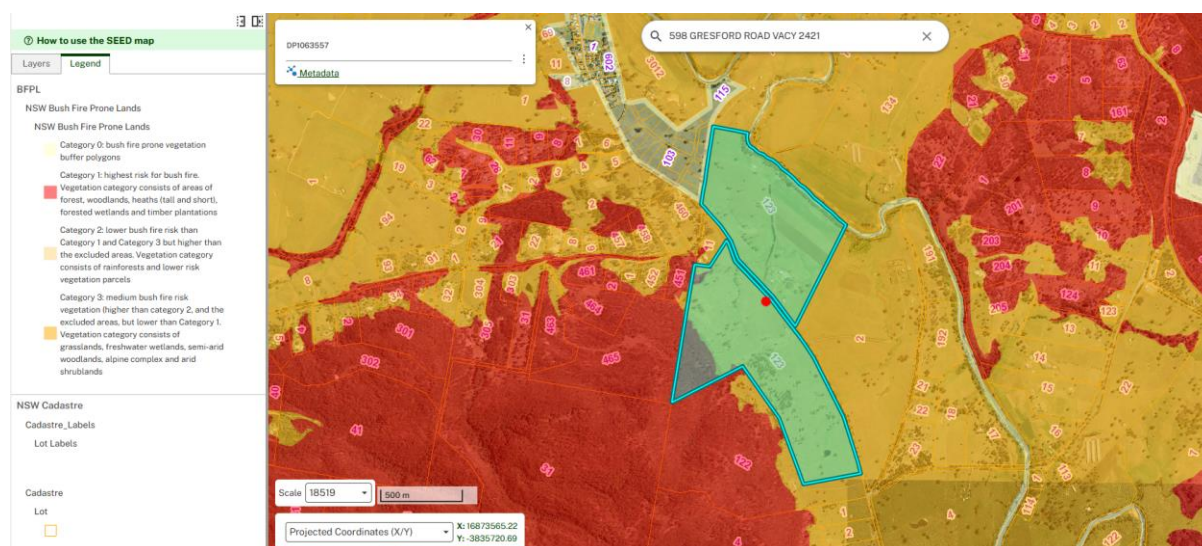


Figure 1-3 – Bushfire prone land mapping
(Source: SEED, obtained 26/5/2025)

1.4.1 Permissibility

The site, being a residential subdivision, is located within the Dungog Shire Council, local government area (LGA), and is currently zoned as a mixture of C3 – Environmental Management and R5 – Large Lot Residential. *Dungog Shire Council LEP 2023 (DSC LEP)* permits both dwelling houses and roads with consent from the council within these zones. Part 4 (Principal development standards) of DSC LEP 2023 provides the permissibility through prescribed development controls for residential subdivisions within the Dungog LGA. (Figure 1-5 below).

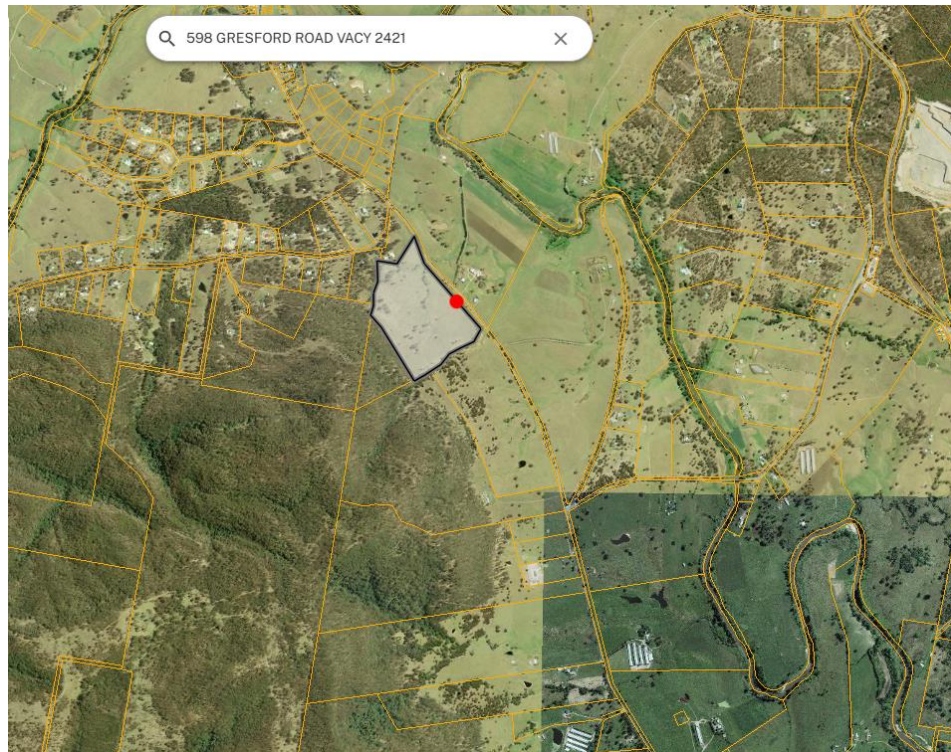


Figure 1-4 – Aerial appraisal – Stage 5
(Source: NearMap Aerial Imagery 202, obtained 6/02/2025)

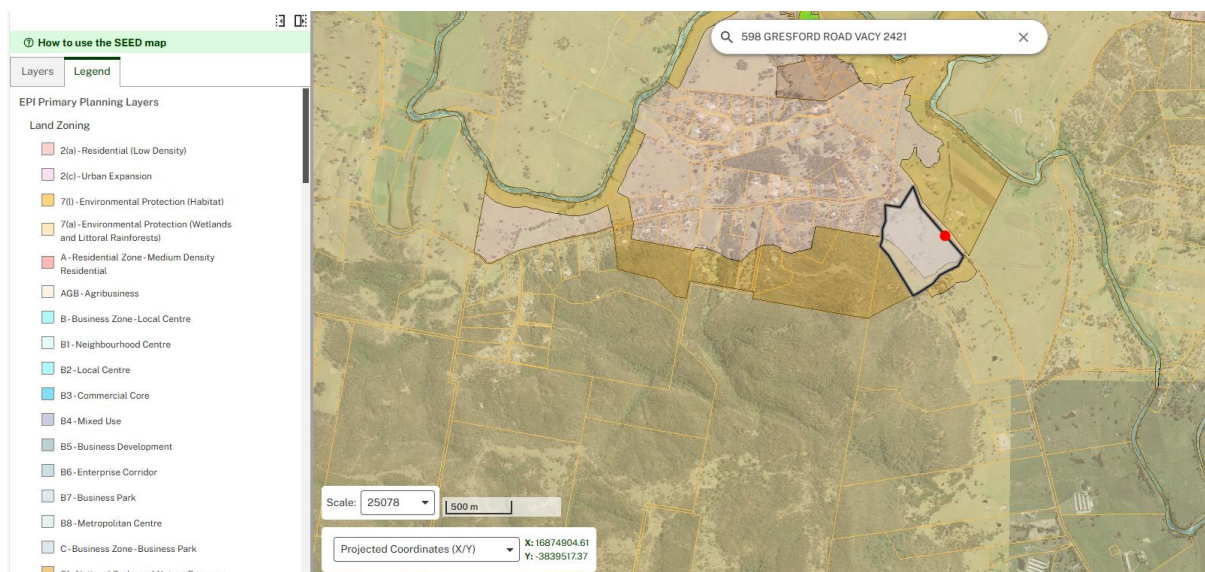


Figure 1-5 – Zoning – Stage 5
(Source: NSW Planning Portal 202, obtained 6/02/2025)

1.4.2 Legislative context

The key legislation in New South Wales (NSW) for bushfire assessment and management include the *Environmental Planning & Assessment Act 1979 (EP&A Act)*, the *Rural Fires Act (RF Act)* and their regulations being the Environmental Planning and Assessment Regulation (EP&A Regulation) and the RF Regulation.

