

BUSHFIRE PROTECTION ASSESSMENT REPORT
FOR THE RESIDENTIAL SUBDIVISION OF
LOTS 21, 22, 23 & 24 in DP 714096
WARRAH ROAD & GYPSY POINT ROAD
NORTH NOWRA

Australian Bushfire Protection Planners Pty Limited

Bushfire Mitigation Consultants

ACN 083 085 474

32 Old Dog Trap Road

SOMERSBY 2250 NSW

Phone: (02) 43622112 Fax: (02) 43622204

Email: abpp@bigpond.net.au



ABPP

Australian Bushfire
Protection Planners Pty Ltd
ABN 48 935534 462

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Report Number	Document	Preparation Date	Issue Date	Directors Approval
B183179 - 2	Final	14.08.2018	24.09.2018	<i>G.L.Swain</i>

BACKGROUND TO THIS REPORT

Australian Bushfire Protection Planners Pty Limited has been commissioned by *Southbank Land Pty Ltd* and *Huntingdale Developments Pty Ltd* to undertake the Bushfire Consultancy for the proposed residential subdivision of the land within Lots 21, 22, 23 & 24 in DP 714096, Warrah Road & Gypsy Point Road at North Nowra.

Australian Bushfire Protection Planners Pty Limited previously prepared a Bushfire Constraints Report for the rezoning of the land. The NSW Rural Fire Service provided comment on the rezoning proposal and in a letter dated 29th January 2018 provided the following advice:

Reference is made to Council's correspondence dated 9 January 2018 seeking preliminary comments in relation to the above proposal.

The New South Wales Rural Fire Service has reviewed the assumptions identified by Mike Willson from TGA Australia and advises that the proposed traffic assessment should incorporate the following matters for consideration:

- Potential evacuation routes and times in consideration of the likely bush fire behaviour within the subject site and surrounding land. This includes, but is not limited to, the rate of spread of a fire moving through the landscape and the intensity of a bush fire at the urban/bushland interface; and
- The assessment should also identify the nearest place of safe refuge and identify a set of risk ratings for all new and existing access roads. Fire trails should not be used or relied upon to offset access constraints.

This data should be incorporated into a revised bush fire risk assessment report. The report should evaluate the broad principle of strategic planning for development in bush fire prone land.

The broad principles which should be applied to strategic level development are as follows:

- Not all land is suitable for development in the context of bush fire risk;
- Any new development on bush fire prone land must comply with the acceptable solutions of *Planning for Bush Fire Protection*;
- Infrastructure associated with emergency evacuation and firefighting operations must be provided; and
- Appropriate ongoing land management practices must be facilitated.

In this regard, given there are areas of high conservation value (HCV) vegetation within and adjoining portions of the site which may be rehabilitated as part of the proposal, the Bush Fire Study should clearly correspond with, and have regard for, any mitigation measures/recommendations of the Environmental Studies for the site. This should include areas of proposed environmental zoning/environmental overlays in any LEP which should not be used for APZs or other bush fire mitigation measures as there may be conflicting land use management objectives. If areas of HCV are proposed to be used for bush fire mitigation measures (i.e. fuel reduction), a clear and concise management plan should be included for this land including clear guidance on who will be fiscally and practically responsible for carrying out those fuel reduction activities for the life of the development and how this will be enforced.

Please note, strategic planning should provide for the exclusion of inappropriate development in bush fire prone areas as follows:

- A. When the bush fire risk makes it inappropriate for new development to occur;
- B. For development that is likely to be difficult to evacuate during a bush fire;
- C. For development that is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants;
- D. For development that will adversely affect other bush fire protection strategies or place existing development at increased risk; and or
- E. Where environmental constraints to the site cannot be overcome.

The NSW Rural Fire Service's comments/recommendations have been incorporated into the revised subdivision layout which includes:

- The creation of residential lots, new roads and Asset Protection Zones outside the High Conservation land with no requirement for the environmental zoned land to be managed to reduce the bushfire risk to the estate;
- A lot layout which provides for Asset Protection Zone widths which comply with the requirement to satisfy BAL 29 construction to the future dwellings and exceeds Table A2.4 of *Planning for Bushfire Protection 2006*;
- A perimeter and internal road network which permits the future occupants of the estate to safely evacuate to an Off-Site Neighbourhood Safer Place;
- Infrastructure associated with evacuation and fire-fighting operations [reticulated hydrant water supply and perimeter roads and fire trails] has been incorporated in the design of the estate;
- Safe evacuation is not dependant on the use of fire trails;
- Traffic Study has confirmed that safe, timely evacuation can be achieved from the estate.

The subdivision creates the following lot yield within Lot 24 in DP 714096:

1. Western Portion:
Zoning E2-AB4 – 10 hectare x 1 lot;
2. Central Portion:
Zoning R2 – 700m² + x 6 lots;
– 1000m² + x 12 lots
3. East Portion:
Zoning R2V – 2000m² + x 3 lots;
Zoning R2-U2 – 700m² + x 44 lots;
Zoning R2-I – 500m² + x 74 lots;
4. Residue Lots:
Central Portion:
25.00 hectare x 1 lot;

East Portion
12.11 hectare x 1 lot;
9.67 hectare x 1 lot.

The subdivision creates the following lot yield within Lots 21, 22, 23 in DP 714096:

1. East Portion:
Zoning R2-V – 2000m² x 9 lots;
Zoning R2-1 – 500m² x 47 lots.

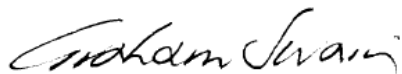
The subdivision also constructs and dedicates the public road network and perimeter fire-trails.

The Shoalhaven Council Bushfire Prone Land Map records that the development site contains Category 1 Bushfire Prone Vegetation.

The proposed subdivision application is therefore integrated development under the provisions of Section 4.46 and Section 4.47 of the *Environmental Planning & Assessment Act 2017* and requires the issue of a Bushfire Safety Authority under Section 100B of the *Rural Fires Act*.

This report uses the methodology provided by *Planning for Bushfire Protection 2006* to validate the proposed subdivision's compliance with *Planning for Bushfire Protection 2006* and examines the requirements of Section 44 of the *Rural Fires Regulation 2013*, necessary to provide compliance with Section 100B of the *Rural Fires Act 1997 (Amended)*.

Recommendations are made for the provision of Asset Protection Zones to the future dwellings, fire fighting access and water supplies, management of the landscape within the immediate curtilage to the future dwelling on each lot and the perimeter road reserve, management of the vegetation within the on the and building construction standards to the future dwellings, so as to satisfy the deemed-to-satisfy specifications of *Planning for Bushfire Protection 2006* as a prerequisite for the issue of a *Bushfire Safety Authority* under Section 100B (4) of the *Rural Fires Act*.



Graham Swain
Managing Director,
Australian Bushfire Protection Planners Pty Limited.
24.09.2018

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SECTION 1

INTRODUCTION

1.1 Aim of this Assessment.

The aim of this Bushfire Protection Assessment is to:

- Determine the formation of the vegetation on and surrounding the future dwelling site on each lot, in accordance with the vegetation classification system contained in *Planning for Bushfire Protection 2006*;
- Undertake an assessment to determine the effective slope of the land on and surrounding the dwelling sites;
- Determine the Fire Danger Index [FDI] for the site;
- Undertake an assessment to determine bushfire protection strategies for the proposed subdivision, including the preferred location of the dwelling sites, that address the following matters:
 - (i) The provision of building setbacks (Asset Protection Zones) from vegetated areas and the siting of buildings to minimize the impact of radiant heat and direct flame contact;
 - (ii) Fire fighting water supplies;
 - (iii) Access requirements for emergency service vehicles;
 - (iv) Construction standards to be used for the future buildings within the proposed development to minimize the vulnerability of buildings to ignition from radiation and ember attack;
 - (v) Land management responsibilities; and
 - (vi) Evacuation management.

1.2 Development Proposal.

This Bushfire Protection Assessment has been prepared for the proposed residential subdivision of Lots 21, 22 & 23 & 24 in DP 714096 Warrah Road and Gypsy Pint Road, North Nowra.

The subdivision of the land within Lot 24 in DP 714096 creates:

1. Western Portion: Zoning E2-AB4 – 10 hectare x 1 lot	2. Central Portion: Zoning R2 – 700m ² + x 6 lots; 1000m ² + x 12 lots
3. East Portion: Zoning R2V – 2000m ² + x 3 lots; Zoning R2-U2 – 700m ² + x 44 lots; Zoning R2-I – 500m ² + x 74 lots;	4. Residue Lots: Central Portion: 25.00 hectare x 1 lot; East Portion 12.11 hectare x 1 lot; 9.67 hectare x 1 lot

The subdivision of the land within Lots 21, 22 & 23 in DP 714096 creates:

East Portion: Zoning R2-V – 2000m ² x 9 lots; Zoning R2-I – 500m ² x 47 lots.

Access to the Estate is to the north via Warrah Road North and Gypsy Point Road to proposed Lot 101. Fire-fighting access to the proposed lots is provided via a perimeter road, a fire trail network - which links to the internal road network – and a single lane one-way road which provides for perimeter access to the south-western corner of the eastern precinct in the estate.

The development proposal establishes Asset Protection Zone setbacks from the retained vegetation within the Environmental Land which comply with or exceed the widths required to satisfy Table A2.4 of *Planning for Bushfire Protection 2006* and the widths required to satisfy BAL 29 constructions pursuant to A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’.

Refer to Figures 1 - 4 – Plans of Development Proposal on Pages 9 - 12.

1.3 Site Inspection.

Graham Swain of Australian Bushfire Protection Planners Pty Limited inspected the site and surrounding areas on the 22nd October 2013, as part of the rezoning application, to assess the topography, slopes and vegetation classification within and adjoining the development property and to validate the future subdivision's compliance with the requisite Asset Protection Zones and access provisions.

Extensive investigations were also undertaken to determine a development layout that provided a design which addressed safe access to the future dwellings; location of the dwelling sites and the provision of the Asset Protection Zones to the future buildings and retention of the vegetation in the Environmental Zone. Adjoining properties were also inspected to determine the surrounding land use / land management.

Figure 1 – Overall Lot Layout.

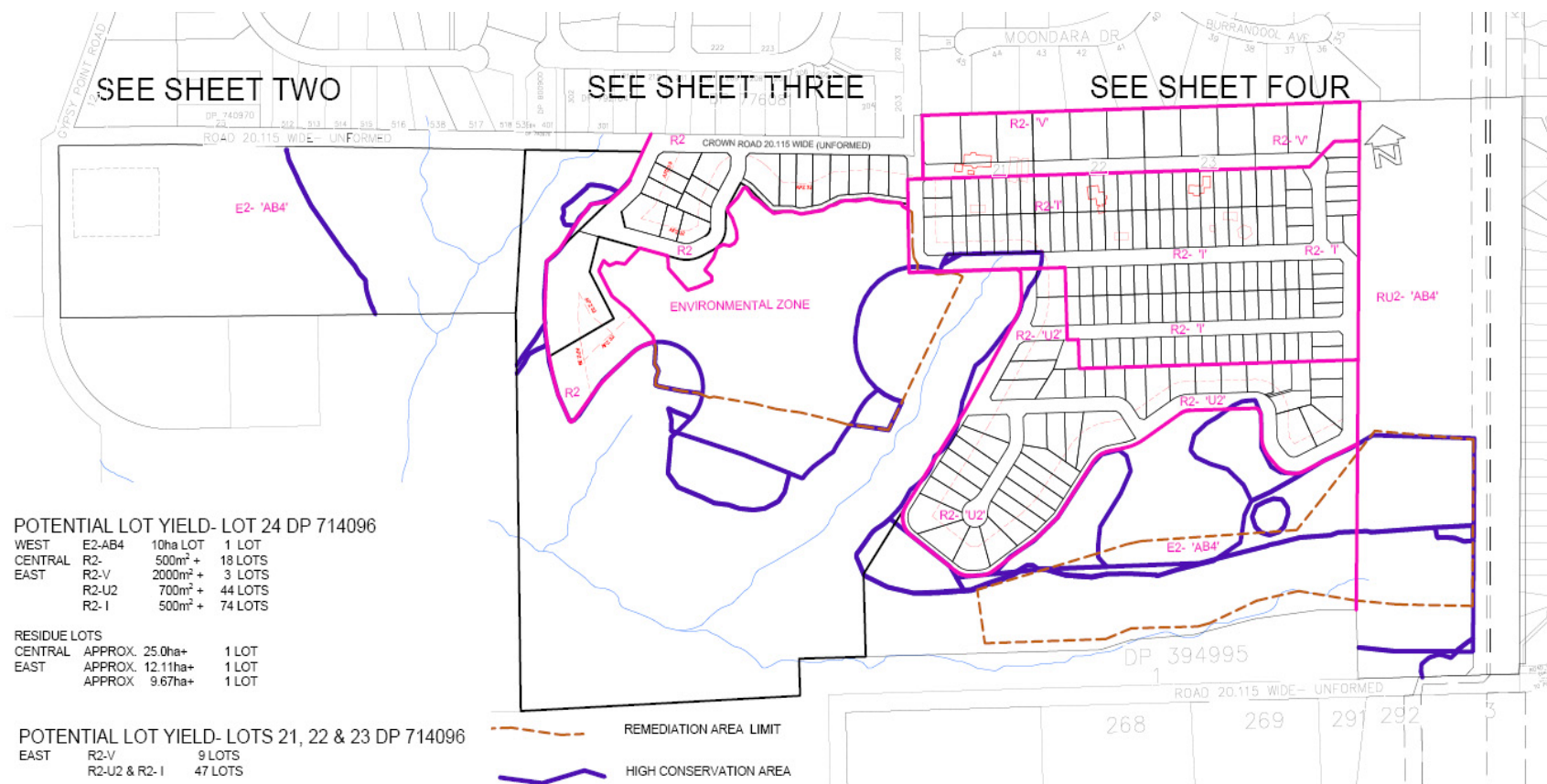


Figure 2 – Western Area – Single “E2” Environmental Lot with Dwelling entitlement.

