Bushfire

Services

Bushfire Assessment

Rezoning Investigations
Jerberra Estate
Tomerong
City of Shoalhaven

August 2006

Our Reference: 5047

BES
bushfire+environmental
Services

PO Box 106
St Georges Basin NSW 2540

Tel 02 4443 5555
Fax 02 4443 6655

ABN 97 597 607 196
www.b-es.com.au

BUSHFIRE ASSESSMENT

Our Reference: 5047

Rezoning Investigations

Jerberra Estate

Tomerong

City of Shoalhaven

Prepared August 2006

for

Shoalhaven City Council

PROJECT TEAM:

Rod Rose
Geoff Young
Angie Jenkins
Steve Edwards
Patrick Grady
Daniel Brkic

ACKNOWLEGEMENTS

This bushfire assessment report was prepared under contract by Bushfire and Environmental Services Pty Ltd, 7/128 Island Point Road, St Georges Basin, NSW 2540, PO Box 106. The consulting planning team included Rod Rose (Managing Director) Geoff Young (Senior Project Officer – Bushfire Division), Patrick Grady (GIS Project Officer), Daniel Brkic (GIS Project Officer), and Steve Edwards (Senior GIS Project Officer).

Eric Hollinger and Maggie Chapman (Planning Group, Shoalhaven City Council) supervised the preparation of the Plan and supplied essential background material and data.

Citation

This report is to be cited in the following manner;

Bushfire and Environmental Services 2006. *Bushfire Assessment – Rezoning Investigations; Jerberra Estate, Tomerong, City of Shoalhaven.* Report prepared for Shoalhaven City Council.

Shoalhaven City Council
PO Box 42
NOWRA NSW 2541
telephone (02) 4429 3111
facsimile (02) 4422 1816
e-mail planning@shoalhaven.nsw.gov.au
internet www.shoalhaven.nsw.gov.au

EXECUTIVE SUMMARY

The Jerberra Estate comprises 166 lots in Deposit Plan (DP) 11629, 1.5 km east of Tomerong on the Eastern side of Pine Forest Road (Figure 1). The current zoning, Rural 1(b)(Main and Arterial Road Protection Zone) and 1(d)(General Rural) under the Shoalhaven Local Environmental Plan (SLEP), does not permit the erection of dwellings on individual allotments within the Estate. This bushfire investigation and assessment report has been prepared to assist Shoalhaven City Council (SCC) in its investigation into the potential rezoning of the Estate to permit residential development. The report prepared by Bushfire and Environmental Services;

- assesses the level of bushfire threat and risk to residential development,
- assesses the current subdivision plans in accordance with NSW planning legislation relating to the development of bushfire prone lands,
- identifies constraints and opportunities to the development of the study area for residential purposes, and
- details the consequences of current legislative requirements on the rezoning and development potential of the Estate.

Bushfire risk and threat

The Shoalhaven has one of the highest incidences of bushfires in NSW. Major bushfire events occur frequently in the locality of the study area which have had periods of high intensity fire behaviour with the potential to cause loss of property. Many structures with the study area were damaged or destroyed by the bushfires in 2001. The same fires were also responsible for damaging and destroying residential dwellings and sheds in nearby villages of Huskisson, Falls Creek and Woollamia. Extensive areas of bushland are located within undeveloped crown and private lands adjacent the Estate. As a result, the risk of bushfire impact will be on ongoing threat to any residential areas within the study area.

Bushfire hazard models indicate that if a fire occurred on days with an FFDI of 80 (extreme), uncontrollable fire intensities could occur within the Estate and on adjoining lands in all wind directions. The models demonstrate that bushfire has the potential to adversely impact life and property if the Estate is developed for residential purposes. Therefore effective bushfire protection provisions need to be applied that aim to prevent flame contact (*e.g.* provision of Asset Protection Zone (APZs)), reduce radiant heat to below ignition thresholds for buildings (APZs, AS3959 building construction standards), and facilitate fire suppression and evacuation operations (*e.g.* access, water supply, and electricity supply).

Bushfire assessment

The Jerberra Estate is within bush fire prone land certified by the Commissioner of the NSW Rural Fire Service (RFS) for the area of the Shoalhaven City Council. The rezoning of the Jerberra Estates requires support from the RFS (Section 117 of the *Environmental Planning and*

Assessment Act 1979 and Ministerial Direction 19 - *Planning for Bushfire Protection*), and any residential development must comply with the specifications and requirements detailed within the RFS (2001) document *Planning for Bushfire Protection 2001*.

Planning for Bushfire Protection 2001 outlines the most recent standards for bushfire protection for built assets applicable in NSW and provides standards for;

- access to and from the development for evacuation and fire fighting,
- the provision of an adequate water supply for fire fighting,
- building setbacks, including the provision of Asset Protection Zones (APZs),
- design staging and siting of the development, and
- AS 3959 building construction standards.

With modification, the Jerberra Estate can comply with *Planning for Bushfire Protection 2001.* Modifications are necessary to provide perimeter access (Figure 11) and Asset Protection Zones (Figure 9). Service supplies (water supplies, electricity, and gas) and AS 3959 - 1999 building construction standards detailed within the assessment will also need to be applied during the construction phase.

Constraints and opportunities

The provision of APZs and perimeter access will adversely impact on the developable area, particularly the smaller allotments along the northern, north-western, south-western, southern and northeastern boundaries. This impact is mitigated by the ability to establish part of the required APZ over adjoining public roads with reserves managed in accordance with APZ specifications. Two allotments within the study area will be 'sterilised' and another three (Table 5 p.32) will be compromised with significant reductions in available building area (<400m^2 or < 20m wide). In some cases, consolidation of affected lots and adjoining lots will be required to provide sufficient area for a dwelling and associated APZ.

The provision of internal APZs (*i.e.* across allotment boundaries) is likely to be a more significant constraint to the rezoning of the Estate because APZs could generally not be accommodated within the existing individual allotments. Appropriate steps will need to be in place to ensure the establishment and maintenance of any APZ that cannot be provided within the boundaries of individual properties. This may include consolidation of lots or the provision of mechanisms in the rezoning process, Development Control Plan, and Development Application stages to ensure APZs are maintained across adjoining properties in perpetuity.

Recommendations

In order for the existing subdivision design (Figure 2) to conform to the specifications and requirements of *Planning for Bushfire Protection 2001* and thereby obtain RFS support, the

rezoning process and the draft LEP must have consideration of the bushfire protection provisions, access provisions and service supplies as outlined in Section 4 of this report.

Recommendations to reduce the impact of the constraints posed by the application of *Planning for Bushfire Protection 2001* and to further facilitate RFS support include;

1. Dwellings should be restricted to the front of the allotment to allow the establishment of APZs across neighbouring properties rather than having to ensure individual protection for a large number of scattered dwellings (refer to Figure 15).

2. Dwellings should be located as close as possible to public through roads to allow APZs to be 'clustered' (Figure 15) and to facilitate access to dwellings in the event of a bushfire.

3. No dwellings are to be placed within the perimeter APZ setbacks as shown in Figure 9.

4. Allow provisions within the rezoning process to ensure that where APZs for individual allotments cannot be provided within individual property boundaries, the remaining APZ can be / is legally provided on adjoining allotments within the study area.

5. Alternatively to recommendation 4 (above), require consolidation of lots and/or boundary adjustment so that APZs could be accommodated entirely within the boundaries of an individual property.

6. Maintain road reserves to IPA standards to allow APZ setbacks to incorporate the perimeter roads.

7. Provide access to the study area via Inglewood, Bowen Street and Jerberra Road (Section 4.2.4 and Figure 11).

8. Investigate consolidation of allotments affected by 'perimeter APZ setbacks' to allow sufficient area for building envelopes and APZs.

9. Provide a perimeter fire trail along the northern and north-eastern boundary with adequate access tracks onto Invermay Avenue and Jerberra Road and establish arrangements to ensure continual maintenance of the firetrail.

10. Re-examine bushfire protection provisions for the study area when environmental constraints are known.

11. Re-examine bushfire protection provisions if revised *Planning for Bushfire Protection* guidelines are released prior to the rezoning.

These opportunities will require further investigation and consultation, and may require modification of the existing subdivision pattern of the Estate.

ACRONYMS

APZ	Asset Protection Zone
BBP	Bushfire Behaviour Potential
BCA	Building Code of Australia
BIP	Bushfire Intensity Potential
BFMCs	Bushfire Management Committees
BFRMP	Bush Fire Risk Management Plan
BFSA	Bush Fire Safety Authority
DNR	Department of Natural Resources (NSW)
DCP	Development Control Plan
DP	Deposited Plan
EP& A Act	Environmental Planning and Assessment Act, 1979 (NSW)
EPBC Act	Environment Protection and Biodiversity Conservation Act,1999 (Commonwealth)
FFDI	Forest Fire Drought Index
IPA	Inner Protection Area
JBREP	Jervis Bay Regional Environmental Plan, 1996
JBSS	Jervis Bay Settlement Strategy
LEP	Local Environment Plan
LES	Local Environmental Study
LGA	Local Government Area
OPA	Outer Protection Area
RF Act	Rural Fires Act, 1997 (NSW)
RF&EALA ACT	Rural Fires and Environmental Assessment Legislation Amendment Act, 2002
RFS	Rural Fire Service (NSW)
RTA	Roads and Traffic Authority (NSW)
SEPP	State Environmental Planning Policy
SCC	Shoalhaven City Council
SLEP	Shoalhaven Local Environmental Plan, 1985
TSC Act	Threatened Species Conservation Act, 1995 (NSW)

CONTENTS

Tables

Figures

Appendices

1. INTRODUCTION

1.1 Background

Jerberra Estate is located 1.5 km east of Tomerong on the eastern side of Pine Forest Road (Figure 1). The Jerberra Estate subdivision was registered by the Land Titles Office in 1922. As originally registered, the Estate consisted of 166 lots, ranging in size from 1,200 m^2 to 17,500 m^2. Due to the widening of Pine Forest Road, several lots along the western perimeter are now less than 900 m^2 (Figure 2).

Under interim Development Order No.1 the land comprising the Estate was zoned part Rural 1(a) and part Rural 1(b). At the gazettal of Interim Development Order No.1 in 1964, 13 lots were held in one ownership and the remaining lots were held in another single ownership. Since 1986, many of the lots have been bought on speculation that the land would be rezoned to allow dwellings to be constructed on each individual lot. As a result, land ownership in the Estate is now highly fragmented.

Under the Shoalhaven Local Environmental Plan (SLEP) 1985, the land in Jerberra Estate is zoned part Rural 1(b) and part Rural 1(d) (Appendix 1). As a result, Shoalhaven City Council (SCC) does not have the legal ability to approve dwellings within the subject land.

On 15th December 1992, SCC resolved to prepare a Draft Local Environmental Plan (LEP) to rezone part of the Estate (hereafter referred to as the 'study area', Figure 2). At the request of the owner, 13 lots in the south-western corner of the Estate were, and still are, excluded from the rezoning investigation.

Rezoning investigations commenced but were halted when the State Government placed a moratorium on land release in the Jervis Bay region pending the gazettal of the Jervis Bay Regional Environmental Plan, 1996 (JBREP) and the (subsequent) completion of the Jervis Bay Settlement Strategy (JBSS). The JBSS, prepared by Council and endorsed by the then Department of Infrastructure, Planning and Natural Resources (DIPNR), was finalised in 2003. The JBSS states "*development potential for rural residential development will be investigated through a review of lot sizes and configuration in order to accommodate on site effluent management and meet the guiding principles and policy actions of this Strategy*."

The threat and risk from bushfire, and an assessment of planning constraints posed by bushfire related legislation was identified as requiring further investigation.

1.2 Scope and purpose

This report has been prepared to assist SCC in its investigation into the potential rezoning of the study area. The report provides background material for the preparation of a local environment study (LES) in support of a draft local environmental plan (LEP) to rezone the study area to enable

rural-residential development. The report provides an assessment of the bushfire threat and risk to the existing subdivision and has been prepared as a 'bushfire assessment' in accordance with current legislative requirements and guidelines for development within bushfire prone land, that is;

- Section 100B of the *Rural Fires Act 1997* (RF Act);
- Clause 46 of the *Rural Fires Regulation 2002*;
- Section 79BA of the *Environmental Planning and Assessment Act 1979* (EPA Act)*;*
- NSW Rural Fire Service (2001) "*Planning for Bushfire Protection: A guide for Councils, Planners, Fire Authorities, Developers and Home Owners"* (herein referred to as *Planning for Bushfire Protection 2001*); and
- Section 117 (EPA Act 1997) *Ministerial Direction No.19 - Planning for Bushfire Protection.*

The requirements and applications of each are discussed in Section 3 of this assessment.

This investigation was undertaken without consideration of environmental constraints that may become apparent through separate investigations. The retention of vegetation within the study area for the purposes of threatened species conservation, habitat corridors, riparian zones, *etc.* may require a reassessment of the bushfire issues once these constraints are known.

1.3 Aims and objectives

The objectives of the bushfire investigation and assessment are to;

1. provide SCC with an increased knowledge of the level of bushfire threat and risk to rural residential development within the study area;
2. assess the existing subdivision (Figure 2) in accordance with the NSW planning legislation and current legislative requirements, namely *Planning for Bushfire Protection 2001* and s.117 (EP&A Act) Direction 19;
3. identify measures necessary to achieve compliance with *Planning for Bushfire Protection 2001* to facilitate NSW Rural Fire Service support for the rezoning;
4. identify opportunities for and constraints to the development of the study area for rural and rural-residential purposes; and
5. detail and examine the consequences of current legislative requirements on lot-yield, provision of access, and vegetation management within the study area.

2. THE STUDY AREA

2.1 Location and description

The study area is located at Tomerong on approximately 79 hectares of partially disturbed bushland immediately east of Pine Forest Road (Figure 1). The Estate is generally bounded to the;

- north and northeast by undeveloped, forested rural land zoned "*Land of Ecological Sensitivity*" under the SLEP,
- west by Pine Forest Road, a Council road reserve, and undeveloped crown land, and
- south and southeast by rural-residential development.

An audit by Council staff in 2004 revealed that there were 65 properties within the study area that contained unauthorised structures/buildings, some of which are used for permanent occupation and many others are utilised for infrequent habitation.

2.1.1 Vegetation

The vegetation communities within the study area have been identified as Blackbutt - Spotted Gum Open Forest, Scribbly Gum – Red Bloodwood Woodland, Eucalypt Swamp Forest, Blue Gum / Bangalay Hybrid Open Forest, Large-fruited Red Mahogany Swamp Forest, and Melaleuca – Bangalay Swamp Forest (BES 2006).

Vegetation across the study area has been categorised and mapped into vegetation groups following the methodology described in Appendix 2 of *Planning for Bushfire Protection 2001.* Vegetation groups are as follows:

- Vegetation Group 1 - *open and wet sclerophyll forests*
- Vegetation Group 2 - *woodlands and heaths*
- Vegetation Group 3 - *open woodland and grassland*

A vegetation group map for the study area (and surrounds) is provided as Figure 3.

2.1.2 Terrain

The study area is gently undulating and generally rises to the centre and the western portion of the study area and falls to the north and south. Slopes are generally below 5^{o}.

A slope map for the study area (and surrounds) is provided as Figure 4.

2.2 Current zoning

The land is currently zoned Rural 1(d)(General Rural) and Rural 1(b)(Main and Arterial Road Protection) under the provisions of the Shoalhaven Local Environmental Plan 1985 (SLEP, Appendix 1). The erection of dwelling houses on individual allotments of less than 40 ha is generaly not permissible.

An area encompassing three (3) allotments (lots 98-100) in the north-eastern portion of the study area (Appendix 1) is identified as *Land of Ecological Sensitivity* to which clause 21 of SLEP 1985 applies.

2.3 Bushfire risk and threat assessment

2.3.1 General comments on Bushfire Risk

The Shoalhaven area has one of the highest incidences of bushfires in NSW, accounting for approximately half of the unplanned fires in the southern region. Major bushfire events occur frequently in the locality of the subject land, and four significant bushfires have occurred in the area over the past 20 years. Many recent fires have had periods of high intensity fire behaviour with the potential to cause loss of property. Many structures within the study area were damaged or destroyed by the bushfires in 2001. The same fires were also responsible for damaging and destroying residential dwellings and sheds in nearby villages of Huskisson, Falls Creek and Woollamia.

Extensive areas of bushland are located within undeveloped crown and private lands adjacent the Estate. As a result, the risk of bushfire impact will be an ongoing threat to any residential areas within the study area.

2.3.2 Bushfire hazard

The bushfire hazard is the potential severity of a fire. Usually measured in terms of intensity (kW/m), the factors that influence a bushfire hazard include climate and weather patterns, vegetation, and slope. Two GIS models have been prepared in the analysis of the bushfire hazard within the study area based on existing vegetation characteristics: Bushfire Behaviour Potential and Bushfire Intensity Potential.

Bushfire Behaviour Potential

Bushfire behaviour potential (BBP) is a term used to describe the potential behaviour of a fire under selected conditions at specific locations. BBP in this instance has been evaluated through an analysis of the terrain (slope and aspect) and fuel (vegetation) across the study area and surrounding lands.

The BBP model produces a map (Figure 5) containing four BBP classes of higher, medium, lower, and negligible of both the relative potential of a fire occurring under any given weather conditions and also the relative potential intensity of that fire. The mapping of areas into higher, medium,

lower, and negligible bushfire behaviour potential does not indicate how often an area will receive potentially damaging fires, or the actual intensity of a fire. It does, however, provide a basic comparative ranking indicating sites of higher and lower potential fire behaviour. It should be noted that uncontrollable fire intensities can still occur in areas with a lower ranked bushfire behaviour potential. In higher bushfire behaviour potential areas, however, fires that are difficult to control are likely to occur more often and with potentially higher intensities.

Notable features of the bushfire behaviour potential analyses are:

- the absence of large areas that have a greater risk of higher intensity fires; and
- the predominance of medium and lower risk areas for high intensity fires.

The absence of areas with a greater risk of high intensity fires can be attributed to the relatively gentle terrain across the study area. The analysis, however, does not negate the risk of potential fire impact to the study area during extreme bushfire conditions (see BIP below).

Bushfire Intensity Potential
Bushfire Intensity Potential (BIP) is a term used to describe the potential intensity of a fire under selected conditions at specific locations. Presented in Figures 6, 7, and 8, BIP has been determined through an analysis of the terrain (slope and aspect) and fuel across the study area and surrounding lands, and generated under a Forest Fire Danger Index (FFDI) of 80, maximum fuel loads for each vegetation community (NSWRFS 2001), and the McArthur (1962) fire intensity formulae. Despite the limitations posed by the accuracy of the datasets, an analysis of potential fire intensities at the interface indicates that if a fire occurred on days with an FFDI of 80 (extreme), uncontrollable fire intensities (*i.e.* fires that cannot be suppressed through direct attack methods which have expected intensities greater than 4,000kW/m,) could occur within the study area in all wind directions. The analysis also indicates that;

- the potential for higher intensity fires is greatest under extreme weather conditions and north – southeast winds and southwest - southeast winds,
- under extreme conditions and north – southeast winds, higher intensity fires (75,000 - <96,000 kW/m) will occur within and surrounding the study area.
- Areas that potentially have less intense and potentially controllable fires (<4,000 kW/m) are located within existing rural residential areas to the southeast of the study area.

