


Planning Proposal - Specialist Study Bushfire Hazard Risk Assessment

Proposed Rezoning
Lot 22 Deposited Plan 619150 &
Lot 1 Deposited Plan 996286
45 Noongah Street & 25 Gwynn Hughes Street
Bargo NSW 2574



4 December 2017



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Foreword

The following report outlines a bushfire hazard assessment addressing the 'Specialist Study Requirements' for the proposed rezoning of 2 adjacent rural allotments, from 'RU2 - Rural Landscape' & 'RU4 – Primary Production Small Lots' to 'R5 - Large Lot Residential' & 'E3 - Environmental Management' (Wollondilly LEP 2011), of land at 45 Noongah Street & 25 Gwynn Hughes Street, Bargo NSW 2574 (Lot 22 DP 619150 & Lot 95 DP 13116) in terms of the relevant Gateway Determination.

Whilst every effort has been made by the Author of the following report to ensure the accuracy and relevance of bushfire risk & management for the subject site, it must be remembered the phenomena of an uncontrolled wildfire and associated emergency response activities largely remains un-predictable.

Notwithstanding the precautions adopted or referred to by this plan, it should always be remembered that bushfires burn under a wide range of conditions and an element of risk, no matter how small, will always remain.

Note: This version of the Specialist Study has been revised to address comments from the NSW Rural Fire Service (Reference L11/0003, Dated 12 July 2017) in relation to Access, Asset Protection Zones and Services.

Introduction

The following report has been commissioned by Precise Planning, to provide a bush fire hazard assessment, a requirement of the specialist study for the proposed rezoning at 45 Noongah Street & 25 Gwynn Hughes Street, Bargo NSW 2574, Wollondilly Shire Council Local Government Area, herein '*the subject property*', or '*the subject development*'.

This assessment considers the subject development site on the basis of;

- Specialist Study Requirements (Precise Planning),
- The subject development site and all surrounding land for at least 140m beyond (denoted as '*Study Area*' by this report - denoted attached maps).
- A site specific inspection undertaken on the 21/5/2015.
- The extent and location of the proposed residential/environmental zonings are initially based on a Zoning Map by Australian Survey Solutions (Surveyors Ref: 170111, Dated 1/3/2017) as appended to the assessment.
- Flora & Fauna Survey by Ecoplaning, Newtown.
- Riparian constraints as identified within the Watercourse Classification Report by Martens & Associates, Hornsby (Reference P1504816JC01V01, Dated 10 July 2015).
- Flood Assessment, by Martens & Associates, Hornsby (Reference P1504816JR04V02, Revision 2, Dated 30/11/2017) - inclusive of the new road design and bushfire APZ provisions (including an emergency access road across the creek line).
- Vegetation extent within the subject area has been derived from available aerial photo interpretation (API), Department of Lands online systems, and relevant environmental/vegetation studies and a site visit (21/5/2015).
- Terrain (slope) considered by this assessment is based on Department of Lands online information, supplied survey plans of the subject property and a site visit (21/5/2015).
- A desktop assessment using licensed or on-line spatial data resources available at the time of this report.

The subject development site has been identified as containing and as being bounded by bush fire prone land, hence NSW legislative requirements for new building or integrated land development on bush fire prone lands is applicable.

Overview of Specialist Study Requirements

Bushfire specific specialist study requirements are contained within Specialist Study Requirements (Wollondilly Shire Council).

They are as follows:

Output

A report which:

- Examines the level of bushfire risk posed to the future development of the study area with reference to Rural Fire Services mapping.
- Reviews the existing road network and available reticulation water supply network suitability for firefighting.
- Reviews the necessity for fire trails around the study area.
- Recommends measures required to manage bushfire risk in a manner compatible with the future land use.

Objectives

- To assess the ability of future land uses to satisfy the requirements of existing legislation in relation to bushfire.
- To assess whether the statutory requirements for bushfire protection and management are capable of being met with future land use.
- To identify bushfire management needs that developer contributions and/or development works may address.

Tasks/Methodology

- Assess and identify the bushfire hazard and risk to for likely future development of the land.
- Assess whether the likely future development of the study area is capable of compliance with the *‘Wollondilly Bushfire Risk Management Plan’*, Section 117 Ministerial Direction No. 4.4 Planning for Bushfire Protection, NSW Rural Fires Act 1997, and RFS Planning for Bushfire Protection Guidelines 2006.

- Prepare a Bushfire Hazard and Risk Assessment which gives due consideration to the recommendations of other specialist studies for rehabilitation of riparian corridors and the recommendations of the biodiversity study to preserve and enhance ecological communities within and adjoining the study areas.
- Identify the potential risk and solutions to demonstrate bushfire protection/hazard reduction/asset management is compatible with the threatened species and biodiversity values of the study area having regard to the Bushfire Environmental Assessment Code for NSW and the Bushfire Hazard Reduction Assessment Guidelines.

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1.0 Description of the property

1.1 Lot and deposited plan (DP) number of the subject property

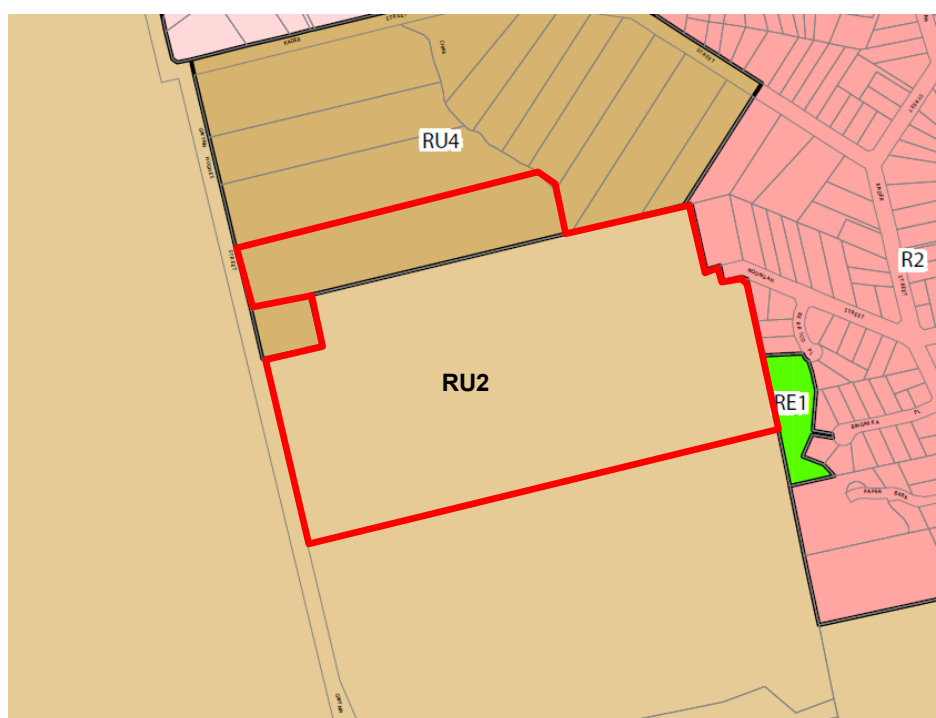
Lot 22 DP 619150 & Lot 95 DP 13116.