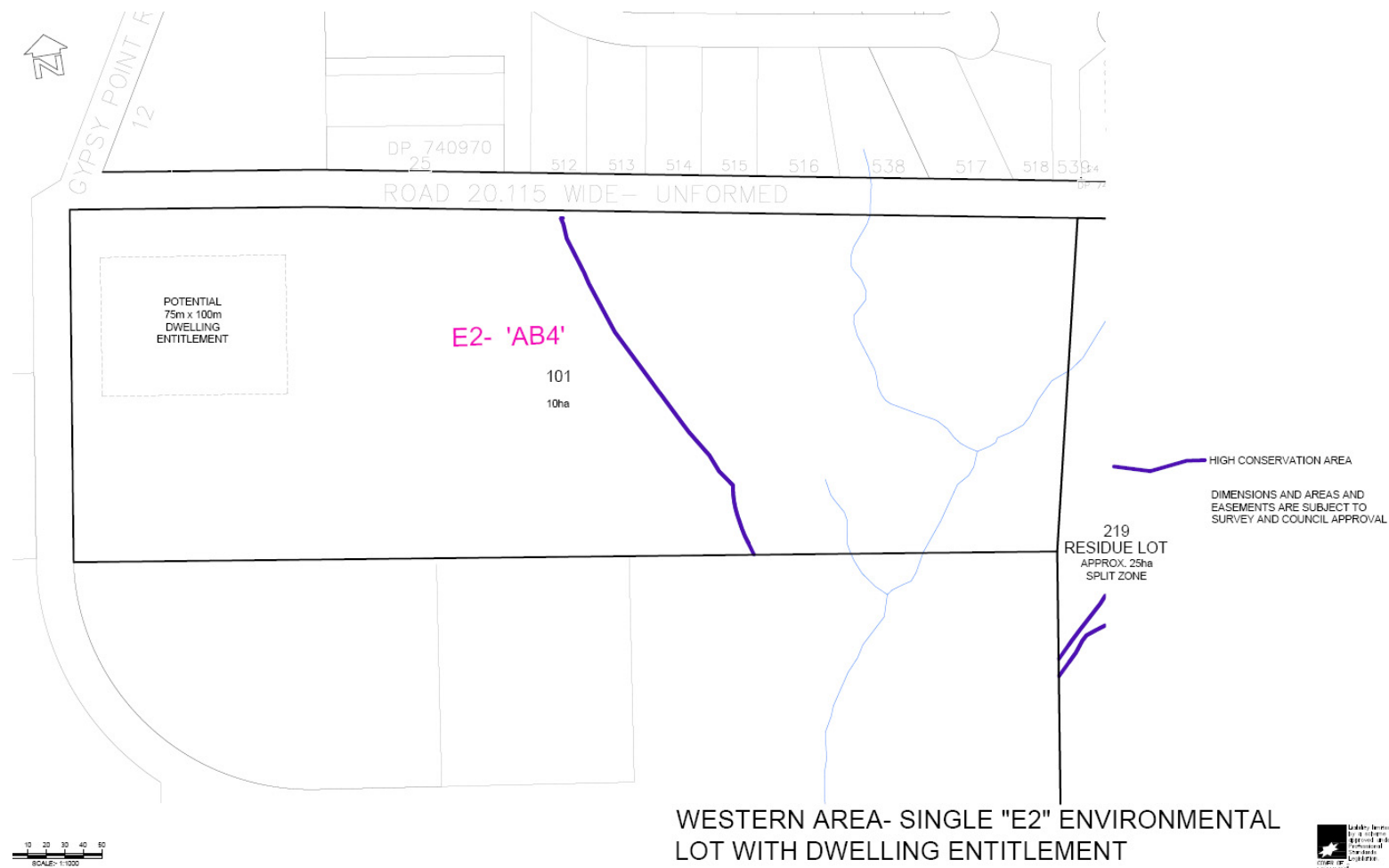
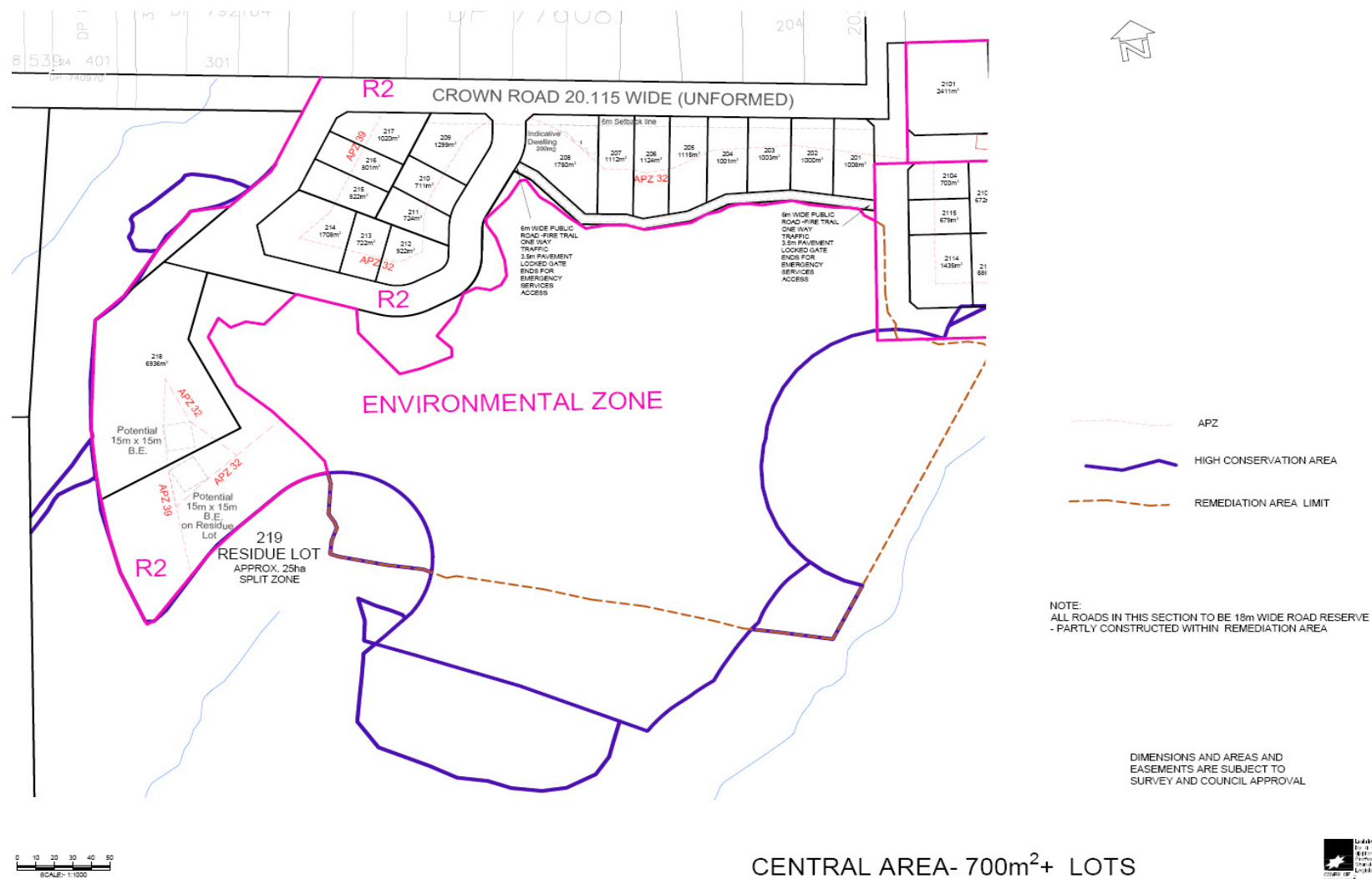


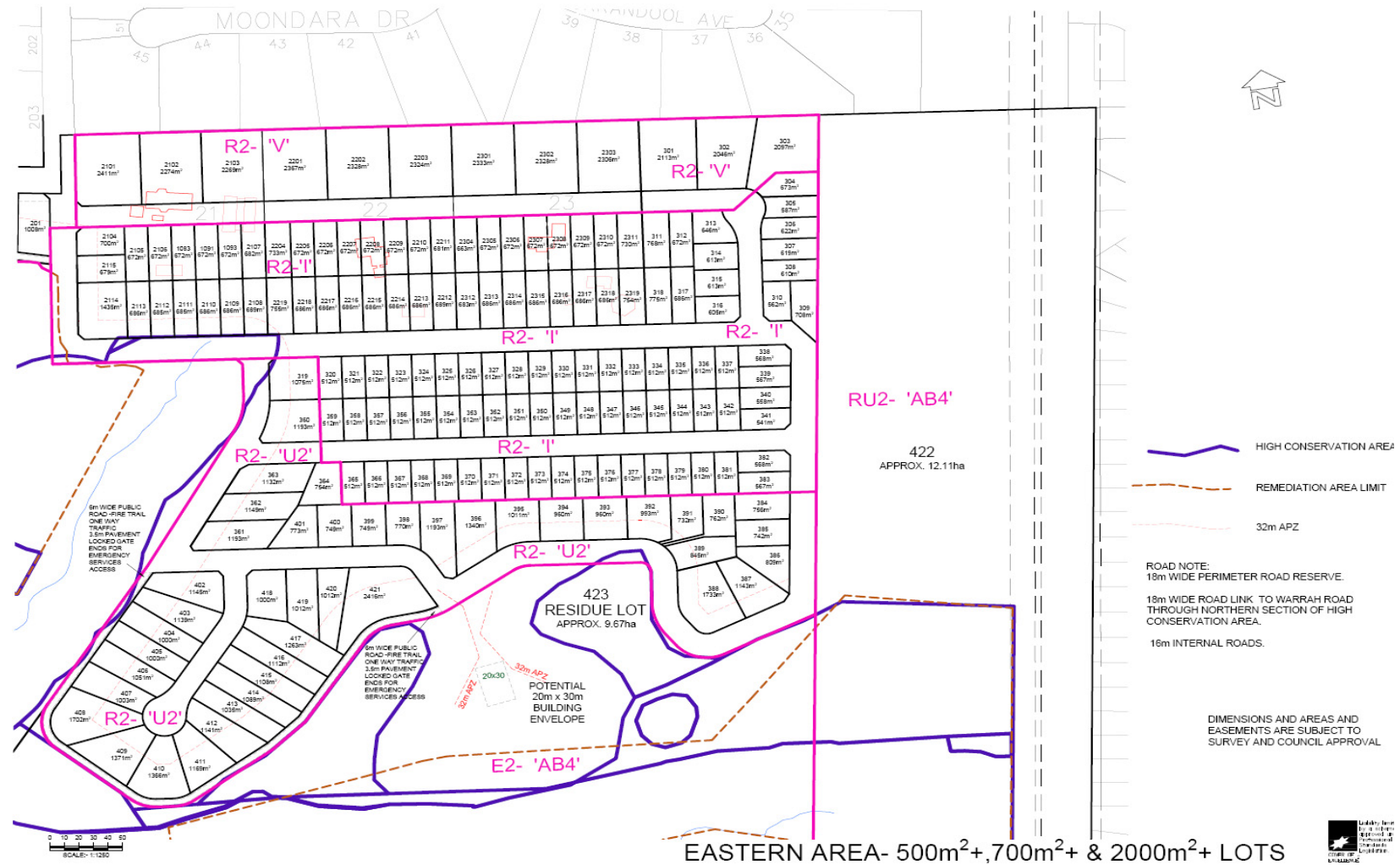
Figure 3 – Central Area – 700m² Lots.



CENTRAL AREA- 700m²+ LOTS



Figure 4 – Eastern Area – 500m² + 700m² + 2000m² Lots.



1.4 Statutory Requirements.

This report has been prepared having regard to the following legislative and planning requirements:

1.4.1 Legislation.

(a) Environmental Planning and Assessment Act (EPA Act)

Planning and development within NSW is regulated by the *Environmental Planning & Assessment Act, 2017* (EPA Act).

In relation to bushfire planning for Industrial/Commercial Developments in bushfire prone areas in NSW Section 4.15 of the *EPA Act* states that:

- A consent authority is to take into consideration the likely impacts of the development, including environmental impacts on both the natural and built environments and social and economic impacts in the local area (e.g. *natural hazards such as bushfire threat*); and
- The suitability of the site for the development (e.g. *bushfires*)

Section 4.46(1) of the *EPA Act* identifies that authorization is required under Section 100B of the *Rural Fires Act 1997* in respect of bushfire safety of the subdivision of land that could lawfully be used for residential or rural residential purposes.

(b) Rural Fires Act 1997

The objectives of the *Rural Fires Act* are to provide:

- The prevention, mitigation and suppression of fires;
- Coordination of bushfire fighting and prevention;
- Protection of people and property from fires; and
- Protection of the environment.

The *Rural Fires Act* was amended in August 2002 by the *Rural Fires & Environmental Assessment Legislation Amendment Act, 2002*. In relation to bushfire planning for new residential, rural residential and special fire protection developments in bushfire prone areas in NSW, Section 100B of the Act applies.