The model, however, does not take into account the limited fire spread once the study area is developed for rural residential purposes and the calculated intensities may be an overestimate.

2.3.3 Bushfire damage potential

Life is threatened directly by bushfire through flame contact, radiant heat and smoke and indirectly through inappropriate evacuation procedures, the effects of wind, increased stress and

dehydration *etc*. The most obvious threat to built assets is the impact from flame contact, wind, radiant heat, smoke and burning debris on built property, infrastructure and residential dwellings. Evidence indicates ember attack is responsible for most bushfire related house fires (NSW RFS 2001 p.41). However strong winds generated by severe bushfires may drive embers into vulnerable areas of a building, preheat and dry fuels ahead of a fire, lift roofing, damage windows, and extend flames along a more horizontal plane closer to building elements. Embers can cause spotting well in advance of a bushfire and provide piloted ignition to building elements. Radiant heat can impair fire fighting operations, the health of residents, and the integrity of building elements. Flames restrict fire fighting operations, provide piloted ignition to building elements and threaten the health of residents and their capacity to evacuate the area (NSW RFS 2001).

The bushfire potential models demonstrate that bushfire has the potential to adversely impact life and property within the study area if it is developed for rural-residential purposes. Therefore effective bushfire protection provisions should be applied that aim to prevent flame contact, reduce radiant heat to below ignition thresholds for various elements of a building, minimise the potential for embers to cause ignition, and facilitate fire suppression and evacuation operations in the event of a bushfire.

2.3.4 Residual Risk

Residual risk is defined as the bushfire risk that remains after the implementation of bushfire protection measures such as asset protection zones (Section 4.1) and AS 3959 building construction standards (Section 4.3). Although residual risk can be reduced through provision of effective fire response, provision of water supplies (Section 4.4.3), and access for fire fighting purposes (Section 4.2), it is acknowledged that despite the provision of bushfire protection measures, some bushfire risk to life and property will remain and bushfires will continue to threaten life and property to some extent. Simply put, it is not possible without major environmental and/or financial impact, to develop a guaranteed level of protection for life and property for residential areas located in bushfire prone land.

3. THE PLANNING ENVIRONMENT

3.1 Legislation

3.1.1 Environmental Planning and Assessment Act (EPA Act) 1979

Section 146 Bush fire prone land

Section 146 imposes a requirement for councils, where a Bush Fire Risk Management Plan (BFRMP) applies, to identify bushfire prone land. The Commissioner of the NSW Rural Fire Service (RFS) designates, through separate guidelines (NSW RFS 2004d), what will constitute a bushfire prone area and how this is to be mapped. Councils are then required to prepare the map in accordance with the guidelines and submit the map for certification by the Commissioner. Such a map becomes the basis for planning for bushfire protection and bush-fire related development controls under the Act (described below). The designation of bushfire prone land also gives effect to the BCA requirement for construction standards as specified in AS 3959 – 1999 *Construction of Buildings in Bushfire-prone Areas* (Standards Australia 1999).

The study area is within bush fire prone land certified by the Commissioner of the RFS for the area of the Shoalhaven City Council. The bush fire prone property map (Appendix 2) is used for the purposes of section 149 of the EP&A Act and is derived by extracting from the cadastre layer each parcel, which is within, or partially within the bush fire prone land dataset.

Section 79BA Consultation and development consent - certain bush fire prone land
Part 4 of the Act relates to development control. Within land certified as bush fire prone land it functions to enable development to be protected from potential threat of bushfire through assessment and conditions. Section 79BA(1) *Consultation and development Consent – certain bushfire prone land* states that;

> *"(1) Development consent cannot be granted for the carrying out of development for any purpose (other than a subdivision of land that could lawfully be used for residential or rural residential purposes or development for a special fire protection purpose) on bushfire prone land unless the consent authority;*
>
> > *a) is satisfied that the development conforms to the specifications and requirements of Planning for Bushfire Protection, ISBN 0 9585987 8 9, produced by the NSW Rural Fire Service…., or*
> >
> > *b) has consulted with the Commissioner of the NSW Rural Fire Service concerning measures to be taken with respect to the development to protect persons, property and the environment from a bush fire"*

A consent authority must not grant approval for a residential development on bush fire prone land, unless the consent authority;

- Is satisfied that the development conforms to the specifications and requirements of *Planning for Bushfire Protection 2001;* or

- Consults with the RFS concerning measures to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bushfire.

Section 91 What is "integrated development"? and S.91A Integrated Development
S.91 and S.91A requires certain approvals prior to the consent of certain developments (as listed in s.91). In regard to development of bushfire prone lands, approval is required under s.100B of the *Rural Fires Act 1997* (RF Act, Section 3.1.2) for "*authorisation under section 100B in respect of bush fire safety of subdivision of land that could be lawfully be used for residential purposes or development of land for special fire protection purposes*."

Recent negotiations with the NSW Rural Fire Service (Appendix 5) in regard to the application of this section has determined that s.100B of the *Rural Fires Act 1997* will only apply where re-subdivision is proposed. Boundary adjustments are considered subdivision and as a result, boundary adjustments subsequent to residential rezoning will require approval under the NSW *Rural Fires Act 1997.*

In the situation where individual lots are consolidated (*i.e.* to allow building envelopes/footprints multiple lots affected by asset protection zone setbacks), s.100B RF Act will also not apply as this does not constitute subdivision (s.4B of the EPA Act).

Section 117 (2) Direction 19 - Planning for Bushfire Protection (previously S117 (2) Direction G.20)

S.117 Direction 19 - Planning for Bushfire Protection (hereafter referred to as Direction 19, Appendix 4) guides councils in the preparation of a draft LEP that affects, or is in proximity to, land that is mapped as bushfire prone land. The objectives of Direction 19 are;

- *"to protect life, property and the environment from bushfire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas*

- *to encourage sound management of bushfire prone areas."*

Direction 19 instructs councils on the bushfire matters which need to be addressed when drafting LEPs. This includes;

- consultation with the Commissioner of the NSW Rural Fire Service under s.62 of the EPA Act, and take into account any comments so made,

- draft LEPs shall have regard to *Planning for Bushfire Protection 2001,*

- compliance with numerous bushfire protection provisions where development is proposed, and

- consultation with the Commissioner of the NSW Rural Fire Service, if a draft LEP affecting bushfire prone land does not comply with the provisions of this Direction to obtain written advice from the RFS such that they do not object to the draft LEP proceeding.

Of particular relevance to the study area, Point 3(b) of Direction 19 states;

> *"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 local environment plan permit Special Fire Protection Purposes (as defined under the section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with,"*

Correspondence received from NSW RFS (Appendix 5) indicates that the RFS would not treat the development as a '*Greenfield site'* but would assess any application under Section 79C and/or Section 79BA of the EPA Act. Therefore, development within the study area should be considered '*infill development'* and potentially subject to '*appropriate performance standard'* in consultation with the RFS where APZs cannot be provided (*e.g.* building dwellings to withstand the expected bushfire attack, radiant heat barriers, and spray systems). However, it is further stated in the same correspondence, the RFS would not support the rezoning unless compliance with *Planning for Bushfire Protection 2001* can be demonstrated:

> *"…the proposed rezoning of the subject is required to comply with the Section 117 Direction 19 – Planning for Bushfire Protection. This involves compliance with Planning for Bushfire Protection 2001, including the provision of Asset Protection Zones in accordance with Table A2.2, access and egress requirements in accordance with Section 4.3 and water requirements in accordance with Section 6.4.3.*

This correspondence is considered "*consultation with the Commissioner of the NSW Rural Fire Service*" as required by the Direction.

Building construction standards (Building Code of Australia and AS 3959 – 1999)

The Building Code of Australia (BCA) is a performance based code which obtains its statutory power through the EP&A Act and EP&A Regulation 2000. The EP&A Regulation 2000 (clause 145(1)(b)) requires a certifying authority to be satisfied that the relevant requirements of the BCA will be met prior to the issuing a construction certificate (or a complying development certificate under clause 136A of the Regulation). Clause 98(1)(a) of the Regulations also states that it is a *prescribed condition* of development consent (s.80A(11) of the EP&A Act) that building work must comply with the BCA. The BCA contains both Performance Requirements and Deemed-to-Satisfy Provisions relating to the construction of buildings in bushfire prone areas. These provisions apply

to class 1, 2, and 3 buildings (as defined by the BCA) that are proposed for construction in "*designated bushfire prone areas*".

The construction requirements of AS 3959 – 1999 *Construction of buildings in bushfire-prone areas* is recognised by *Planning for Bushfire Protection 2001* as the Deemed-To-Satisfy construction standard for buildings in designated bushfire prone areas. The BCA has been amended with a NSW variation such that Appendix 3 of *Planning for Bushfire Protection 2001* provides the appropriate site assessment methodology and replaces Section 2 of the AS 3959 – 1999 when determining bushfire attack and the construction levels required to comply with the BCA.

3.1.2 NSW Rural Fires Act 1997 (RF Act)

On the 1st August 2002, *NSW Rural Fires and Environmental Assessment Legislation Amendment Act 2002* (RF&EALA Act), which amended both the *EP&A Act* and the *Rural Fires Act 1997* (RF Act) came into effect. The RF&EALA Act gave legal effect to the document *Planning for Bushfire Protection 2001* (NSW RFS 2001) (see below) and provided new processes for development approval when bushfire prone land was implicated.

RF&EALA Act provided for a formal consultative role under s.79BA of the EP&A Act (Section 3.1.1) and increased powers of the Rural Fire Service Commissioner under the RF Act in relation to the issuance of a Bush Fire Safety Authority (BFSA) for certain 'high risk' developments which are considered "integrated development" under the EPA Act (refer to Section 3.1.1 for more information). Under Section 100B of the RF Act, the Commissioner may issue a BFSA for the following development purposes:

- Subdivision of bushfire prone land that could lawfully be used for residential or rural residential purposes, and
- Development of bush fire prone lands for a 'Special Fire Protection Purpose' *e.g.* school, childcare centre, a hospital, tourist accommodation, retirement villages and for other developments as listed within s. 100B of the RF Act and the regulations.

Subdivision for residential and rural residential purposes or for special fire protection purposes shall be considered in accordance with the principles of *Planning for Bushfire Protection 2001*. The BFSA will authorise development with regard to setbacks, access, asset protection zones, provision of water supply and other matters the Commissioner considers necessary. Clause 46 (*Application of a bush fire safety authority*) of the *Rural Fires Regulation 2002* outlines the assessment process to obtain a BFSA.

The rezoning of the study area for rural-residential proposes does not constitute a subdivision (refer to Section 3.1.1) or a 'special fire protection purpose'. Section 100B will only apply where boundary adjustments (*e.g.* for the creation of perimeter roads), re-subdivision, or a '*special fire protection development*' is proposed subsequent to the residential rezoning.

***Planning for Bushfire Protection 2001* (NSW RFS 2001)**

The document *Planning for Bushfire Protection 2001* (NSW RFS 2001) clarifies the role and responsibilities of councils, developers and land owners and integrated and replaced the provisions of previous guidelines: *DUAP (1989) Circular C10: Planning in Fire Prone Areas* and *Planning for Bushfire Protection: Discussion Document*. It also provided a new site assessment and methodology, more applicable to NSW circumstances, recommended for use in place of Section 2 of AS 3959 (Standards Australia 1999). *Planning for Bushfire Protection 2001* outlines the most recent standards for bushfire protection for built assets applicable in NSW and provides standards for;

- access to and from the property for evacuation and firefighting,
- the provision of an adequate water supply for firefighting,
- building setbacks, including the provision of 'Asset Protection Zones',
- design, staging and siting of the development, and
- building construction standards.

Planning for Bushfire Protection 2001 is given legal effect through *S.79BA "Consultation and Development Consent – Certain Bushfire Prone Land"* and *S.91 "What is Integrated development'* of the EPA Act.

Specific to rural residential development, *Planning for Bushfire Protection 2001* (NSW RFS 2001 p.24) states;

> *Councils are encouraged to have a single Asset Protection Zone for rural residential areas. However, the lower densities associated with rural residential developments will mean that the provision of a single asset protection zone for the entire subdivision may not always be possible. In these circumstances, the following provisions should be applied:*
>
> - *Asset Protection Zones around individual, or clusters of buildings.*
> - *A public through road to the new rural residential subdivisions with property access roads joining directly to this road…*
> - *Consideration should be given to grouping rural residential developments into clusters that allow for establishment of Asset Protection Zones around a group of dwellings rather than having to ensure individual protection for a large number of scattered dwellings*
> - *The provision of adequate and independent static water supplies where mains water is not available.*

The existing land ownership boundaries within the study area were already in place, well before the advent of *Planning for Bushfire Protection 2001*. Therefore the subdivision design and siting principles, access provisions and proposed water supply were designed without consideration of the planning principles set out in *Planning for Bushfire Protection 2001.*

Planning for Bushfire Protection 2001 is currently under review and a revised document is expected to be released at the end of 2006. Although Direction 19 (s.117(2) of the EP&A Act) is specific to *Planning for Bushfire Protection 2001,* it is anticipated that the revised guidelines will also be adopted for the purposes of this Direction. The impact of the revised guidelines on the existing subdivision design is unknown. There may be a requirement to review the outcomes of this assessment and further review the existing subdivision design if the new guidelines are published prior to the rezoning.

3.2 Relevant Environmental Planning Instruments

3.2.1 Shoalhaven Local Environmental Plan 1985 (SLEP)

SLEP is the principal planning instrument for the City of Shoalhaven providing detailed controls on land use within the City. SLEP provides the following land use zoning for Jerberra Estate (Appendix 1);

- Rural 1(d) (General Rural) and Rural 1(b) (Main and Arterial Road Protection): Within these zones, the construction of dwelling houses on individual allotments of less than 40 hectares is generally not permissible.

- Land of Ecological Sensitivity: This is applied to an area encompassing three (3) allotments (lots 98 – 100) in the north eastern portion of the study area (Appendix 1). The objectives of clause 21 of SLEP, which relates to land so identified is to; "*minimise adverse impacts of development on natural features, including flora, fauna, landforms and other physical features, and ecological processes".* Any development on such land requires Council consent which must take into account "*the adequacy of the measures proposed by the applicant to avoid, mitigate or remedy any adverse impacts on the ecological values of the land and other land in its vicinity".*

To allow residential development within the study area, the current land-use will require rezoning and it is anticipated the *Land of Ecological Sensitivity* may be affected through the construction of dwellings, roads/firetrails, related infrastructure, and the provision of bushfire protection measures such as asset protection zones.

Clause 28 *Danger of bush fire* imposes obligations on Shoalhaven City Council not to grant consent to the development of bush fire prone land (as mapped by Council and certified by the Commissioner of the RFS) if it is of the opinion that:

a) the development may have a significant adverse effect on the implementation of:

> *(i) any strategies for bush fire hazard reduction or risk management adopted by Council, or*
>
> *(ii) any relevant provision of the Act or the Rural Fires Act 1997, and*
>
> *(b) the development, including the arrangements for access to and from the development, may constitute a significant threat to the lives of residents, visitors or emergency services personnel, and*
>
> *(c) the development may give rise to an increased demand for emergency services during bushfire events that will result in a significant decrease in the ability on the emergency services to effectively control major bush fires.*

The BIP analysis presented in Section 2.3.2 of this report indicates that if a fire occurred on days with an FFDI of 80 (extreme), uncontrollable fire intensities (i.e. greater than 4,000kW/m) could occur within the study area in all wind directions. It is therefore anticipated that;

- the proposal may give rise to increased demand for emergency services during bushfire events, and
- despite the provision of bushfire protection measures, some bushfire risk to life and property will remain and bushfires will continue to threaten life and property in the study area.

Clause 28 also reinforces the requirement to conform to the bushfire protection specifications outlined within *Planning for Bushfire Protection 2001*:

> *(3) Before deciding to grant consent to any development on bushfire prone land, the Council:*
>
> *(a) must have regard to the requirements set out in Planning for Bushfire Protection 2001…*
>
> *(b) must be satisfied that those requirements will be met as far as practicable in the circumstances.*

3.3 Other planning considerations

3.3.1 Jervis Bay Settlement Strategy, 2003

The Jerberra Estate is included as a rural-residential component of the Jervis Bay Settlement Strategy 2003 and is included in the Strategy Principles Plan which identifies a number of recommendations to resolve the small lot rural residential subdivisions in the region. The Strategy recommends that; "… *the development potential for rural residential development will be investigated through a review of lot sizes and configuration in order to accommodate on site effluent management and meet the guiding principles and policy actions of this Strategy".* Other issues identified in the strategy include environmental investigations and also bushfire protection.

The strategy highlights the need for development on land mapped as 'Bushfire Prone' to comply with legislative requirements in respect to bushfire protection. The strategy makes reference to the document *Planning for Bushfire Protection 2001* (NSW RFS 2001) and states that; "*where the rezoning of bushfire prone land for residential or rural residential use is proposed, the provisions of Section 117 (2) Direction G20- Planning for Bushfire Protection must be addressed".* The Strategy also states that the provision of APZs associated with new development are contained within developable areas and excluded from protected areas.

3.3.2 Shoalhaven District Bushfire Risk Management Plan (BFRMP)

The Shoalhaven BFRMP forms the basis for bushfire risk management in the Jervis Bay region (Shoalhaven District). Updates of the BFRMP may require consideration of the study area's rezoning.

3.3.3 NSW Rural Fire Service Planning Guidelines

Development Control Note 02 - Establishment of Easements for the Purposes of Asset Protection Zone

This Development Control Note aims to (NSWRFS 2004a p.1, Appendix 4);

> *"provide guidance for the establishment of easements under section 88B or 88D of the Conveyancing Act 1919 for the purpose of providing Asset Protection Zones (APZ) on adjoining land arising from a proposed development requiring a bush fire safety authority. In particular, the issue of exceptional circumstances in which APZs may exist on adjoining lands are considered."*

Although rezoning will not require a bush fire safety authority, the principles of the Development Control Note 2 may apply in situations where required APZ for individual dwellings within the study area cannot be contained within the property boundaries.

Easements may be required in the study area where "*a development would normally be declined due to inadequate APZs on the land to be developed and where it can be demonstrated that there is a strong likelihood of the adjoining land being developed for future residential or other compatible purposes"* or where "*easements are also required for the purposes of providing access for electricity or other services".* The creation of easements may need to occur to allow appropriate APZs to occur within the study area.

The Development Control Note also specifies the following conditions for the creation and cancellation of APZ easements:

- An easement has to have consent for all parties that is legally binding and allow for the following:

- A notice under s.66 of the RF Act to be issued to the owner of the land with the easement and will under the conditions specified in the easement be required to clear the bushfire hazard; and

- The person/s in benefit of the easement is legally responsible for the management of the APZ on the easement.

- An APZ easement can only be cancelled with the agreement of all parties affected by its establishment, including the approval of the RFS.

It is anticipated that '*exceptional circumstances'* will not apply if it affects land zoned *Land of Ecological Sensitivity* (Appendix 1) and other areas where there isn't a "*strong likelihood of adjoining land being developed for future residential or other compatible purposes*."