For subdivisions which are for residential or rural-residential purposes, developers must apply for a Bush Fire Safety Authority (BFSa) in accordance with section 100B of the *RF Act* were mapped as being bush fire prone. The subject land is mapped as being bush fire prone land under section 10.3 of the *EP&A Act* and s100B does apply.

Performance requirements for residential subdivisions are outlined in Chapter 5 of *PBP* and are considered in the case of this development.

1.4.3 Bush Fire Prone Land

Under Section 10.3 of the *EP&A Act*, the NSW RFS is responsible for guiding local councils in mapping bushfire-prone land (BFPL). The *BFPL Mapping Guide* 2015 outlines procedures for preparing, modifying, and maintaining BFPL maps. The site is officially mapped as bushfire-prone (Figure 1-3).

1.4.4 Planning for Bush Fire Protection 2019 (PBP)

The aim of *PBP* is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment. The objectives of *PBP* are to:

- afford buildings and their occupants protection from exposure to a bush fire.
- provide for a defensible 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 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.

Under the *EP&A Act*, a subdivision is defined as “*the division of land into two or more parts, which after the division, would be adapted for separate occupation, use or disposition....*”.

1.4.5 Dungog Development Control Plan (DCP) 2018

The *Dungog Development Control Plan* (Dungog DCP) 2019 is a regulatory framework that ensures land use and development in the region, including subdivisions like the Vacy development, align with community expectations and environmental constraints. For land zoned R5 Large Lot Residential, such as the subject site, the DCP mandates minimum building line setbacks to balance residential amenity, bushfire safety, and environmental management. These setbacks are:

- 70m from a main road, such as Gresford Road.
- 30m from any other public road.
- 15m from new roads within the subdivision. Additionally, side and rear setbacks for R5 zoning require a minimum of 10m.

These setbacks have been acknowledged and applied to Stage 5 (see Schedule 1). However, the Council may vary the DCP requirements at the DA stage.

1.5 Environmental and Aboriginal heritage constraints

Submission requirements require the following environmental and heritage considerations that have the potential to be a constraint for implementing APZs within the site and may require further assessments before construction proceeds within a site:

- identification of any significant environmental features on the property.
- the details of any threatened species, population or ecological community identified under the *Biodiversity Conservation Act 2016 (BC Act)* and/ or the *Environmental Planning and Assessment Act 1979 (EPBC Act)* that is known to the applicant to exist on the property.
- the details and location of any Aboriginal object (within the meaning of the *National Parks and Wildlife Act 1974*) or Aboriginal place (within the meaning of the Act) that is known to the applicant to be situated on the property.

The following sources databases were reviewed to determine whether any environmental and Aboriginal heritage constraints were present within the proposed site:

Table 1-2 – Environmental and heritage constraints

Potential constraint	Database
Aboriginal Heritage significant sites and places.	Aboriginal Heritage Information Management System (AHIMS).
Threatened Ecological Communities (TECs).	Threaten Ecological Communities Greater Sydney Dataset (NSW SEED Portal).
Threatened Species (flora and fauna)	NSW BioNet Species Sightings Data Collection (NSW SEED Portal)
Watercourses	NSW Hydrography Dataset (NSW SEED portal)

Searches of each database used a 50m buffered area from the site boundaries to identify features.

A basic search of the AHIMS database identified no known significant Aboriginal sites or places. No significant Aboriginal heritage sites have been confirmed within the study area; however, further ongoing engagement with local Aboriginal communities is recommended to ensure compliance with the *National Parks and Wildlife Act 1974* and to mitigate any potential impacts on undetected heritage values.

The site features a few minor unnamed gullies and depressions that traverse the area, primarily flowing eastward into the Paterson River. These natural hydrological features create localised topographical variations, contributing to the site's gently undulating terrain and the development of riparian zones. The depressions, which vary in size, play a crucial role in supporting the remnant vegetation and maintaining ecological connectivity within the site.

There are three (3) known endangered populations within Dungog Shire LGA. These are:

- *Acacia pendula* population in the Hunter Catchment (recorded 2013)
- *Eucalyptus camaldulensis* population in the Hunter Catchment
- *Cymbidium canaliculatum* population in the Hunter Catchment (recorded 1926)

None of these endangered populations were located onsite within the study area. One (1) threatened species – *Eucalyptus glaucina* (Slaty Red Gum) – was observed within the site. No threatened ecological communities (TECs) were observed within the development footprint. The subject-site is not located on lands mapped as Biodiversity Values Land (see Figure 1-6).

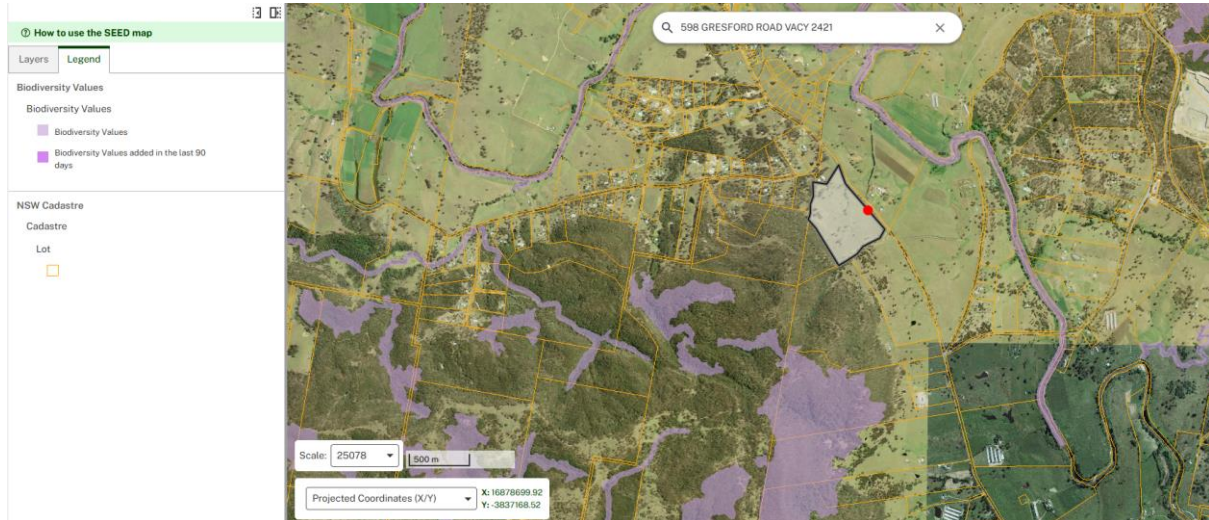


Figure 1-6 – Biodiversity Value Mapping – Stage 5 (purple = Biodiversity values)
(Source: NSW SEED Portal 2024, dated 6/02/2025)

2. BUSHFIRE THREAT ASSESSMENT

To assess the bushfire threat and to determine the required width of an APZ for development a bushfire assessment must include the determination of the regional fire weather conditions (FDI) and an assessment of the predominant vegetation that has the potential to be a bushfire threat to the development, as well as the effective slope within such vegetation. The known fire history for the development site and surrounding landscape is also considered.

2.1 Fire history

A fire history search of the development site and its surrounding areas was conducted using the NSW National Parks and Wildlife Services (NPWS) 'NPWS Fire History- Wildfires and Prescribed Burns' database within the NSW SEED Portal.