1.2 Street address and locality map

45 Noongah Street & 25 Gwynn Hughes Street, Bargo NSW 2574.

Locality maps attached Appendix 1.

1.3 Zoning of the subject land and any adjoining lands



The subject allotments are located at the Western extent of the Bargo Village, and both have frontage to Gwynn Hughes Street to the West. 45 Noongah Street also has direct access to Noongah Street to the East. Gwynn Hughes Street is unformed along the Western boundary of 45 Noongah Street.

The subject allotments are adjacent to each other and share a common boundary. 45 Noongah Street is currently zoned 'RU2 - Rural Landscape' and 25 Gwynn Hughes Street is currently zoned 'RU4 – Primary Production Small Lots', under the Wollondilly Shire Council Local Environmental Plan (2011). It is proposed to rezone the subject sites to 'R5 - Large Lot Residential' & 'E3 - Environmental Management' (Wollondilly LEP 2011), to allow for further rural residential development.

Land adjoining the subject development to the South and West is also zoned 'RU2 - Rural Landscape', whilst land to the North is zoned 'RU4 – Primary Production Small Lots', and land to the East (Bargo Village) is zoned R2 – Low Density Residential'.

1.4 Description of Proposal and Staging issues, if relevant

Description

45 Noongah Street

The site is generally vacant and currently contains no improvements, with previous structures removed from the Eastern section. The site generally presents as a managed rural property.

The site is approximately 17.3 Hectares (600m x 300m) and contains two watercourses, the first running from SW – NE through the central part of the site, the second running to the SE off the first, to the midpoint of the Eastern boundary. These watercourses are mapped within the Wollondilly Water Map as 'Sensitive Land - 30m Each Side'.

The main watercourse contains a strip of riparian vegetation, ranging from approximately 70m – 100m in width. The second watercourse is currently not vegetated, but will be regenerated as part of this proposal, and will be approximately 60m wide.

Apart from this, the site contains no further persistent bushfire vegetation within its boundaries.

There is little, or no shrub layer, and all under storey and mid storey areas are free of persistent vegetation, outside of the riparian zones. There are large expanses of managed grasslands, without any over storey tree coverage.

25 Gwynn Hughes Street

This site is adjacent to 45 Noongah Street, sharing part of its Northern boundary (330m to the West).

The site is generally vegetated and currently contains no improvements.

The site is approximately 3.2 Hectares (400m x 80m) and contains a watercourse, running along its rear (Eastern) boundary.

This watercourse is mapped within the Wollondilly Water Map as 'Sensitive Land - 30m Each Side'. This watercourse contains riparian vegetation, transitioning into dry forest vegetation, towards the West. The site also appears to contain a significant amount of exotic / regrowth vegetation towards the Western boundary.

As provided by the proponent at the time of this report, the extent and location of the proposed residential subdivision is initially based on the rezoning map / proposed subdivision plan (as appended to the assessment - Map 3).

Development within the site, subject to further development approval, may include;

- Large lot single residential allotments (able to contain individual Class 1 buildings)
- Riparian Zones, containing limited regenerated riparian vegetation within land zoned as 'E3 – Environmental Management'.
- Public road system
- Associated infrastructure including driveways and hardstand areas, &
- Generally, 'cleared and managed' lands, apart from the residual 'Riparian Zones'

The subject development site is able to be connected to all local services.

Staging Issues

Staging issues are not considered relevant to the subject development. However, given the sites location, and the zoning of the surrounding areas it is likely that the extent of persistent bushfire vegetation, which currently could be expected to pose a risk to the development, will be reduced further in the future.

1.5 Aerial or ground photographs of the subject land including contours and existing and proposed cadastre

Ground / site photography of the subject property are appended to this report (Appendix 2 – Site Photos, 21/5/2015).

Aerial photography (oblique / boundary overlay) is as appended to this report (Appendix 1).

Contours as shown / considered by this report are derived from the Department of Lands SIX Viewer Digital Elevation Model (DEM) data (10m Contour Interval) (Appendix 1). Existing cadastral and property boundaries are as denoted attached maps.

It should also be noted, that residual lands to the North and East contain rural residential and general residential development and contain large areas that are generally considered 'cleared and managed lands', and pose no threat to the subject development.

As such, the major bushfire risk to the subject development will mainly be from the persistent bushfire vegetation hazard contained within the adjoining lands, however the retention / regeneration of riparian zones within the allotment will see some linkages to vegetation within the subject site. The central riparian zone within the subject site may become continuous forest vegetation, and link with persistent forest vegetation within the adjacent allotments to the North – North East.

The major bush fire hazard and associated risks to future residential development on the subject site are still located within adjacent lands to the South & West.

Utilising the standard Risk Management Matrix (as per Bushfire Risk Management Planning guidelines of 'Likelihood and Consequence' - AS/NZS 4360-2004) the risk would be considered **VERY HIGH** (Likelihood of **LIKELY** and Consequence of **MAJOR**). This assessment would place this development within a similar risk level as the adjoining residential areas of 'Bargo Village West' and other villages / similar development within this LGA.

Further specific risk assessment and identification are included in Section 2.5 of this assessment. The assessment methodology and principals within '*Planning for Bushfire Protection 2006*' calculate specific exposure levels based on local risk parameters.

2.2 Compliance with *Wollondilly Bushfire Risk Management Plan 2011*

The '*Wollondilly Bushfire Risk Management Plan 2011*' (WBFRMP2011) was prepared by the Wollondilly Bushfire Management Committee (BFMC) in accordance with the legislative requirements of Part 3 Division 4 of the Rural Fires Act 1997.

It is a strategic document that identifies community assets at risk, and sets out a five-year program of coordinated multi-agency treatments to reduce the risk of bushfire to these assets.

The subject site is adjacent and continuous to the existing residential village of Bargo. Bargo West Village (inclusive of 25 Gwynn Hughes Street) is listed as a 'Human Settlement Asset No. 32', within the WBFRMP2011.

Specific risk mitigation measures for the village include the maintenance of a 'Strategic Fire Advantage Zone' (SFAZ) NW& W of the village (on public lands), community education (to raise general awareness) and 'preparedness', which involves a program of identifying static and reticulated water supplies.

As this development becomes a minor extension to the village, it would also benefit from these risk mitigation measures. In addition, there is a planning requirement for an 'Asset Protection Zone' (APZ) to be maintained within the subject development site.

The development will also benefit from the BFMC wide treatments. BFMC wide treatments are activities which reduce the overall bush fire risk within the BFMC area and are undertaken on an ongoing basis as part of normal business. These treatments are not linked to specific assets in the BFRMP, rather they are applied across all or part of the BFMC area as designated by legislation or agency policy.

BFMC wide treatments include the following:

Ensuring developments in bush fire prone land comply with '*Planning for Bush Fire Protection 2006*'

This document provides guidance for Council on varying levels. This includes 'Strategic Planning' and 'Development Assessment'. The assessment process requires new applications for development to include bush fire protection measures. The provisions of PBP 2006 are included in Section 2.5 below.