Development Control Note 004 - Preparation of Local Environmental Plans (LEPs) and Development Control Plans (DCPs) for bush fire prone areas.
This Development Control Note (NSW RFS 2004b, Appendix 4) aims to "*clarify the processes required in the assessment of Environmental Planning Instruments and the role of the NSW Rural Fire Service (RFS) in providing advice to councils under Section 117 of the Environmental Planning and Assessment (EP&A)Act 1979".*

For site specific LEPs, the development control note recommends that the draft LEP incorporate the provisions of the s.117 Direction 19 (Section 3.1.1) and that provisions and conditions relating to residential development cannot diverge from the requirements of *Planning for Bushfire Protection 2001.*

Development Control Note 05 - Development Consent in Bush Fire Prone Areas
This note (NSW RFS 2004c, Appendix 4) aims to "*provide a guide for persons that are preparing or assessing development applications for the construction of habitable dwellings in bush fire prone areas under section 79BA of the Environmental Planning and Assessment Act 1979 (EP&A Act)".*

Although applicable to the development stages of the study area, this control note affirms the requirement for compliance with *Planning for Bushfire Protection 2001.*

3.4 Correspondence with relevant authorities

Correspondence regarding the rezoning proposal has been received from the Department of Natural Resources (DNR), Department of Planning, Roads and Traffic Authority (RTA), and RFS. Copies of correspondence are provided as Appendix 5.

Roads and traffic authority (RTA)

The RTA provided no comments in relation to bushfire and bushfire protection of the study area, but advised that a traffic impact study must be prepared to assess the impact of the rezoning on the surrounding network.

Department of Natural Resources (DNR)

DNR identifies numerous catchment issues and stream protection measures that may affect the provision of asset protection zones and access roads within the study area. Asset Protection Zone building setbacks for vegetated riparian zones will be required. DNR also notes that many lots may require amalgamation and configuration to accommodate on-site effluent disposal. Because of these and other constraints (*e.g.* retention of vegetation, threatened species conservation, habitat corridors, visual amenity and aboriginal sites) and planning issues associated with the study area, DNR advises that an additional bushfire assessment should be prepared based on the final allotment configuration.

Rural Fire Service (RFS)

RFS states that "*the proposed rezoning of the subject land is required to comply with Section 117 Direction 19 – Planning for Bushfire Protection.*

RFS advises that a bushfire assessment should be prepared as part of the LES that addresses the requirements of *Planning for Bushfire Protection 2001.*

RFS also advises that the use of easements or planning instruments may be required to provided APZ setbacks for individual dwellings within the study area;

> *"…if some lots are not developed or the vegetation is retained then allotments adjoining these bushland areas will required additional APZ. As such consideration will need to be given to the maintenance of any APZ that can not be provided within individual property boundaries. It may be necessary to consider the establishment of easements for the provision of APZ or steps in place to ensure individual blocks are maintained as APZ prior to being developed"*

Department of Planning

The Department of Planning advises that the bushfire study should consider the bushfire considerations and actions in the Jervis Bay Settlement Strategy. The Department of Planning also advises that amendments to the existing subdivision design and subsequent bushfire protection provisions may need to be undertaken with respect to other land use studies including vegetation, environmental and onsite effluent management studies.

3.5 Summary

The rezoning of the Jerberra Estate study area requires support from the RFS (s.117 EPA Act Direction 19), and any residential development within the study area must comply with the specifications and requirements of *Planning for Bushfire Protection 2001.* This may result in the

loss of allotments and restrictions on building entitlements (*e.g.* location and size of building envelopes) especially around the perimeter of the study area.

The ability to comply with the requirements of *Planning for Bushfire Protection 2001* will be constrained by other environmental constraints (*e.g.* threatened species and endangered ecological communities) pertaining to the land. Although an assessment of these constraints is beyond the scope of this investigation, all the bushfire protection provisions required for the rezoning (and detailed in Section 4 of this report) must be considered in such an assessment.

4. BUSHFIRE PROTECTION PROVISIONS

4.1 Setbacks/Asset Protection Zones (APZs)

Asset Protection Zone setbacks (*i.e*. the separation of assets from bushfire prone vegetation) are required at the interface between all bushfire prone vegetation and built assets vulnerable to bushfire damage whether it is a single building, a group of isolated buildings or a residential/rural residential subdivision. The primary purpose of an APZ setback is to ensure that a progressive reduction of bushfire fuels occurs between the bushfire hazard and any habitable buildings within the development.

The gradient of the slope and whether it is upslope or downslope from the asset, and the type of vegetation on that slope are used to determine the size of the APZ (Section 4.1.1 and Section 4.1.2). Generally APZs incorporate an Inner Protection Area (IPA) and an Outer Protection Area (OPA) (Section 4.1.3).

As noted in Section 3.1, the RFS is unlikely to support the rezoning unless the draft LEP provides APZs to the dimensions specified in *Planning for Bushfire Protection 2001.*

Dimensions of Asset Protection Zones for the study area have been determined using methodology outlined in Appendix 2 of *Planning for Bushfire Protection 2001* (RFS 2001). Minimum dimensions for Asset Protection Zones for rural residential purposes are outlined in *Planning for Bushfire Protection 2001* (NSW RFS 2001 Table 4.1 p. 18) and are shown below.

APZ dimensions have been determined;

- from the perimeter of the study area; and
- for internal APZ setback requirements.

"Table 4.1

Minimum specifications for Asset Protection Zones (APZ) for Residential Purposes in Bushfire-prone Areas

Forests (Grp 1)		
Slope		**APZ = IPA + OPA**
> 5°	Upslope	20 = 20 + 0
5- 0°		30 = 20 + 10
> 0-5°	Downslope	40 = 30 + 10
> 5-10°		50 = 40 + 10
> 10-15°		60 = 50 + 10
> 15-18°		70 = 60 + 10
Woodlands, heaths, open scrub (Grp 2)		
Slope		APZ = IPA + OPA
> 5°	Upslope	20 = 20 + 0
5- 0°		30 = 20 + 10
> 0-5°	Downslope	35 = 25 + 10
> 5-10°		40 = 30 + 10
> 10-15°		50 = 40 + 10
> 15-18°		60 = 50 + 10
Rainforests, Grasslands, Open Woodlands, Mallee		
*Minimum separation distance of 20 m (managed understorey or grasses) required regardless of construction level for all slopes. Fire trail recommended***.**		
Distance in metres**.**		
IPA- Inner Protection Area OPA- Outer Protection Area		

4.1.1 Perimeter APZ setbacks

Table 1 and Figure 9 show the APZ building setback from the perimeter of the study area.

Dwellings around the perimeter of the study area would only be allowed outside of the APZ setback and would have to be constructed to appropriate building construction standards (refer to Section 4.3).

APZ setbacks from internal hazards would need to be individually assessed. Section 4.1.2 outlines a procedure for estimating APZ requirements from hazards within the study area. This is indicative only. Exact requirements would need to be determined at DA stage.

Table 1: Asset Protection Zone building setback dimension (Figure 9)

Direction	Lot numbers	Slope class of most influence	Predominant vegetation category	Recommended APZ setback (minimum) APZ=IPA+OPA (m)
North	Lots 55 - 60	>5-10° down slope	*Group 1 (open forest)*	**40** (=30+10)
	Lots 61 – 69 & Lots 92 – 96	0-5° down slope	*Group 1 (open forest)*	**40** (= 30+10)
	Lots 97 – 100	0-5° up slope	*Group 1 (open forest)*	**30** (=20+10)
East	Lot 100	0-5° down slope	*Group 1 (open forest)*	**40** (= 30+10)
	Lot 101, 137 & 138	0-5° down slope	*Group 2 (woodland)*	**35** (=25+10)
South	Lots 138 – 139	0-5° down slope	*Group 2 (woodland)*	**35** (=25+10)
	Lots 140 - 143	>5-10° down slope	*Group 2 (woodland)*	**40** (= 30+10)
	Lots 144, 145 and part 148	0-5° down slope	*Group 1 (open forest)*	**40** (= 30+10)
	Part Lot 148 - 151	0-5° down slope	*Group 3 (grassland)*	**20**
	Lots 152 – 156, Lot 166, Lot 36 and Lot 1	0-5° up slope	*Group 1 (open forest)*	**30** (=20+10)
west	Lots 160 – 166, Lot 11	0-5° up slope	*Group 1 (open forest)*	**30** (=20+10)
	Lots 1 - 11	>5° up slope	*Group 1 (open forest)*	**20** (= 20+0)
	Lots 39 – 46 and Lot 55	>5-10° down slope	*Group 1 (open forest)*	**40** (=30+10)

4.1.2 Internal APZs

A bushfire constraints GIS model was developed to facilitate the determination of APZs. This was considered necessary as precise APZs cannot be determined until building sites have been defined.

An interim method of determining the likely size of the APZ for any location is described below (also using Figure 10). It allows calculation of an indicative APZ for any number of potential building sites within the study area. The methodology is described below.

Step 1: Identify the building foot print or envelope where appropriate.

Step 2: For areas not adjoining bushfire prone vegetation, no setback is required. For areas adjoining bushfire prone vegetation, Figure 10 is used to determine the required APZ.

Step 3: Using Figure 10, identify a distance of 140 m into the 'bushland' from the boundary of the building envelope or footprint and using the contours overlaying the map determine

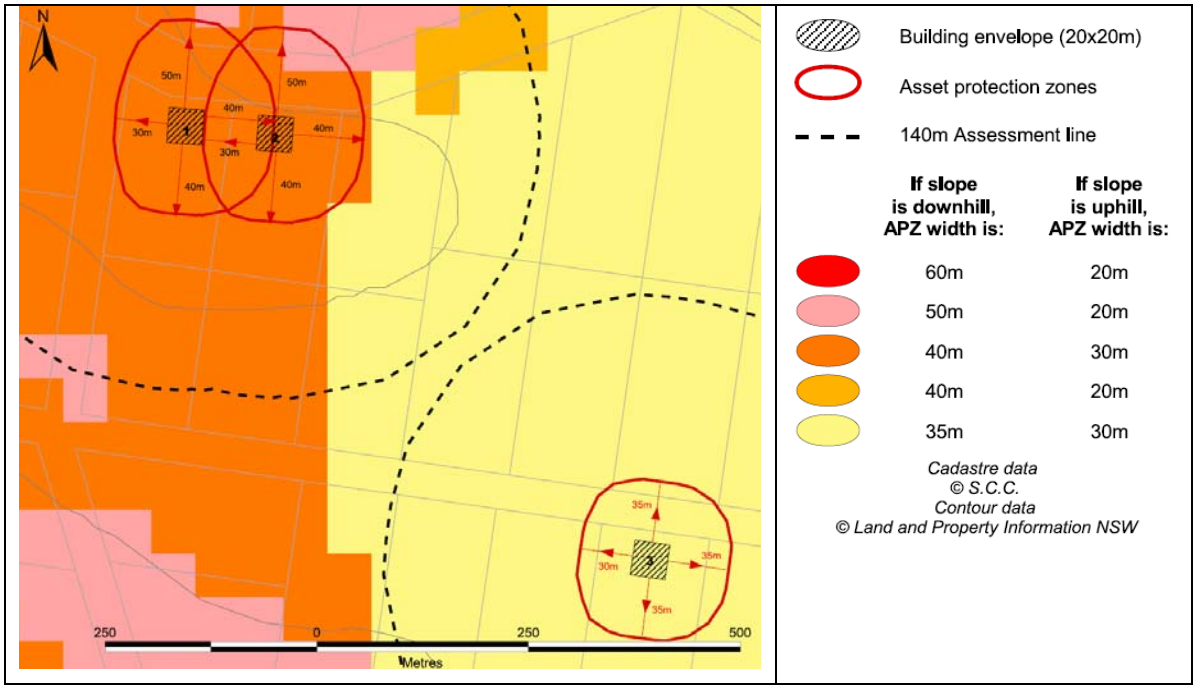
whether the slope is uphill or downhill leading away from the interface. If it is a combination of upslope and downslope, select the slope that is predominant, particularly in the first 50 m out from the area eligible for development. If the slope identified is downslope, go to Step 4. If it is upslope or flat, go to step 5.

Step 4: Using Figure 10, identify within the 140 m line obtained from Step 3, the grid square representing the largest APZ for ***downhill slopes*** (see legend in Figure 10). This distance is indicative of the APZ required for habitable building placed in the selected location.

Step 5: Using Figure 10, identify within the 140 m line obtained from Step 3, the grid square representing the largest APZ for ***uphill slopes*** (see legend in Figure 10). This distance is indicative of the APZ required for habitable buildings placed in the selected location.

Three worked examples of how to apply these steps are provided below.

Example calculation of APZ setbacks



In the above 'cut-out' from Figure 10, three examples are used to demonstrate the methodology for determining an indicative asset protection zone (APZ).

In examples 1 and 2, the contours indicate that the slope to the north, south and east is downslope from the potential house site and upslope to the west. The grid square representing the largest setback is coloured pink to the north and orange elsewhere, therefore from the map legend (above), the required APZ is 50 m wide to the north, 40 m to the and east and west, and 30 m to the west.

In example 3, the contours indicate downslope to the north, south and east from the house site and upslope to the west. The grid square representing the largest APZ is coloured yellow, therefore from the map legend (above) the required APZ is 35 m wide to the north, south, and east and 30 m to the west.

In each of these examples, the required APZs would overlap onto adjoining lots.

A similar methodology can be used to determine APZ setback from any internal reserved areas of vegetation if required (*e.g.* riparian zone reserves). This methodology is provided as Appendix 6.

4.1.3 Provision of APZs across allotment boundaries

Correspondence received from RFS (Appendix 5) advises that, in situations where APZs are required to cross into neighbouring allotments located within the study area, steps need to be put into place to ensure the maintenance of any APZ that can not be provided within individual property boundaries;

> *"Figure 3 of your letter identifies the APZ around the study area and assumes that the internal areas are developed to the extent that APZ setbacks are not required around residual vegetation. However if some lots are not developed or the vegetation is retained then allotments adjoining these bushland areas will require additional APZ. As such consideration will need to be given to the maintenance of any APZ that can not be provided within individual property boundaries. It may be necessary to consider the establishment of easements for the provision of APZ or steps put in place to ensure individual blocks are maintained as APZ prior to being developed"*

The establishment of easements for the purposes of APZ for individual developments can be cumbersome and prohibitive for the following reasons;

- All proposed easements should be assessed as per conditions specified in Development Control Note No.2 (NSW RFS 2004a, refer Section 3.3.3).

- Easements must have the consent of all parties. Where landholders of 'burdened" properties are not willing, easements cannot be created.

Section 4.1.2 and Figure 10 indicates that based on vegetation characteristics within the study area, in virtually all cases, APZs could not be accommodated entirely within individual properties. Therefore, to resolve bushfire constraints posed by the existing lot configuration, it may be necessary to either;

1. require consolidation of lots and/or boundary adjustment subdivision so that APZs could be accommodated entirely within an individual property; or

2. incorporate mechanisms into the rezoning, DCP and development application stages to ensure APZs are maintained across adjoining properties in perpetuity. Mechanisms might

include but not be limited to a LEP clause, and/or restriction as to user under section 88b of the *Conveyancing Act, 1919*.

4.1.4 Fuel / vegetation management specifications

APZs incorporate;

1. An Inner Protection Area (IPA)
2. An Outer Protection Area (OPA)

The IPA extends from the asset (*i.e*. the dwelling) to the OPA which is located adjacent to the hazard.

The purpose of the IPA is to ensure that the presence of fuels, which could be involved in a fire, are minimised close to the development. Therefore, the impact of direct flame contact and radiant heat is minimised (NSW RFS 2001). The purpose of the OPA is to reduce the intensity of an approaching fire and to restrict the pathways to the crown fuels. The OPA will also reduce the level of direct flame, radiant heat and ember attack on the IPA (NSW RFS 2001 p.16).

Typical fuel management within APZs is described below.

Inner Protection Area

- Existing larger trees (at least 150 mm in diameter measured at chest height) can remain within the APZ provided that;
    - no part of their crown occurs within 5 m of any building;
    - canopies are discontinuous, *i.e.,* canopies are separated by at least 2 m;
    - they are smooth barked species or, if rough barked, are maintained free of hanging bark and other ladder fuels; and
    - low branches holding fine fuel (*i.e.* leaves and twigs of <6mm in diameter) are pruned to 2 m from the ground.
- Smaller trees (i.e. less than 150 mm in diameter), shrubs, fallen trees and tree-limbs and stumps should be removed and continually suppressed;
- Any landscaping or plantings should preferably be local endemic mesic species or other low flammability species. The presence of a few shrubs, vegetable gardens or fruit trees is also acceptable provided that all plantings and residual vegetation are well spread out, do not form a contiguous pathway to the dwelling and do not constitute more than 5% of the total APZ area;

- A minimal ground fuel should be maintained to include either mown grass, paving, concrete, bare ground, or less than 3 tonnes per hectare of fine fuel (i.e. material of <6 mm in diameter);

- Any structures (*e.g.* fences, garden sheds, decks, pergolas) within the APZ are to be non-combustible (*i.e*. non-combustible under Australian Standard 1530.1 and not deemed combustible pursuant to clause C1.12 of volume 1 of the Building Code of Australia);

- Any structures storing combustible materials such as firewood (e.g. sheds) must be sealed to prevent entry of burning debris; and

- Gutters, roofs and roof gullies shall be kept free of leaves and other debris.

Outer Protection Area

- Trees and shrubs should be maintained in such a manner that the vegetation is not continuous,

- Fuel loadings should be kept to below 8 tonnes per hectare, and

- Grass should be maintained below 10 centimetres.

4.2 Access

4.2.1 Perimeter access

Perimeter access is required between all residential areas and vegetation that is considered bushfire prone (Figure 11). The purpose of perimeter access is to (NSW RFS 2001 p.17);

- *"provide firefighters with easier access to structures, allowing more efficient use of firefighting resources;*

- *provide a safe retreat for firefighters; and*

- *provide a clear control line from which to conduct hazard reduction or back burning operations."*

Perimeter access can be in the form of a 'perimeter road' or a 'perimeter fire trail'. All perimeter roads should have a minimum reserve width of 20 m and be constructed to the design criteria outlined in Table 3 (p.26). If a perimeter fire trail is provided, the fire trail must (NSW RFS 2001 p.17);

- be located within a perimeter reserve a minimum of 6 m wide (4 m wide trail and 1 m wide cleared area each side of the trail), with the reserve maintained in accordance with the specifications for an Inner Protection Area (Section 4.3.2),

- be trafficable by fire fighting vehicles under all weather conditions,

- have the capacity for passing (passing bays about every 200 m which are 20 m long by 3 m wide, making a minimum trafficable width of 7 m at the passing bay),
- be constructed in accordance with the design criteria outlined in Table 2 (p.26),
- link into the street network at regular intervals via an access track constructed in accordance with the design criteria in Table 2 (p. 26), and
- be maintained and in a serviceable and accessible condition at all times by the owner of the land.

Perimeter roads are preferred over perimeter fire trail (NSW RFS 2001, p.17) and perimeter fire trails are only acceptable in the following circumstances:

- Where there are clear benefits over the use of a perimeter road;
- Where they are connected to the internal road system at frequent intervals (200 m is standard); and
- Where there are arrangements to ensure ongoing maintenance.

Perimeter roads and reserves have been incorporated into the existing subdivision design (Figure 2) along most of the perimeter. Additional perimeter access is required along the northern and north-eastern perimeter as shown in Figure 11. As a result of the APZ requirements along this interface, the provision of perimeter road or fire trail is not expected to impact on the development viability of affected allotments.