There have been no known fires to have directly affected the site itself. (Refer to Figure 2-1). However, the region is dominated by grassland and rural bushland making it susceptible to fast-spreading grassfires and bushfires during dry and windy conditions. The following bushfires have been recorded in the vicinity of the site:

- During 2002-2003, a large grassland fire was recorded within 15 kilometres south-east of the site.
- A small, localised fire occurred in 2006, approximately 12 kilometres north of the site.
- In 2013, the Hunter Region bushfires occurred, 18 kilometres south of Gresford Road which was classified as a major fire event, fuelled by dry grass and windy conditions.
- In 2017, another fire was recorded 10 kilometres west of the site, burning through farmland and scrub.
- The 2019-2020 'Black Summer' fires impacting the Hunter region, included a fire approximately 16 kilometres east of Gresford Road.

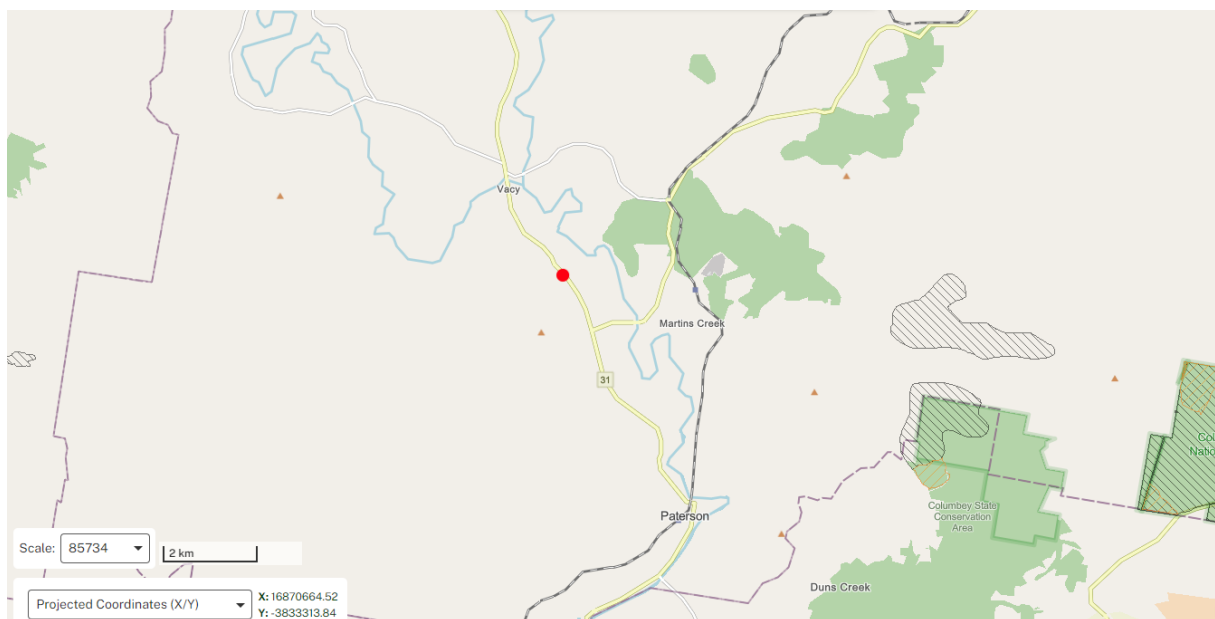


Figure 2-1 – Fire history
 (Source: NSW SEED Portal 2024, dated 16.10.24)

2.2 Predominant vegetation

The *PBP* guidelines require identifying the predominant vegetation formation within 140m of a proposed building envelope using David Keith's 2004 classifications. Vegetation data for the site was sourced from the NSW SEED Portal and verified through site assessments. The predominant vegetation aligns with the Hunter Subregion of the Sydney Basin Bioregion and includes key Plant Community Types (PCTs): PCT 3433 - Hunter Coast Foothills Spotted Gum Ironbark Forest, PCT 3446 - Lower North Foothills Ironbark-Box-Gum Grassy Forest, and PCT 4042 - Lower North Riverflat Eucalypt-Paperbark Forest.

The vegetation is primarily grasslands with isolated tree patches and riparian vegetation, showing varied conditions. High canopy cover and species diversity are notable near watercourses, while fragmentation from historical land use is evident in other areas.

Photos of the predominant vegetation within the 140m assessable area are shown below within Figures 2-2 -2.9.

2.3 Effective slope

The effective slope for the development site has been assessed up to 100m from the boundary, with variations observed across Stage 5. Effective slope, which refers to the slope exerting the greatest influence on fire behaviour, has been analysed in detail to ensure accurate assessment.

Stage 5 exhibits varied slopes depending on the aspect. To the north, the slope is upslope ranging from >5–10 degrees downslope, reducing the intensity of fire spread in this direction. The southern aspect features a steeper downslope of >10–15 degrees, significantly increasing fire intensity and rate of spread. On the western side, the slope transitions from flat to a gentle downslope of >0–5 degrees downslope, posing a relatively lower risk compared to steeper aspects.

2.4 Regional fire weather conditions

The study area assessment methodology relies on the application of the relevant fire weather conditions, referred to as the Fire Danger Index (FDI) or the Grassland Fire Danger Index (GFDI) for grassland vegetation. For the Dungog area, which falls within the Greater Hunter Fire Weather District, the acceptable FDI and GFDI values are set at 100 and 130, respectively in accordance with *PBP*. For these given values, Table A1.12.2 of *PBP* is used for the Hunter Region District in determining the relevant APZs.



Figure 2-2 – Vegetation photos (adjoining land)
(598 Gresford Rd Vacy dated 17 August 2024)



Figure 2-3 – Vegetation photos (on-site)
(598 Gresford Rd Vacy dated 17 August 2024)



Figure 2-4 – Vegetation photos (on-site)
(598 Gresford Rd Vacy dated 17 August 2024)



Figure 2-5 – Vegetation photos (on-site)
(598 Gresford Rd Vacy dated 17 August 2024)

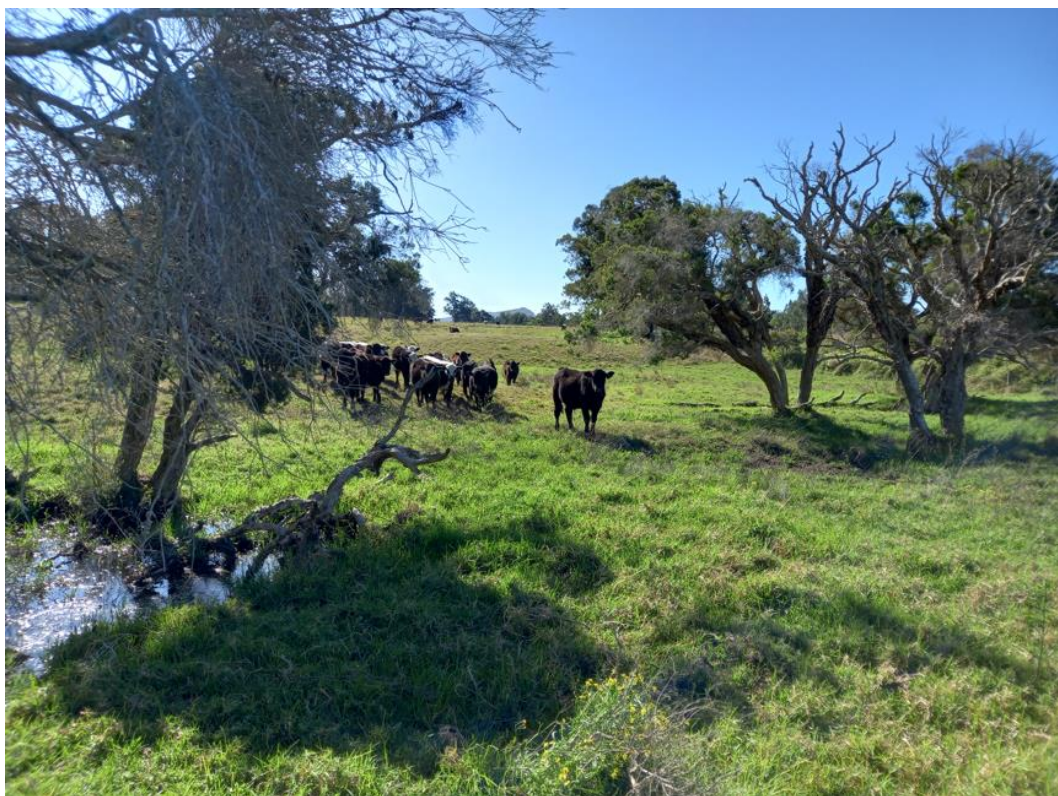


Figure 2-6 – Vegetation photos (on-site)
(598 Gresford Rd Vacy dated 17 August 2024)