Using the Local Environment Plan/s (LEPs) to control developments in areas with a bush fire risk

LEPs can be used to exclude development in extreme bush fire risk areas or where bush fire protection measures cannot be incorporated.

Normal fire suppression activities

Responding to bush fire is a normal business activity for the firefighting authorities.

2.3 Compliance with *Section 117 Ministerial Direction No. 4.4 Planning for Bushfire Protection*

An extract of this directive is replicated below:

Objectives

(1) The objectives of this direction are:

- (a) to protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and*
- (b) to encourage sound management of bush fire prone areas.*

Where this direction applies

(2) This direction applies to all councils that are required to prepare a bush fire prone land map under section 146 of the Environmental Planning and Assessment Act 1979 (the EP&A Act), or, until such a map has been certified by the Commissioner of the NSW Rural Fire Service, a map referred to in Schedule 6 of that Act.

When this direction applies

(3) This direction applies when a council prepares a draft LEP that affects, or is in proximity to land mapped as bushfire prone land.

What a council must do if this direction applies

(4) In the preparation of a draft LEP a Council shall consult with the Commissioner of the NSW Rural Fire Service under section 62 of the EP&A Act, and take into account any comments so made,

(5) A draft LEP shall:

- (a) have regard to Planning for Bushfire Protection 2006,*
- (b) introduce controls that avoid placing inappropriate developments in hazardous areas, and*
- (c) ensure that bushfire hazard reduction is not prohibited within the APZ.*

(6) A draft LEP shall, where development is proposed, comply with the following provisions, as appropriate:

- (a) provide an Asset Protection Zone (APZ) incorporating at a minimum:*
 - (i) an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and*
 - (ii) an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road,*

- (b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the draft LEP permit Special Fire Protection Purposes (as defined under section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with,*
- (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.*

Consistency

(7) A draft LEP may be inconsistent with the terms of this direction only if council can satisfy the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General) that the council has obtained written advice from the Commissioner of the NSW Rural Fire Service, to the effect that, notwithstanding the non-compliance, the NSW Rural Fire Service does not object to the progression of the draft LEP.

Assessment of Compliance with Ministerial Directive

The Wollondilly Council and the NSW Rural Fire Service has confirmed that the site is located within a bush fire prone area and as such, any future development will be subject to the provisions of *Section 79BA of the EP & A Act 1979* and *Section 100B of the Rural Fires Act 1997*. The NSW Rural Fire Service encourages Councils to take a strategic approach to bushfire protection through appropriate zoning which will reflect the risk to the proposed land use. Provision of appropriate access/egress provisions, sufficient water volume and pressure and utilities to the development form part of the essential requirements.

In addition, the directive requires due regard to the document '*Planning for Bushfire Protection 2006*'. This document provides for a wholistic approach to bushfire protection in NSW. This includes strategic planning and bushfire protection measures (APZs, building construction standards, utilities, access/egress, emergency/evacuation planning).

Specific assessment of the sites ability (given its proposed zoning) to comply with PBP 2006 are included in Section 2.5 of this assessment.

2.4 Compliance with *NSW Rural Fires Act 1997*

Key legislation relating to 'Bush Fire Prone land' and 'Development Assessment' is contained within 'Appendix 1' of *Planning for Bushfire Protection 2006*. Relevant legislation contained within the '*Rural Fires Act 1997*' (and associated regulations '*Rural Fires Regulations 2002*') could be summarized as relating to the issue of '**Bush Fire Safety Authorities**' for development upon bushfire prone lands, that would include:

- Residential or Rural Residential subdivision proposals
- Development for 'special fire protection purposes' (SFPP) e.g. schools, hospitals, tourist accommodation etc.

The current rezoning study does involve residential or rural residential subdivision and zoning issues. It is based on an application for rezoning for residential subdivision purposes.

As the rezoning of the site would allow for residential subdivision, any future development application for residential subdivision would require the issue of '**Bush Fire Safety Authority**' from the NSW Rural Fire Service, and would be subject to the provisions of *Section 100B of the Rural Fires Act 1997*. Specific assessment of the site's ability (given its proposed zoning) to comply with these provisions and to the planning requirements of PBP 2006 are included in Section 2.5 of this assessment.

It is not currently proposed to include any SFPP development within the subject development area. Should an application for an SFPP development be lodged in the future within the subject property, it would be subject to not only the provisions of the relevant LEP and relevant zoning constraints, but also the strict provisions of *Section 100B of the Rural Fires Act 1997*, and would be assessed at this time on its merits. Given that the subject site is quite large in area (> 20 hectares) a SFPP development may well be able to comply, depending on its ability to achieve sufficient separation distances from the bushfire hazard and other bushfire protection measures.

2.5 Compliance with *Planning for Bushfire Protection Guidelines 2006 (NSW RFS)*

The document '*Planning for Bushfire Protection 2006*' is the major planning guideline related to bushfire planning provisions within the NSW development control system. It is referenced within the *Environmental Planning and Assessment Act 1979*, the *Ministerial Direction No. 4.4* (above) and the *Rural Fires Act 1997*.

An assessment, incorporating the relevant guidelines of PBP 2006, and using the 'Conceptual Subdivision Plan' as a key indicator as to how the site may be developed in the future (subject to rezoning) would give a clear indication as to the sites ability to achieve compliance with the planning provisions for 'bush fire prone land'.

It should be noted that the 'rezoning map' may not be final, and will be used only as a guide, upon which to base the assessment of compliance at this time.

Strategic Planning Guidelines

Councils responsibilities include the mapping of 'Bushfire Prone Land' (under s146 of the EP&A Act), and the extent to which the land is bushfire prone. Secondly, Council is required to suitable address bushfire requirements during the preparation of any LEP or DCP (Ministerial Direction 4.4).

The subject lands have already been mapped as 'bushfire prone land'. The 'Gateway Determination' has included input from the RFS (addressed within the study), and any future DA (beyond the rezoning application) will be subject to the normal development application requirements for development on bushfire prone land.

This will include additional input from the RFS where it is considered appropriate (dependant on the specific development proposed).

This rezoning proposal, incorporating the rezoning from 'RU2 - Rural Landscape' & 'RU4 – Primary Production Small Lots' to 'R5 - Large Lot Residential' & 'E3 - Environmental Management' - to allow for residential development, does not constitute an unacceptable development type (Bushfire Protection Measures, Chapter 3 PBP) within a bushfire prone area.

Development Assessment Guidelines

The 'Aims & Objectives' of PBP 2006 are as follows;

- i) Afford occupants of any building adequate protection from exposure to a bush fire;
- ii) Provide for adequate defendable space to be located around buildings;
- iii) Provide appropriate separation between a hazard and buildings, which in combination with other measures prevent direct flame contact and material ignition;

- iv) Ensure that safe operational access and egress for emergency services personnel and residents is available;
- v) Provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the APZ areas, and;
- vi) Ensure that utility services are adequate to meet the needs of firefighters (and other assisting in bush firefighting).