Perimeter access is not required along the southern boundary as the adjoining lands are predominantly cleared and are readily accessible to fire fighting appliances. Parnell Road and Evelyn Road are considered adequate as a fire advantages for fires approaching from the south, southeast and southwest.

Perimeter road/fire trail reserves should be managed to IPA specifications (Section 4.1.4).

4.2.2 Property access roads

Property access roads to individual dwellings within the lower density areas of the study area (Figure 11) must be designed and constructed to the criteria provided as Table 2 (p. 26). The purpose of these criteria is to provide safe access and defendable space for firefighters providing property protection during a bushfire.

Short property access roads are preferable to long ones for the safety of evacuating residents and emergency service personnel, and therefore it is preferable to site dwellings as close as possible to public through roads.

Table 2: Design criteria for perimeter fire trails and property access roads

PBP guidelines (NSW RFS 2001, page 19 – 21)	
section 4.3.2 (b)	**Design criteria**
dot point 1	A minimum trafficable width of 4m with an additional 1m (minimum) wide strip kept clear of bushes and long grass.
dot point 2	The road should have a passing bay about every 200 m where possible, which should be 20 m long by 3 m wide, making a minimum trafficable width of 7 m at the passing bay.
dot point 3	The capacity of the road surface should be sufficient to carry loaded firefighting vehicles (approximately 28 tonnes or 9 tonnes per axle).
dot point 4	A minimum vertical clearance of 6 m to any overhanging obstruction, including trees branches
dot point 5	Curves should have a minimum inner radius of 6 m
dot point 6	The minimum distance between inner and outer curves should be 6m
dot point 7	Maximum grades should not exceed 15^{o} and preferably not more than 10^{o}
dot point 8	Roads should provide sufficient width to allow firefighting vehicle crews to work with firefighting equipment about the vehicle
dot point 9	Dwellings not sited within 200m of the road system should have an alternative access road providing emergency egress to the through road system.
dot point 10	Roads should be clearly signposted. Bridges should clearly indicate load rating

4.2.3 Public Road construction requirements

Public road construction standards as outlined within *Planning for Bushfire Protection 2001* will be required for all public perimeter and internal roads, and also access roads into the study area (Figure 11). The aim of these standards (summarised in Table 3) are to provide operational access and egress for emergency services personnel in suppressing a bushfire and to facilitate evacuation of an area in advance of the bushfire.

Table 3: Public road design criteria for residential subdivisions in bushfire prone areas

Planning for Bushfire Protection 2001 Guidelines **(NSW RFS 2001, page 19)**	
section 4.3.1 (b)	**Design criteria to be met for public and perimeter roads**
dot point 1	Roads two-wheel drive, all weather.
dot point 2	Roads two-way, that are, at least two traffic lane widths (8m minimum) with shoulders on each side allowing traffic to pass in opposite directions.

***Planning for Bushfire Protection 2001 Guidelines* (NSW RFS 2001, page 19)**	
section 4.3.1 (b)	**Design criteria to be met for public and perimeter roads**
dot point 3	The perimeter road should be linked to the internal road system at an interval of no greater than 500 m in urban areas*
dot point 4	Restricted use of speed humps and chicanes to control traffic
dot point 5	Roads should be through roads. Dead end roads are not recommended, but if unavoidable, dead ends should be not more than 200 m in length, incorporate a minimum 12m radius turning circle, and should be clearly sign posted as dead ends.
dot point 6	The capacity of road surfaces and bridges should be sufficient to carry fully loaded firefighting vehicles (approximately 28 tonnes or 9 tonnes per axle).
dot point 7	Curves should have a minimum inner radius of 6 m and be minimal in number to allow for rapid access and escape.
dot point 8	The minimum distance between inner and outer curves should be 6m.
dot point 9	Maximum grades should not exceed 15^0 and preferably not more than 10^0 or gradient specified by road design standards, whichever is the lesser gradient.
dot point 10	There must be a minimum vertical clearance to a height of 6 m. above the road at all times.
dot point 11	Roads should provide sufficient width to allow firefighting vehicle crews to work with firefighting equipment about the vehicle.
dot point 12	Roads clearly sign-posted (easily distinguished names) and buildings clearly numbered. Bridges should clearly indicate load rating.

** This criteria does not apply to the Jerberra Estate as it is considered rural-residential.*

4.2.4 Adequacy of access and egress

In regard to access and egress, *Planning for Bushfire Protection 2001* states (NSW RFS 2001 p.21);

> *"The public road system in a bushfire-prone area should provide alternative access or egress for firefighters and residents during a bushfire emergency if part of the road system is cut by fire.*
>
> *At least one alternative access road needs to be provided for individual dwellings or groups of dwellings more than 200m from a public through road. The routes of these roads should be selected to ensure that both roads are unlikely to be cut by a fire at the same time, to ensure there is at least one safe evacuation route available at all times.*

Short access roads are preferable to along ones for the safety of evacuating residents and emergency personnel, and therefore it is preferable to site dwellings as close as possible to public through roads."

The existing subdivision (Figure 2) and the roads leading into and out of the study area are consistent with these principles. However, a number of roads accessing the study area have yet to be created. In consideration of the above principles, access into the study area from Inglewood (west of Parnell Road and east off Evelyn Road), Bowen Street (off the council road reserve) and Jerberra Road (west off Pine Forest Road) are essential to provide suitable access and egress (Figure 11).

The provision of public road access along Greenslopes Avenue (from Evelyn Road) is also recommended but not considered essential. Environmental and traffic impacts should be considered in determining whether this road is provided.

The extension of Jerberra Road to the east is currently not warranted.

4.3 Building construction standards (AS 3959 – 1999)

Appendix 3 of *Planning for Bushfire Protection 2001* sets out the procedures for the assessment of the categories of bushfire attack at the construction stage for a building proposed within a designated bushfire prone area. Categories of bushfire attack are determined in order that application of special building requirements in accordance with AS3959 – 1999 may be applied. Currently there are five (5) categories of bushfire attack and these are described in Table 4 (p.28).

The procedure outlined in Appendix 3 of *Planning for Bushfire Protection 2001* (NSW RFS 2001 p.51) was followed to determine approximate building construction standards for class 1, 2, and 3 buildings (under the BCA) that may be built in close proximity to the boundary of the study area. This has been provided as Figure 12 and appears as "zones" around the perimeter of the study area. Dwellings within the internal areas of the study area will still require individual assessments at the construction stage. This assessment must follow the procedure outlined in Appendix 3 of *Planning for Bushfire Protection 2001.*

Table 4: Categories of Bushfire Attack and corresponding Level of Construction

Category of Bushfire Attack	Description	AS 3959 – 1999 level of building construction
Low	Minimal attack from radiant heat and flame due to the distance of the site from vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements.	Nil

Category of Bushfire Attack	Description	AS 3959 – 1999 level of building construction
Medium	Attack by burning debris is significant with radiant heat and flame attack insufficient to threaten building elements. Specific construction standards are warranted.	Level 1
High	Attack by burning debris is significant with radiant heat and flame threatening some building elements.	Level 2
Extreme	Attack by burning debris is significant and radiant heat levels could threaten building integrity.	Level 3
Flame Zone	Flames and radiant heat levels likely to significantly threaten building integrity and result in significant risk to residents who will not be adequately protected	Outside scope of AS3959 - 1999

4.4 Service Supply

During major bushfire events, the protection and preparedness of the dwelling and its occupants may be jeopardised with the loss of basic services (NSW RFS 2001). *Planning for Bushfire Protection 2001* specifies certain criteria for the provision of electricity, gas and water supplies in bushfire prone land. The supply of services to the study area must take these criteria into account.

4.4.1 Electricity

Planning for Bushfire Protection 2001 (NSW RFS 2001, p.35) specifies that the electricity supply should be underground wherever possible, however, where overhead electrical transmission lines are installed;

- lines should be installed with short pole spacing, unless crossing gullies, gorges or riparian areas, and
- no part of a tree should be closer to a powerline than the distance set out in Appendix 4 of *Planning for Bushfire Protection 2001* (provided as Appendix 7 of this report)

4.4.2 Gas

Planning for Bushfire Protection 2001 (NSWRFS 2001, p.35) specifies that the gas supply (both bottled and reticulated) should;

- be installed and maintained in accordance with AS1596 and the requirements of relevant authorities,

- be kept clear of all flammable materials, and
- have the release valve positioned away from the building and away from hazardous flammable materials so that it does not act as a catalyst to combustion.

4.4.3 Water supply

If reticulated mains water supply is to be made available to the Estate, hydrants must be installed in accordance with Section 6.4 of *Planning for Bushfire Protection 2001* (NSW RFS 2001 p.35-36), *i.e.*;

- The water supply is to be supplied to all perimeter roads via a ring main system.
- Hydrants are to be made accessible and located such that a tanker can park within a distance serviceable by a 20 m hose.
- Hydrants are to be located such that all habitable buildings are within 70 m of a hydrant.
- Fire hydrant spacing, sizing and pressures must comply with AS 2419.1 - 1994

If the reticulated mains water supply is not made available, 10,000 L static water supplies (*i.e.* water tanks) specifically reserved and adapted for firefighting purposes should be provided in allotments. The following specifications regarding water tanks are also recommended by *Planning for Bushfire Protection 2001* (NSWRFS 2001 p. 35-36);

- Tanks should be visible or have appropriate signage to notify firefighting personnel (and other residents) of their location;
- Underground tanks should have an access hole of 200 mm to allow tankers to refill direct from the tank;
- Raised tanks should have a suitable connection for RFS purposes. The local RFS should be contacted during construction to confirm local requirements; and
- Raised tanks should have their stands protected.

5. CONSTRAINTS AND OPPORTUNITIES

5.1 Constraints

APZ setbacks from unmanaged bushland (Section 4.1 and Figure 9) and access requirements (Section 4.3 and Figure 11) traditionally form the development related constraints as both have the potential to significantly reduce the area available for development and may prohibit development of certain lands (*e.g.* in situations where alternative access and egress cannot be provided, and where APZs cannot be provided on-site or are on steep slopes). Building construction standards (Section 4.2) and the provision of water and electricity supplies (Section 4.4) may be considered financial constraints rather than affecting 'lot-yield' or the amount of land suitable for development. *Figure 9: Asset Protection Zones* and *Figure 11: Access,* therefore represent the constraints for development within the Jerberra Estate study area.

The provision of perimeter APZ setbacks will affect the smaller allotments along the northern, north-western, south-western and southern boundaries. Table 5 and Figure 14 list and display allotments that will be significantly affected by APZ setbacks (*i.e.* less than 400 m^2 developable area remaining and/or very narrow) and quantifies and describes the effect of the APZ setback. It is important to note that lots with <400m^2 developable area may still allow development but will there will be significant restrictions on the location and size of the development.

Table 5 (p.32) and Figure 14 shows that four (4) allotments within the study area will have less than (<) 400 m^2 developable area remaining after the provision of the perimeter APZ setbacks (Figure 14) and one (1) will have a developable area which is relatively narrow (<20 m wide). Development of these allotments for residential purposes may not be viable. This may also have consequences on the development potential of surrounding allotments as 'unviable lots' may contain bushfire hazard for which APZ setbacks are required to be established from. For instance, if Lot 166 cannot be developed for residential purposes and contains bushfire hazard, an APZ setback will be required from the boundary of Lot 166 north into Lot 165 which will significantly affect the development potential of this lot. To avoid this situation, consolidation of 'unviable lots' and adjoining lots may need to occur to allow for the provision of APZs. Suitable lots for consolidation have been identified in Section 5.2 and Figure 13.

The provision of internal APZs (*i.e.* across allotment boundaries) is likely to be a more significant constraint to the rezoning of the Estate. *Planning for Bushfire Protection 2001* (RFS 2001p.15) states that *"Bushfire Protection measures that are essential to a development must occur on the site of the proposed development…".* Correspondence received from RFS also advises that in situations where APZs are required to cross into neighbouring allotments located within the study area, steps need to be put into place to ensure the maintenance of any APZ that cannot be provided within the boundaries of individual properties.

As demonstrated in Section 4.1.2, in virtually all cases, APZs cannot be accommodated entirely within individual properties. Section 4.1.3 identifies a number of solutions to be investigated.

However if this issue is not resolved, consolidation of lots and/or boundary adjustments may need to occur. This will result in a reduction of residential allotments within the study area.

Table 5: Lots affected through the provision of Perimeter APZ setbacks

Lot no (s).	Size of allotment	Developable area* after the provision of APZ	Comment
166	2704	0	
55	1822	17	
1	731	107	
36	2325	327	
100	11686	3706	The remaining developable area is narrow (< 20 m wide).

** Note: Table 5 has not taken into consideration front and side setbacks. Likewise no consideration has been given to the requirements for internal APZs for reasons discussed in 4.1.2 and 4.13. The developable area calculations shown in Table 5 are therefore are likely to be an overestimation.*

5.2 Opportunities

The application of *Planning for Bushfire Protection 2001* to the existing subdivision design (Figure 2) will have significant impacts on the lot yield and result in the loss of allotments and restrictions on building envelopes. There are, however, opportunities to be investigated that may reduce the impact on lot-yield. These are discussed below and are shown in Figure 13.

A. Lots may be consolidated to allow provision of building envelopes and perimeter APZ setbacks.

Lots that are significantly impacted by perimeter APZ setbacks (Table 5 p.32) may be consolidated to provide larger developable areas with sufficient area to establish required APZs. Allotments suitable for consolidation are shown in Figure 13 and include;

- Lots 165 and 166
- Lots 55 and 56
- Lots 1 and 2
- Lots 36 and 35
- Lots 100 and 99

B. Provision of a perimeter fire trail instead of a perimeter road along the northern and north-eastern boundary will significantly reduce the impact on affected allotments.

Although perimeter roads are preferred over perimeter fire trails (NSWRFS 2001 p.17), they are acceptable in the following circumstances:

- Where there are clear benefits over the use of a perimeter road;
- Where they are connected to the internal road system at frequent intervals (200 m is standard); and
- Where there are arrangements to ensure ongoing maintenance.

The obvious benefit for a perimeter fire trail, is that the intrusion into the allotments along the northern boundary for the provision of perimeter access is reduced from 20 m to 6 m (9 m where passing bays are required). This will increase the potential for residential development in allotments where appropriate Asset Protection Zones can be provided.

A secondary benefit of having a perimeter fire trail rather than a perimeter road along this boundary is that it reduces the possibility of residents evacuating along the hazard interface where firefighting operations are occurring. In this situation, Evelyn Road, Jerberra Road, Invermay Avenue and Bowen Street will provide the main egress for evacuees.

Giving consideration to the circumstances relating to the affected lots, including potential development constraints and the benefits for evacuation, the provision of a perimeter fire trail in lieu of a perimeter road should be acceptable at the northern and north-eastern boundary. The fire trail would have to be excised from individual properties to maintain free access (i.e. no fences, structures etc.). The provision of a fire trail in this location will also require arrangements that ensure continued maintenance. As such, it is preferred that management and ongoing maintenance of the fire trail is the responsibility of a single agency.

Access tracks will be required to link Jerberra Road and Invermay Avenue with the fire trail at least every 200 m (Figure 13). This is expected to encroach into an number of allotments.

6. CONCLUSIONS AND RECOMMENDATIONS

Under Direction 19, draft LEPs are to have regard to *Planning for Bushfire Protection 2001* and to comments received from the Commissioner of the RFS. Correspondence received from RFS (Appendix 5) indicates that support from the RFS would not be given unless the residential areas conform to the specifications and requirements of *Planning for Bushfire Protection 2001.*

In order for the existing subdivision design (Figure 2) to conform to the specifications and requirements of *Planning for Bushfire Protection 2001* and thereby obtain support from RFS, the rezoning process and the draft LEP must have consideration of the bushfire protection provisions, access provisions and service supplies as outlined in Section 4 of this report.

The investigation was undertaken without consideration of environmental constraints that may become apparent through separate investigations. The retention of vegetation within the study area for the purposes of threatened species conservation, habitat corridors, riparian zones, *etc.* may require a reassessment of the bushfire issues once these other constraints are known.

Recommendations

The following recommendations aim to reduce the impact of the APZs and perimeter roads on the lot yield and to further facilitate RFS support:

1. Dwellings should be restricted to the front of the allotment to allow the establishment of APZs across neighbouring properties rather than having to ensure individual protection for a large number of scattered dwellings (refer to Figure 15).

2. Dwellings should be located as close as possible to public through roads to allow APZs to be ‘clustered’ (Figure 15) and to facilitate access to dwellings in the event of a bushfire.

3. No dwellings are to be placed within the perimeter APZ setbacks as shown in Figure 9.

4. Allow provisions within the rezoning process to ensure that where APZs for individual allotments cannot be provided within individual property boundaries, the remaining APZ can be / is legally provided on adjoining allotments within the study area.

5. Alternatively to recommendation 4 (above), require consolidation of lots and/or boundary adjustment so that APZs could be accommodated entirely within the boundaries of an individual property.

6. Maintain road reserves to IPA standards to allow APZ setbacks to incorporate the perimeter roads.

7. Provide access to the study area via Inglewood, Bowen Street and Jerberra Road (Section 4.2.4 and Figure 11).

8. Investigate consolidation of allotments affected by 'perimeter APZ setbacks' to allow sufficient area for building envelopes and APZs.

9. Provide a perimeter fire trail along the northern and north-eastern boundary with adequate access tracks onto Invermay Avenue and Jerberra Road and establish arrangements to ensure continual maintenance of the firetrail.

10. Re-examine bushfire protection provisions for the study area when environmental constraints are known.

11. Re-examine bushfire protection provisions if revised *Planning for Bushfire Protection* guidelines are released prior to the rezoning.

7. REFERENCES

Bushfire & Enviromental Services 2006 *DRAFT FOR COMMENT Flora and Fauna Assessment – Rezoning investigations Jerberra Estate, Tomerong.*

Department of Infrastructure, Planning and Natural Resources (DIPNR) 2003 Jervis Bay Settlement Strategy

McArthur, A.G., 1962. *Control burning in Eucalypt Forests.* Commonwealth of Australia, *Timber Bureau Leaflet, no 7*

NSW Department of Planning 2005. PLANNING circular PS 05-009, 30 September 2005. *Section 117 Ministerial Directions*

NSW Rural Fire Service (RFS). 2001. *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.* Australian Government Publishing Service, Canberra.