Section 100B provides for the issue, by the Commissioner of the NSW Rural Fire Service, of a Bushfire Safety Authority for development which creates the subdivision of bushfire prone land for residential and rural residential development and construction of special fire protection developments located within a Bushfire Prone Area.

An application for a Bushfire Safety Authority must be lodged as part of the Development Application process and must demonstrate compliance with *Planning for Bushfire Protection 2006* and other matters which are considered necessary, by the Commissioner, to protect persons, property and the environment from the impact of bushfire.

In relation to the management of bushfire fuels on public and private lands within NSW, Sections 63(1) and 63(2) require public authorities and owners / occupiers of land to take all practicable steps to prevent the occurrence of bushfires on, and to minimize the danger of the spread of bushfires.

(c) *Rural Fires Regulation 2013.*

Section 44 of the *Rural Fires Regulation* provides details of the matters that are required to be addressed for the issue of a *Bushfire Safety Authority* under Section 100B of the *Rural Fires Act*.

(d) *Biodiversity Conservation Act 2016.*

The purpose of this Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community consistent with the principles of ecologically sustainable development.

1.4.2 Planning Policies.

Planning for Bushfire Protection – 2006 – (Rural Fire Service).

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for rural residential and residential subdivision and Special Protection Developments in bushfire prone areas.

The Commissioner may determine additional measures that are considered necessary to protect the development against the impact of bushfire.

1.5 Documentation Reviewed in this Assessment.

The following documents were reviewed in the preparation of this report:

- Plan of proposed subdivision of Lot 21, 22, 23 & 24 in DP 714096 Warrah Road and Gypsy Point Road, North Nowra, prepared by Allen Price & Scarratts Pty Ltd [Drawing No. N26956-02 Sheets 1 – 4 Revision P6 dated 02.08.2018;
- Bushfire Constraints Report for the rezoning of the land, prepared by Australian Bushfire Protection Planners Pty Limited – Reference No. B132086 – dated 16.06.2014;

- *Planning for Bushfire Protection 2006* prepared by the NSW Rural Fire Service;
- Australian Standard AS3959 *Construction of Buildings in Bushfire Prone Areas*;
- *Rural Fires Regulation 2013*;
- Shoalhaven Bushfire Prone Land Map;
- Traffic Impact Assessment prepared by TDG for Shoalhaven City Council – dated May 2018.

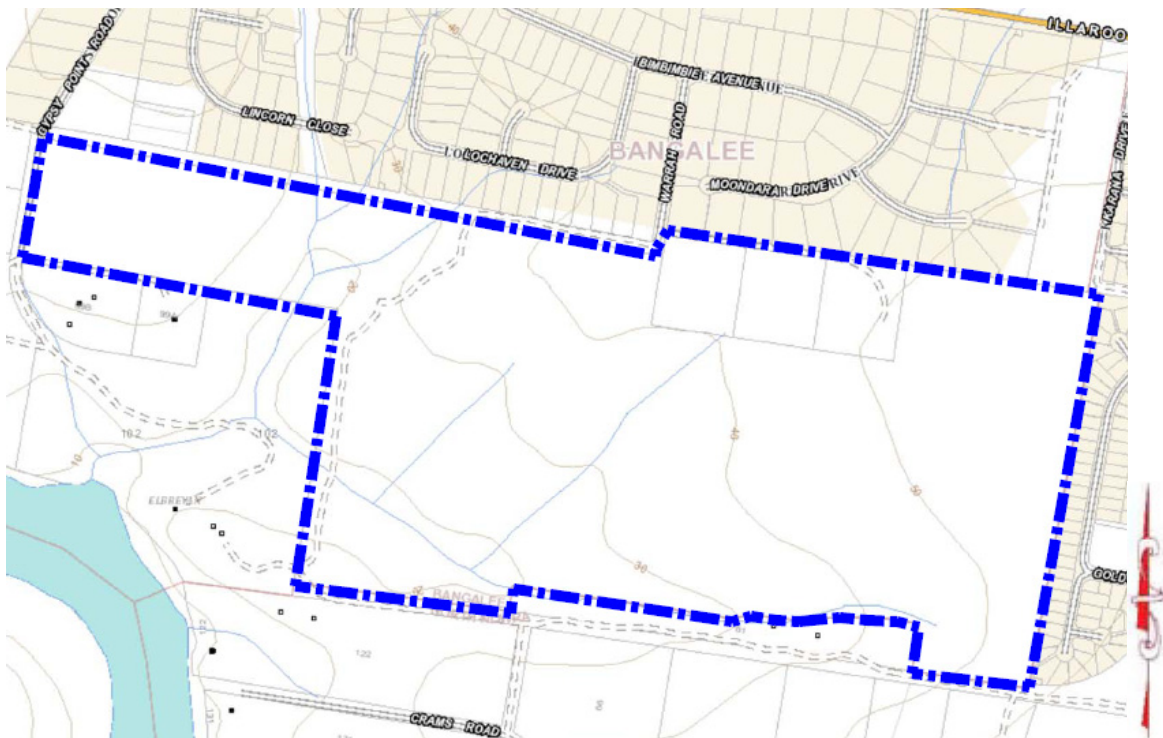
SECTION 2

PROPERTY DESCRIPTION

2.1 Location.

The subdivision proposal is over land within Lots 21, 22, 23 & 24 on DP 714096 Warrah Road and Gypsy Pint Road, North Nowra.

Figure 5 – Location of Development Site.



2.2 Existing Land Use.

Lot 24 in DP 714096 contains vacant land. Lots 21, 22 & 23 in DP 714096 contain existing residential dwellings and associated structures.

2.3 Surrounding Land Use.

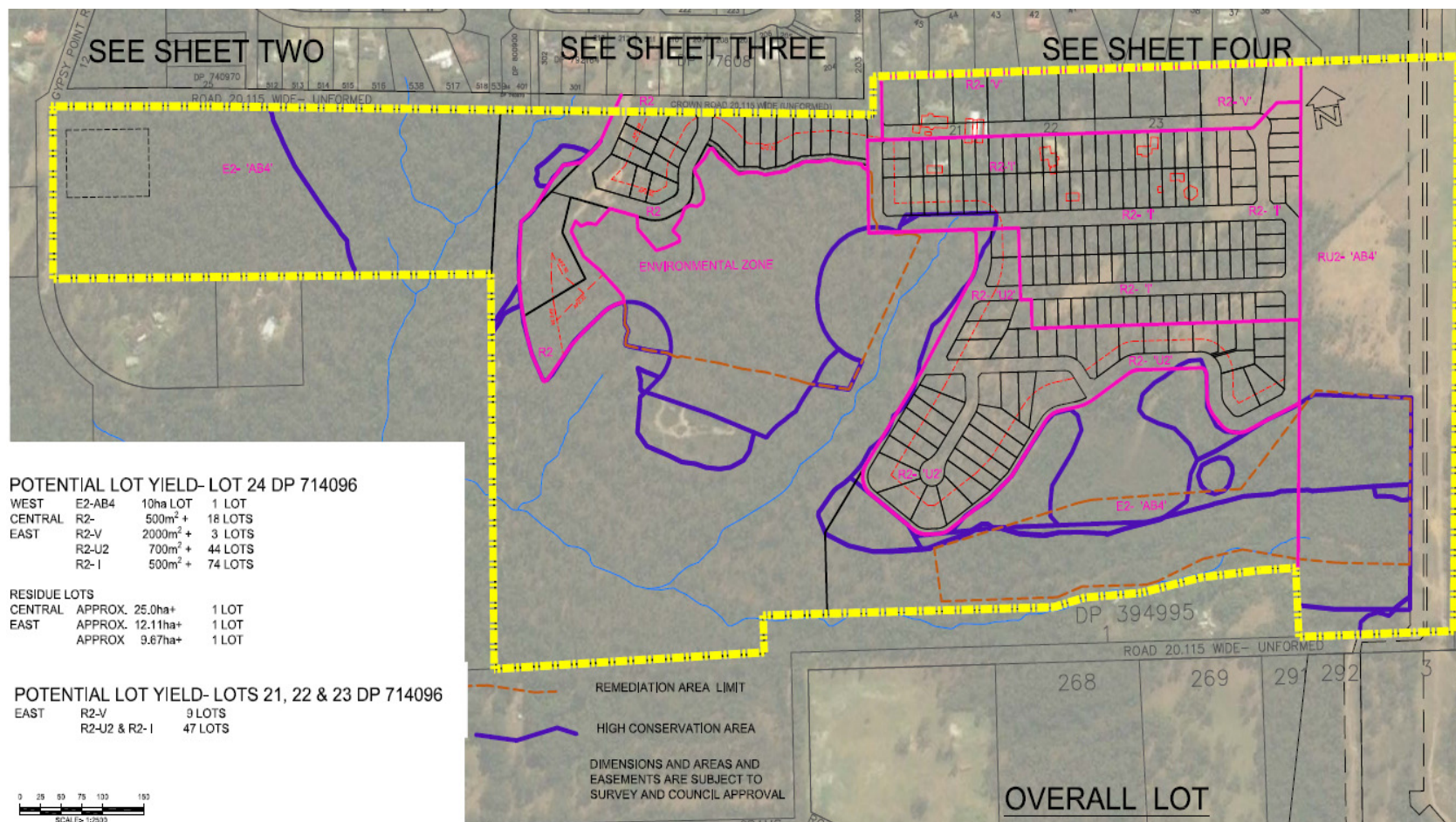
The land to the north contains existing large lot residential and residential development. The land to the east of the development site contains residential development having access to Coconut Drive.

The land to the south and west of the development site contains rural residential development which contains managed, partially managed and unmanaged vegetation – refer to Figure 6 – Aerial Photograph of Development site.

Figure 6 – Aerial Photograph of the Development Site.



Figure 7 – Subdivision Layout overlaid on the Aerial Photograph.



2.4 Topography.

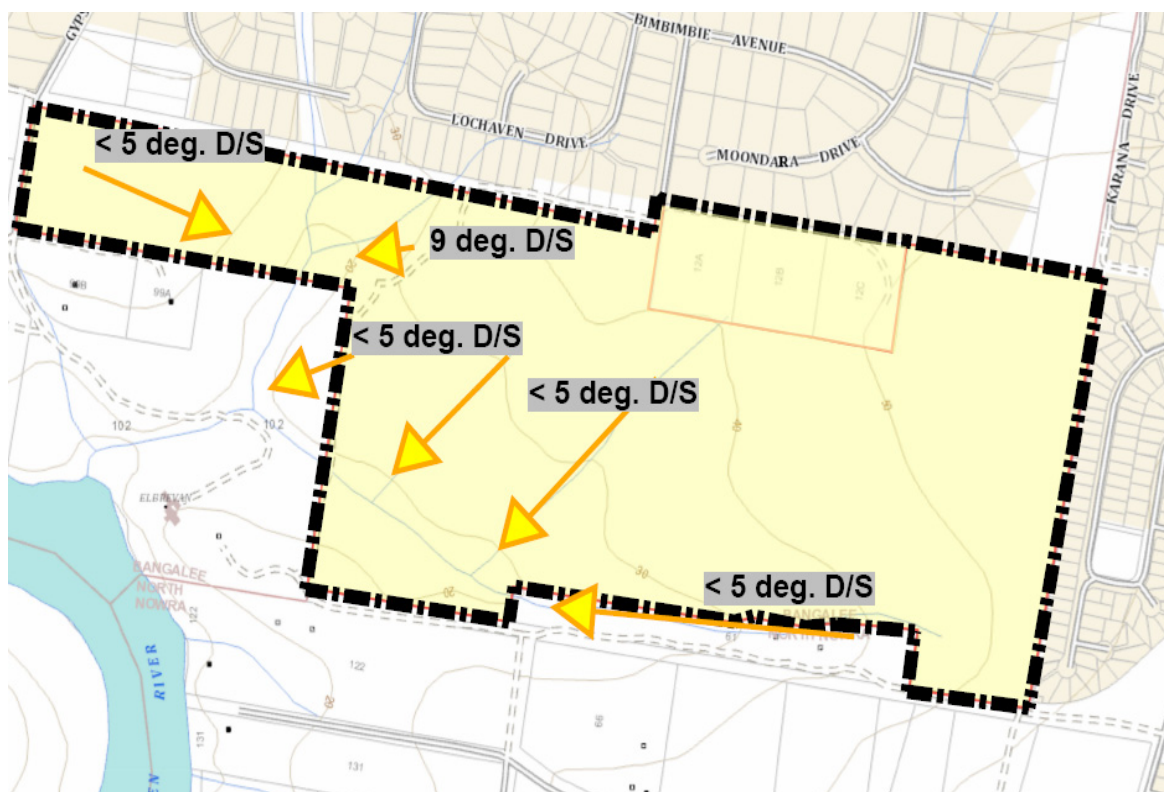
Appendix 2 of *Planning for Bushfire Protection 2006* states that slopes should be assessed, over a distance of at least 100m from an asset and that the gradient of the land should be determined which will most significantly influence the fire behaviour to the site. The topography of the land within the proposed residential precinct forms the apex of a broad ridgeline that is orientated northwest to southeast.

The topography of the land within the rezoning precinct is characteristic of the undulating hilly landform extending to the north from the Shoalhaven River. The proposed residential precinct contains two watercourses which flow to the southwest, connecting to a third watercourse which flows to the west along the southern boundary of the rezoning precinct. The gradient within these watercourses is less than 5 degrees downslope with a similar side slope.