Bushfire Hazard Assessment (Appendix 2 Methodology PBP 2006)

Vegetation (bushfire hazard) within 100m of the proposed building

The vegetation within the study area is mapped as 'Bushfire Prone Vegetation Category 1 & Category 2' on Wollondilly Shire Council Bushfire Prone Land Maps.

The vegetation constraining the development is currently located both within the subject site and within adjacent lands, beyond the subject development site. The development will require the regeneration of some riparian zones within the subject site.

Based on a determination of vegetation formation using the Keith 2004 Identification Key, the bushfire vegetation having the potential to affect the subject development, based on a site visit, is most representative of persistent 'Dry Sclerophyll Forest (Open Forest)'.

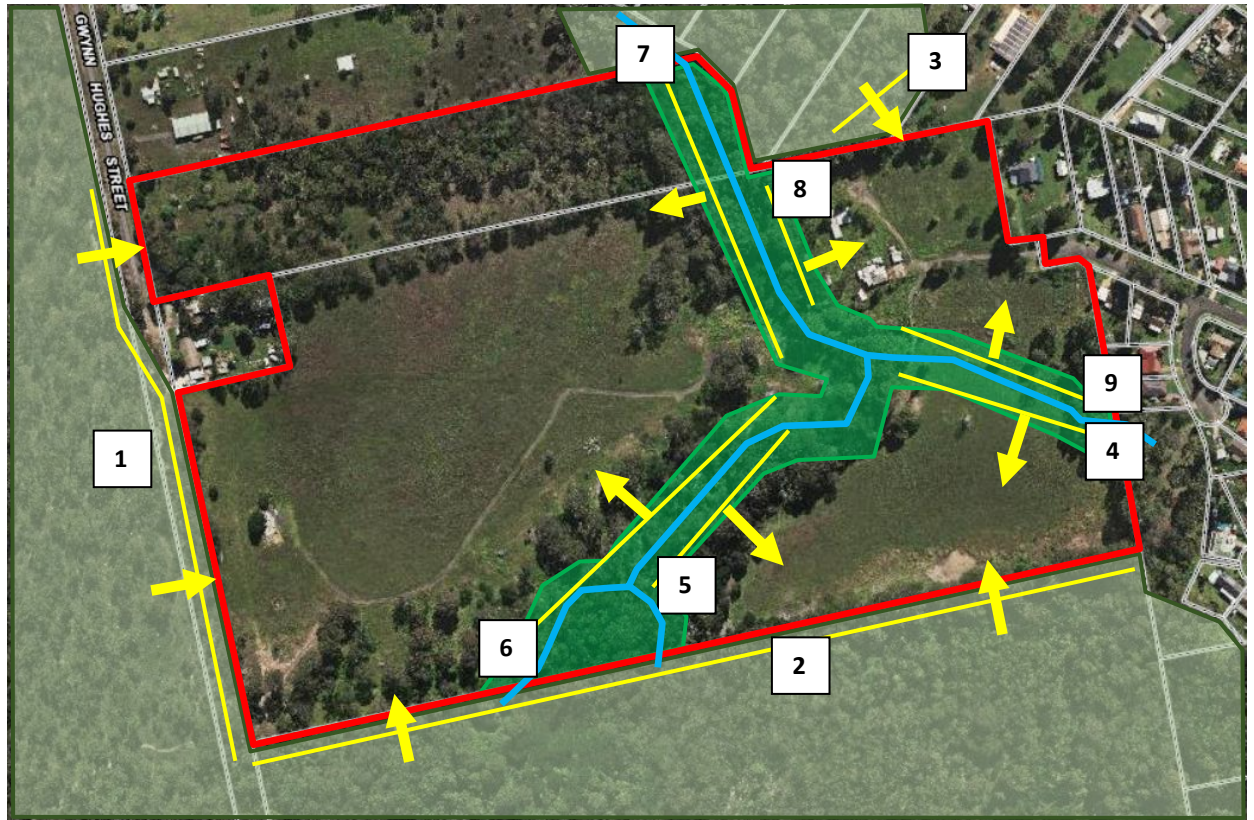
PBP 2006 states, *'for the purposes of assessment, the following are not considered a hazard or as a predominant vegetation class/formation and can be included within an asset protection zone;*

- *non-vegetated areas including roads, footpaths, cycle ways, waterways, buildings, rocky outcrops and the like; and*
- *Reduced vegetation including maintained lawns, golf course fairways, playgrounds or sports fields, vineyards, orchards, cultivated ornamental gardens and commercial nurseries.*

The proposed development is located on the edge of a well-established residential/rural residential subdivision, with some adjoining allotments containing residential buildings which are generally clear of persistent vegetation and could be considered 'cleared and managed lands'.

Effective slope that will influence bushfire behaviour

The effective slopes are associated with potential fire travel paths, towards the development site. Due to the varied nature of the site, a number of potential scenarios need to be addressed. They can be summarized below:



The effective slope within approximately 100m of the subject development site, which would influence bushfire behaviour, has been assessed as predominately;

Fire Run	Effective Slope
Fire Run 1	>0 – 5 Degrees Down Slope
Fire Run 2	Flat / Upslope
Fire Run 3	Flat / Upslope
Fire Run 4	>0 – 5 Degrees Down Slope
Fire Run 5	>0 – 5 Degrees Down Slope
Fire Run 6	>0 – 5 Degrees Down Slope
Fire Run 7	>0 – 5 Degrees Down Slope
Fire Run 8	>0 – 5 Degrees Down Slope
Fire Run 9	>0 – 5 Degrees Down Slope

Distance/Separation between future building line and bushfire hazard

Considering the location of the proposed development and the extent of the proposed / mapped bushfire vegetation within and adjoining the site, the minimal required APZ / separation distance (as per PBP 2006 Table A2.4) has been assessed as:

Fire Run	Minimum Distance
Fire Run 1	Min 25m
Fire Run 2	Min 20m
Fire Run 3	Min 20m
Fire Run 4	Min 25m
Fire Run 5	Min 25m
Fire Run 6	Min 25m
Fire Run 7	Min 25m
Fire Run 8	Min 25m
Fire Run 9	Min 25m

Fire Danger Index (FDI) for Local Government Area (LGA)

☒ 100 ☐ 80 ☐ 50

Wollondilly Shire Council – Illawarra / Shoalhaven Region (Table A2.3 PBP, 2006)

Determination of Bushfire Exposure Levels

Fire Run	Vegetation	Slope	Minimum Distance	Exposure Level
Fire Run 1	Forest	>0 – 5 Degrees Down Slope	Min 25m	29 kW/m ²
Fire Run 2	Forest	Flat / Upslope	Min 20m	29 kW/m ²
Fire Run 3	Forest	Flat / Upslope	Min 20m	29 kW/m ²
Fire Run 4	Forest	>0 – 5 Degrees Down Slope	Min 25m	29 kW/m ²
Fire Run 5	Forest	>0 – 5 Degrees Down Slope	Min 25m	29 kW/m ²
Fire Run 6	Forest	>0 – 5 Degrees Down Slope	Min 25m	29 kW/m ²
Fire Run 7	Forest	>0 – 5 Degrees Down Slope	Min 25m	29 kW/m ²
Fire Run 8	Forest	>0 – 5 Degrees Down Slope	Min 25m	29 kW/m ²
Fire Run 9	Forest	>0 – 5 Degrees Down Slope	Min 25m	29 kW/m ²

The relevant 'Acceptable Solutions' for 'Residential Subdivision', contained within PBP 2006, which demonstrate compliance with the abovementioned 'Aims & Objectives' are summarized below.