Figure 2-7 – Vegetation photos (on-site)
(598 Gresford Rd Vacy dated 17 August 2024)



Figure 2-8 – Vegetation photos (looking to nearby lands)
(598 Gresford Rd Vacy dated 17 August 2024)



Figure 2-9 – Vegetation photos (adjoining forest)
(598 Gresford Rd Vacy dated 17 August 2024)

2.5 Bushfire attack assessment

“A means of measuring the severity of a building’s potential exposure to ember attack, radiant heat and direct flame contact. In the NCC, the BAL is used as the basis for establishing the requirements for construction to improve protection of building elements.” (PBP 2019, page 110).

Table 2-1 provides a summary of the bushfire attack assessment based on a residential development and the methodologies used to determine APZs within *PBP*.

The APZs are required to be wholly within the site’s boundaries and should not rely on being on adjoining land. APZs can extend beyond a site’s boundaries in cases where structures or features of a landscape are considered permanent and act as barriers against fire spread. Examples are road carriageways, urban landscapes or land with vegetation that is considered managed. The minimum APZ setback required for residential and rural subdivisions is a rating of BAL-29, which ensures buildings are not exposed to a radiant heat flux exceeding 29 kW/m².

The APZ requirements are identified in Table 2-1 below.

Table 2-1 – Bushfire attack assessment – Stage 5

Aspect	Vegetation Formation within 140m (<i>PBP</i>)	Effective Slope	APZ required	APZ provided	Comments
North-East (Lots 1-6)	Grasslands (PCT 3433)	>5-10°DS	13m	70m	The building envelope setback must meet minimum 70m. With this frontage provision and the main road setback (minimum 8m), Lots 1-6 are compliant. The proposed restoration plantings have been added to Schedule 1, with the minimum DCP setbacks measured from this proposed vegetation. It is important to note that given the minimum frontage building envelope setback of 70m (Dungog DCP), Lots 1-6 is sufficiently separated in terms of APZ spacing.

Aspect	Vegetation Formation within 140m (PBP)	Effective Slope	APZ required	APZ provided	Comments
South-East (Lots 1, 13-14)	Grasslands (PCT 3433) Forested Wetlands (PCT 4042) Dry Sclerophyll Forests (PCT 3446)	>5-10 °DS	13m 16-25m 36-45m	35m (Grasslands) 31m (Forested Wetlands) 90m (Forests)	The south-eastern aspect exceeds APZ requirements across vegetation types. Note that the C3 lands are assumed to regrow to a forest form (PCT3446)
North-West (Lots 7-8)	Dry Sclerophyll Forest (shrub/grass formation) (PCT 3433) Wet Sclerophyll Forest (PCT 3244)	>0-5 °DS	29m 29m	50m (Dry Sclerophyll Forests) 29m (Wet Sclerophyll Forest)	The north-western aspect meets the APZ requirements for Dry Sclerophyll Forests. The minimum building envelope setback of 10m and the road corridor provides an adequate buffer from the bordering Forests (Lots 7-8). This area must be maintained as an APZ.
South-west (Lots 9-13)	Grasslands (PCT 3433) Dry Sclerophyll Forests (Shrub/grass sub-formation) (PCT 3466)	>10-15 °DS	15m (Grasslands) 45m (Dry Sclerophyll Forest)	35m (Grasslands) 45m (Dry Sclerophyll Forest)	The south-western aspect is assumed to regrow to forest vegetation based on the C3 zoning. The minimum building envelope setbacks (15m) and the proposed 20m road reserve allow for some APZ. Lots 9-13 have an increase to the building envelope setback, as a minimum of 45m from Dry Sclerophyll Forest sits closer to the road. The steep slope demands continued vegetation management. Therefore, this southern portion must be maintained as an APZ.

In summary, the development will have APZ setbacks which satisfy the minimum requirements to achieve a BAL-29 rating and ensure all future buildings will not be exposed to radiant heat levels exceeding 29kW/m². As stated, the minimum building setbacks will be addressed in the SoEE. The proposed restoration plantings have been added to Schedule 1, with the minimum DCP setbacks measured from this proposed vegetation. Adequate dwelling siting will need to be addressed for Lots 1-6.

All APZs have been appropriately assessed to ensure that a suitable building envelope is achievable on each lot, including those which may regrow to a forest form, which is not likely, but possible in the Stage 5 area. APZs are achieved through DCP provisions.

The decision to rely on the 20m road reserves as part of the APZ strategy is based on the spatial analysis of the site. The minimal building envelope setbacks prescribed by the Dungog DCP 2019 already restrict building configurations, particularly on lots with challenging topography or irregular shapes.

The 20m road reserves provide sufficient setbacks to meet APZ requirements under *PBP*, effectively acting as a low-fuel buffer between the development and surrounding vegetation. These roads enhance access for emergency services while ensuring compliance with bushfire safety standards. Given their strategic placement and dual purpose, the perimeter roads are a practical and compliant solution that negates the need for additional APZs, provided ongoing maintenance is ensured to retain their effectiveness as low-fuel areas.

Areas of planted native vegetation and small forest remnants within grassland environments with significantly reduced fire threat, providing flexibility in APZ requirements.

3. SPECIFIC FIRE PROTECTION ISSUES

This section outlines the proposed package of bushfire protection measures and where possible assesses their compliance with the relevant performance criteria by comparison to the acceptable solutions for residential and rural subdivisions as per Chapter 5 of *PBP*.

3.1 Asset protection zones (APZs)

The intent of the measures is to provide sufficient space and maintain reduced loads to ensure radiant heat levels at the buildings are below critical limits and prevent direct flame contact. In summary, the entire development site is to be managed as an inner-protection area as per *Appendix 4* of *PBP* and Schedule 2. This should be applied throughout the lifetime of the development and until each lot is sold / developed and the hazard is removed.

Table 3.1 outlines the proposal's compliance with the performance criteria for APZs.

Table 3-1 – Standards for asset protection zones and landscaping (PBP)

<i>Performance criteria: to provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at the buildings are below critical limits and prevent direct flame contact.</i>		
<i>Acceptable Solution</i>	<i>Complies</i>	<i>Comments</i>
APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	☒	APZ setbacks include a minimum of 29-45m from forest vegetation and 12-16m for grasslands, compliant with <i>PBP</i> .
APZs are managed in accordance with the requirements of Appendix 4.	☒	All APZs will be managed as inner protection areas, maintaining fuel loads as specified under Appendix 4 of <i>PBP</i> . On-site landscaping will need to be managed at future dwelling stages.
APZs are wholly within the boundaries of the development site	☒	Proposed APZs are wholly within property boundaries, with setbacks validated for compliance.
APZs are located on lands with a slope less than 18 degrees.	☒	All APZs are situated on compliant gradients, ensuring operational safety and bushfire resistance.
Landscaping is in accordance with Appendix 4; and	☒	Landscaping should align with inner protection area requirements, western perimeter and near identified buildable lots. Further information is required at dwelling DA stages.
Fencing is constructed in accordance with section 7.6.	☒	Future fencing specifications should include non-combustible materials as required by <i>PBP</i> 2019. Rural boundary fencing comprising post and wire or post and rail is permissible.
Summary: The proposed asset protection zones for Stage 5 meet all performance criteria outlined in <i>PBP</i> 2019, ensuring the reduction of bushfire risk to below critical thresholds for future dwellings. All setbacks and APZ management strategies are in full compliance with acceptable solutions.		