NSW Rural Fire Service (RFS). 2004a *Development Control Note 02, Establishment of Easements for the Purposes of Asset Protection Zones.* NSW RFS Website at; http://www.nsw.rfs.gov.au

NSW Rural Fire Service (RFS). 2004b *Development Control Note 004, Preparation of Local Environmental Plans (LEPs) and Development Control Plans (DCPs) for Bush Fire Prone Areas.* NSW RFS Website at; http://www.nsw.rfs.gov.au

NSW Rural Fire Service (RFS). 2004c Development Control Note 05, *Development consent in Bush Fire Prone Areas Section 79BA Environmental Planning and Assessment Act 1979 (EP&A).* NSW RFS Website at; http://www.nsw.rfs.gov.au

NSW Rural Fire Service (RFS). 2004d *Guideline: Bushfire Prone Land Mapping.* NSW RFS Website at; http://www.nsw.rfs.gov.au

Shoalhaven City Council (SCC), 1985. *Shoalhaven Local Environmental Plan (With amendments made as at 6 February 2004)*. Shoalhaven City Council

Standards Australia 1999, *Construction of buildings in bushfire-prone areas, AS 3959, Second edition 1999 and Amendment 1, 2000*, Standards Australia International Ltd, Sydney

APPENDIX 1:

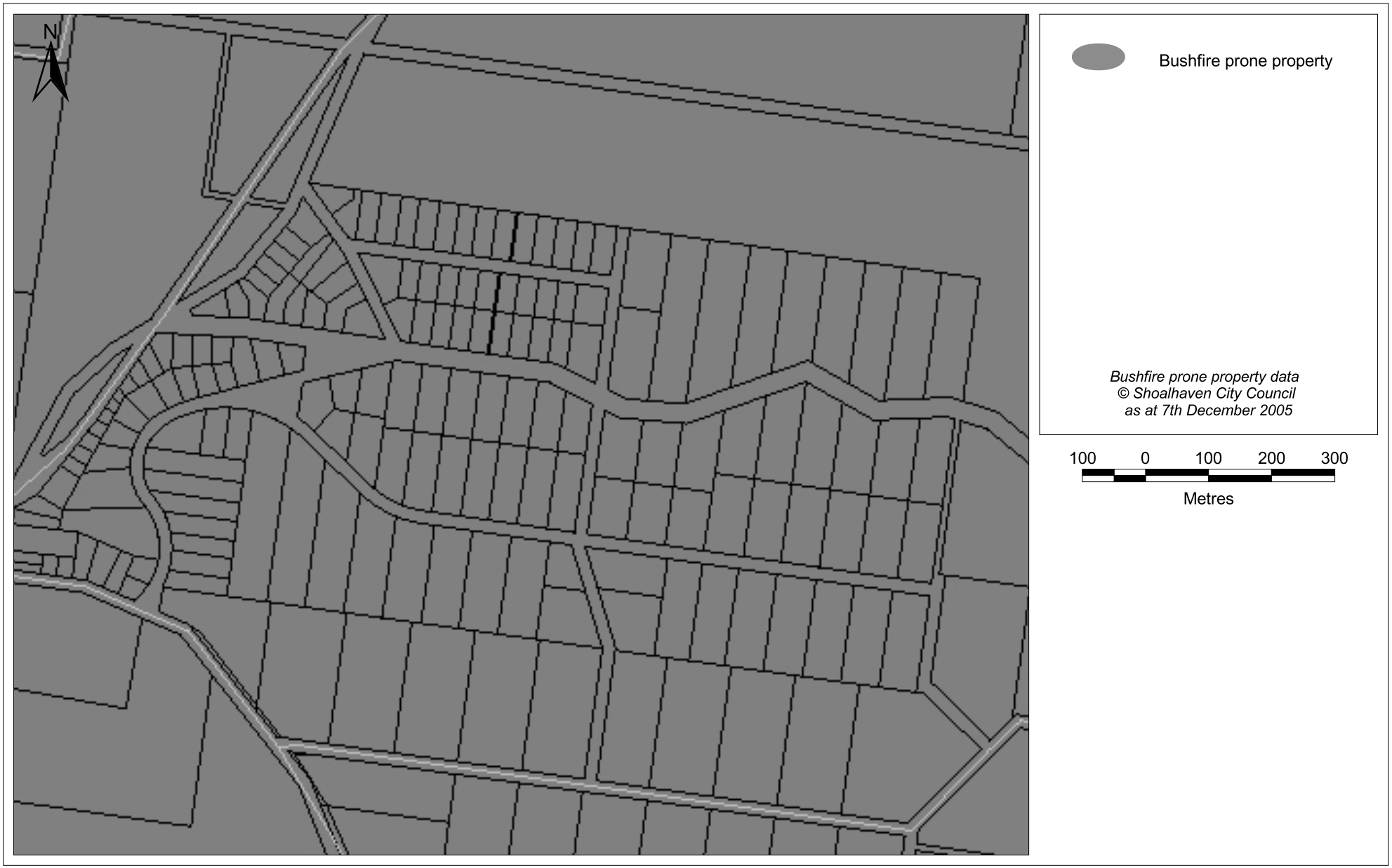
Zoning under the Shoalhaven Local Environmental Plan, 1985

Appendix 1: Zoning

APPENDIX 2:

Bush fire prone property map

Appendix 2: Bushfire prone property map



APPENDIX 3:

Section 117 (2) Direction 19

Direction No.19 – Planning for Bushfire Protection

Objective

- To protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas.
- To encourage sound management of bush fire prone areas

Where this direction applies

This direction applies to all councils that are required to prepare a bush fire prone land map under section 146 of the 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 the Act.

When this direction applies

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

(1) In the preparation of a draft local environmental plan a Council shall consult with the Commissioner of the NSW Rural Fire Service under section 62 of the Act, and take into account any comments so made,

(2) A draft LEP shall:
  (a) have regard to Planning for Bushfire Protection 2001,
  (b) introduce controls that avoid placing inappropriate developments in hazardous areas, and
  (c) ensure that bushfire hazard reduction is not prohibited within the APZ

(3) 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 local environmental plan 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, and

(4) If the draft local plan does not comply with the provisions listed in paragraphs 2 and 3, the Council must obtain 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 local environmental plan.

APPENDIX 4:

NSW Rural Fire Service development control notes

NSW RURAL FIRE SERVICE

DEVELOPMENT CONTROL NOTE 02

Establishment of Easements for the purposes of Asset Protection Zones.

This Development Control Note aims to provide guidance for the establishment of easements under section 88B or 88D of the *Conveyancing Act 1919* for the purpose of providing Asset Protection Zones (APZ) on the adjoining land arising from a proposed development requiring a bush fire safety authority. In particular, the issue of exceptional circumstances in which APZs may exist on adjoining lands are considered.

1. Background

The *Environmental Planning and Assessment Act 1979 (EP & A)* Act section 79C requires that a consent authority take into account relevant matters for consideration when determining a development application.

EP&A Act section 91 defines what are integrated developments and lists the concurrence authorities that a consent authority must refer a development application to for approval. Under this section the NSW Rural Fire Service (RFS) is required to consider whether a bush fire safety authority (section 100B of the *Rural Fires Act 1997)* for a subdivisions (residential and rural residential purposes or special fire protection purposes) should be issued.

EP & A Act section 79BA establishes the process for consultation with the RFS on developments applications within a bush fire prone area. A consent authority is responsible for approving development applications involving the erection of a new dwelling or additions/alterations to existing dwellings on bush fire prone land if they conform to the specifications of *Planning for Bushfire Protection 2001 (PfBP)*. Where development is non-complying with *PfBP* then additional protection measures are to be considered in consultation with the RFS under section of the *EP&A Act*.

PfBP outlines planning considerations that need to be taken into account when a development application is to be determined in bush fire prone areas.

EP & A Act defines bush fire prone areas as:

bush fire prone land, in relation to an area, means land recorded for the time being as bush fire prone land on a bush fire prone land map for the area.

bush fire prone land map for an area means a map for the area certified as referred to in section 146 (2).

The provision and maintenance of an APZ for new residential or special fire protection purpose (including extensions) development is not the responsibility of an adjoining land management agencies or land owners. This is particularly important where the adjoining land use would not be compatible with the purpose of the proposed development. In some cases, a duty (section 63 of the Rural Fires Act 1997) exists in relation to existing forms of development.

Where a bush fire hazard exists on or adjacent to an allotment that is to be developed, an APZ is to be established on the land to be developed between the dwelling/s and the bush fire hazard. The APZ provides a buffer between the dwellings and bush fire hazard. This ensures that there is a progressive reduction of bushfire fuels between the hazard and any habitable dwellings.

PfBP requires that, other than in "the most exceptional circumstances", APZs are to be located within the boundaries of the proposed development. *PfBP* notes that this is particularly important for new subdivision developments. This position has been consistently supported by numerous decisions of the Land & Environment Court.

NSW RFS has established principals for determining what are exceptional circumstances and the methodology for providing APZs beyond the proposed developed land. This may be achieved through the establishment of an easement on the adjoining land that has the agreement of all landowners involved being administered via an instrument under the *Conveyancing Act 1919*.

This concession is only to be applied in the most exceptional circumstances and is not to be viewed as a reason to increase the yield of a development, reduce the size of a lot or overdevelop a site contrary to the requirements of *PfBP*.

Further explanation and application of APZs can be found in *PfBP*.

2. What is the exceptional circumstances test of easements for Asset Protection Zones?

The following are considered to be exceptional circumstances that may apply to a development application for an APZ easement on adjoining land in bush fire prone areas.

- Where a development would normally be declined due to inadequate APZs on the land to be developed and where it can be demonstrated that there is a strong likelihood of the adjoining land being developed for future residential or other compatible purposes (eg staged development or Urban Development Program or Strategies with supporting development control plans).

- Where an existing special fire protection purpose development was approved prior to August 2002 and the applicant is only proposing alterations and/or additions to existing buildings and the existing APZs do not comply with current APZ requirements. In this case, the alterations/additions should lead to improved construction standards up to and including Level 3 construction under AS3959-2000 and the proposed development should not significantly increase densities of residents.

- Where easements are also required for the purposes of providing access for electricity or other services (eg Gas pipeline, water), for rights of ways, as a fire trail, for protection of a fence and for drainage which is to be kept clear of free standing vegetation. In these circumstances, the proponent will need to obtain written confirmation by the relevant authority that the easement will continue to be maintained in a suitable manner.

- Where in the opinion of the RFS officer assessing the proposed development, the existing form of development will obtain a better bushfire risk outcome than if the development did not proceed (eg through increased construction standards).

3. Easements and what they must and must not cover?

In those circumstances described above where it may not be possible for an APZ to be wholly provided within the boundaries of a property that is to be developed, an easement having the consent of all parties that is legally binding shall allow for the following:

- A notice under section 66 of the *Rural Fires Act* (RF Act) is to be issued to the owner of the land with the easement and will under the conditions specified in the easement be required to clear the bushfire hazard; and

- The person/s in benefit of the easement is legally responsible for the management of the APZ on the easement.

Easements should not be considered where the adjoining land is used for a public purpose where vegetation management is not likely or cannot be legally granted (eg national park, Council bushland reserve), where the adjoining zoning is not compatible with vegetation management (eg environmental protection, endangered ecological communities, etc) or where the onus for management rests other than with the benefiting land holder.

In any event, easements are not to be established on areas of SEPP 14 – Coastal Wetlands, SEPP 26 – Littoral Rainforests or areas of critical habitat.

Councils do not have the power to grant an easement for an APZ over land that is classified as "community land". An adjoining landowner can apply to the Supreme Court under s.88K of the *Conveyancing Act* for an easement over community land. It is understood that an easement for an APZ could be considered under s88K of the Act. There is no guarantee that the Court would grant the easement, nor that Council would not oppose the granting of such an easement. In view of this, any party considering applying for a s.88K easement would be well advised to discuss the proposal with Council and seek independent legal advice.

If the adjoining land is Crown land whereby Council is trustee or manager, Council can only grant an easement for an APZ, with the consent of the Minister for Lands. However this does not apply to land which vests in the Council under s.76 of the Crown Land Act because it is taken to be community land under the Local Government Act. Where the APZ would otherwise exist on this type of land tenure, a plan of management may provide some protection measures (see 10 below).

4. Who is responsible for the establishment of an easement?

Neither the RFS nor the Council have the power to impose an APZ on an adjoining landowner. It is therefore the developer's responsibility to negotiate with adjoining land owner/s as part of the development application process. The RFS does not have a role in these negotiations.

It is the responsibility of the developer, in conjunction with Council to ensure that the APZ proposed for the adjoining land via an easement is capable of being established on the site and does not contravene any other legislative responsibility that is applicable to the site (such as SEPP 14 – Coastal Wetlands) or exceed environmental tests of significance.

The NSW RFS requires that the terms of any easement be adequate to secure the required APZ, and meet the general terms of the RFS easement principles detailed in this Development Control Note.

The developer must demonstrate that exceptional circumstances apply to the land to be developed prior to approval for the establishment of an easement. The requirements for the establishment of an easement will be included in the conditions of approval for the issuing of a bush fire safety authority.

5. Who is responsible for the maintenance of the APZ easement?

The owner/occupier of the land that benefited by the easement shall be responsible for maintaining the APZ. An easement that has been allowed to become overgrown may result in a notice under section 66 of the RF Act being issued to the owner of the land on which the easement was established and it is for this reason that the easement is to contain a provision that provides a legal responsibility for the cost of maintaining the easement be borne by the benefiting party.

Where an APZ easement has been established to the benefit of a community title, it shall be maintained in accordance with plan of management for the community tiled land.

6. What are the APZ principals?

Whilst each development application is considered independently, the following principles may be applied:

- Each lot to be developed will be first assessed to determine its capability for providing the required APZ within its own boundaries.

- Easements will only be considered where the most exceptional circumstances test has been proven.

- For subdivisions where a building envelope has not been specified, for the purpose of determining APZs, the RFS will determine a reasonable building envelope to determine the sites capability of supporting the required APZs. The onus rests with the proponent to identify a building line or building footprint as part of the information supplied to the RFS.

- An easement on land awaiting further (residential type) development (eg. staged development strategies) should contain no more than 50% of the required APZ for the land being developed.

7. What is the approval process for establishment of an APZ easement?

The NSW RFS may suggest the establishment of an easement in regards to the issuing of a bush fire safety authority under the following circumstances:

- Where an APZ has been proposed on adjacent lands but no easement established, the RFS would consider approving the application subject to an easement being

established prior to commencement. Exceptional circumstances will first need to been proven in accordance with the principles of this Development Control Note.

- Where exceptional circumstances have been proven and an easement has been established that meets the general terms of the RFS draft easement document the RFS will consider issuing a Bush Fire Safety Authority.

- Where exceptional circumstances have been proven and an easement has been established that meets the general terms of the RFS draft easement document the RFS will recommend approval to council under section 79BA of the *EP&A Act*.

8. Who certifies easements and keeps a register?

The Certificate of Title issued by the Department of Lands – Land and Property Information Division will indicate that an easement exists on a site.

Easements that have been established or are to be established will be reviewed by the RFS and approved through the development consent process by the appropriate local Council.

The Land Titles Office will register any new easements which will run with the title of the land for the period specified.

9. How can an easement be cancelled?

An APZ easement can only be cancelled with the agreement of all parties affected by its establishment, including the approval of the RFS.

10. What alternatives are available to the establishment of an easement?

An APZ may be accepted on adjoining managed lands (eg Council Park) provided a Plan of Management has been supplied that meets the requirements for the maintenance of the APZ eg inner or outer protection area requirements. The plan must include the cyclic maintenance regime for the area to be considered as an APZ. This documented evidence is to be provided as proof, prior to any approval being accepted as part of an APZ. Although a land management agency has a duty to protect existing developments, these agencies are neither required nor responsible for the provision of an APZ for new residential subdivisions or special fire protection purpose developments unless they it is already considered appropriate for other management purposes (eg a fire trail or fire break for an existing pattern of development).

11. Attachments

NSW Rural Fire Service 2003 Draft Easement Instrument setting out terms of easement intended to be created pursuant to section 88B of the *Conveyancing Act 1919*, as amended.

Further Information

Should you require any further information on this matter, please contact Development Control Services on (02) 8741- 5422 during normal business hours.

Rob Rogers
Executive Director, Risk Management

INSTRUMENT SETTING OUT TERMS OF EASEMENT INTENDED TO BE CREATED PURSUANT TO SECTION 88B OF THE *CONVEYANCING ACT* 1919, AS AMENDED

Lengths are in metres **Sheet 1 of 4 sheets**

PART 1

Plan	Plan of easement within **[insert title details of Lot Burdened]**
Full name and address of Proprietor of the Land	**[insert details here]**
1. Identity of Easement firstly referred to in the abovementioned plan.	Easement for Asset Protection Zone ***[X]*** metres wide ***[insert such further description as necessary]***

SCHEDULE OF LOTS, ETC AFFECTED

Lot Burdened	**Lot Benefited**
[insert title details]	***[insert title details]***

PART 2

Terms of Easement for Asset Protection Zone firstly referred to in the abovementioned plan

1. Full and free right for every person who is at any time entitled to an estate or interest in the Lot Benefited or any part thereof ("**grantee**") and every person authorised by the grantee, from time to time, and at all times to enter onto the Lot Burdened within the site of the easement indicated on the plan ("**Asset Protection Zone**"), together with the right to carry out bushfire hazard reduction work in the Asset Protection Zone to manage or reduce the bushfire hazard to the improvements on the Lot Benefited and to do anything reasonably necessary for that purpose including but not limited to:

   (a) the establishment or maintenance of fire breaks within the Asset Protection Zone;

   (b) the controlled application of appropriate fire regimes or other means for the reduction or modification of available fuels in the Asset Protection Zone to mitigate against the spread of a bushfire;

   (c) entering upon and obtaining access to the Asset Protection Zone at any time with surveyors, workmen, vehicles, materials, machinery or implements or any other necessary things or persons; and

   (d) placing and leaving on while work is being undertaken, or removing from, the Asset Protection Zone all necessary materials, machinery, implements and other things.

2. In exercising its rights the grantee must:

   (a) ensure that all work is done properly;

PART 1

Plan Plan of easement within **[insert title details of Lot Burdened]**

(b) cause as little inconvenience as is practicable to the registered proprietor of the Lot Burdened and any occupier of the Lot Burdened;

(c) cause as little damage as is practicable to the Lot Burdened and any improvement on it;

(d) make good within a reasonable time any damage it causes to the surface of the Lot Burdened and any improvement on it; and

(e) restore the Lot Burdened as nearly as practicable to its former condition and make good any collateral damage.

3. The registered proprietor of the Lot Burdened must not:

(a) do or neglect to do or permit or suffer anything to be done which may result in the Asset Protection Zone being interfered with or comprised in terms of its capacity to reduce the bushfire hazard to the improvements on the Lot Benefited; or

(b) erect or permit to be erected any building or other erection of any kind or description on over or under the Asset Protection Zone or carry out any form of construction affecting the surface, under surface or subsoil of the Asset Protection Zone or place any item whatsoever upon the surface of the Asset Protection Zone which may obstruct or interfere with access to the Asset Protection Zone without the prior written consent of the grantee or interfere with the capacity of the Asset Protection Zone to reduce the bushfire hazard to the improvements on the Lot Benefited.

4. The grantee and the registered proprietor of the Lot Burdened covenant and agree that:

(a) the grantee will maintain the Asset Protection Zone being the subject of this easement so that the Asset Protection Zone possesses at all relevant times the following characteristics:

[insert details/requirements of APZ for the particular property]

The cost of such maintenance and repair shall be borne by the grantee;

(b) the grantee is to undertake routine maintenance of the Asset Protection Zone and must repair any damage it causes to the Lot Burdened;

(c) the grantee indemnifies and keeps indemnified the registered proprietor of the Lot Burdened against all actions suits claims and damages of whatsoever nature which may be brought against the registered proprietor of the Lot Burdened to the extent that they arise because of the exercise by the grantee of its rights under this

PART 1

Plan: Plan of easement within **[insert title details of Lot Burdened]**

easement and all costs charges and expenses which the registered proprietor of the Lot Burdened may incur as a result of any act or omission of the grantee to the extent that they arise because of the exercise by the grantee of its rights, or the grantee's failure to comply with its obligations, under this easement; and

(d) without limiting 4(c) above, the grantee and the registered proprietor of the Lot Burdened acknowledge that, from time to time, the local authority for the Land under the *Rural Fires Act* 1997 ("**Rural Fires Act**") or the Commissioner under section 12A of the Rural Fires Act may issue notices to the registered proprietor or occupier of the Lot Burdened in respect of the Land pursuant to section 66 of the Rural Fires Act.