A fourth watercourse bounds the north-western corner of the residential precinct. The side slope to the watercourse is nine [9] degrees downslope to the northwest of the residential precinct.

Except for the 9 degree downslope to the northwest, the effective slope to the remainder of the south-western edge of the residential precinct is < 5 degrees downslope and < than 5 degrees upslope to the eastern edge.

Figure 8 – Topographic Map.



2.5 Vegetation.

Appendix A2.3 of *Planning for Bushfire Protection 2006* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 metres in all directions from the future development on the site. Vegetation is classified using Table A2.1 of *Planning for Bushfire Protection 2006*, which classifies vegetation types into the following groups:

- (a) *Forests [wet & dry sclerophyll forests];*
- (b) *Woodlands;*
- (c) *Plantations – being pine plantations not native plantations;*
- (d) *Forested Wetlands;*
- (e) *Tall Heaths;*
- (f) *Freshwater Heaths;*
- (g) *Short Heaths;*
- (h) *Alpine Complex;*
- (i) *Semi – arid Woodlands;*
- (j) *Arid Woodlands; and*
- (k) *Rainforests.*

2.5.1 Vegetation within the proposed residential precinct.

The vegetation within Lots 21, 22 & 23 in DP 714096 consists of managed landscaped gardens beneath a remnant tree canopy. The vegetation within the proposed residential precinct on Lot 24 in DP 714096 consists of Scribbly Gum Woodland with some previous thinning and disturbance – refer to Figure 9 – Vegetation Communities on Page 21 prepared by OMVI.

2.5.2 Vegetation on the land adjoining the proposed residential precinct

The rural residential and residential development to the north of the proposed subdivision precincts contains managed landscaped gardens.

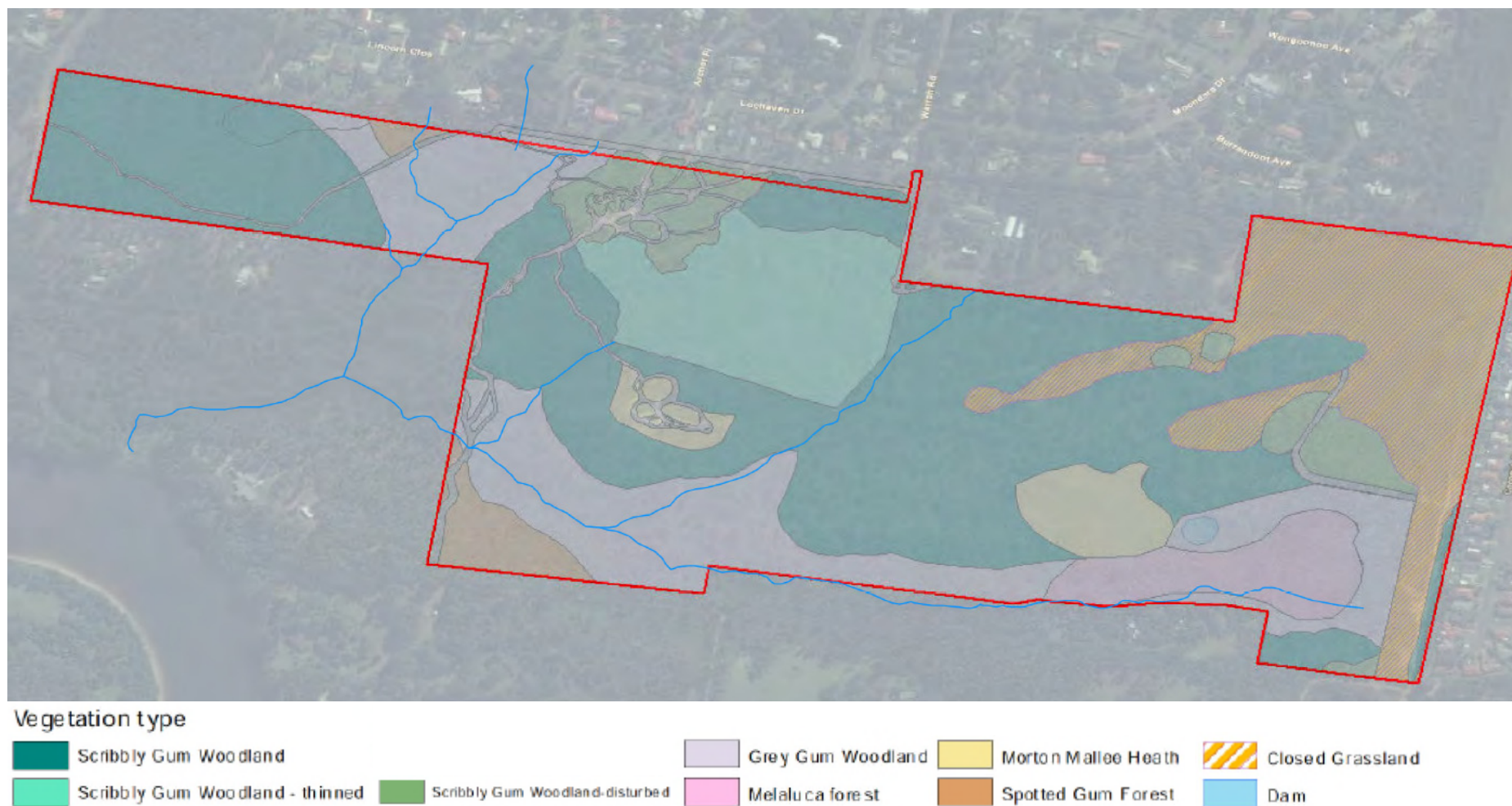
The future road corridor located within the eastern portion of Lot 24 in DP 714096, to the east of the eastern residential precinct, contains an area of Grey Gum Forest, Melalueca Forest, Grey Gum Woodland and Closed Grassland.

The vegetation within the riparian corridors to the creek lines within Lot 24 in DP 714096 consists of unmanaged Grey Gum Woodland. Similar woodland vegetation the land to the south of Lot 24 in DP 714096, with small areas of managed land displaying grassland vegetation.

The property to the west of the residential precinct [Lot 11 in DP 804611] contains woodland vegetation.

For the purpose of determining Asset Protection Zones to the future residential development 'forest' vegetation classification has been used.

Figure 9 – Vegetation Communities Plan.



2.6 Site Photographs



Photograph No. 1 – View showing the woodland vegetation within the residential precinct within Lot 24 in DP 714096.



Photograph No. 2 – View showing the woodland vegetation within unmanaged portion of the residential precinct within Lot 24 in DP 714096.

2.7 Significant Environmental Features on the Property.

The development site does not contain significant environmental features such as SEPP 14 Wetlands; SEPP 26 Littoral Rainforests; Areas of Geological interest; Steep Lands [>18 degrees]; Land slip areas or National Parks Estate.

Lot 24 in DP 714096 contains the leaders to a creek line that flows to the south/southwest into the Shoalhaven River. The riparian corridors to these leaders will be preserved in the subdivision layout.

2.8 Known Threatened Species, Population or Ecological Community within the Property.

The OMVI Ecological Report and the subsequent review undertaken by NGH identified the Grey Gum Woodland and Spotted Gum Forest within parts of Lot 24 in DP 714096 to most closely align with threatened Currumbene – Batemans Lowlands Forest.

The OMVI Ecological Report and the subsequent review undertaken by NGH identified numerous threatened species likely to occupy Lot 24 in DP 714096 with the High Conservation Value areas, as shown in the subdivision layout, set aside to conserve these species.

2.9 Details and location of Aboriginal relics or Aboriginal place.

Mary Dallas Consulting Archaeologists undertook a study into the potential Aboriginal heritage on the site and found five artefacts on Lot 24, located beside a gravel quarry in the south-eastern corner of the lot. A second disturbed site was located adjacent to transmission lines at the eastern end of the lot.

Both sites are located outside the proposed subdivision.

SECTION 3

FIRE MANAGEMENT RESPONSIBILITIES

Fire management within the development site is the responsibility of:

3.1 Shoalhaven City Council.

The Shoalhaven City Council has responsibility, under Section 66 of the *Rural Fires Act*, to issue a notice in writing requiring an owner / occupier of any land within the LGA to carry out bushfire hazard reduction works on that land. Section 100E of the *Rural Fires Act* requires Council to issue bushfire hazard reduction certificates for hazard reduction to be undertaken on private lands.

3.2 New South Wales Rural Fire Service.

The NSW Rural Fire Service (RFS) has the responsibility for undertaking fire suppression activities, hazard management activities and other functions relative to emergency management, within its areas of operation. *Section 73* of the *Rural Fires Act (1997)* enables the Commissioner to carry out bush fire hazard reduction works on any land as required by a bush fire risk management plan if the work has not been carried out satisfactorily. Incurred costs can be recovered as a debt owed to the Crown.

The proposed development falls under the NSW Rural Fire Service jurisdiction for fire-fighting operations.

3.3 Fire & Rescue New South Wales.

The Fire & Rescue NSW has the responsibility for undertaking fire suppression activities, and other functions relative to emergency management, within its area of operation and through Mutual Aid Agreements, provide assistance to the NSW Rural Fire Service, particularly for structural fire operations within the NSW Rural Fire Brigade Districts. Hazmat management within New South Wales is the responsibility of Fire & Rescue NSW.

3.4 Shoalhaven Bush Fire Management Committee.

The Shoalhaven Bushfire Management Committee has the responsibility for planning for co-ordinated fire fighting activities / hazard management activities on a local government level. It is not an operational organization, a fire fighting organization or a funding source for fire management activities.

The Bush Fire Management Committee is supported by the following provisions of the Rural Fires Act 1997:

- **Section 52** requires each Bush Fire Management Committee to prepare a draft bush fire management plan for their local areas which includes a plan of operations and a bush fire risk management plan.
- **Section 54** of the Act specifies that a draft bush fire risk management plan is to 'set out schemes for the reduction of bush fire hazards in the rural fire district or other part of the State'. A draft bush fire risk management plan may also restrict or prohibit the use of fire or other fire hazard reduction activities in all or specified circumstances or places to which the plan applies.

3.5 Public Authorities & owners/occupiers of land.

The Rural Fires Act, 1997 provides several legislative opportunities to require Public Authorities, land owners and occupiers to manage hazardous fuels. These are listed below:

- **Section 63(1)** states that it is the duty of a public authority to take any practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of a bushfire on or from:
 - (a) any land vested in or under its control or management, or
 - (b) any highway, road, street, land or thoroughfare, the maintenance of which is charged on the authority.
- **Section 63(2)** states that 'it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land'.
- **Section 65A** states that the 'Commissioner may nominate a member of the Service as a hazard management officer'.
- **Section 65(2)** states that 'an authorised person may, with the permission of the fire fighting authority or other authority responsible for unoccupied Crown land or managed land or a person nominated by the authority to give such permission, enter the land and carry out bushfire hazard reduction work with the assistance of such other persons as the authorised person considers to be necessary for the purpose'.
- **Section 65(3)** states that 'the authority responsible for unoccupied Crown land or managed land is to be taken to have given the permission under this section to the extent necessary to give effect to a bushfire risk management plan'.

- **Section 65(4)** states that *'if permission under this section is given subject to conditions, the conditions must be complied with'*.
- **Section 66(1)** states that *'a hazard management officer may, by notice in writing, require the owner or occupier [not being a public authority] of any land to carry out bushfire hazard reduction work specified in the notice on the land'*.
- **Section 66(2)** states that *'a hazard management officer must serve a notice under this section if required to do so by a bushfire risk management plan applicable to the land that is in force'*.
- **Section 66(3)** states that *'a hazard management officer must issue a bushfire hazard reduction certificate in respect of any bushfire hazard reduction work required by a notice issued in accordance within section (2)'*.
- **Section 66(6)** states that *'the requirements and conditions so specified must include any requirements in a bushfire risk management plan that is applicable to the land and is in force and may include a requirement or condition that the burning of fire breaks or of combustible material;*
 - (a) must in fire district constituted under the Fire Brigades Act 1989 be carried out by or under the supervision of the fire brigade or an officer in charge of the fire brigade;*
 - (b) must outside a fire district, be carried out by or under the supervision of the rural fire brigade specified in the notice or an appropriate officer of the rural fire brigade or any hazard management officer.*
- **Section 66(7)** states that *'a notice requiring the establishment of a firebreak cannot require an occupier or owner to kill or remove any trees that are reasonably necessary for shade, shelter, windbreak or fodder purposes or the protection of threatened species, populations, ecological communities or critical habitats within the meaning of the 'Threatened Species Conservation Act 1995'.*
- **Section 66(8)** states that *'an occupier or owner to whom a bushfire hazard reduction notice is given must, despite the fact that a fire permit has not been granted under Division 5, comply with the requirements specified in the notice'*.

- **Section 70(2)** states that *'if within the time specified in the relevant notice the owner or occupier to whom it is given fails to comply with any requirement of the notice, the Commissioner may, without prejudice to liability of the owner or occupier, enter on the land and carry out the bushfire hazard reduction work the owner or occupier was required to do under the notice'*.
- **Section 70(3)** states that *'any costs incurred by the Commissioner in carrying out such work may be recovered from the owner or occupier of the land as a debt due to the Crown in a court of competent jurisdiction'*.
- **Section 87** allows the removal of hazards in the bush fire danger period by the provision of a permit system. The permits are valid for 21 days, excluding TOBAN days.

Section 10 permits are not required to adhere to *Part V* provisions of the EPA Act 2017 in the assessment of impact, except for public authorities. An owner/occupier of private land must obtain from the NSW Rural Fire Service, a bushfire hazard reduction certificate before undertaking hazard reduction works on that land (Section 100E of the *Rural Fires Act 1997*).