3.2 Construction standards

The building construction standards of future dwellings within the development site that will be situated on BFPL and within 100m of bushland or 50m of grassland are to be applied in accordance with *AS3959 Construction of buildings in bushfire prone areas (2018)* or NASH Standard and Section 5 of *PBP*. Future residential buildings will be able to comply with BAL 29 or lower setbacks.

3.3 Access

The intent of the access measures is to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.

Stage 5 proposed typical road section is illustrated in Figure 3-1.

Table 3-2 – Standards for access (General) within Residential Subdivisions (PBP)

Performance criteria: Firefighting vehicles are provided with safe, all-weather access to structures		
Acceptable Solution	Complies	Comments
Property access roads are two-wheel drive, all-weather roads;	☒	Proposed designs include sealed, all-weather roads accessible by firefighting vehicles.
Perimeter roads are provided for residential subdivisions of three or more allotments;	☒	Perimeter roads align with subdivision designs and provide adequate firefighting access. Perimeter roads are not required for rural-residential subdivisions including R5 zones. Lots 9-14 and Lot 1 enjoy perimeter access.
Subdivisions of three or more allotments have more than one access in and out of the development;	☒	Stage 5 has one access in and out of the development. However, given that the development is in zone R5 and is through a grassland, not forest, woodland or heath, it demonstrates compliance with the performance criteria.
Traffic management devices are constructed to not prohibit access by emergency services vehicles;	☒	Traffic management should include features that avoid obstructions for emergency vehicles. Condition of consent.
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;	☒	Road gradients comply with both maximum and average slope criteria, ensuring safe access for firefighting vehicles.
All roads are through roads;	☒	Stage 5 has a road system which indirectly provides for a through road. (See below re alternative approach)
Dead end roads are not recommended, but if unavoidable, are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end:	☒	Stage 5 has a road system which indirectly provides for a through road. Signage placement is subject to the condition of consent requirement. (See Figure 3-1).

Performance criteria: Firefighting vehicles are provided with safe, all-weather access to structures

Where kerb and guttering are provided on perimeter roads, roll top kerbing should be used to the hazard side of the road;	☑	Kerb designs should incorporate roll top kerbing on all sides of road to facilitate emergency vehicle access.
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	☑	Complies. Stage 5 does not travel through forest, woodland or heath.
One-way-only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression	☑	Complies. Road widths meet <i>PBP</i> standards, ensuring operational access for emergency vehicles. Reticulated water not proposed – dedicated water on-site subject to siting of buildings.

Summary: The proposed access infrastructure demonstrates compliance with several key criteria; however, there are notable considerations in terms of secondary access that must be addressed to fully meet the performance criteria for providing safe, all-weather access for firefighting vehicles:

- Given the rural-residential, low-density nature of the area and the planned conversion of lots from grassland to managed Inner Protection Areas (IPA), safe, all-weather access for firefighting vehicles to structures can be provided thereby meeting the performance criteria.

Considerations:

- If vegetation restoration is to go ahead, minimum clearance from the access road must be provided, and plantings must be maintained throughout in perpetuity.
- Rural boundary fencing should be non-combustible or post and wire/post and rail configuration.
- Validate traffic management and kerb design compliance prior to finalizing.

Table 3-3 – Standards for Perimeter Roads within Residential Subdivisions (PBP)

Performance criteria: vehicle 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 interfaces are provided with safe, all-weather access to structures.		
Acceptable Solution	Complies	Comments
Are two-way sealed roads;	☑	All perimeter roads in the proposed design are two-way sealed roads, meeting <i>PBP</i> specifications for firefighting vehicle access and residential egress.
Minimum 8m carriageway width kerb to kerb	☑	The <i>Road Alignment Control Plan & Typical Road Cross Section</i> , Rev. A, dated 2 December 2024, illustrates that the proposed carriageway within the road reserve within Stage 5 meets the minimum 8m width (see Figure 3-1)
Parking is provided outside of the carriageway width	☑	Complies. Parking on-site of each lot.
Hydrants are located clear of parking areas;	N/A	On-site water of 20,000L per lot recommended.
Are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	☑	Complies. Stage 5 area will be converted from grassland to a managed IPA and is a low-density, rural-residential area. Indirect through road but no alternate access.
Curves of roads have a minimum inner radius of 6m;	☑	All road curves comply with the minimum 6m inner radius requirement, facilitating safe manoeuvring of firefighting vehicles.
The maximum grade road is 15 degrees and average grade of not more than 10 degrees;	☑	Road designs maintain compliant gradients, ensuring safe access and egress for emergency vehicles under all conditions. Grades less than 10 degrees.
The road crossfall does not exceed 3 degrees;	☑	Crossfall measurements throughout the subdivision roads are within the permissible limit, enhancing vehicular stability and safety during emergencies. See typical road design.
A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	☑	Vertical clearance meets the 4m requirement, ensuring unobstructed passage for firefighting equipment and larger vehicles.
Summary: Generally, perimeter roads are not required for rural-residential forms of development. The proposed perimeter road design demonstrates overall compliance with <i>PBP</i> performance criteria.		
Considerations: Ensure future vegetation management plan is consistent with <i>PBP</i> perimeter road requirements.		

Table 3-4 – Standards for Non-Perimeter Roads within Residential Subdivisions (PBP)

Performance criteria: Firefighting vehicles are provided with safe, all-weather access to structures		
Acceptable Solution	Complies	Comments
Minimum 5.5m carriageway width kerb to kerb	☑	All non-perimeter roads are 8m and meet the minimum carriageway width of 5.5m, ensuring accessibility for firefighting vehicles.
Parking is provided outside of the carriageway width;	☑	There are no designated parking spaces within proposed design, however there is adequate space on-site of each lot.
Hydrants are located clear of parking areas;	N/A	Reticulated water is not provided.
Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m;	☑	The internal road network includes roads linked at compliant intervals, facilitating efficient movement for emergency vehicles. Stage 5 does not have a through road.
Curves of roads have a minimum inner radius of 6m;	☑	Road curves meet the required 6m inner radius, allowing smooth navigation for firefighting equipment.
The road crossfall does not exceed 3 degrees;	☑	All crossfalls are within the permissible 3-degree limit, ensuring stability for vehicles, particularly during emergency operations.
A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	☑	Adequate vertical clearance has been ensured, with no obstructions below 4m, facilitating the passage of firefighting vehicles and larger apparatus.
Summary: The proposed non-perimeter roads comply with the performance criteria for providing safe, all-weather access to structures; however, there are some areas requiring additional clarification and potential improvement: • While there are no designated parking spaces in the current design, the spacing on-site of each Lot is sufficient for off-street parking. • The positioning of dedicated water supplies relative to parking areas needs further clarification at the dwelling DA stage. Water tanks are to be well placed and clear of any potential obstructions is critical to maintaining accessibility for emergency services. Additional detail of the site is required to confirm compliance at the dwelling DA stage. Considerations: • Clearly identify and designate parking spaces on-site at the dwelling DA stage to prevent encroachment on firefighting access routes.		