Where a notice referred to in this clause 4(d) is issued to the registered proprietor of the Lot Burdened, the registered proprietor must provide a copy of the notice to the grantee as soon as practicable after receiving the notice;

Upon receipt of a copy of the notice referred to in this clause 4(d), the grantee must comply with the terms of such a notice:

(i) within the time specified in the notice; and

(ii) at the grantee's expense.

Where:

(i) the grantee fails to comply with the terms of a notice referred to in this clause 4(d); and

(ii) the local authority or the Commissioner elects to perform the work the subject of such a notice; and

(iii) the local authority or the Commissioner seeks to recover the costs of performing such work from the registered proprietor of the Lot Burdened, pursuant to section 70 of the Rural Fires Act,

the grantee indemnifies the registered proprietor of the Lot Burdened from any costs, liabilities, suits or other actions which may arise by virtue of the operation of section 70 of the Rural Fires Act; and

(e) the grantee agrees that the use will be abandoned and the Easement will be released if:

(i) the grantee intends to permanently cease using the Asset Protection Zone; or

INSTRUMENT SETTING OUT TERMS OF EASEMENT INTENDED TO BE CREATED PURSUANT TO SECTION 88B OF THE *CONVEYANCING ACT* 1919, AS AMENDED

Lengths are in metres **Sheet 4 of 4 sheets**

PART 1

Plan Plan of easement within **[insert title details of Lot Burdened]**

(ii) the local authority or the Commissioner under the Rural Fires Act gives notice in writing to the grantee or the registered proprietor of the Lot Burdened that an Asset Protection Zone is no longer required on the Lot Burdened;

(f) the terms of the Easement may not be varied except with the prior written agreement of the Commissioner of the New South Wales Rural Fire Service ("**RFS**") from time to time, or the successor of the RFS.

If there is a dispute relating to the need to carry out work under this easement or the nature of the work, that dispute shall be determined by a single arbitrator (being a barrister of at least five (5) years standing) appointed under the *Commercial Arbitration Act* 1984 (NSW) whose determination shall be conclusive. The costs incurred in the determination of such dispute shall be borne by the parties equally or in the proportions determined by the appointed arbitrator.

EXECUTION:

Executed by **[insert name of owner of Lot Burdened]** by or in the presence of:

Signature of Director

Signature of Secretary/other Director

Name of Director in full

Name of Secretary/other Director in full

NSW RURAL FIRE SERVICE

DEVELOPMENT CONTROL NOTE 004
Preparation of Local Environmental Plans (LEPs) and Development Control Plans (DCPs) for Bush Fire Prone Areas

This Development Control Note aims to clarify the processes required in the assessment of Environmental Planning Instruments and the role of the NSW Rural Fire Service (RFS) in providing advice to councils under Section 117 of the *Environmental Planning and Assessment* (EP&A) *Act*, 1979.

1. The process for referral of LEP's and DCP's

Minister for Planning issued a revised section 117 Direction for bushfire protection to councils required to prepare a bush fire prone land map. As a requirement of s117 Direction G20 – Planning in Bushfire Areas, these councils must consult with the Commissioner when preparing a draft LEP for land identified as bush fire prone. This shall be undertaken in accordance with the RFS Service Standard 4.1.3 Environmental Planning Instruments available on the RFS website www.rfs.nsw.gov.au

This Direction applies to both new and draft LEPs that are being prepared by councils. If an LEP does not comply with the provisions listed in item 2 of Direction G20, then council must obtain written advice from the Commissioner of RFS, to the effect that, notwithstanding the non-compliance, RFS does not object to the progression of the draft local environmental plan. Council must take into account the comments made by the RFS and have regard to *Planning for Bushfire Protection (*PBP).

DCPs are prepared by local councils to provide further detail to the implementation of the provisions of LEPs. If a council intends to prepare a DCP that does not comply with PBP, then they are required to consult with the RFS.

Further explanation of the requirements of LEPs and DCPs can be found in PBP.

2. What information is to be included in the Council area wide LEP

Council should consider including the following 'standard' bushfire clause for a local government area wide LEP for those councils required to prepare a bush fire prone land map:

1. "This part applies to land identified as bush fire prone land on the Bush Fire Prone Land map prepared pursuant to Section 146(2) of the *EP&A Act 1979*, and certified by the Commissioner of the NSW Rural Fire Service.

2. In deciding whether to grant consent to any development on bush fire prone land, council shall:

    i. have regard to, and be satisfied that, the relevant provisions of the *Rural Fires Act 1997*, the *EP&A Act 1979*, and the PBP guideline, or such Acts, Regulations or guidelines as may replace these, have been met; and

    ii. consider whether the measures adopted to avoid or mitigate the threat from bushfire, including siting of development, design and construction of structures, clearing of vegetation, provision of Asset Protection Zones, landscaping and fire control aids such as roads and water supplies, are adequate for the locality; and

    iii. consider the potential environmental impacts of measures proposed to avoid or mitigate the threat from bushfire."

The definitions below appear in the amended *EP&A Act 1979*. Councils may choose to restate them in their LEP but are advised not to create different definitions.

bush fire prone land, in relation to an area, means land recorded for the time being as bush fire prone land on a bush fire prone land map for the area.

bush fire prone land map for an area means a map for the area certified as referred to in section 146 (2) of the EP&A Act 1979.

3. What provisions apply to exempt and complying development?

It is important to be aware of planning controls within LEP's and DCP's that place inappropriate developments in hazardous areas and allow for the placement of combustible materials in Asset Protection Zones. Of concern are non-habitable combustible buildings such as pergolas, awnings and cabanas that may be attached to dwellings or placed within Asset Protection Zones. Councils should require these structures to be placed away from any dwelling or require the use of non-combustible materials.

In bush fire prone areas the levels of construction for dwellings should comply with the provisions of Australian Standard 3959 (AS 3959) *Construction of Buildings in Bushfire Prone Areas*. Where the construction of a dwelling falls outside the scope of AS3959 (eg flame zone), councils are required to obtain a recommendation from the RFS.

Residential development should not be designated as complying development within bush fire prone areas unless the development meets the performance criteria outlined within PBP and conforms to AS 3959.

The clearing of vegetation for the purpose of maintaining an Asset Protection Zone should not be prohibited.

4. What are the provisions and conditions for site specific LEPs and DCPs

It is recommended that any site-specific LEPs and DCPs (such as rezoning) incorporate the provisions of the Minister For Planning's s117 Direction "G20 – Planning For Bush Fire Protection" (provision 3 a to h).

In existing or new LEPs or DCPs any references to "fuel free and fuel reduced" should be amended to Inner Protection Area and Outer Protection Areas in accordance with PBP.

Provisions and conditions relating to residential development cannot diverge from the requirements of PBP or AS 3959.

Further Information

The information contained in this document was prepared by Development Control Services of the RFS. Should any further information be required please contact an officer on (02) 8845 3571 during normal business hours.

Rob Rogers
Executive Director, Risk Management

NSW RURAL FIRE SERVICE

DEVELOPMENT CONTROL NOTE 05
Development Consent in Bush Fire Prone Areas
Section 79BA *Environmental Planning and Assessment Act 1979* (EP&A)

This Development Control Note aims to provide a guide for persons that are preparing or assessing development applications for the construction of habitable dwellings in bush fire prone areas under section 79BA of the *Environmental Planning and Assessment Act 1979* (*EP&A Act*).

Background

These business rules cover a range of issues involved with the assessment of development applications for habitable dwellings in bush fire prone areas. Areas covered include:

- general matters such as the application of building construction standards and terminology
- specific cases where experience has shown possible difficulties in interpreting or applying the provisions of *Planning for Bushfire Protection 2001* (*PfBP*)
- situations that were not foreseen at the time of preparation of *PfBP*.

These rules provide a process that should assist in ensuring such development application determinations are consistent and are considered in an expeditious manner.

Where development is proposed on bush fire prone land, one of two-development assessment processes apply. These two assessment processes are shown below and depend on the type of development proposed:

- Development that requires a bush fire safety authority from the NSW Rural Fire Service (RFS) which becomes 'integrated development' under s91 of the EP&A Act; and
- Development that does not require a bush fire safety authority (notably Building Code of Australia Class 1, 2, and 3 buildings) under section 79BA of the *EP&A Act* (and s.79C).

What conditions apply to s79BA?

Section 79BA of the *EP & A Act* requires that a consent authority (council or the Department of Infrastructure, Planning and Natural Resources [DIPNR]) not grant approval for a development application for any purpose (excluding matters under section 100B of the *Rural Fires Act 1997*) on bush fire prone land, unless the consent authority is satisfied that:-

a. the development conforms to the specifications and requirements of *PfBP* produced by the NSW Rural Fire Service; or
b. consults with the Commissioner of the NSW Rural Fire Service concerning measures to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bush fire.

Therefore under section 79BA the consent authority is only required to consult with the RFS when a proposed development does not comply with *PfBP*.

Advice from the RFS is intended to provide a performance-based assessment to assist the consent authority in their final determination of the proposal.

What types of development are covered by s79BA?

In practice, the scope of *PfBP* is directed to the subdivision of land and the construction of buildings of Class 1, 2 or 3 under the Building Code of Australia where the land is identified as being bush fire prone. In addition, Class 10 buildings that form an addition to or extension of a Class 1, 2 or 3 building are also covered. These Class 10 buildings include decks, patios and attached pools and garages. Items such as antennae, clothes lines, swimming pools, fencing and awnings may be exempt development and do not get captured under s79BA.

In many cases, Class 2 and 3 buildings used in conjunction with special fire protection purposes or subdivisions will not be subject to the provisions of section 79BA (see below). For all other purposes Class 2 or 3 buildings will be subject to section 79BA consideration.

As such, most s79BA matters are likely to be Class 1A or 1B buildings. Dual occupancy dwellings, not subject of a subdivision, will therefore be covered under section 79BA when either of the dwellings is unable to meet the requirements of *PfBP*.

What developments are not covered by s79BA?

The subdivision of land for a residential or rural-residential purpose or development identified as a special fire protection purpose is not subject to section 79BA of the *EP&A Act*. These matters are considered to be integrated development and subject to section 91 of the *EP&A Act*.

Integrated developments require the issuing of a bush fire safety authority from the RFS under section 100B of the *Rural Fires Act 1997*. Head Office (HO) of the RFS issue a Bush Fire Safety

Authority in consultation with RFS District or Zone staff as appropriate. These matters will be subject of another RFS Development Control Note.

The principles of *PfBP* can be applied to other development types (eg commercial, industrial development), but such development types are not subject to the legislative requirements of section 79BA. As such, all forms of subdivision, buildings used for special fire protection purposes and buildings of Class 4-9 and Class 10 building which are detached from the principle residence (ie separation greater than 10 metres) are not subject to section 79BA.

What is the RFS application processing period?

The RFS will aim to process s79BA development applications within 14 days from receipt of the application from the respective consent authority. The assessment time may vary where the RFS is of the opinion that insufficient information has been provided for the application to be assessed or where other issues require resolution.

What does "insufficient information" mean?

Insufficient information is where a development application cannot be processed due to lack of information provided by the applicant and/or the council. It should be emphasised that the decision making process under section 79BA is one for council and the RFS is acting as an advisor to Council only where the application does not comply with *PfBP*.

Council should refer a development application back to the applicant if insufficient information has been provided to permit a determination.

Likewise an application referred by council to the RFS that has insufficient information will be returned back to council for onward transmission to the applicant.

The assessing officer may seek clarification or additional information on how a particular aspect of the proposal will be addressed (e.g. access, water, bush fire mitigation proposals). This provides the assessing officer with the opportunity to appreciate the merits of the proposal rather than recommending refusal or the imposition of unnecessary conditions.

The effect of this action will suspend the assessment process until the appropriate information has been received (clock is stopped). On receipt of the appropriate information the assessment process will be recommenced (clock is restarted) and the development proposal will be processed.

Although Section 79BA is not subject to specific statutory timeframes, an applicant can still appeal a council's failure to determine a matter under section 96 of the *EP&A Act*. The RFS seeks to provide an answer to Council within 14 days of receipt of a section 79BA application. This timeframe will apply whether or not the matter is listed in the Land and Environment Court for determination.

What is infill development?

Development applications in bush fire prone areas, involving the erection of Class 1, 2 or 3 buildings (or Class 10 additions/extensions to these buildings), are generally considered infill developments where the land was subdivided prior to the 1 August 2002. In the case of dual occupancy that do not comply with PfBP, these developments are not considered infill where they interface with the bush, as they increase residential densities above the existing pattern of a subdivision.

Infill development may not readily allow for asset protection zones or access provisions to be applied consistent with *PfBP*. In these cases greater emphasis on construction standards, landscaping, siting, and vegetation management practices may be recommended to ensure improved levels of protection are afforded to the development, its occupants and fire fighters. However reliance on construction standards alone will not provide appropriate levels of safety for the development. (Section 4.6 *PfBP*). As such, some minimal asset protection zones will be required which will vary from one site to another.

While the RFS will make every effort to accommodate an infill development proposal, the RFS will not support developments that are considered to place residents and/or fire fighters at an excessive risk arising from bushfire.

What constitutes approval with conditions?

Where a proposed development conforms to all of the requirements of *PfBP*, council would normally assess these applications without consulting the RFS. Where the applicant on advice from council amends the proposal or the council requires compliance with *PfBP* under section 79C *EP&A Act* considerations, then a referral to the RFS is also not required.

Where development proposals do not or are unable to meet *PfBP*, council shall consult the RFS for its assessment and any recommendations. A bushfire assessment report submitted with a development application that identifies the bushfire threat and relevant appropriate protection measures to be taken to reduce the impact of a bushfire will be considered by the RFS. The RFS may prepare a list of specific requirements that are relevant to the development application.

When are development applications recommended for refusal by the RFS?

In assessing an application that does not comply with *PfBP*, the RFS may recommend refusal of the proposal. Where a proposal is being considered for refusal, the RFS will carry out an internal review process to validate its position. This review process will include the following:

a) Where a district/zone RFS office assesses an application as not complying with *PfBP* and refusal is being considered, a report will be forwarded to RFS Development Control Services (at HO) for review before any recommendations are made to council. Council should be advised that the matter has been referred to HO for further deliberation.

b) RFS Development Control Services will re-assess any referred applications and where supported the relevant council will be advised of the recommendation for refusal. The Executive Director Risk Management of the RFS will be advised of all refused applications.

c) If Development Control Services on re-assessing a referred application consider that on bushfire grounds it should proceed, the relevant council and District/zone office will be advised of the determination and any applicable conditions.

d) If the RFS assessing office and/or Development Control Services is of the opinion that although the proposed development cannot comply with *PfBP*, there is an opportunity for considering an alternative proposal to that submitted, council is to be advised of this and be requested to encourage the applicant to resubmit a modified proposal where bushfire is the only outstanding consideration. These refusals do not required district/zone RFS office referral to HO Development Control.

Examples of circumstances for recommending a refusal include:

- A single parcel of land whilst being suitable for the erection of a single dwelling may not be suitable for dual occupancy. The determining factors for a second dwelling will be whether the proposal has suitable provision for asset protection zones, access and water. If the effect of the proposal is that asset protection zones, access and water will be less than that required by *PfBP* then a second (or subsequent) dwelling should be recommended for refusal.

- Where a building is being built closer to a hazard than the existing pattern of development or where the APZ requirements of *PfBP* can be met but are not provided, the RFS will recommend refusal to the council.

What are Asset Protection Zones (APZs)?

Asset protection zones are areas of managed land that are cleared of vegetation in accordance with *PfBP* and provide a safety buffer between buildings and the vegetation (hazard). The following principles apply to APZs:-

a) APZs are to be constructed in accordance with *Planning for Bush Fire Protection (PfBP)*.
b) Increased levels of building construction above level 3 of AS3959-1999 should not be used to permit reduced APZs .
c) Where a development proposal does not provide adequate APZs in accordance with *PfBP* and it is ascertained that the dwelling could be relocated to a position that would provide appropriate APZs, then the RFS will recommend refusal and should be referred back for dwelling relocation.
d) Where a proposed single dwelling cannot contain the required APZs within the subject lot, the entire property should be managed as an 'Inner Protection Area' as outlined in section 4.2.2 in *PfBP*. This may apply when a building lot does not allow for appropriate APZs from the vegetation as required by *PfBP*.

e) Where APZs are available in excess of that required by *PfBP* without the need for vegetation clearance then a lower level of building construction may be permitted as set out in table A3.3 of *PfBP*.
f) In RFS recommendations to Councils, APZs will be specified for each principle direction, so that shape of the APZs may be ellipsoid.

What are building construction standards?

Building construction standards for dwellings that are built on bush fire prone land are based on *Australian Standard AS3959 – "Construction of Buildings in Bushfire Prone Areas."* This Australian Standard establishes 3 levels of construction:-

- Levels 1 construction for "Medium" bush fire attack
- Level 2 construction for "High" bush fire attack and
- Level 3 construction for "Extreme" bush fire attack

Where the bush fire attack upon a dwelling has been assessed as being "Low" or greater than 100 metres from the hazard, no special building construction requirements shall be required.

When determining building construction levels under section 79BA, the setbacks for the inner protection area (IPA) is derived from Table A3.3 of *PfBP* (page 53). It must be remembered that the outer protection area (OPA) is either 10 metres (for Class 1 buildings) or 15 metres for special fire protection purposes and is added to the IPA figure in Table A3.3.

PfBP requires that the level of construction be applied on the basis of a closest distance between the hazard and the building. For the purposes of this assessment, the OPA is considered part of the hazard. Where buildings exist (or are proposed) between the proposal and the hazard, the appropriate construction standards from Table A3.3 may be revised dependant upon the amount of radiant heat protection afforded to the new development. Level 1 construction that affords basic ember protection should be applied as a minimum up to 100 metres from the forest or woodland hazard (other than rainforests). Ember attack is just as likely in this scenario in the same manner as if the intervening land was part of the subject lot and maintained as an APZ.

The effect of vegetation type on determining the need for an OPA.

It is often not fully appreciated that certain vegetation types are not easily modified to form outer protection areas and as such would not apply in section 79BA determinations. This includes grasslands, rainforests, mallee and heaths. In general, OPAs are most effective and designed specifically for forest and woodland vegetation types. As construction standards are based on setbacks from the hazard, Table A3.3 can be used directly where an OPA is not feasible due to vegetation structure.

How is the slope determined?

Slope is used when determining required asset protection zones in accordance with *PfBP*. Slope is assessed from all directions within the area of the bush fire hazard for a distance of at least 100

metres. Where the slope varies over this distance, the gradient used will be that which will most significantly influence the fire behaviour, having regard to the vegetation found. It is important to realise that the slope is not assessed within the area of the APZ but rather within that part of the landscape (including on neighbouring land) that will remain the hazard.