3.6 Bushfire Hazard Management within the development site.

The proposed subdivision creates a Torrens Title estate.

The responsibility for the management of the individual residential lots, including the Asset Protection Zone to the future dwellings, shall remain the responsibility of the lot owners.

It is recommended that a Fire Management Plan be prepared for the Estate.

SECTION 4

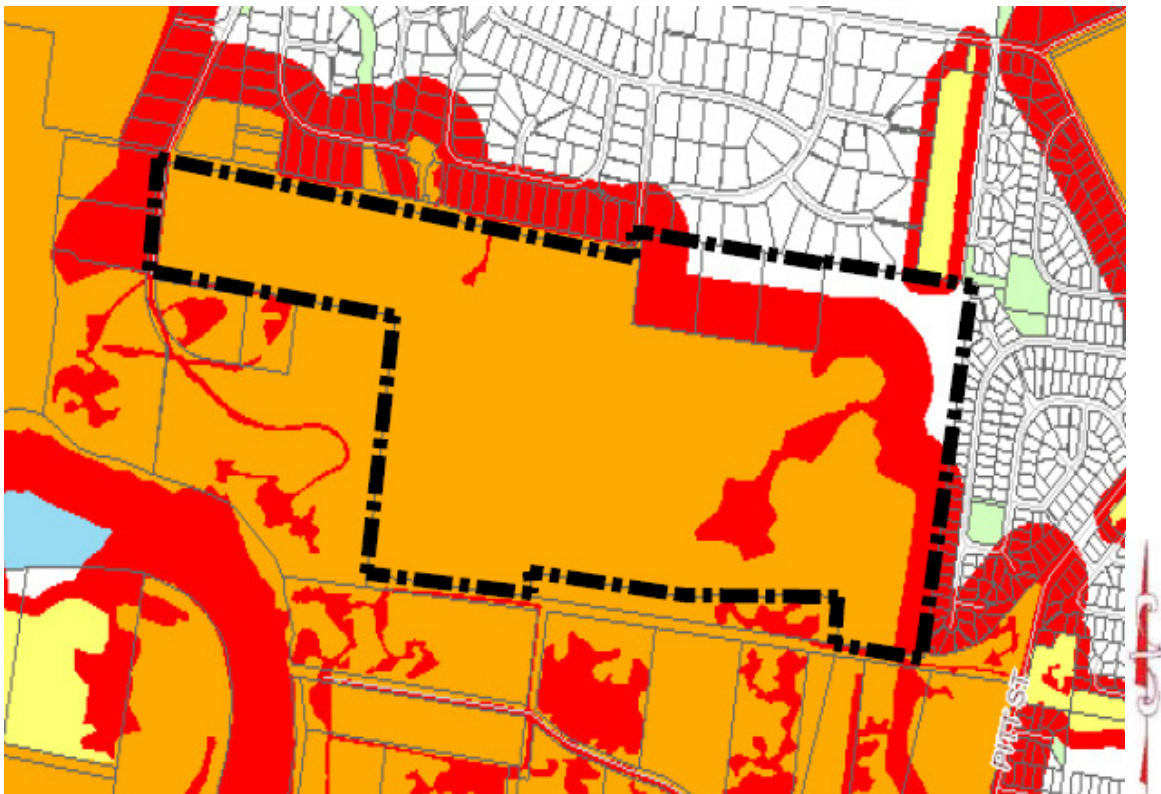
PRECINCT LEVEL ASSESSMENT

4.1 Precinct Level Assessment of Bushfire Prone Vegetation.

Section 10.3 of the *Environmental Planning & Assessment Act 2017* requires councils, where a Bushfire Risk Management Plan applies, request the Commissioner of the NSW Rural Fire Service to designate land within the area that the Commissioner considers, having regard to the bushfire risk management plan, to be bushfire prone land and must record any land so designated on a map.

Figure 10 below provides an extract from the Shoalhaven Council Bushfire Prone Land Map which shows the Category 1 Bushfire Prone Vegetation on the land within and adjoining the development site.

Figure 10 – Extract from the Shoalhaven Bushfire Prone Land Map



Legend: Orange – Category 1 Bushfire Prone Vegetation; Red – Buffer Zone.

SECTION 5

BUSHFIRE PROTECTION ASSESSMENT

5.1 Introduction.

Section 44 of the *Rural Fires Regulation 2013* requires that an application for a *Bushfire Safety Authority* must include a bushfire assessment for the proposed development (including the methodology used in the assessment) that addresses the extent to which the development provides:

- *asset protection zones;*
- *the siting and adequacy of water supplies for fire-fighting operations;*
- *capacity of public roads to handle increased volumes of traffic during a bushfire emergency;*
- *whether or not public roads link with the fire trail network and have two way access;*
- *the adequacy of access and egress for the purposes of emergency response;*
- *the adequacy of bushfire maintenance plans and fire emergency procedures;*
- *the construction standards to be used for building elements.*

Planning for Bushfire Protection 2006 provides a methodology to determine the Asset Protection Zones and Bushfire Attack / Construction Standards required for habitable buildings in rural residential and residential subdivisions that are designated as bushfire prone.

Section 5.2 of this report utilises the methodology provided by *Planning for Bushfire Protection 2006* to determine the Asset Protection Zones to the future dwellings erected within the proposed subdivision.

The remaining items identified by Section 44 of the *Rural Fires Regulation 2013* are examined in Sections 5.3 – 5.8 of this report.

5.2 Determination of Asset Protection Zones.

Appendix 2 of *Planning for Bushfire Protection 2006* provides the following procedure for determining setback distances (Asset Protection Zones) for residential and rural residential development which is deemed to be bushfire prone:

(a) *Determine vegetation formations as follows:*

- Identify all vegetation in all directions from the site for a distance of 140 metres;
- Consult Table A2.1 to determine the predominant vegetation type; and
- Select the predominant vegetation formation as described in Table A2.1.

(b) *Determine the effective slope of the land under the predominant vegetation Class.*

(c) *Determine the appropriate fire [weather] area in Table A2.2.*

(d) *Consult Table A2.4 and determine the appropriate setback [Asset Protection Zone] for the assessed land use, vegetation formation and slope range.*

The Shoalhaven Bushfire Prone Land Map identifies that Lot 24 in DP 714096 within the subdivision precinct contains Category 1 Bushfire Prone Vegetation with similar vegetation on the rural residential land to the west, south and partially to the east of the proposed residential subdivision precinct.

Except for the 9 degrees downslope adjacent to the north-western corner of the central residential precinct, the effective slope of the land within the riparian corridors is < 5 degrees downslope and the effective slope of the land to the east of the eastern residential precinct is < 5 degrees upslope, to the east.

Figure 11 below provides a layout of the recommended Asset Protection Zones to the residential landuse precinct within the subdivision precinct. The widths shown have been derived from A.S. 3959 – 2009 [for forest vegetation] so as to limit the construction levels to the future dwellings to not more than BAL 29, as required by the NSW Rural Fire Service.

The Asset Protection Zones shall be maintained to the standards of an Inner Protection Area [IPA] as defined by *Planning for Bushfire Protection 2006* and the NSW Rural Fire Service's '*Specifications for Asset Protection Zones*'.

Figure 11 – Plan showing the recommended Asset Protection Zones – based on the predominant vegetation being forest.

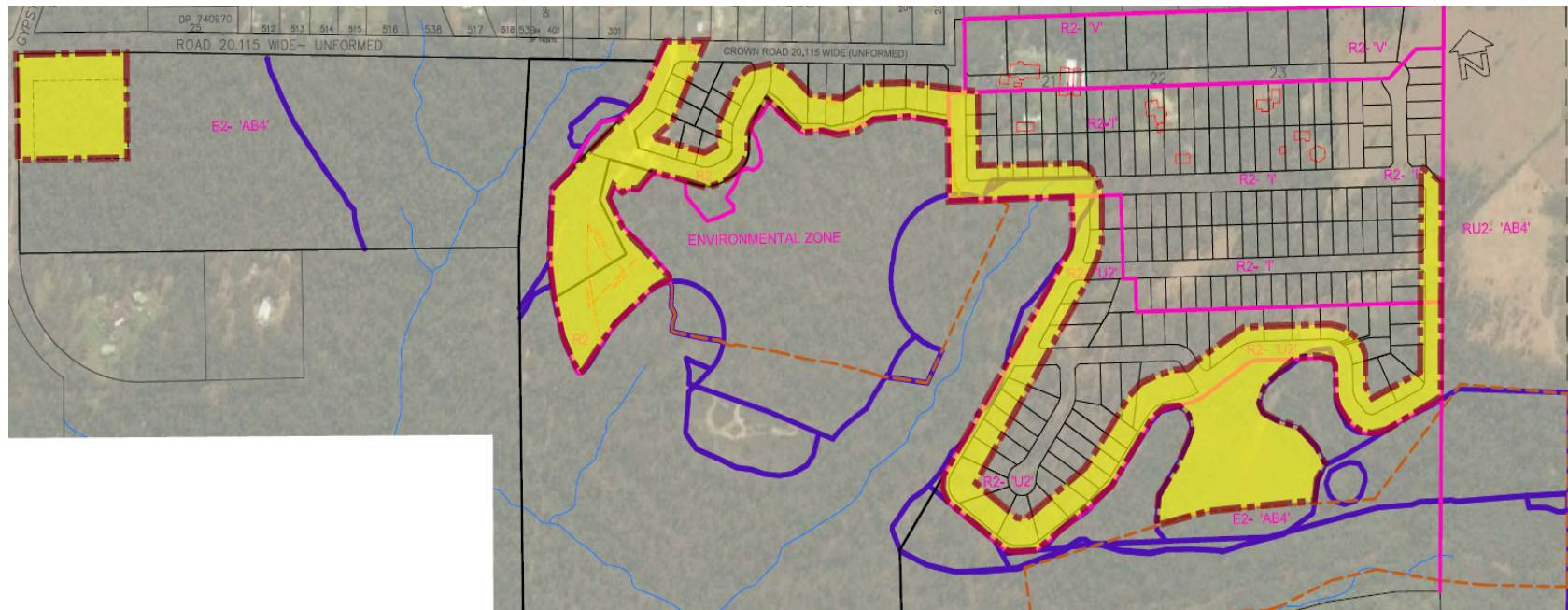


Figure 12 – Eastern Precinct Detail Asset Protection Zones – based on the predominant vegetation being forest.

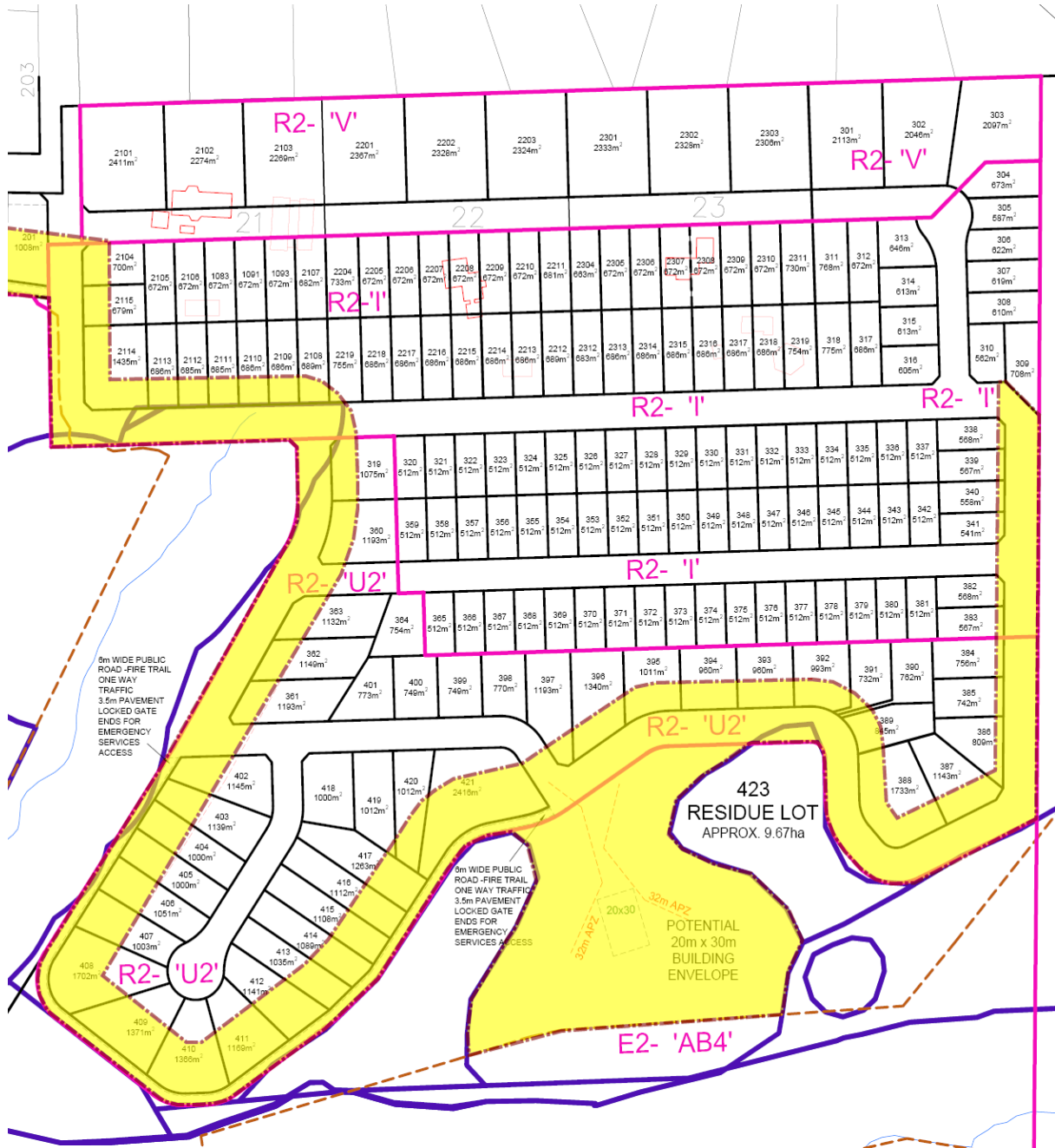


Figure 13 – Central Precinct Detail Asset Protection Zones - based on the predominant vegetation being forest.