Table 3-5 – Standards for Property Access within Residential Subdivisions (PBP)

Performance criteria: Firefighting vehicles can access the dwelling and exit the property safely		
Acceptable Solution	Complies	Comments
There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	☒	Complies. Rural-residential subdivision. The layout complies with urban access requirements, with no unobstructed paths exceeding 70m to the public road system. Speed limit will be 60kph max.
Summary: The proposed property access design meets the performance criteria outlined in <i>PBP</i> , Table 5.3d notwithstanding the development is for a rural-residential subdivision. The design ensures unobstructed access paths for firefighting vehicles, adequate clearance and turning areas, and compliant road grades and widths. Passing bays and road curves have been appropriately designed for rural sections.		

3.4 Services

3.4.1 Water supplies

The intent of measures is to provide adequate services of water for the protection of buildings during and after the passage of bushfire. Table 3-6 outlines the proposal's compliance with the acceptable solutions for reticulated water supply.

Table 3-6 – Standards for reticulated water supplies (PBP)

Performance criteria: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building		
Acceptable Solution	Complies	Comments
Reticulated water is to be provided to the development where available;	N/A	No reticulated water is proposed. Can be a condition of consent if future utility is proposed.
A static water and hydrant supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed	☒	For non-reticulated developments, Stage 5 must comply with Table 5.3d of <i>PBP</i> , Chapter 5. Specifically, it must comply with 'Rural-residential lots' (>10,000m ²) for a water requirement of 20,000L/lot. Can be a condition of consent. (Note some lots less than 10,000m ² but higher water is recommended).
Static water supplies shall comply with Table 5.3d.	☒	Can comply. Static water is required, confirm tank capacities, and compliance with distance standards before dwelling approval. Can be a restriction to the title.
Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard AS 2419.1:2005	N/A	Not applicable.
Hydrants are not located within any road carriageway	N/A	Not applicable.

Performance criteria: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building

Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	N/A	No reticulated water proposed. Ensure alternate static systems comply. Can be a condition of consent.
Fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	N/A	No reticulated water proposed. Ensure alternate static systems comply. Can be a condition of consent.
All above-ground water service pipes are metal, including and up to any taps; and	☑	Can be a condition of consent for dwelling DA.
Above-ground water storage tanks shall be of concrete or metal.	☑	Can be a condition of consent for dwelling DA.

Summary:

- No reticulated water supply is proposed. The subdivisions must plan for dedicated on-site static water supply systems compliant with Table 5.3d of *PBP*, including a minimum water requirement of 20,000L per rural residential lot.
- Static water supplies need to comply fully with *PBP* 2019 standards. This includes verification of tank capacities, placement, and operational fittings.
- Metal pipes and tanks are proposed but require further verification to ensure compliance.

Considerations

- The design to include static water systems that meet the specified volume and standards under *PBP* 2019 Table 5.3d.
- Conduct a detailed review of hydrant placement to confirm compliance with AS 2419.1:2005 and ensure hydrants are clear of road carriageways.
- Confirm and document that all above-ground water service pipes and tanks are constructed with fire-resistant materials, such as metal or concrete.

3.4.2 Gas

The intent of measures is to locate gas so as not to contribute to the risk of fire to a building. Table 3-7 outlines the required acceptable solutions for gas supply.

Table 3-7 – Performance criteria for gas supplies (PBP guidelines)

Performance criteria: location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.		
Acceptable Solution	Complies	Comments
reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 - <i>The storage and handling of LP Gas, the requirements of relevant authorities, and metal piping is used</i>	N/A	Is not proposed.
all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side	N/A	Is not proposed.
connections to and from gas cylinders are metal;	N/A	Is not proposed.
polymer-sheathed flexible gas supply lines are not used; and	N/A	Is not proposed.

Performance criteria: location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.

above-ground gas service pipes are metal, including and up to any outlets.

N/A

Is not proposed.

Summary: No gas utilities proposed. Bottled gas (cylinders) is not supported or recommended and there should be a restriction on titles other than small bottles for BBQs.

If future gas services are included in the subdivision, compliance with AS/NZS 1596:2014 and *PBP* must be verified through:

- Confirmation of gas supply type (reticulated or bottled) and its installation details.
- Assurance of adequate shielding, distance from flammable materials, and the use of fire-resistant materials like metal.
- Site verification to ensure compliance with *PBP*.

Considerations:

- If any future gas utilities are proposed, conduct an on-site inspection to validate compliance with the acceptable solutions.

3.4.3 Electricity

The intent of measures is to locate electricity so as not to contribute to the risk of fire to a building. Table 3-8 outlines the required acceptable solutions for the development's electricity supply.

Table 3-8 – Standards for electricity services (*PBP*)

Performance criteria: location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.

Acceptable Solution	Complies	Comments
Where practicable, electrical transmission lines are underground;	☒	Based on surrounding Vacy area and proposed design, no proposed electrical transmission lines are underground as it is not reasonable.
Where overhead, electrical transmission lines are proposed as follows: • lines are installed with short pole spacing of 30m, unless crossing gullies, gorges or riparian areas. • no part of a tree is closer to a power line than the distance set out in ISSC3 Guideline for Managing Vegetation Near Power Lines.	☒	Overhead transmission lines likely apply based on the surrounding Vacy area context. Compliance with pole spacing needs further verification. Vegetation clearance near power lines requires site-specific verification, particularly for areas adjacent to bushland.

Summary: The compliance of electricity services for the proposed subdivision cannot be fully determined without additional details specific to the site. The Vacy area generally relies on overhead transmission lines, which increases the risk of ignition if not properly managed.

- Underground transmission lines would reduce ignition risks but are unlikely to be feasible in this context. Confirmation is required on whether overhead lines are planned.
- If overhead lines are used, compliance with pole spacing (30m) and vegetation clearance under ISSC3 guidelines must be ensured. These factors are critical to minimize bushfire risks.

Considerations:

- Confirm the proposed method for electrical service installation (underground or overhead).
- For overhead lines, validate compliance with ISSC3 vegetation clearance standards and pole spacing requirements.

3.5 Specific objectives for residential and rural-residential subdivisions

The specific objectives for residential and rural subdivisions with a dwelling entitlement are as follows:

Table 3-9 – Specific Objectives (Residential and Rural-Residential Subdivisions)

Specific objective	Compliance	Comment
Minimise perimeters of the subdivision exposed to the bush fire hazard (hourglass shapes, which maximise perimeters and create bottlenecks should be avoided);	☑	Complies. (Refer to the discussion in section 2.5 and 3.3).
Minimise vegetated corridors that permit the passage of bush fire towards buildings	☑	Complies. (Refer to the discussion in section 2.5 and 3.3).
Provide for the siting of future dwellings away from ridge-tops and steep slopes, within saddles and narrow ridge crests	☑	Complies. The development site is not situated on or near to ridge-tops and steep slopes, within saddles and narrow ridge crests.
Ensure that APZs between a bush fire hazard and future dwellings are effectively designed to address the relevant bush fire attack mechanisms	☑	Complies. All APZs can achieve BAL 29. (Refer to the discussion in sections 2.3 and 3.1).
Ensure the ongoing maintenance of APZs	☑	Complies. Future maintenance to be implemented and compliance with future Vegetation Management Plan.
Provide adequate access from all properties to the wider road network for residents and emergency services	☑	Complies. (Refer to the discussion in section 3.4.1).
Provide access to hazard vegetation to facilitate bush fire mitigation works and fire suppression; and	☑	Complies – (Refer to the discussion in section 3.3).
Ensure the provision of an adequate supply of water and other services to facilitate effective firefighting	☑	Complies. (Refer to the discussion in section 3.4).