Asset Protection Zones (APZ)

An assessment of the bushfire hazards, and associated slopes, has determined that minimum complying onsite APZs are required as follows:

Setback from edge of all CRZs – Minimum 25m (onsite)

Western Boundary – Minimum 25m (including 20m Road Reserve where managed)

Southern Boundary – Minimum 20m (onsite)

North Eastern Boundary – Minimum 20m (onsite)

Further, as required by PBP 2006, APZs can be located within the boundaries of the subject development site (or adjacent formed road reserves), and would be located on lands with a slope of less than 18 degrees.

Access

The site is located on, and will provide direct access to and from numerous suburban roadways, including Noongah Street and Gwynn Hughes Street (Southern end to be formed). Further, the subdivision proposal will include the construction of a new internal road system allowing direct access / egress from residential properties to the public road system.

The public road system would provide direct unimpeded access to the Bargo East Village and surrounding rural residential areas.

The PBP 2006 'acceptable solutions' for internal property access roads (for this specific development location) states that;

'No specific access requirements apply in an urban area where a 70m unobstructed path can be demonstrated 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 (i.e. a hydrant or water supply).'

As such, all proposed residential allotments could reasonably achieve this requirement.

Further, the installation or maintenance of any Fire Trails is not considered necessary, or relevant for this specific development.

The site would generally have the capacity to support the access provisions of PBP Section 4.1.3. **and an additional emergency access / egress road has now been proposed to allow for emergency egress across the creek line.**

Water and Services

The Bargo East village residential area is currently serviced by a reticulated water supply. A reticulated water main is currently located along Noongah Street.

Any application for future residential subdivision would be required to install a reticulated water supply within the subject development site. This supply would be required to meet the requirements of AS2419.1-2005 and would include a ring main. Location, number and sizing of hydrants must be supported by fire engineering principals and be subject to approval by Sydney Water in due course.

The site would have the capacity to satisfy the water supply provisions of PBP Section 4.1.3 (Subject to the approval of Sydney Water etc.).

The site is also currently serviced by an above ground electrical transmission line, within Noongah Street and Gwynn Hughes Street. It is a likely outcome that these supplies would be amplified in need, and the electrical supply to any future development within the site, will be relocated underground. This arrangement would comply with the provisions of PBP Section 4.1.3 (Subject to approval of the relevant electrical authority).

Gas supplies have not been considered as part of the rezoning process. Any future reticulated or onsite gas supply would be subject to the provisions of PBP 2006 and could be conditioned within any future DA consent.

Emergency Planning

The existing 'Wollondilly LGA Emergency Management Plan' would be reasonably expected to provide a suitable level of emergency response procedures for the subject development, and surrounding rural and suburban areas.

In addition, the current and future editions of the 'Wollondilly Bushfire Risk Management Plan' will continue to provide BFMC wide treatments which reduce the overall bush fire risk within the BFMC area and are undertaken on an ongoing basis as part of normal business. These treatments are not linked to specific assets in the BFRMP, rather they are applied across all or part of the BFMC area as designated by legislation or agency policy.

There are no further requirements within PBP 2006 for emergency planning for this type of residential development within bushfire prone areas.

Landscaping / Vegetation Management

Landscaping and vegetation retained within the majority of the development site will be minimal, but does include a regenerated riparian zones as noted within appended Map 2.

Future development applications for residential subdivision and construction would be required to support complying APZs within individual development sites.

The subject APZs would be conditioned, within the development consent, to be managed as fuel free/fuel reduced areas for the life of the subject development.

2.6 Review of Biodiversity study

For the purposes of this assessment, it is considered that the subject site does contain some bushfire vegetation within its boundaries, which will be retained / regenerated within the noted riparian zones.

Further, the Flora & Fauna Survey confirms the location of Alluvial Woodlands (River Flat Eucalypt Forest on Coastal Floodplain) within most of the riparian areas along with limited areas of Shale Sandstone Transitional Forest (SSTF).

Apart from this, most vegetation within the study area is considered to be 'Upper Georges River Sandstone Woodland'.

All bushfire vegetation, including the proposed regenerated riparian areas, have been considered within this bushfire assessment, and do have the ability to increase the overall risk to the subject development.

Subsequently, recommendations to provide suitable APZs, to address this risk, have been included within this assessment also.

2.7 Bushfire Management Measures

For the purposes of this assessment, it is considered that the proposed development will include the retention / regeneration of persistent bushfire vegetation within its boundaries.

Environmental constraints will prevent the removal of further significant vegetation in some areas of the site (e.g. those identified in the riparian zone constraints studies/maps).

Given the above, this vegetation has been assessed a risk to the proposed development, and suitable measures have been provided to address the calculated risks (i.e. minimum APZs etc.). It is unlikely that any further bushfire management measures would be required within the development site (outside of the maintenance of the DA general consent conditions) which would require further developer contributions and/or future development works.

The general maintenance requirements (APZ vegetation management) would be conducted by the building owners / tenants etc. in due course.

No bushfire management measures or works, either in the initial development stage or ongoing maintenance, are proposed within any areas located outside of the site boundaries, with the exception of the formation of a public road within a current unformed road reserve area (i.e. Southern extent of Gwynn Hughes Street).

2.8 Bushfire Evacuation and Safety

Measures to ensure that the safety and evacuation of likely future occupants can be undertaken in accordance with the legislative requirements and bushfire protection guidelines are included within the Emergency Planning principles noted within PBP 2006 (addressed in Section 2.5 above).

The development site is located upon the Western side of Bargo Village. The NSW RFS has identified a number of 'Neighbourhood Safer Places' within the Bargo area, including land near the Bargo Hotel (225 Great Southern Road), Bargo Shops and the hall within Bargo Showground. Access routes, from the subject site, to these refuges, generally takes the evacuee away from the bushfire hazard, which is located mainly to the S – W and NW of the subject site.

2.9 Bushfire Environmental Assessment Code NSW

The '*Bushfire Environmental Assessment Code NSW 2006*' (NSW Rural Fire Service) is designed to provide for a streamlined environmental assessment process for use by issuing authorities and certifying authorities in determining bush fire hazard reduction certificates, with regard to the principals of ecological sustainable development and *Section 111 of the EP & A Act 1979*.

For the purposes of this assessment, it is considered that the subject site does (or will) contain some persistent bushfire vegetation within its boundaries. However, it is not proposed to remove or alter any persistent vegetation from within or outside of the subject development site, with the exception of the formation of a public road within a current unformed road reserve area (i.e. Southern extent of Gwynn Hughes Street). Further, all bushfire protection measures will be located within the subject site, or adjacent formed road reserves.