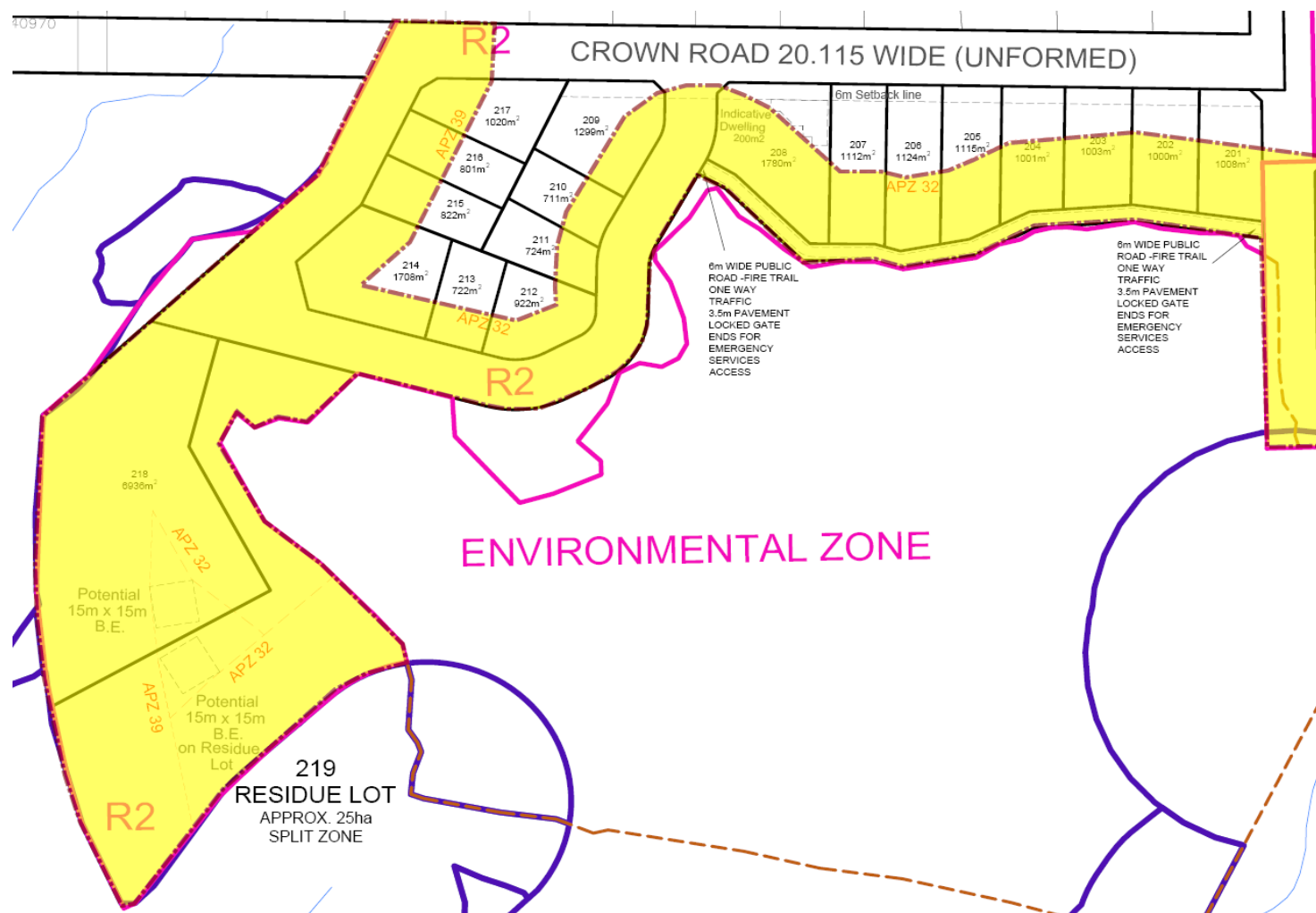
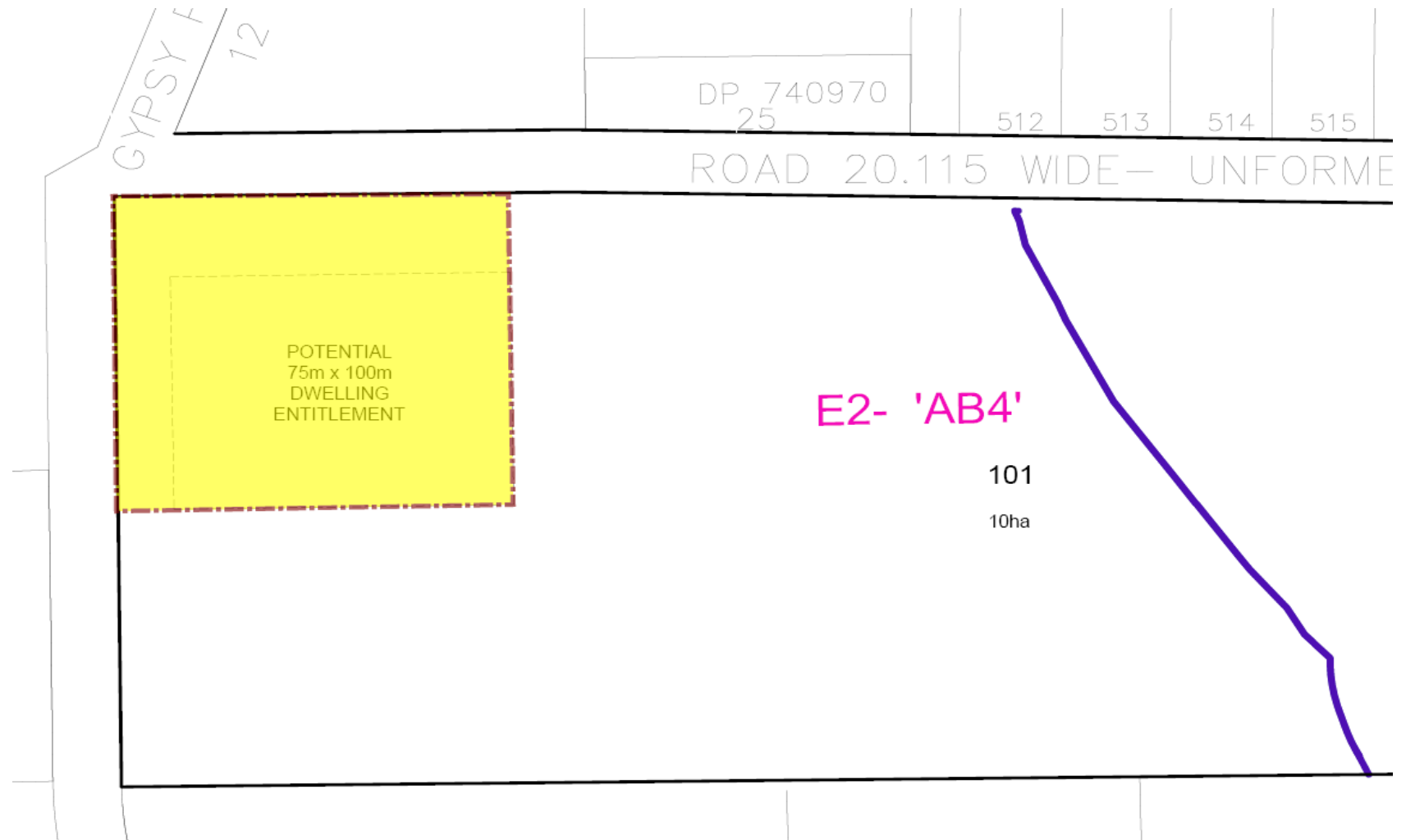


Figure 14 – Western Precinct Detail Asset Protection Zones - based on the predominant vegetation being forest.



5.3 Assessment of Bushfire Attack (Construction Standards).

Part 2.3.4 of the Building Code of Australia states that a Class 1 building that is constructed in a *designated bushfire prone area* must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes.

Australian Standard A.S. 3959 - 2009 is the enabling standard that addresses the performance requirements of Part 2.3.4 of the Building Code of Australia.

Therefore, the future Class 1 buildings within the development shall be constructed to comply with the specifications of this Standard.

The 2010 amendment of Appendix 3 of *Planning for Bushfire Protection 2006* provides the following procedure for determining bushfire attack on a building within a designated bushfire prone area:

- (a) Determine vegetation formation types and sub-formations around the building as follows;
 - (i) Identify all vegetation types within 140 metres of the site using Keith [2004];
 - (ii) Classify the vegetation formations as set out in Tables A2.1 in Appendix 2; and
 - (iii) Convert Keith to Specht classifications using Table A3.5 of Appendix 3 [2010].
- (b) Determine the separation distance between each vegetation formation and the structure;
- (c) Determine the effective slope of the ground for each vegetation group;
- (d) Determine the relevant Fire Danger Index [FDI] for the Council area from Table A2.3 in Appendix 2;
- (e) Match the relevant FDI, appropriate vegetation, distance and effective slope to determine the bushfire attack levels using the relevant tables of A.S.3959 – 2009 as indicated below:
 - (i) FDI 100 – Table A2.4.2;
 - (ii) FDI 80 – Table A2.4.3; and
 - (iii) FDI 50 – Table A2.4.4.

There are four levels of bushfire construction with deemed-to-satisfy arrangements accepted by the NSW Rural Fire Service. These are BAL 12.5; BAL 19; BAL 29 and BAL 40 as defined by A.S 3959 – 2009.

The Asset Protection Zones provided to the future dwellings, as shown on Figures 11 – 14 [based on forest being the predominant vegetation classification] have been determined to mitigate the impact of bushfires to the extent that radiant heat levels will be less than 29 kW/m².

The future dwellings and ancillary buildings directly exposed to the bushfire hazard shall be constructed to comply with Section 3 and Section 7 [BAL 29] specifications pursuant to A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’ and Addendum Appendix 3 of *Planning for Bushfire Protection 2006*.

All remaining dwellings not directly exposed to the bushfire hazard shall be constructed to comply with Section 3 and Section 5 [BAL 12.5] specifications pursuant to A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’ and Addendum Appendix 3 of *Planning for Bushfire Protection 2006*.

In addition, roof gutters and valleys shall have fitted a non-combustible protection device which minimises the accumulation of combustible materials in the gutter/valley.

5.4 Water Supplies for Firefighting Operations & Utility Services.

The proposed subdivision will be serviced by a reticulated mains water supply installed to meet the fire hydrant spacing, sizing and pressures to comply with the requirements of A.S. 2419.1 – 2005 in respect to the provision of fire-fighting water supplies.

Hydrants shall also be installed along the fire trail/access road. The water service to the dwelling on proposed Lot 101, Residue Lot 219 and Residue Lot 423 shall be of a size to supply a static water supply tank and fire hose reels to each dwelling.

No additional bushfire fighting water supplies are required for the estate.

Electrical supply lines are proposed to be laid underground.

Liquid Petroleum Gas [LPG] installations shall comply with A.S. 1596 and all fixed cylinders shall be kept clear of flammable materials for a distance of 10 metres and located in a position which is not exposed to the bushfire hazard.

Release valves shall be directed away from the building and at least 2 metres away from combustible materials.

All exposed pipes, fixtures, fittings and hose connections above ground or less than 300mm below ground, shall be metal [plastic, PVC or polythene fittings are not permitted].

5.5 Access for Fire Fighting Operations.

5.5.1 Adequacy of Public Roads:

The subdivision of the land will create lots which will have vehicular access directly off the new internal public road network.

The design and construction of the proposed roads shall comply with the specifications of Section 4.1.3(1) of *Planning for Bushfire Protection 2006*.

The minimum pavement width of the perimeter roads shall be 8.0 metres, kerb to kerb with 'No Parking' on one side with the services [hydrants] located on this side of the road and capable of carrying a fully laden Rural Fire Service Bulk Water Tanker with a GVM of 28 tonnes.

Internal roads shall be designed and constructed with a minimum pavement width of 6.5 metres, kerb to kerb and no parking to both sides.

5.5.2 Fire Trail Access to two-way Public Roads.

The subdivision layout provides for the provision of a fire trail to the south of proposed Lots 201 – 208 in the central precinct and a one-way perimeter access road to the west, south and southeast of the lots located in the south-western corner of the eastern precinct [Lots 402 – 417 and Lot 421].

These access provisions do not form part of the access to the proposed lots and only serve as access for fire-fighting operations.

The fire trail shall be designed and constructed to provide a trafficable width of 4.0 metres and the access road constructed to provide a one-way trafficable width of 3.5 metres and a carrying capacity of 18 tonnes GVM.

Internal radius to corners shall be 6 metres and external radius shall be 12 metres with passing bays provided at 200 metre intervals.