4. CONCLUSION & RECOMMENDATIONS

4.1 Conclusion

This bushfire protection assessment has been undertaken for the proposed future residential subdivision at 598 Gresford Road, Vacy. In total, there will be 18 rural residential lots in Stage 5. The proposal is mapped as being bush fire prone and as such, requires a bush fire safety authority from the RFS under section 100B of the *RF Act*.

In summary, the assessment highlighted the following:

1. **Stage 5 (Southern Lot):** Building envelope constraints on Lots 1-6. It is acknowledged that this will be addressed in SoEE. Despite APZ compliance, these lots require adjustments to align with the minimum building envelope setbacks prescribed by the Dungog DCP 2019 rather than bushfire requirements.
2. **Perimeter Roads:** The proposal does not trigger secondary access requirements as access/egress does not traverse forest, woodland, or heath vegetation. Schedule 1 acknowledges the proposed restoration plantings as per the draft VMP and recommends maintenance and management to reduce increase in bushfire risk. In recognition of the requirements of *PBP* and the potential bushfire risk posed to the development site by the nearby bushland, *TBE* proposes the following combination of bushfire measures:
 - APZ setbacks are required the minimum setbacks for BAL-29 and in accordance with the minimum setbacks outlined with *PBP* for most aspects as shown in table 2-2 and generally depicted in schedule 1.
 - Given the rural-residential, low-density nature of the site and the planned conversion of lots from grassland to managed IPA, the bushfire hazard will be significantly reduced, and all-weather access to structures will be provided. This design minimises the need for extensive travel into the site by emergency services, supporting safe operations while aligning with the intent of the *PBP* performance criteria.
 - If any future gas and water utilities proposed must be implemented in accordance with *PBP*. Gas is not supported and should be a restriction to title for bottled gas.
 - Future dwelling construction in compliance with *PBP* and the appropriate construction sections of *AS3959-2018 (or NASH)* and *PBP*.
 - Fencing should be post and rail or post and wire rural fencing.

The following specific recommendations are provided to ensure that the development is in accordance with, or greater than, the requirements of *PBP*.

4.2 Recommendations

Recommendation 1 – The development including APZs is as generally indicated on the attached Schedule 1- Plan of Bushfire Protection Measures and in Table 2-1 of this report. Future dwellings must be constructed to achieve BAL-29 compliance (AS 3959:2018) where APZs meet the prescribed setbacks for Grasslands, Forested Wetlands, and Dry Sclerophyll Forests.

Recommendation 2 – If restoration plantings go ahead, a 24m cleared separation on both sides of the access road should be maintained in perpetuity if restoration works proceed. Given the risk of increasing fuel loads after the initial three-year vegetation management period, extending maintenance obligations or implementing an adaptive management plan is recommended (see Section 3.3).

Recommendation 3 – Street landscaping to be managed in accordance with *Appendix 4 of PBP* and as shown in Schedule 2- Management of Assessment Protection Zones.

Recommendation 4 – Incorporate dedicated static water supply systems meeting *PBP* provisions (20,000L static water tanks per lot for rural residential developments) for each lot at the dwelling DA stage as a restriction to the title. Tanks must include compatible fittings and 4m accessible clear zones for firefighting vehicles and above-ground water pipes must be constructed from non-combustible materials (metal).

Recommendation 5 – Electrical reticulation is proposed and must be in accordance with *PBP* provisions. Implement a restriction on title to prevent the use of bottled gas connections to houses. Small, bottled gas is permissible for BBQs.

Recommendation 6 – Ensure ongoing on-site vegetation management to retain APZ functionality, particularly on steep slopes (e.g. southern and eastern aspects).

Recommendation 7 – Vegetation within the site boundary must be maintained, consistent with Schedule 2, according to Appendix 4 of *PBP*.

5. INFORMATION SOURCES

5.1 Information collation

- 1) Aboriginal Heritage Management Information System (AHIMS).
- 2) IDC 2025, *Cornish Group Vacy Village Stage 5 598 Gresford Rd*, Rev A, dated 16.01.25)
- 3) Premise. "STAGE 5- PROPOSED SUBDIVISION DEVELOPMENT 598 GRESFORD ROAD (LOT 412), VACY VILLAGE", MASTERPLAN/SITE ANALYSIS, Rev B, dated September 2024
- 4) WARREN RAYMOND SAUNDERS, PLAN OF SUBDIVISION OF LOT 123 IN DP 1063557, Reference: P000385. 05C.DP, October 2024
- 5) *Dungog Local Environmental Plan 2023 (Dungog LEP) and Dungog Development Control Plan 2019 (Dungog DCP)*
- 6) NSW Planning Portal.
- 7) NSW SEED Portal.
- 8) *Rural Fires Act 1997 (RF Act)*.

5.2 Bibliography

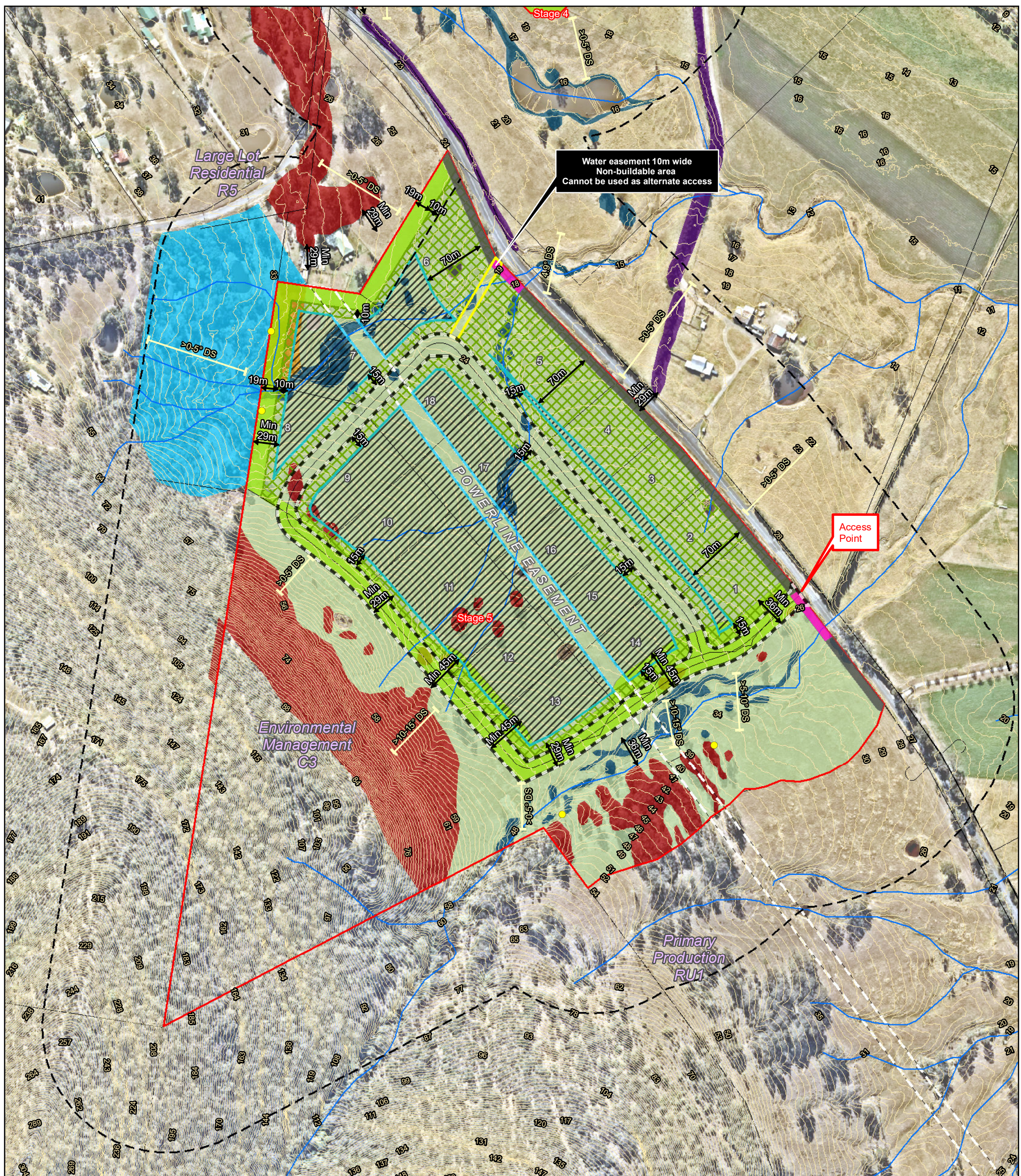
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Rural Fire Service (2019), Planning for Bush Fire Protection – A guide for councils, planners, fire authorities and developers. NSW Rural Fire Service. Sydney.