As such, it is not envisaged that an application for a 'Bushfire Hazard Reduction Certificate' will be required, either for the subject allotment or adjacent allotments, as part of the rezoning process, or as part of any future development applications for the subject site. As bushfire hazard reduction works are not required, a certificate authorizing these activities will also not be required, and as such an assessment of the environmental impacts of such a certificate / works has not formed part of this planning study.

Please note, however, this is subject to continued vegetation maintenance at current levels (i.e. minimal vegetation within most of the site i.e. no persistent bushfire hazard on site outside of identified riparian zones) and does not address the general environmental impacts of the proposed development, including the removal of individual trees for the construction of any proposed future residential buildings and infrastructure and road reserves.

2.10 NSW Rural Fire Service Comments

1. – 3. Access

A complying perimeter road has been proposed around the majority of the primary bushfire risk i.e. Western – South Western interface (proposed Road No.2 and the extension of Gwynne Hughes Street).

In addition, an emergency access road has been proposed that will allow emergency access/egress over the central creek line in the event of a serious bushfire event that may impact the extension of Gwynne Hughes Street. This would allow for emergency egress from the West, to the East, for evacuating residents, and similarly access from the East, to the West, for emergency services. This new short emergency access road allows for a creek crossing, and a passing bay to the West of the creek line. It will provide for sealed all weather access, and has been designed to support the use of heavy vehicles (load ratings, curve radius etc.).

4. – 7. Asset Protection Zones

It is noted that the RFS support the proposed APZs within the subject site, in relation to the risks from retained/revegetated CRZs.

It should be noted that the extension of Gwynn Hughes Street would form part of any future development proposal for residential subdivision. This would mean that Gwynn Hughes Street would be ‘formally constructed’ in line with the RFS comments.

It is also noted that the RFS support the APZ areas within this assessment as complying with Table A2.4 of PBP 2006. Table A2.4 of PBP 2006 is currently the primary bushfire compliance document that would be used for establishing suitable APZ distances within any further development application, for a residential subdivision, with these proposed rezoned lands.

8. Services

It is noted that any future development proposal would be subject to the planning provisions within PBP 2006, in relation to the provision for water, electricity and gas.

3.0 Conclusion

This report has been commissioned to provide a bush fire hazard assessment, a requirement of the specialist study for the proposed rezoning at 45 Noongah Street & 25 Gwynn Hughes Street, Bargo NSW 2574

The **Bushfire** specific requirements are contained within Specialist Study Requirements (Precise Planning) and have been addressed within the body of this report. Specific tasks related to bushfire compliance included:

- Assess and identify the bushfire hazard and risk to for likely future development of the land.
- Assess whether the likely future development of the study area is capable of compliance with the *‘Wollondilly Bushfire Risk Management Plan’*, Section 117 Ministerial Direction No. 4.4 Planning for Bushfire Protection, NSW Rural Fires Act 1997, and *RFS Planning for Bushfire Protection Guidelines 2006*.
- Prepare a Bushfire Hazard and Risk Assessment which gives due consideration to the recommendations of other specialist studies for rehabilitation of riparian corridors and the recommendations of the biodiversity study to preserve and enhance ecological communities within and adjoining the study areas.
- Identify the potential risk and solutions to demonstrate bushfire protection/hazard reduction/asset management is compatible with the threatened species and biodiversity values of the study area having regard to the Bushfire Environmental Assessment Code for NSW and the Bushfire Hazard Reduction Assessment Guidelines.

Based on the above assessment, the proposed rezoning proposal can reasonably comply with the relevant specialist study requirements (bushfire specific), and as such can reasonably comply with the objectives of the Specialist Study as follows:

- To assess the ability of future land uses to satisfy the requirements of existing legislation in relation to bushfire.
- To assess whether the statutory requirements for bushfire protection and management are capable of being met with future land use.
- To identify bushfire management needs that developer contributions and/or development works may address.

It is a considered opinion, based on the above assessment of bushfire risk levels and relevant bushfire planning legislation, that the outcomes of this assessment support the rezoning proposal.

Whilst the proposed rezoning maps are not considered as 'Final', and have been used only as a guide upon which to base the specialist studies, it clearly demonstrates the level of residential development which is being considered for the site and the ability of the site to comply with the current bushfire planning provisions within the relevant planning legislation.

It should be noted that further development on the site, post rezoning, would be subject to further assessment under the bushfire planning legislation of either *Section 79BA of the E P & A Act 1979* or *Section 100B of the Rural Fires Act 1997*.



Scott Jarvis

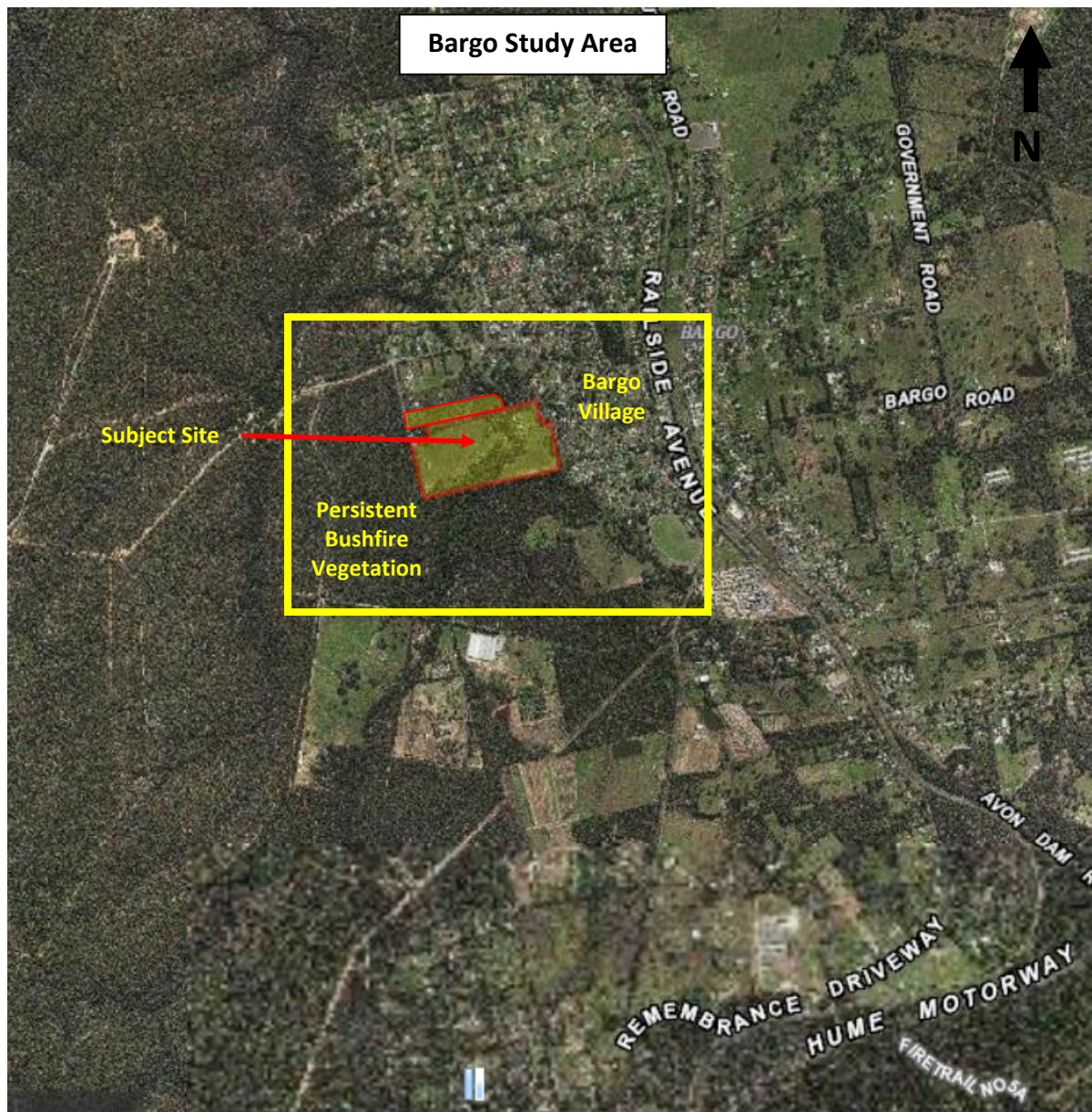
Graduate Diploma Design for Bushfire Prone Areas
Diploma of Building Surveying
Diploma of Public Safety (Fire Fighting Management) (Dip PSFM)
Cert. IV Residential Building Studies
Member No. 18593 Fire Protection Association Australia
BPAD-Level 3 Certified Practitioner BPD-PA-18593
Mob: 0414 808 295 Ph/Fax.: (02) 9369 5579
Email: scott@sydneybushfireconsultants.com.au