What development may be approved within an APZ?

Pergolas, decks, garages, fences and sheds within an APZ and within 10m of a dwelling shall be constructed from non-flammable materials. This avoids providing a point of ignition or radiant heat attack within the APZ that could threaten the dwelling.

What if the required APZ cannot be contained within the land to be developed?

The containment of APZs within the boundary of the development site is the most common issue in relation to section 79BA matters. Even where access and water provisions are adequate, the required setbacks from boundaries may not be achievable.

Where notional building setbacks from the hazard side of the site exist for established dwellings (these may not be formalised but nonetheless operate as a defacto setbacks), then the expectation of the RFS is that this building alignment from the hazard not be encroached. In general, performance based assessments can be achieved in most cases through the use of appropriate certified building materials.

APZs may, under exceptional circumstances, be permitted across an adjoining property/s (refer RFS Development Control Note 002 "Establishment of Easements for the purposes of Asset Protection Zones").

This will not remove the necessity for the provision of a defendable space for fire fighters in the form of a minimum APZ.

Can there be different levels of building construction on a dwelling?

In some circumstances more than one construction level may apply to a single dwelling. This depends on the design and placement of the dwelling in relation to the hazard (refer to RFS Development Control Note 003 "Concessions and Principles for the Application of AS3959").

Are there any other additional building construction considerations?

Additional construction considerations should be:-

- Avoiding low-pitched roofs, or roof designs that feature valleys or corners that may accumulate leaf matter.

- In all cases where Level 1 construction (AS3959) or above is indicated in table A3.3 *PfBP*, any LPG cylinders or other above ground fixtures of a gas supply system should be

located on the side of the building away from the bush fire hazard. Where this is not achievable, protect the gas supply with a non-combustible radiant heat shield. Safety valves must vent away from the side of the house or any flammable material. Any radiant heat shield must be designed so as to not provide a trap for leaking gas. This is in addition to the requirements of AS 1596.

- Garages that are attached to a dwelling assessed as requiring level 1 or higher construction standards shall require vehicle entry doors be sealed against the entry of embers. Commercial products are available that can satisfactorily achieve this.

Can timber be used for external construction?

Australian Standard AS3959 –1999 *Construction of buildings in bushfire–prone areas* requires that fire retardant treated timbers be used in the external construction of a dwelling for particular levels of construction. (refer to RFS Development Control Note 001 "Fire Retardant Treated Timbers").

Alterations and additions considerations

Alterations and additions should comply with the requirements of *PfBP*. Where an existing dwelling does not comply and it is proposed to construct additions to a building, no part of the proposed additions are to be built closer to the bush fire hazard than that of the adjoining properties.

The following general principles apply:-

- Alterations and additions to the hazard side/s of an existing house will need to meet the relevant standards under AS3959 and part 4.10 of *PfBP*.
- Where an existing dwelling has not been built to the required AS3959 construction level and major renovations or additions are proposed, the entire existing building may need to be upgraded to a minium of Level 1 construction. Where the bushfire threat for an existing dwelling is High or Extreme, other appropriate measures such as fire rated glass for windows on the hazard side will need to be considered. Bush fire building construction protection measures that require manual operation should be avoided.
- Proposed additions or alterations towards the bush fire hazard that increases the level of bush fire attack from "Extreme" to "Flame Zone" should not be approved. Building levels of construction are not a substitute for appropriate asset protection areas.
- Where level 1 or greater construction standards apply, permanent openings or screened enclosures should be fitted with corrosion resistant steel or bronze mesh with a maximum aperture of 1.8mm.

What is meant by Flame Zone and what impact does this have on a development application proposal?

For a dwelling assessed as having at greater bush fire attack than that of Extreme (level 3 building construction) under AS3959, the proposal will be categorised as being within the "Flame Zone" and is therefore beyond the scope of AS3959.

Where a dwelling has been determined as being within the flame zone, and only where the application is an infill development (this does not apply to integrated developments), the RFS will recommend a performance-based solution to council that exceeds that of level 3 construction of AS3959.

The consent authority is responsible for the supervision and certification of building construction compliance with consent conditions.

Flame Zone building construction requirements.

Flame Zone building construction requirements apply only in cases of infill development where there is no opportunity for provision of appropriate asset protection zones that meet *PfBP*. The following conditions would normally be included in recommendations by the RFS for proposals that fall within the flame zone level of bushfire attack. As each development application has its own individual circumstances, the assessment of a development application may vary from the following.

- **APZ**: Provision of construction standards should never be considered as alternative to adequate APZs where they can be achieved.
- **No exposed timber**: As discussed above flame zone developments may be subject to direct flame impingement as well as radiant heat and ember attack beyond the scope of AS3959. No timbers have been identified as suitable for flame zone conditions.
- **Glazing**: All windows exposed to the hazard will utilise a suitably performing glazing material and/or non-combustible shutters to provide protection from radiant heat and impact. Systems that do not require human operation are the preferred option.
- **Glazing on Hazard Side.** Large areas of glazing can provide increased access for radiant heat or damage from debris. Where glazing is to be installed, the proposal should minimize their size and number on the hazard side of the dwelling
- **Roof lights and openings on the plane of the roof exposed to the hazard.** Openings of any sort facing the hazard should be minimized and screened to restrict the entry of embers. Roof light construction materials are required to withstand the calculated radiant heat attack to all vulnerable elements. The installation of a roof light shall be such that it does not permit the accumulation of leaves and or burning debris.
- **Static Water –W**here there is no dependable reticulated water supply a dedicated accessible static water supply for fire fighting purposes shall be provided. Where a sprinkler (drenching) system is to be employed then water must also meet expected usage for the period of the exposure. Pools and dams are not suitable for drenching systems and occupant fire

suppression. Fittings, which are capable of being used by fire fighting services in the area, must also be employed (eg 38mm or 65mm Stortz fittings).

- **Access:** Site access is generally described by 4.2.1 of *PfBP*, but the following may also apply in some cases. Gates that provide access to rural properties from a public road must allow emergency vehicles to enter without stopping on the public road. Where road and shoulder width or layout is not adequate, the gate should be set back from the road reserve by at least 8 metres and open inwards away from the road.

Commercial and Industrial developments

Section 79BA's of the *EP&A* Act applies to development applications involving the construction or modification of class 1, 2, and 3 buildings under the *Building Code of Australia* (BCA). The principles of *PfBP* can be applied to other development types (eg commercial and industrial development) but such development types are not legally subject to s79BA. Commercial and industrial building construction requirements are set down in the *BCA*. Where a commercial or industrial development includes accommodation such as a caretakers dwelling, *PfBP* shall be applied as for dwellings.

Further Information

Should you require any further information on this matter, please contact Development Control Services on (02) 8845 3571 during normal business hours.

Rob Rogers
Executive Director, Risk Management

APPENDIX 5:

Correspondence received

NSW Government
DEPARTMENT OF NATURAL RESOURCES

Contact: Chris Page
Phone: 4224 9663
Fax: 4224 9651
Email: chris.page@dipnr.nsw.gov.au

Our ref: DGC06/47 (cp/06erm005)
Your ref:
File: Shoalhaven LGA

Mr Rod Rose
Managing Director
Bushfire and Environmental Services
PO Box 106
ST GEORGES BASIN NSW 2540

6 February 2006

Dear Sir

Subject: Bushfire Investigation for Draft LEP LP 155 – Jerberra Estate, City of Shoalhaven

Reference is made to your letter dated 20 January 2006 seeking comments from the Department of Natural Resources (DNR) regarding s.62 of the EP&A Act for the preparation of a local environmental study (LES) for the above site and comments specific to bushfire and bushfire protection. It is noted that while your firm is commissioned by Shoalhaven City Council for bushfire matters, there will be further consultation with the Department during the preparation of the draft LEP.

The Department notes that the subject land is situated in an upper catchment location within the Moona Moona Creek catchment. First and second order waterways are situated within and adjacent to the site. Except where unauthorised structures and associated clearing have occurred, there is a general cover of native vegetation across the site and along the waterways.

Other attributes within the catchment/locality include the National Park, SEPP14 Coastal Wetland (No.325) and Jervis Bay/Marine Park all downstream to the east. And to the north, there is an identified habitat corridor (refer to Map 7 of the Jervis Bay Settlement Strategy 2003).

The Jervis Bay Settlement Strategy (JBSS) has a number of key elements that warrant recognition in regard to the further analysis and presentation of bushfire issues in the LES. Specifically, it is noted that:

1) Your letter only partly references what the JBSS sets out: "*Jerberra Estate will be investigated to provide for rural residential living opportunities. In order to achieve this, it will be necessary to finalise detailed environmental investigations that have commenced into the appropriate size and configuration*". But it should go on to also state that, "*…of allotments and their ability to accommodate on-site effluent disposal*". While this statement was in the general discussion of the JBSS, the agreed Action for the Jerberra Estate is, "*The development potential for rural residential development will be investigated through a review of lot sizes and configuration in order to accommodate on site effluent management and meet the guiding principles and policy actions of this Strategy*". It is noted that the JBSS also identifies the option that lots may need to be amalgamated to a minimum size to accommodate on-site effluent management.

Given the above, it would appear that BES's intent to only "provide an assessment of the bushfire threat to the existing subdivision" does not necessarily align with the agreed Action in the JBSS. BSE should, therefore, ensure that resources are put toward also assessing the bushfire implications for the final subdivision layout. It is unknown whether the existing subdivision layout (with its number of smaller allotments) will be able to manage effluent on-site. It is important to understand the final subdivision layout due to the critical need to deliver superior water quality outcomes given the downstream National Park, SEPP14 wetlands and receiving waters of Jervis Bay and its Marine Park status. The JBSS also states that, "*Protection of water quality in Jervis Bay, St Georges Basin and Lake Wollumboola is of fundamental importance*". Council's City*plan* also envisages that, "*Shoalhaven will be known nationally for its excellence in…effluent disposal*". Hence the final subdivision and likely clearing for on-site effluent management will also have a bearing on bushfire issues.

2) The BES also sets out certain APZ issues in Figures 3 and 4. It is important that BES is also aware of Section 8.1: Principles for Development and Section 9: Environmental Opportunities and Constraints contained in the JBSS. In particular, Section 9.7 – Bushfire (Action ii) states that, "*Asset Protection zones associated with new development will be contained within the developable area, and will be excluded from areas set aside for the protection of natural or cultural attributes (eg. riparian areas, habitat corridors, Aboriginal places/sites and so on)*".

Given the above, in regard to riparian areas (see also Section 9.10 of JBSS), the DNR has undertaken a preliminary assessment of the waterway values based upon a methodology previously agreed with by Council in the Nowra-Bomaderry Riparian Corridor Objective Setting report (prepared on behalf of Council for the Nowra-Bomaderry Structure Planning exercise). Taking into account the existing values of the site, the catchment location and the downstream features, the preliminary assessment for the waterways on and adjacent to the Jerberra Estate is for the protection and management of values and functions commensurate with Category 2 – Terrestrial and Aquatic Habitat.

The aim of Category 2 waterways is to maintain and restore as much as possible the natural functions of a stream to: (i) provide bed and bank stability; (ii) protect and improve water quality; (iii) provide suitable habitat for terrestrial and aquatic fauna, and (iv) maintain viability of the native vegetation.

To achieve the above riparian objectives it is important to protect, conserve and manage the riparian lands for a width greater than 30 metres either side of the waterway (measured at right angles from top of bank). The riparian area should be revegetated if necessary using local provenance species to a density consistent with natural conditions. This 30m area would be made up of a core riparian zone (CRZ) of 20m either side of waterway plus an additional vegetated buffer of 10m to protect the CRZ from edge effects such as weed invasion, micro-climate fluctuations, trampling, litter, etc. Any additional core or buffer width is supported and could be required by the Jervis Bay Marine Park Authority or Department of Primary Industry (ie NSW Fisheries) for protection of other environmental matters. BES should liaise with these agencies. Any setback for bushfire asset protection should be measured from the outer edge of the vegetated buffer. Such vegetation retention would need to be incorporated into the detailed BES bushfire assessment.

Additional vegetation may be retained around the riparian areas where the flood extent is of a greater width than the riparian land. The Department is aware that Council is currently undertaking a flood study into the Moona Moona Creek catchment. It is unlikely, however, that an estimation of the extent of flooding on the Jerberra Estate will result from this work. Hence, it

may be necessary to assess the likely flood extent via a separate study to ascertain flood-free access and egress issues and the relationship between flood extent and riparian outcome can be determined (It is noted, however, that the upper catchment location and local topography may limit the flood extent to be within the riparian width required to enable the Category 2 waterway outcome).

BES would also benefit from liaison with Department of Environment and Conservation (DEC) in regard to any existing vegetation required to be retained to accommodate Aboriginal significance, enhancement or buffering of the habitat corridor to the north, and/or threatened species issues. Council could also advise of any vegetation proposed to be retained to provide visual buffer/amenity to the surrounding locality (given that Council's City*plan* assigns importance to protecting the value and beauty of the environment and the low visual impact of settlement). The City*plan* document also recognises the objective that, "*opportunities for rural living will be made available where this is in keeping with the area's natural attributes*".

The retention, enhancement and management of vegetation for biodiversity, riparian functioning, cultural/heritage purposes, threatened species issues, habitat corridors and visual amenity are similarly recognised in the draft South Coast Regional Strategy (being finalised by the Department of Planning) and draft Catchment Management Plan (being finalised by the Southern Rivers Catchment Management Authority).

It is imperative, therefore, that BES makes allowance for those internal areas that will not be developed and that APZ setbacks around any residual vegetation are delineated within the subject land (and based upon the final subdivision layout).

In summary, the bushfire assessment (and management) should be based upon the final allotment configuration that facilitates appropriate on-site effluent management. The final allotment configuration should recognise the retention of vegetation to deliver Category 2 riparian outcomes for the waterways within and adjacent to the Jerberra Estate. In addition, any final allotment (and subsequent bushfire assessment) will need to also take into account the possible retention of vegetation due to flood extent, cultural/heritage value, threatened species management, enhancement/buffering of the identified habitat corridor and/or providing a visual buffer/amenity to this new settlement area. It is likely that further investigation is warranted to understand the above site attributes prior to progressing detailed bushfire issues.

Any further correspondence with the Department should be directed to the Wollongong office (rather than Sydney Head Office) to assist response time. It is important that the site is also appropriately zoned at the end of the investigation/LES process to ensure the natural attributes have the protection that is warranted in the high quality environment of the Jervis Bay region. It is requested that BES pass this advice onto other relevant stakeholders in the LES process for the Jerberra Estate. Any queries can be directed to Mr Chris Page, Landscape Planning Unit, on ph: 4224 9663.

Yours sincerely

Brian Dooley
A/Regional Director

Received 8/2/06.

RTA

Our Ref: 404.5314 06/146

Contact: Chris Millet (4221 2570)

Your Ref: 5047

7 FEB 2006

Managing Director
Bushfire Environmental Services
7/128 Island Point Road
ST GEORGES BASIN 2540

CITY OF SHOALHAVEN – DRAFT LEP 155 – 1.5KM EAST OF TOMERONG BUSHFIRE INVESTIGATION FOR JERBERRA ESTATE, 1.5KM EAST OF TOMERONG

Dear Sir

I refer to your letter dated 20 January 2005 regarding the subject Draft LEP forwarded to the RTA for consideration.

The RTA offers no comments specific to bushfire and bushfire protection of the site.

However, the applicant should prepare a traffic impact study to assess the impact of the rezoning on the surrounding network, including the impact on the Princes Highway. As a guide, the attached document (Table 2.1 of the *RTA Guide to Traffic Generating Developments*) outlines the key issues that may be considered in preparing a Traffic Impact Study. Intersection modelling using aaSIDRA should be undertaken to assess the impact to the Princes Highway and where necessary, appropriate junction treatments should be identified.

The RTA will commence its detailed assessment of the Draft LEP once the aforementioned information is provided. Should you require any clarification on this matter please call Chris Millet on 4221 2570.

Yours faithfully

for Trish McClure
Manager, Road Safety and Traffic Management
Southern Operations and Services

NSW GOVERNMENT
Department of Planning

RECEIVED 27-2-06

Contact: Mark Parker
Phone: (02) 4224 9468
Fax: (02) 4224 9470
Email: mark.parker@planning.nsw.gov.au

Our ref: DGC06/111
W93/00004
Your ref: 5047

Rod Rose, Managing Director
Bushfire & Environmental Services
PO Box 106
St Georges Basin NSW 2540

Dear Rod,

Subject: Bushfire investigations for Draft LP155 – Jerberra Estate, Tomerong.

I refer to your letter notifying the Department of your investigations on behalf of Shoalhaven Council into the bushfire risk associated with the potential rezoning of the Jerberra Estate. The Department of Planning has previously advised Council that investigations for any new rural residential land use in the Jerberra Estate should include defining areas of land suitable for rural residential development, establishing minimum lot sizes and densities for rural residential development and proposing mechanisms for consolidating existing lots. The Jervis Bay Settlement Strategy specifically identifies the investigation of potential for rural residential development through a review of lot sizes and configurations in order to accommodate on site effluent disposal and other relevant issues/considerations.

Your letter acknowledges that the bushfire study and assessment will be in accordance with current legislative requirements and guidelines for development within bushfire prone land. The study and assessment should also consider the bushfire considerations and actions in the Jervis Bay Settlement Strategy (section 9.7 page 51).

Figures 3 and 4 of your letter display the results of preliminary investigations into the provisions of Asset Protection Zones (APZ) based on the application of Planning for Bushfire Protection, 2001. Figure 3 identifies the APZ around the study area and assumes that the internal areas are to be developed to the extent that APZ setbacks are not required around any residual vegetation within the subject lands. This assumption may be pre-emptive of the results of land use studies including vegetation and onsite effluent management studies.

Any investigations into the land use capacity of Jerberra Estate should consider an assessment of the vegetation on the land and its significance for its natural and cultural attributes eg threatened fauna and flora species and communities, habitat corridors, riparian areas, and Aboriginal places/sites etc. APZ associated with any new rural residential development need to be contained within the developable area and excluded from areas set aside for the protection of natural and cultural attributes.

Your bushfire investigation should therefore liaise closely with those preparing other land use capacity studies and government agencies prior to developing bushfire management options.

I trust this advice assists you in your investigations.

Please do not hesitate to contact myself on 4224 9468 or Lisa Kennedy on 4224 9457 if you wish to discuss these matters further and please refer any further correspondence to myself at the Southern Region, Wollongong Office.

Yours sincerely

23/2/2006

Mark Parker
Local Planning Manager
Southern Region

Geoff.

All communications to be addressed to:

Head Office
NSW Rural Fire Service
Locked Mail Bag 17
Granville NSW 2142

Telephone: (02) 8741 5555

Head Office
NSW Rural Fire Service
15 Carter Street
Homebush Bay NSW 2127

Facsimile: (02) 8741 5550

Bushfire and Environmental Services
PO Box 106
ST GEORGES BASIN NSW 2540

Attention: Rod Rose

Your Ref: 5047
Our Ref: LEP/0110
A06/0099

23-Mar-2006

Dear Sir/Madam,

Re: Bushfire Investigation for Draft LEP LP 155 – Jerberra Estate, City of Shoalhaven

I refer to your letter dated 20 January 2006 seeking our advice in accordance with Section 62 of the *Environmental Planning & Assessment Act 1979* for the above Local Environmental Plan (LEP) and Local Environmental Study (LES) and apologise for the delay in responding.