Standards Australia (2018), AS3959: 2018 - Australian Standard - Construction of buildings in bush fire-prone areas. Sydney.

SCHEDULE 1. PLAN OF BUSHFIRE PROTECTION MEASURES



Legend

- Study area (source:CAD)
- 140m assessment area
- Gullies/depressions
- Contour 1 m (Source: LiDAR)
- Habitat tree
- Buffer line

- Minimum building envelope setbacks (Dungog DCP)
- Minimum APZ required (<29kW/m2/IPA)
- Plantings 10m wide - Forest PBP**
- PCT 3433 - re-vegetation (0.75ha)
- PCT 4042 - re-vegetation (0.11ha)

Vegetation Formation

- Wet Sclerophyll Forests
- Dry Sclerophyll Forest (Shrubby sub-formation)
- Dry Sclerophyll Forest (Grassy sub-formation)

- Grasslands
- Forested Wetlands
- Planted native vegetation (Remnant Vegetation, PBP)

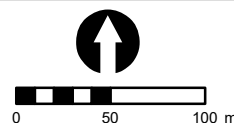


PROJECT & MXD REFERENCE
Stage 5 - 598 Gresford Rd, Vacy
CORN06_BF001_Stg5

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Issue 1

SCALE & COORDINATE SYSTEM
1:4,000 @ A3
GDA2020 MGA Zone 56

Schedule 1- Bushfire Protection Measures (Stage 5)



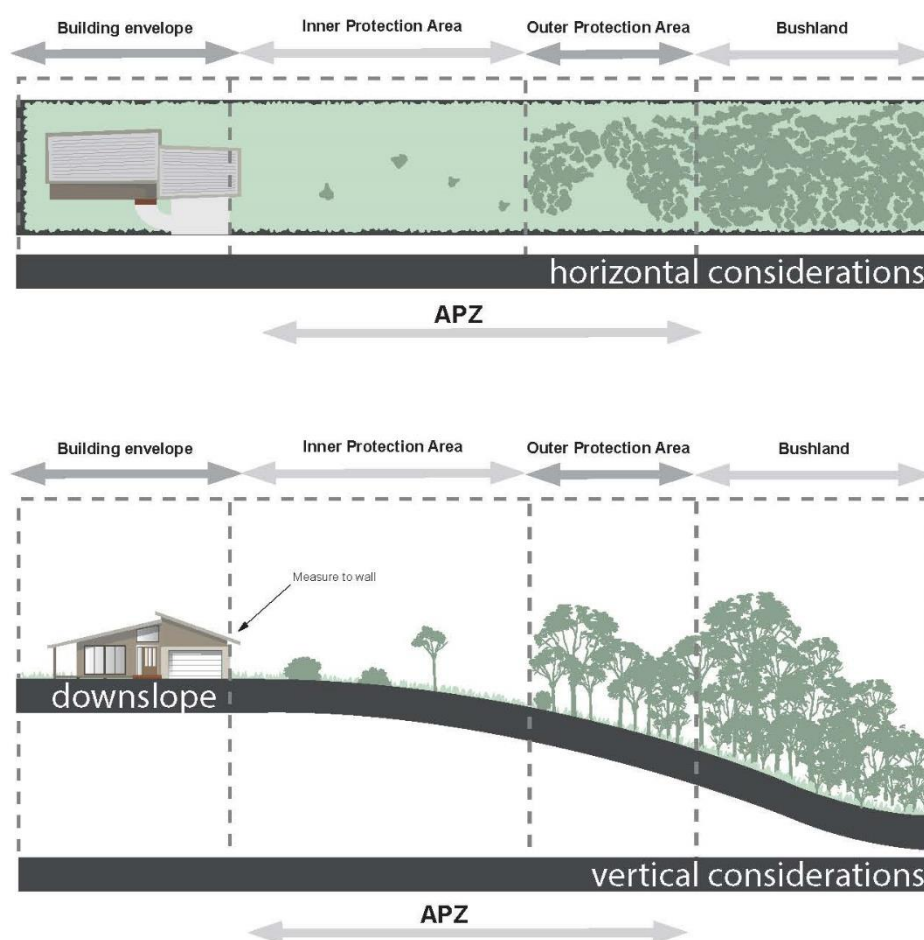
Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

SCHEDULE 2. MANAGEMENT OF ASSET PROTECTION ZONES

The RFS provides basic advice in respect of managing APZs through documents such as, *Standards for Asset Protection Zones* (RFS, 2005), with landscaping to comply with Appendix 4 of *PBP*.

In forest vegetation an APZ may consist of two subordinate areas, an inner protection area (IPA) and an outer protection area (OPA). The IPA is the area immediately surrounding the building and the OPA (up to 30% of the total APZ width) is between the IPA and the hazard.

A typical APZ is graphically represented below.



APZs and progressive reduction in fuel loads
(Source: PBP, 2019)

Note: Vegetation management as shown is for illustrative purposes only. Specific advice is to be sought regarding vegetation removal and retention from a qualified and experienced expert to ensure APZs comply with the RFS performance criteria.

The following table adapted from *PBP* provides maintenance advice for vegetation within the IPA and OPA. The APZ is to be maintained in perpetuity and maintenance should be undertaken regularly, particularly in advance of the bushfire season.

	Inner Protection Area	Outer Protection Area
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 retaining smooth barked and evergreen trees.	➤ Tree canopy cover should be less than 30%; and ➤ Canopies should be separated by 2 to 5m.
Shrubs	➤ Large discontinuities or gaps in the vegetation should be provided to slow down or break the progress of fire towards buildings. ➤ Shrubs should not be located under trees. ➤ Shrubs should form less 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.	➤ Shrubs should not form a continuous canopy; and ➤ Shrubs should form less than 20% of ground cover.
Grass and Leaf Litter	➤ Grass should be kept mown to a height of less than 100mm; and ➤ Leaves and other debris should be removed	➤ Grass should be kept mown to a height of less than 100mm; and ➤ Leaf and other debris should be removed.
	All Management Zones	
Weeds	➤ All weeds should be removed in accordance with best practice guidelines, and measures taken to prevent their further spread	
Landscaping	➤ Suitable impervious areas being provided immediately surrounding the building such as courtyards, paths and driveways. ➤ Restrict planting in the immediate vicinity of the building which may over time and if not properly maintained come into contact with the building. ➤ When considering landscape species consideration needs to be given to estimated size of the plant at maturity. ➤ Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies. ➤ Use smooth bark species of trees species which generally do not carry a fire up the bark into the crown. ➤ Avoid planting of deciduous species that may increase fuel at surface / ground level (i.e. leaf litter). ➤ Avoid climbing species to walls and pergolas. ➤ Locate combustible materials such as woodchips / mulch, flammable fuel stores away from the building. ➤ Locate combustible structures such as garden sheds, pergolas and materials such timber garden furniture way from the building; and ➤ Use of low flammability vegetation species.	