References

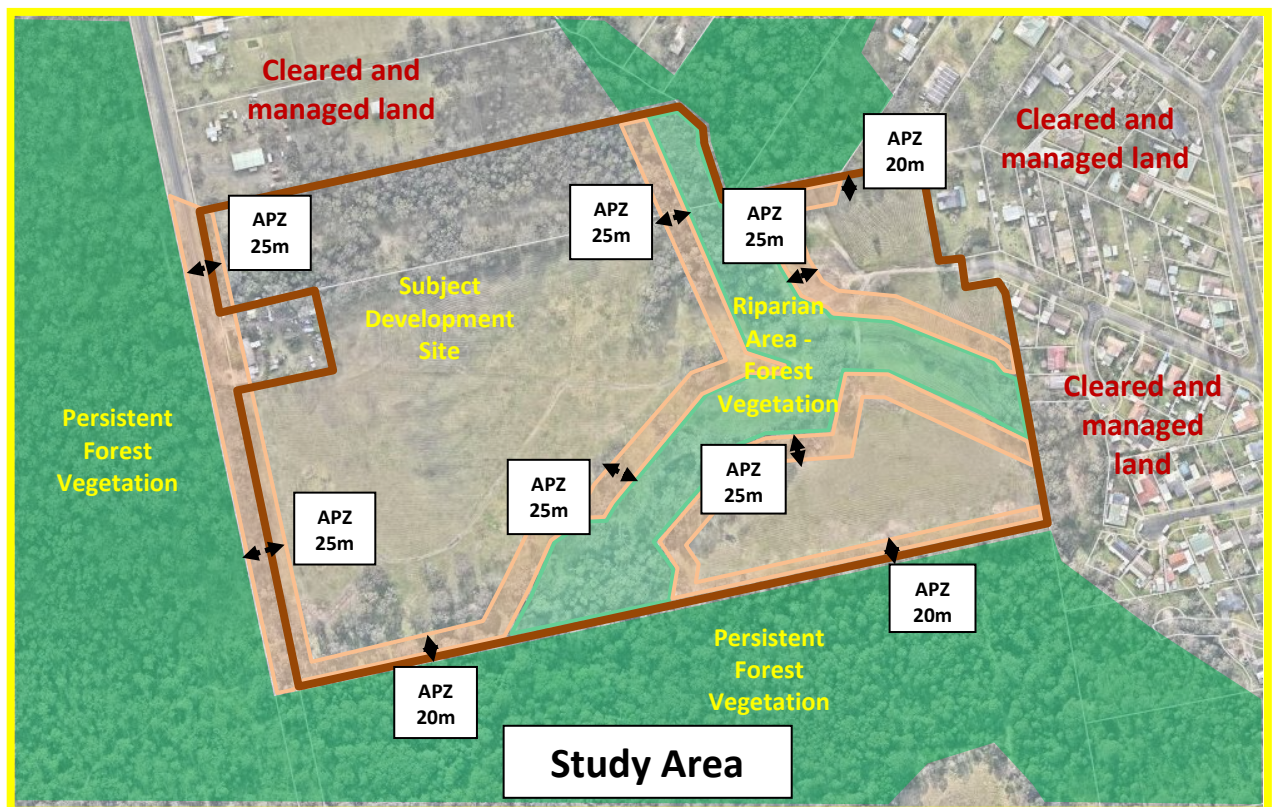
- *Australian Standard 3959:2009 Construction of buildings in bushfire-prone areas.*
- *Planning for Bushfire Protection. A guide for councils, planners, fire authorities & developers (2006) – NSW Rural Fire Service.*
- *Addendum: Appendix 2 - Planning for Bushfire Protection. A guide for councils, planners, fire authorities and developers (2010) – NSW Rural Fire Service.*
- *Specialist Study Requirements – (Precise Planning)*
- *Rural Fires Act 1997 – NSW Government*
- *Environment Planning and Assessment Act 1979 – NSW Government*
- *Bushfire Environmental Assessment Code NSW 2006 – NSW Rural Fire Service*