The fire trail/access road shall be sealed and designed to address stormwater overland flows.

Locked gates [minimum opening width of 3.6m] shall be installed at the junction of the fire trail/access road with the public road with keys to be provided by the NSW Rural Fire Service.

Maintenance of the fire trail/access road shall be the responsibility of Shoalhaven Council as part of the public road network.

5.5.3 Emergency Response Access / Egress.

The subdivision layout provides for a road network designed to provide fire appliance access via complying perimeter and internal roads.

The subdivision layout also incorporates direct access from Gypsy Point Road to the future dwelling erected on proposed Lot 101 with access to the central and eastern development precinct via an extension off Warrah Road North, which will undergo works to permit direct access to the north to Illaroo Road.

5.6 Adequacy of Bushfire Maintenance Plans and Fire Emergency Procedures.

It is recommended that the future owners of the new lots prepare an *Emergency Fire Plan* that identifies those emergencies that are likely to impact upon the estate, and identify appropriate responses to those emergencies.

This may include protocols for the early removal of non-active/young/sick and frail members of the family to safer areas within Nowra, prior to the arrival of any potential major fire event.

5.7 Bushfire Hazard Management.

The intention of bushfire hazard management is to prevent flame contact with a structure, reduce radiant heat to below the ignition thresholds for various elements of a building, to minimize the potential for wind driven embers to cause ignition and to reduce the effects of smoke on residents and fire-fighters.

Careful attention shall be given to species selection of landscaping near the future dwellings, their location relative to their flammability, avoidance of continuity of vegetation [separation horizontally and vertically] and ongoing maintenance to remove flammable fuels. Methods of bushfire hazard management include mowing of lawns within the immediate curtilage to the dwelling, slashing within the road reserves.

5.7.1 Fuel Management:

A diligent approach to the management of bushfire fuel levels is required to the land within the future development.

Management of the vegetation within the Asset Protection Zones shall comply with the recommendations of Appendix A5.4 & Appendix A5.5 of *Planning for Bushfire Protection 2006* and the Rural Fire Service “*Standards for Asset Protection Zones*”.

Management of the landscaped gardens within the curtilage to the future dwellings shall comply with the following:

- Maintain a clear area of low cut lawn or pavement adjacent to the buildings;
- Keep areas under fences, fence posts, gates & trees raked and clear of combustible fuels;
- Utilise non-combustible fencing and retaining wall structures near buildings;
- Separate future tree canopy and shrub connectivity with defined landscaped garden beds;
- Maintain tree canopies and shrubs so that they are clear of the building by at least five metres;
- Utilise non-flammable materials such as Scoria, pebbles and recycled crushed bricks as ground cover to landscaped gardens in close proximity to buildings;
- Maintain minimal fine fuel loading at ground level within the Inner Protection Area and landscaped area (nominally 3 tonnes / hectare);
- Trees and shrubs are acceptable provided that they are spread out and do not form a continuous canopy, are not species that retain dead material and are located away from the buildings to minimize radiant heat and direct flame attack;
- Landscape species selection shall be drawn from those that are considered to be species which are “*fire retardant*” and do not promulgate the spread of fire;

5.7.2 Management Responsibilities:

Section 63(2) of the Rural Fires Act states that ‘it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land’.

In this section; ‘*notified steps*’ means:

- (a) any steps that a bush fire risk management plan (or the Coordinating Committee) advises a person to take;
- (b) that are included in a bush fire risk management plan applying to the land.

The owners of each lot will be responsible for the maintenance of the curtilages to the dwellings to reduce the potential for fires to ignite and spread across their land and to escape onto the adjacent lands.

5.8 Adequacy of Sprinkler Systems & other Fire Protection Measures.

There are no sprinkler systems required or recommended.

5.9 Strategic Planning and Evacuation.

In correspondence to the Shoalhaven City Council [29th January 2018], the NSW Rural Fire Service raised the matter of strategic planning and evacuation, noting that strategic planning should provide for the exclusion of inappropriate development in bushfire prone areas as follows:

- A. When the bush fire risk makes it inappropriate for new development to occur;
- B. For development that is likely to be difficult to evacuate during a bush fire;
- C. For development that is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants;
- D. For development that will adversely affect other bush fire protection strategies or place existing development at increased risk; and or
- E. Where environmental constraints to the site cannot be overcome.

The letter also recommends that the revised bushfire risk assessment report should evaluate the broad principle of strategic planning for development in bushfire prone land, stating the broad principles as:

- Not all land is suitable for development in the context of bush fire risk;
- Any new development on bush fire prone land must comply with the acceptable solutions of *Planning for Bush Fire Protection*;
- Infrastructure associated with emergency evacuation and firefighting operations must be provided; and
- Appropriate ongoing land management practices must be facilitated.

The letter also suggests that the data from the TGA Traffic Study [undertaken for Shoalhaven City Council] should be incorporated into the revised bushfire risk assessment report. The matters raised by the NSW Rural Fire Service have been considered and the following responses made:

- **Strategic Planning A – When the bushfire risk makes it inappropriate for new development to occur:**

Comment:

Whilst there remains a risk from a bushfire burning in the vegetation retained within the conservation areas on the development site and adjoining lands, the fire protection measures included in the design of the new estate [e.g. complying Asset Protection Zones/perimeter roads/construction standards to the future dwellings and a road network which provides alternate routes] mitigate the risk to an acceptable level where it is appropriate to permit residential development on the site.

- **Strategic Planning B – For development that is likely to be difficult to evacuate during a bushfire:**

Comment:

The Traffic Study prepared by TDG identifies that the *“longest travel path to exit a dwelling and reach Illaroo Road is approximately 2.0km and assuming an average travel speed of 30km/h, the vehicle is expected to take approximately 240 seconds [four minutes] to traverse the midblock sections and reach Illaroo Road”*

“A vehicle evacuating from this dwelling would be required to give way at three intersections with the longest delay being at the intersection of Bimbimbie Avenue and Moondara Drive with an average delay of approximately six seconds and a total delay of 18 seconds”.

The report concludes that *“based on the above the longest time it would take for a vehicle to exit the subdivision and reach the queue to exit onto Illaroo Road would be approximately 258 seconds” [approximately 4 – 5 minutes].*

The subdivision layout being presented in the Subdivision Application is different to that proposed at the rezoning proposal [and assessed by the NSW Rural Fire Service] and now includes a road network which provides a safe exit from the central precinct via the Crown Road linking to Warrah Road.

The road layout in the eastern precinct provides alternate routes through this precinct with the main exit being beyond the Asset Protection Zone setback distance and linking to Warrah Road. This intersection will require control undertaken by Police or SES – refer to Evacuation Route Plans on Page 42 and Page 43.

Figure 15 – Evacuation Route Plan - Central & Eastern Development Precincts – early evacuation.

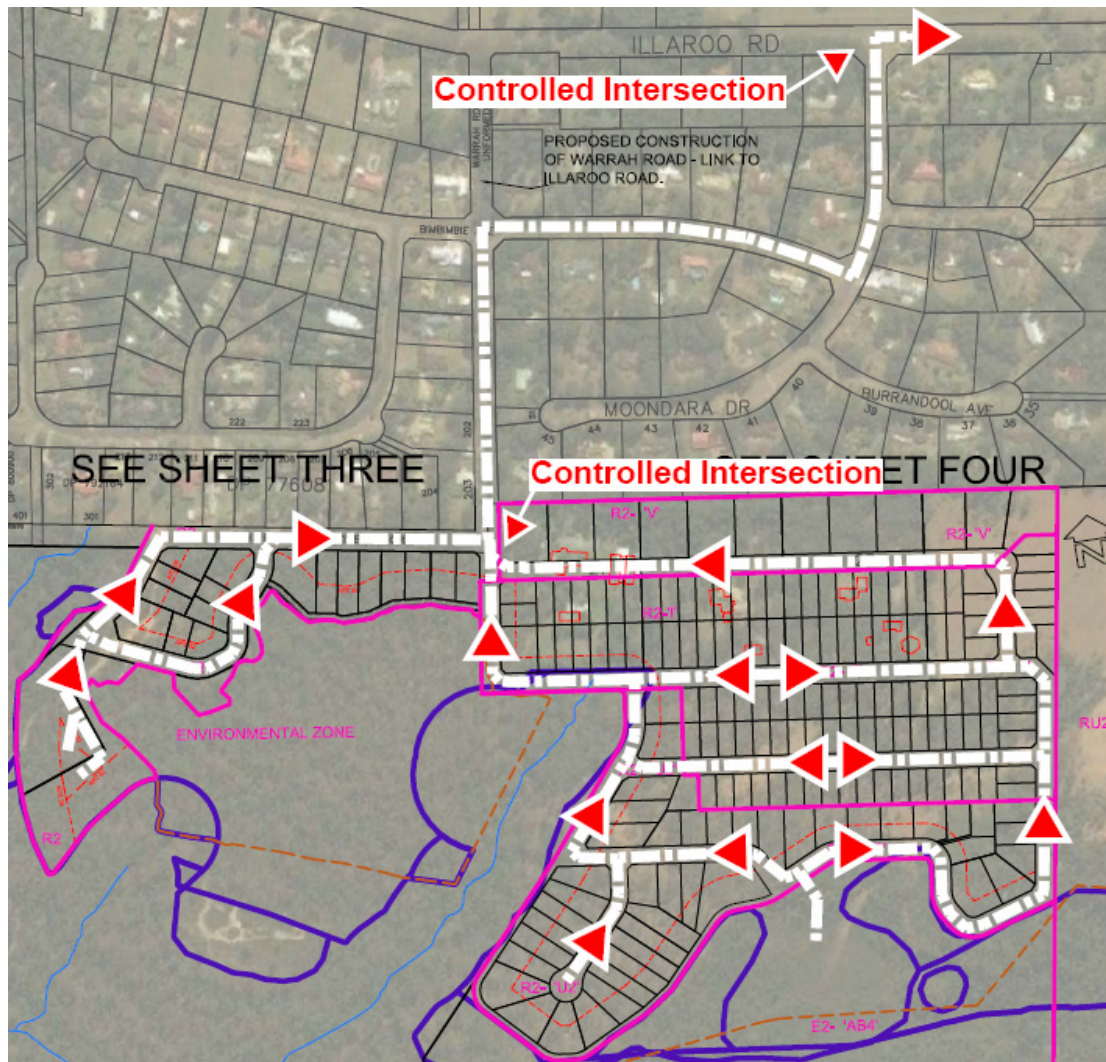
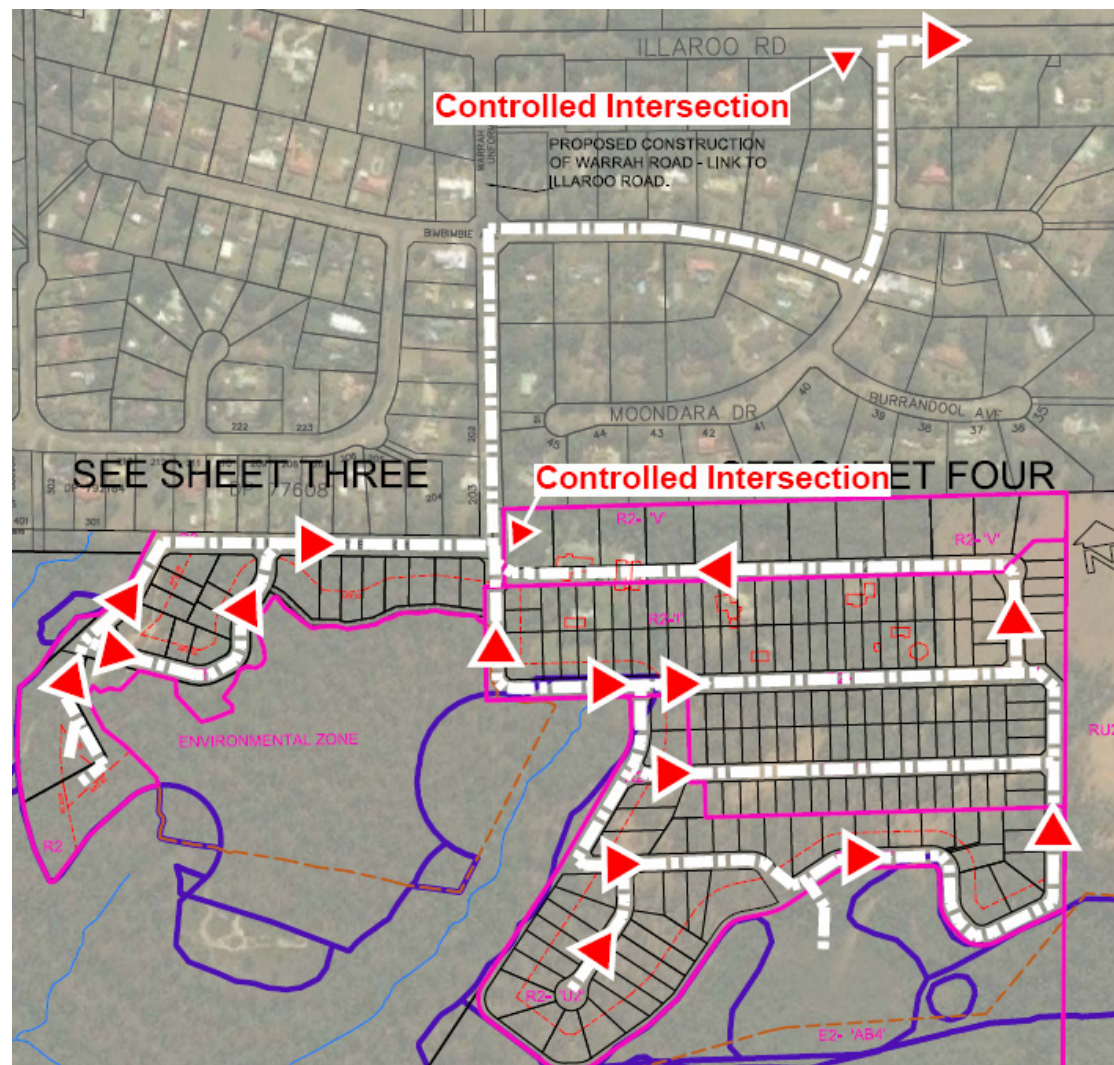


Figure 16 – Evacuation Route Plan - Central & Eastern Development Precincts – late evacuation.



- **Strategic Planning C – For development that is within an area of high bushfire risk where density of existing development may cause evacuation issues for both existing and new occupants.**

Comment:

The provision of complying Asset Protection Zones and other bushfire protection measures, including bushfire construction standards to the dwellings, mitigates the potential bushfire risk to the occupants of the estate and reduces the need to implement evacuation procedures.

Should evacuation be initiated by the Emergency Services the proposed road layout provides safe egress to the north, onto Illaroo Road.

Traffic Study prepared by TDG states:

For the purposes of this assessment, the bush fire evacuation has been assumed to occur at night when all dwellings within the study area are occupied. Using Census data it has been identified that approximately 11% of all dwellings within the Bangalee area have five or more persons residing in the premises. It has been assumed that all dwellings will generate one vehicle movement during a bush fire, with any dwelling accommodating five or more people generating two vehicle movements. Therefore, a trip rate per dwelling of 1.11 vehicles has been applied to the study area.

The study area has been broken into the areas shown within **Figure 19** in order to determine the movements at the intersections.



Figure 19: Existing Dwelling Zones

The existing areas and proposed subdivision are shown to accommodate approximately 365 dwellings, generating about 400 vehicle movements, as noted in **Table 10**.

	AREAS							Site	Total
	A	B	C	D	E	F	G		
Dwellings	66	3	6	4	22	3	10	250	364
Trips	73	3	7	4	24	3	11	278	405

Table 10: Number of Dwellings in Study Area and Trip Generation

A SIDRA analysis has then been undertaken for the intersections of Bimbimbie Avenue with Warrah Road and Moondara Drive in the event of an evacuation. The assessment has assumed that all residents will evacuate within 30 minutes. It has also been assumed that all vehicles on the road network are evacuating and using the left lane only, allowing entry by emergency vehicles. The results of the SIDRA analysis are provided within **Table 11** with the detailed results presented in **Appendix H**.

Scenarios	Degree of Saturation	Average Delay (sec)	Level of Service
Warrah Road / Bimbimbie Avenue	0.529	6.8	A
Bimbimbie Avenue / Moondara Drive	0.493	5.8	A

Table 11: Bush Fire Evacuation SIDRA Results

The SIDRA results show that the intersections are expected to operate in an acceptable manner and with minimal delays. The minimal delays are not unexpected given there has been assumed to be no base traffic during this time. Further, there is a clear dominant movement on all of the intersections allowing for relatively free-flowing traffic.

The longest travel path for a vehicle to exit a dwelling and reach Illaroo Road is approximately 2.0km based on the proposed layout of the subdivision provided within Section 7. Assuming an average travel speed of 30km/hr, the vehicle is expected to take approximately 240 seconds to traverse the midblock sections and reach Illaroo Road.

A vehicle evacuating from this dwelling would be required to give way at three intersections. The longest delay at an intersection would likely occur at the intersection of Bimbimbie Avenue and Moondara Drive which has the highest traffic volumes. The intersection was recorded to have an average delay of approximately six seconds. Adopting this delay at the three intersections would result in a total delay of 18 seconds at intersections.

Based on the above, the longest time it would take for a vehicle to exit the subdivision and reach the queue to exit onto Illaroo Road would be approximately 258 seconds. As discussed, the time taken to exit onto Illaroo Road is expected to vary depending on the extent of the wider area evacuation, the location of where people are evacuated to, and the traffic management that is implemented during an evacuation.

Based on the research/findings undertaken by TDG, the proposed development does not cause evacuation issues for the existing and new occupants and in fact development of the land within Lot 24 in DP 714096 removes the bushfire risk to the existing residential development and potentially removes the need for these residents to relocate during a bushfire.

- **Strategic Planning D – For development that will adversely affect other bushfire protection strategies or place existing development at increased risk.**

Comment:

The proposed subdivision will not affect other bushfire protection strategies or place existing development at increased risk. In fact the development of the land within Lot 24 in DP 714096 reduces/removes the risk to the existing residential development which does not contain any existing bushfire protection strategies.

- **Strategic Planning E – Where environmental constraints to the site cannot be overcome.**

Comment:

The environmental constraints have been addressed in the retention of High Conservation Value [HCV] zones within the development site and the inclusion of Asset Protection Zones located outside this zone.

For practical risk management purposes the HCV land does not require fuel reduction to reduce the bushfire risk to the future dwellings/occupants in the estate as complying bushfire protection measures are to be implemented.

SECTION 6

RECOMMENDATIONS

Recommendation 1 – Asset Protection Zones to future dwellings:

The Asset Protection Zones to the widths as shown on Figures 11 - 14 shall be maintained in accordance with the prescriptions of Appendix 5 of *Planning for Bushfire Protection 2006* and the NSW Rural Fire Service “Standards for Asset Protection Zones”.

Recommendation 2 – Positive Covenant:

A Positive Covenant, created under Section 88B of the Conveyancing Act of 1919, shall be established on the lots burdened by the provision of the Asset Protection Zones, for the management of the Asset Protection Zones in accordance with the Fire Management Plan.

Recommendation 3 – Construction Standards to future dwellings:

The future dwellings and ancillary buildings directly exposed to the bushfire hazard shall be constructed to comply with Section 3 and Section 7 [BAL 29] specifications pursuant to A.S. 3959 – 2009 – ‘Construction of Buildings in Bushfire Prone Areas’ and Addendum Appendix 3 of *Planning for Bushfire Protection 2006*.

All remaining dwellings not directly exposed to the bushfire hazard shall be constructed to comply with Section 3 and Section 5 [BAL 12.5] specifications pursuant to A.S. 3959 – 2009 – ‘Construction of Buildings in Bushfire Prone Areas’ and Addendum Appendix 3 of *Planning for Bushfire Protection 2006*.

In addition, roof gutters and valleys shall have fitted a non-combustible protection device which minimises the accumulation of combustible materials in the gutter/valley.

Recommendation 4 – Public Road Design:

The design and construction of the internal public roads shall comply with the specifications of Section 4.1.3(1) of *Planning for Bushfire Protection 2006*.

The minimum pavement width of the perimeter roads shall be 8.0 metres, kerb to kerb with ‘No Parking’ on one side with the services [hydrants] located on this side of the road and capable of carrying a fully laden Rural Fire Service Bulk Water Tanker with a GVM of 28 tonnes.

Internal roads shall be designed and constructed with a minimum pavement width of 6.5 metres, kerb to kerb and no parking to both sides.

Recommendation 5 – Fire Trail/Access Road Design:

The fire trail shall be designed and constructed to provide a trafficable width of 4.0 metres and the access road constructed to provide a one-way trafficable width of 3.5 metres and a carrying capacity of 18 tonnes GVM.

Internal radius to corners shall be 6 metres and external radius shall be 12 metres with passing bays provided at 200 metre intervals.

The fire trail/access road shall be sealed and designed to address stormwater overland flows.

Locked gates [minimum opening width of 3.6m] shall be installed at the junction of the fire trail/access road with the public road with keys to be provided by the NSW Rural Fire Service.

Maintenance of the fire trail/access road shall be the responsibility of Shoalhaven Council as part of the public road network.

Recommendation 6 – Firefighting Water Supplies & Utility Services.

The proposed subdivision shall be serviced by a reticulated mains water supply installed to meet the fire hydrant spacing, sizing and pressures to comply with the requirements of A.S. 2419.1 – 2005 in respect to the provision of fire-fighting water supplies.

Hydrants shall also be installed along the fire trail/access road. The water service to the dwelling on proposed Lot 101, Residue Lot 219 and Residue Lot 423 shall be of a size to supply a static water supply tank and fire hose reels to each dwelling.

Liquid Petroleum Gas [LPG] installations shall comply with A.S. 1596 and all fixed cylinders shall be kept clear of flammable materials for a distance of 10 metres and located in a position which is not exposed to the bushfire hazard.

Release valves shall be directed away from the building and at least 2 metres away from combustible materials. All exposed pipes, fixtures, fittings and hose connections above ground or less than 300mm below ground, shall be metal [plastic, PVC or polythene fittings are not permitted].

Recommendation 7 – ‘Bushfire Survival Plan’:

It is recommended that the future owners of the lots prepare a ‘*Bushfire Survival Plan*’ that identifies those emergencies that are likely to impact upon the estate and appropriate responses to those emergencies.

This may include protocols for the safe removal of persons to safer areas, including Nowra, prior to the arrival of any potential major fire.

SECTION 7

CONCLUSION

The proposed development consists of the Torrens Title subdivision of Lots 21, 22, 23 & 24 in DP 714096 Warrah Road and Gypsy Point Road, North Nowra.

The subdivision also includes the construction and dedication of the internal road, fire tail and access road networks and the provision and management of Asset Protection Zones to the extent as shown on Figures 11 - 14.

The vegetation within and adjoining the development site has been mapped as Bushfire Prone Vegetation, therefore Sections 4.46 & 4.47 of the *Environmental Planning & Assessment Act* applies to the proposed residential subdivision of the land and a *Bushfire Safety Authority* is required under Section 100B of the *Rural Fires Act*.

The recommendations contained within this report address the requirements of Section 44 of the *Rural Fires Regulation 2013* as a prerequisite for the issue of a *Bushfire Safety Authority* under Section 100B (4) of the *Rural Fires Act* for the subdivision application.

The report also examines and addresses to matters raised in the NSW Rural Fire Service's letter date 29th January 2018 in respect to the location of Asset Protection Zone and fuel management activities outside the High Conservation Value [HCV] areas within the estate, the strategic planning and evacuation planning issues raised.

The following table summarises the extent to which the development proposal conforms with [or deviates from] the requirements of Section 44 of the *Rural Fires Regulation 2013* and the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006* relating to the provision of:

- Asset Protection Zones to the future dwellings in the estate;
- The provision of safe access;
- The provision of water supplies for fire-fighting operations;
- Construction standards to the future buildings; and
- The management of bushfire fuels within the Asset Protection Zones.

Table 1. Compliance with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006*.

Bushfire Protection Measure	Compliance with deemed-to-satisfy provisions of <i>Planning for Bushfire Protection 2006</i>.
Asset Protection Zone setbacks	The width of the Asset Protection Zones exceed the deemed-to-comply requirements of <i>Planning for Bushfire Protection 2006</i> and provide occupants of the future dwellings adequate protection from exposure to a bushfire..
Siting & adequacy of water supplies for firefighting operations	Reticulated water supply provided complete with hydrants installed to satisfy the specifications of A.S. 2419.1 – 2005.
Capacity of public roads to handle increased volumes of traffic in the event of a bushfire emergency	Existing public roads provide for increased volumes of traffic in the event of the bushfire emergency – TDG Traffic Report.
Fire trail network	Fire trail and access road to be provided and designed to satisfy the specifications a Section 4.1.3(3) of <i>Planning for Bushfire Protection 2006</i>
Adequacy of emergency response access and egress	Complying emergency access is provided to each lot directly from the internal road network, connecting to Warrah Road North.
Adequacy of Bushfire Maintenance Plans and fire emergency procedures	A Bushfire Maintenance Plan is not required as the proposed fire protection measures do not extend onto adjoining properties or HCV land. A ' <i>Bushfire Survival Plan</i> ' shall be prepared by each property owner.
Building construction standards	Asset Protection Zones recommended reduce the expected level of radiant heat on the future dwellings to less than 29kW/m ² . The dwellings on the lots directly exposed to the hazard shall be constructed to comply with Section 3 and Section 7 [BAL 29] of A.S. 3959 – 2009. All remaining dwellings shall be constructed to comply with Section 3 and Section 5 [BAL 12.5] of A.S. 3959 – 2009.
Adequacy of sprinkler systems & other fire protection measures	Not applicable

The proposed subdivision as represented by the subdivision layout prepared by *Allen Price & Scarratts Pty Ltd* exceeds the minimum “Deemed-to-Satisfy” specifications set out in Chapter 4 (Performance Based Control) and the aim and objectives of *Planning for Bushfire Protection 2006* and affords occupants of the future dwellings adequate protection from exposure to a bushfire.



Graham Swain,
Managing Director,
Australian Bushfire Protection Planners Pty Ltd
24.08.2018

REFERENCES:

- N.S.W Rural Fire Service – *Planning for Bushfire Protection 2006*;
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2006*;
- *Environmental Planning & Assessment Act – 2017*;
- *Rural Fires Act – 1997*;
- *Rural Fires and Environmental Assessment Legislation Amendment Act 2002*;
- *Rural Fires Regulation 2013*;
- *Biodiversity Conservation Act 2016*;
- *Bushfire Environmental Assessment Code 2006*;
- *Shoalhaven Bushfire Prone Land Map*;
- Building Code of Australia;
- Australian Standard A.S 3959-2009 “*Construction of Buildings in Bushfire Prone Areas*”.