Appendix 1 – Map / Plan Images

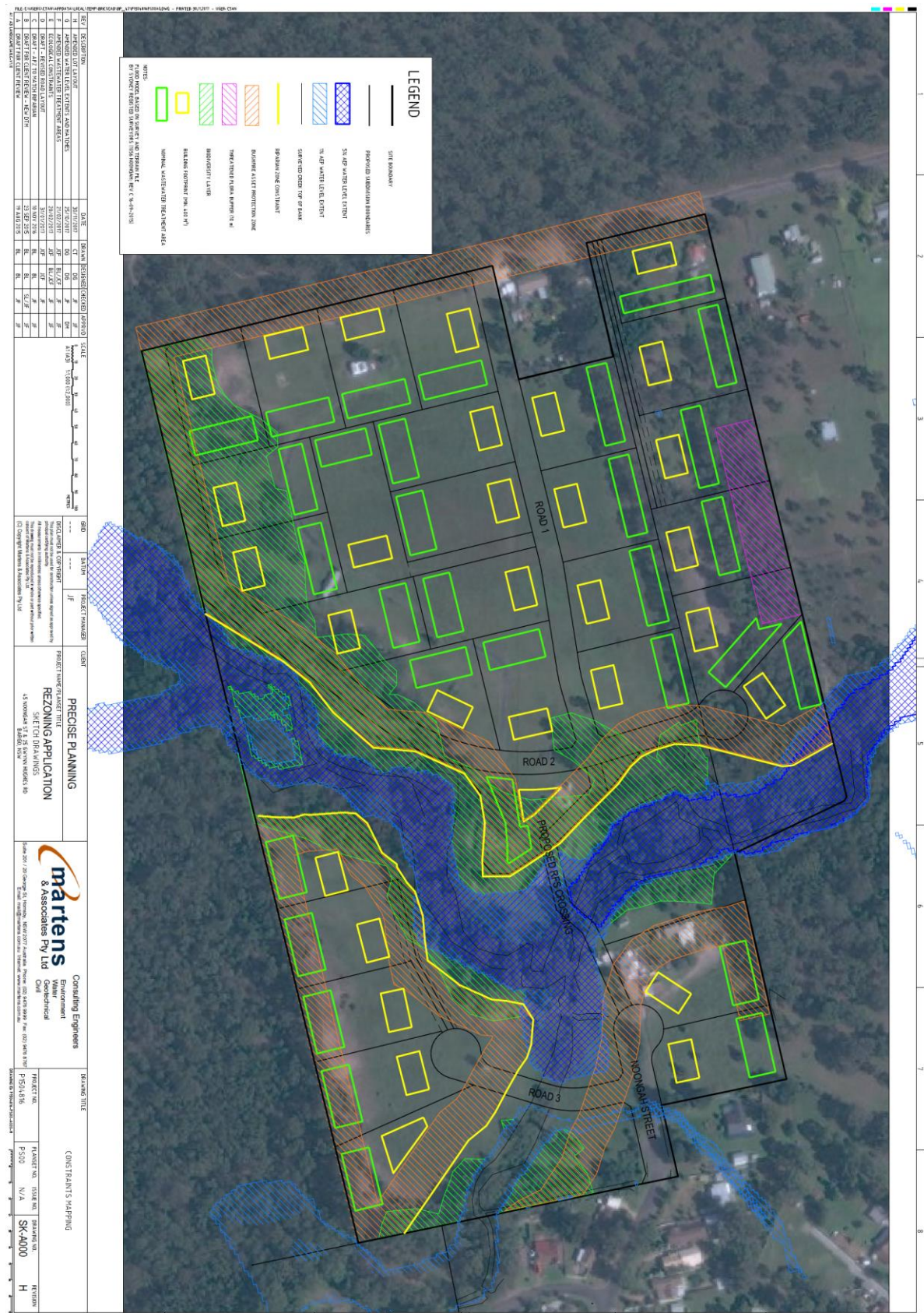
Map 1 – Overview and Bargo Study Area



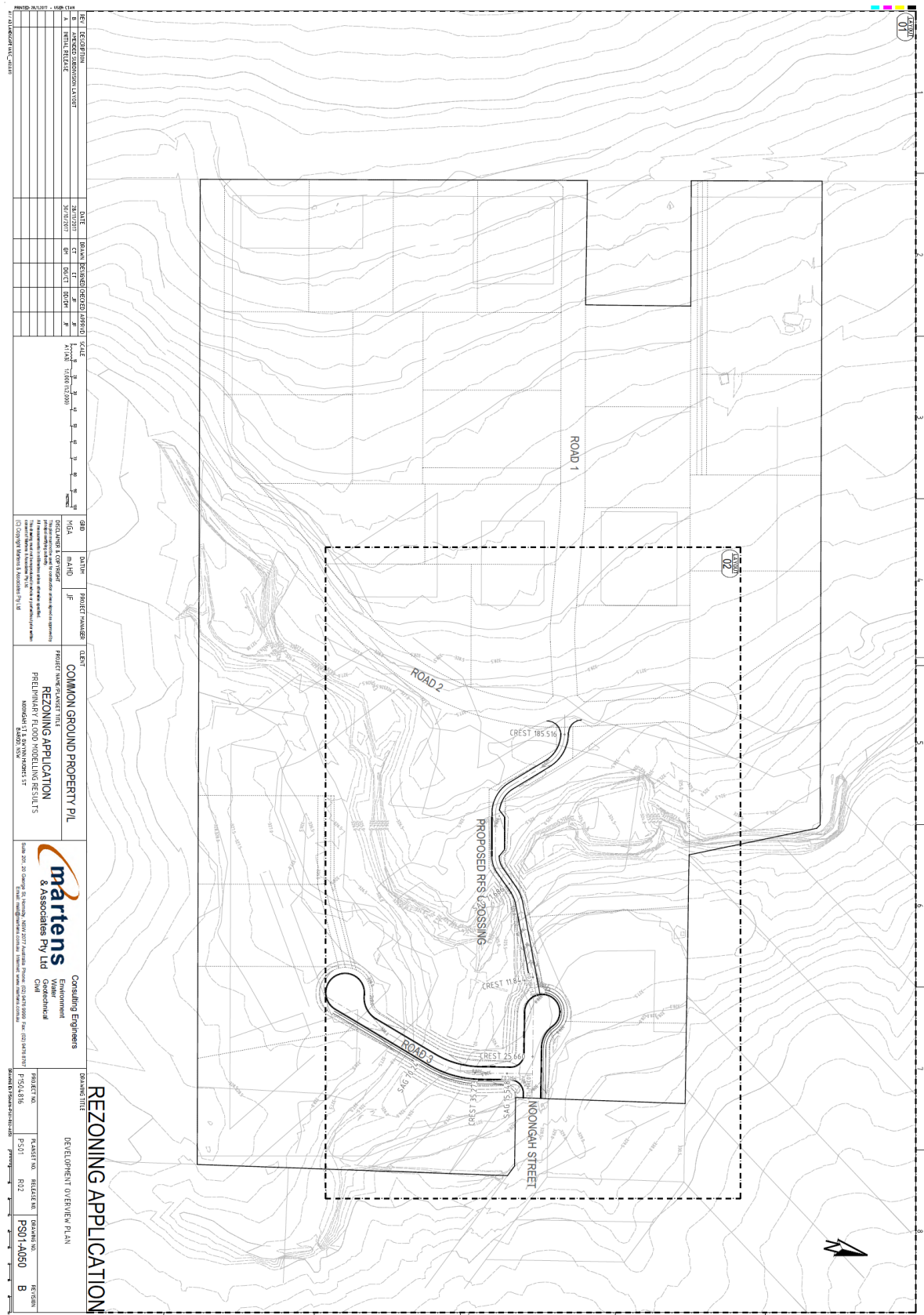
Map 2 – Planning Study Area / Subject Lot / Slopes / Minimum APZ extent



Map 4 – Constraints Map



Map 5 – Development Overview (including proposed Internal Roads)



Appendix 2 – Site Photos (21/5/2015)



Subject site, looking W from end of Noongah Street



Noongah Street, looking E to Bargo Village



Subject site, looking S from end of Noongah Street



Subject site, looking NE from end of Noongah Street



Subject site, looking SE from midpoint of site



Adjacent sites to NE of subject site, looking NE



25 Gwynn Hughes Street, looking E



**Riparian vegetation within watercourse,
within subject site**



**Western section of subject site, looking
NW**



**Adjacent sites to N of subject site,
looking N.**



**Gwynn Hughes Street, looking N from
end of formed section**



**Vegetation located to W of subject site,
looking W**