Firstly the NSW Rural Fire Service (RFS) advises that the requirements of Section 100B of the *Rural Fires Act 1997* will only apply to the subject area where re-subdivision is proposed. Any development applications proposing the erection of dwellings on the existing allotments would be subject to the requirements of Section 79BA of the *Environmental Planning and Assessment Act 1979*.

Having said this, the proposed rezoning of the subject is required to comply with the Section 117 Direction 19 – Planning for Bushfire Protection. This involves compliance with *Planning for Bushfire Protection 2001,* including the provision of Asset Protection Zones in accordance with Table A2.2, access and egress requirements in accordance with Section 4.3 and water requirements in accordance with Section 6.4.3.

Council and the RFS have a responsibility to ensure that any development of the area for residential purposes is afforded a suitable level of protection. A bushfire assessment should therefore be prepared as part of the LES that addresses the requirements of *Planning for Bushfire Protection 2001*. The RFS notes that this is the intention and that some preliminary bushfire protection provisions have been identified in your letter.

Figure 3 of your letter identifies the APZ around the study area and assumes that the internal areas are developed to the extent that APZ setbacks are not required around any residual vegetation. However if some lots are not developed or the vegetation is retained then allotments adjoining these bushland areas will required additional APZ.

As such consideration will need to be given to the maintenance of any APZ that can not be provided within individual property boundaries. It may be necessary to consider the establishment of easements for the provision of APZ or steps put in place to ensure individual blocks are maintained as APZ prior to being developed. Compliance with *Planning for Bushfire Protection 2001* may also result in constrained sites and possibly consolidation of some lots (in particular the RFS refers to the North West corner of the subject area)

As indicated in your letter, service supplies, access and building construction standards will also need to be addressed in any bushfire assessment. The bushfire assessment should demonstrate that suitable access is provided to all lots proposed for residential development within the subject site.

The RFS is prepared to liaise with Bushfire and Environmental Services in the preparation of the bushfire assessment to ensure that issues of community safety and bushfire protection are adequately addressed.

For any enquiries regarding this correspondence please contact Danielle Meggos.

Yours sincerely

Lew Short
Manager, Development Control Services

APPENDIX 6:

Methodology to determine APZ setbacks from internal areas of bushland

Appendix 6: Methodology to determine APZ setbacks from internal areas of bushland

If internal areas of bushland are reserved or remain within the Estate, the GIS model presented in Figure 10 allows for the approximation of APZ building setbacks from these areas. The methodology is described below:

- Step 1: Identify the boundary of the area offering urban development potential after the areas excluded from development from all other constraints have been finalised. Determine whether the area excluded by the other constraints contains or will contain bushfire prone vegetation (bushland containing surface or elevated fuels <6 mm in diameter and not being managed to APZ specifications).

- Step 2: For areas not adjoining bushfire prone vegetation, no setback is required. For areas adjoining bushfire prone vegetation, Figure 10 is used to determine the required Asset Protection Zone (APZ) setback.

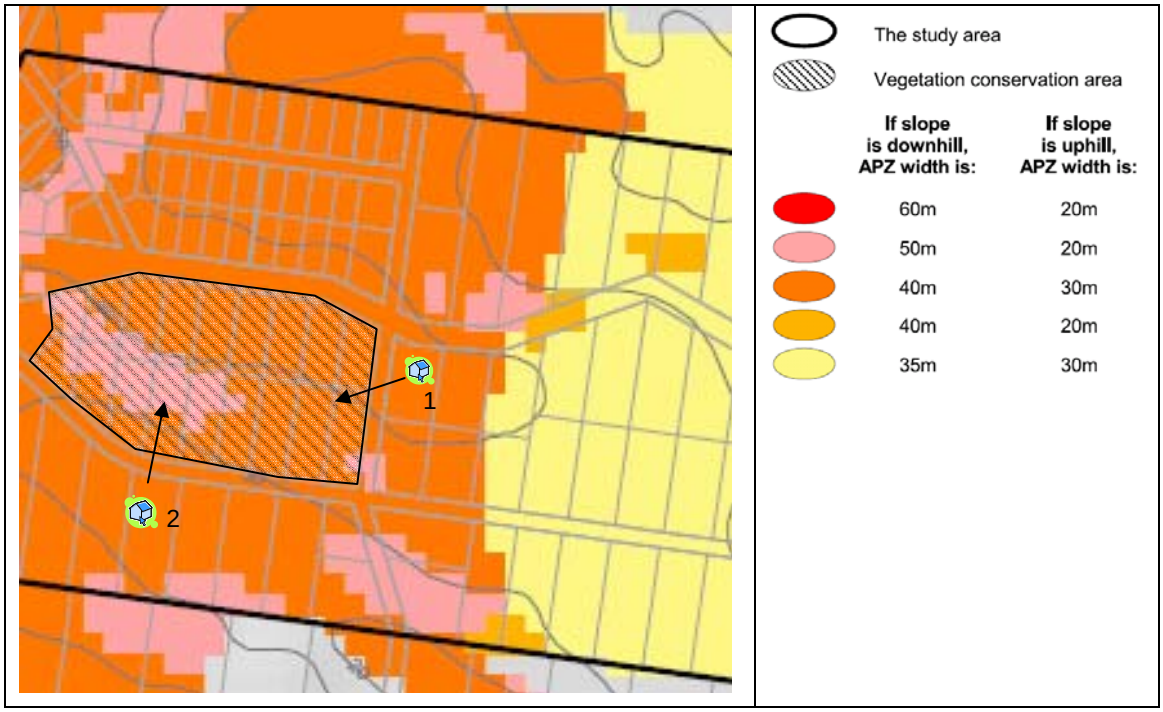
- Step 3: Using Figure 10 identify a distance of 140 m into the 'bushland' from the boundary of the area eligible for development and using the contours overlaying the map determine whether the slope is uphill or downhill leading away from the interface. If it is a combination of upslope and downslope, select the slope that is predominant particularly in the first 50 m out from the area eligible for development. If the slope identified is downslope, go to Step 4, if it is upslope, go to Step 5.

- Step 4: Using Figure 10 identify within the 140 m line obtained from Step 3, the grid square colour representing the largest APZ setback for downhill slopes (see legend in Figure 10). This distance is indicative of the APZ setback required for a habitable building placed in the selected location.

- Step 5: Using Figure 10 identify within the 140 m line obtained from Step 3, the grid square representing the largest APZ setback for uphill slopes (see legend in Figure 10 for meaning of the colour code). This distance is indicative of the APZ setback required for a habitable building placed in the selected location.

Two worked examples of how to apply these steps are provided below.

Figure 10: Example calculation of APZ setbacks



In the above 'cut-out' from Figure 10 two examples are used to demonstrate the methodology for determining an indicative size asset protection zone (APZ) setback.

The black hatched areas represent internal bushland areas that cannot be developed or cleared and also contain bushfire prone vegetation. In both examples it is assumed that buildings are required to be placed as close to the bushland as permitted by the APZ setback.

The assessment requires the APZ dimensions to be calculated 140 m into the bushland (as shown by the arrows overlaying the hatched area).

In example 1, the contours indicate that the slope is downhill (to the southwest) from the potential house site, and the grid square representing the largest setback is coloured orange, therefore from the map legend (above) the required APZ is 40 m wide. This means the proposed building will need to be set back at least 40 m from the bushfire prone vegetation (hatched area).

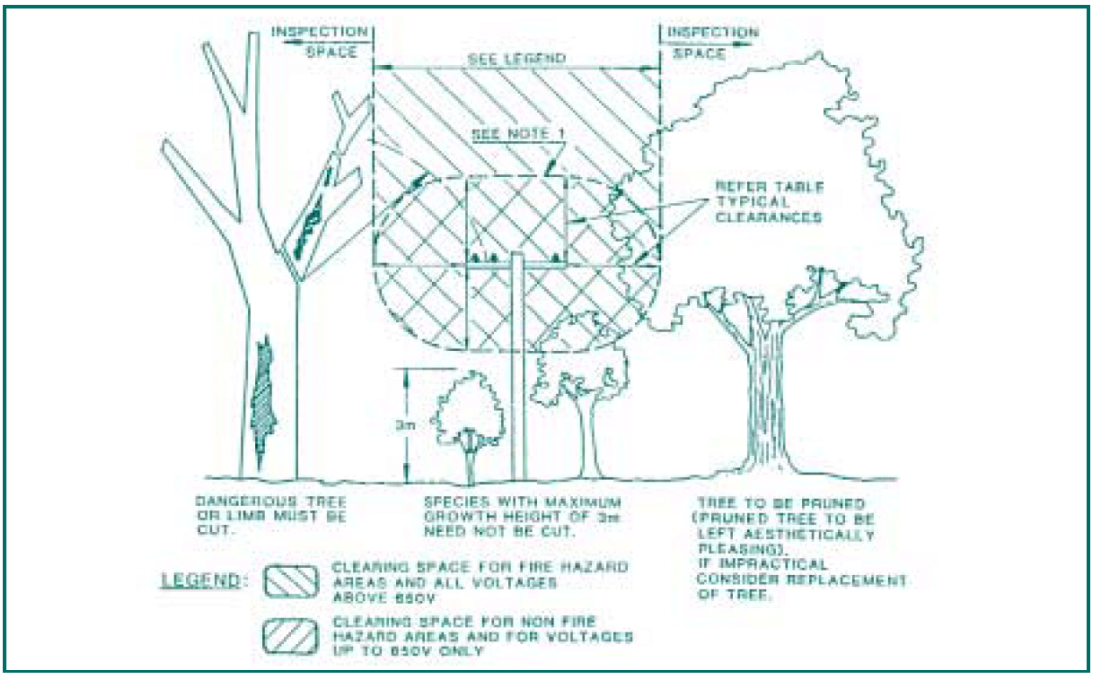
In example 2, the contours indicate that the slope is uphill from the potential house site, and the grid square representing the largest setback is coloured orange, therefore from the map legend (above) the required APZ is 30 m wide. This means the proposed building will need to be set back at least 30 m from the bushfire prone vegetation (hatched area).

APPENDIX 7:

Tree Pruning – Typical clearances

Appendix 7: Tree pruning – typical clearances (NSW RFS 2001 pp.54)

Voltage	Clearance at pole to nearest conductor in rest position	Clearance along middle 2/3 of span to nearest conductor in rest position
Insulated service wires	0.5m	0.5m
Up to 650V, see Note 3	1.0m	1.0m **or** sag at 50° C plus 0.5m (whichever is greater)
>650V to 22kV	1.5m	1.5m **or** sag at 50° C plus 0.5m (whichever is greater)
>22kV up to 66kV	2.25m	2.25m **or** sag at 50°C plus 1.0m (whichever is greater)
>66kV up to 132kV	3.0m	3.0m **or** sag at 50°C plus 1.0m (whichever is greater)

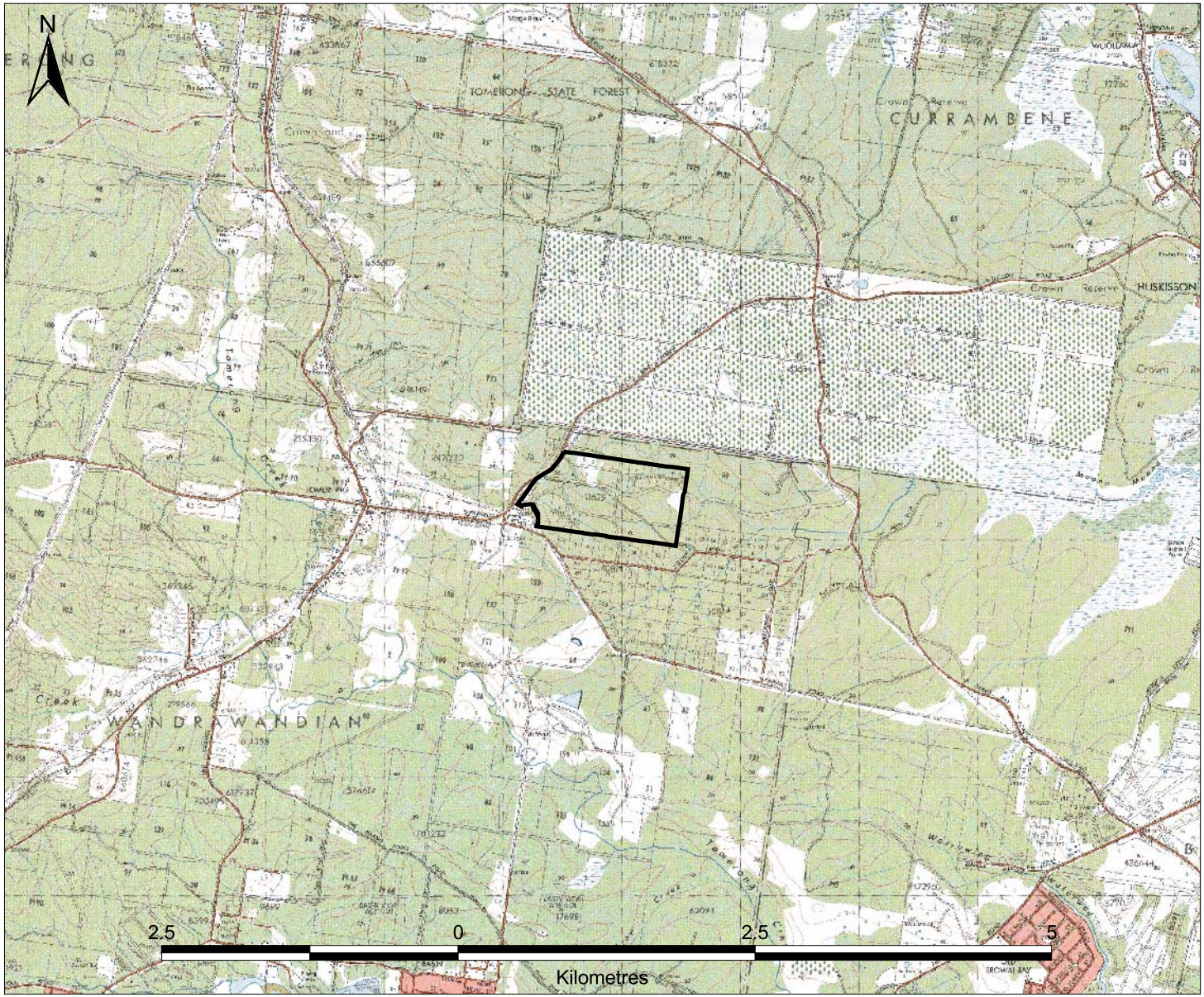


Notes:

1. The extent of the clearing space may be limited as shown where, in the opinion of the chief electrical engineer part of a tree in the clearing space does not constitute a serious hazard to such conductors. This shall only apply in the case of conductors operating at voltages up to 650V.
2. Additional clearance shall be allowed for regrowth, see clause 2.5.
3. An additional clearance of 0.5m shall be added to the nominated clearances for fire hazard areas.
4. Clearances in the table are typical and for guidance only. The appropriate clearance in each situation will vary depending on local circumstances (eg. type of vegetation, climate, locality, etc.). In all cases the most appropriate clearance is a matter for determination be the chief electrical engineer.

FIGURES

Figure 1: Location of the study area



The study area

Base topographic map
© Land and Property Information NSW

Figure 2: Jerberra Estate study area - existing subdivision

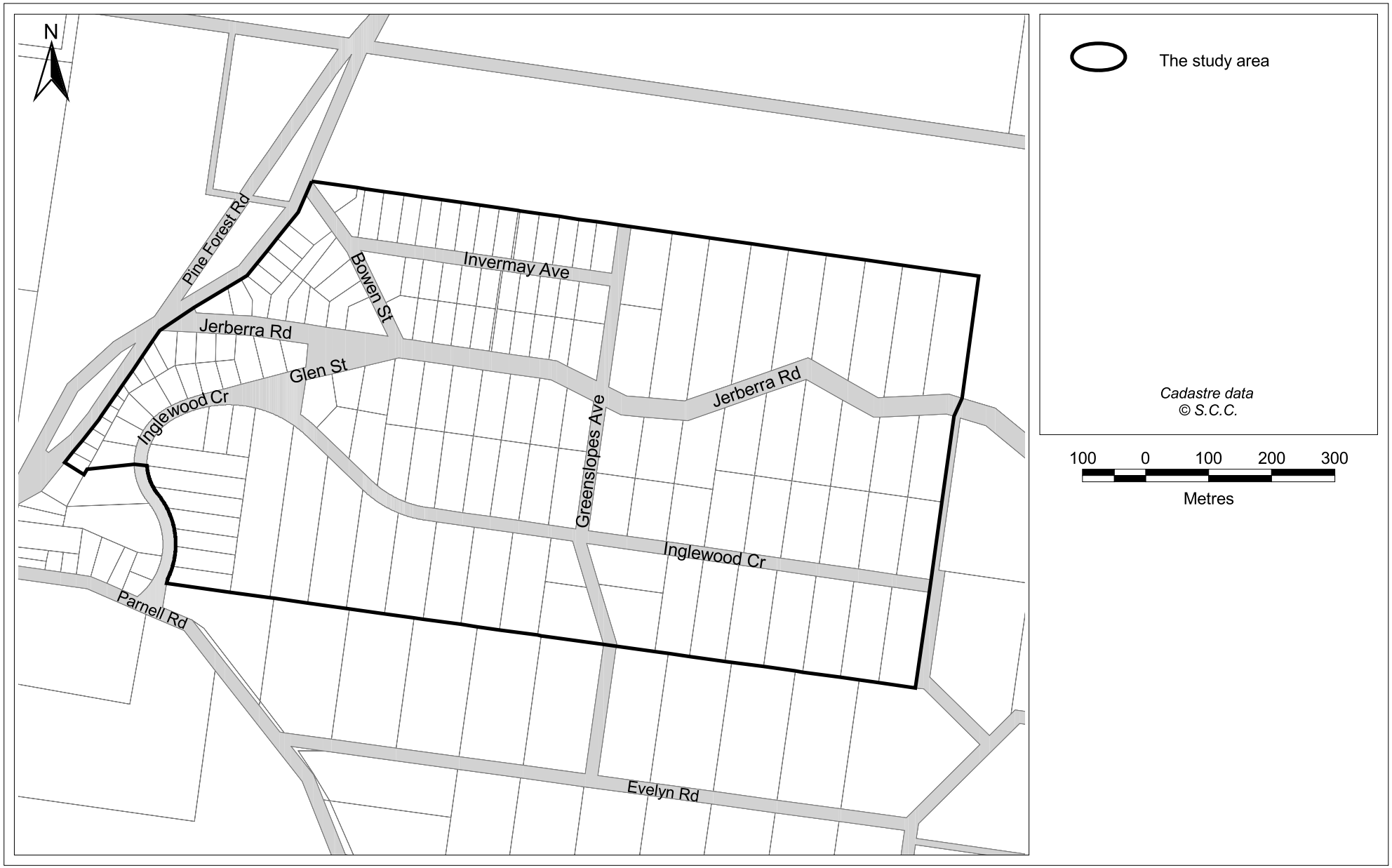


Figure 3: Planning for bushfire protection 2001 vegetation groups

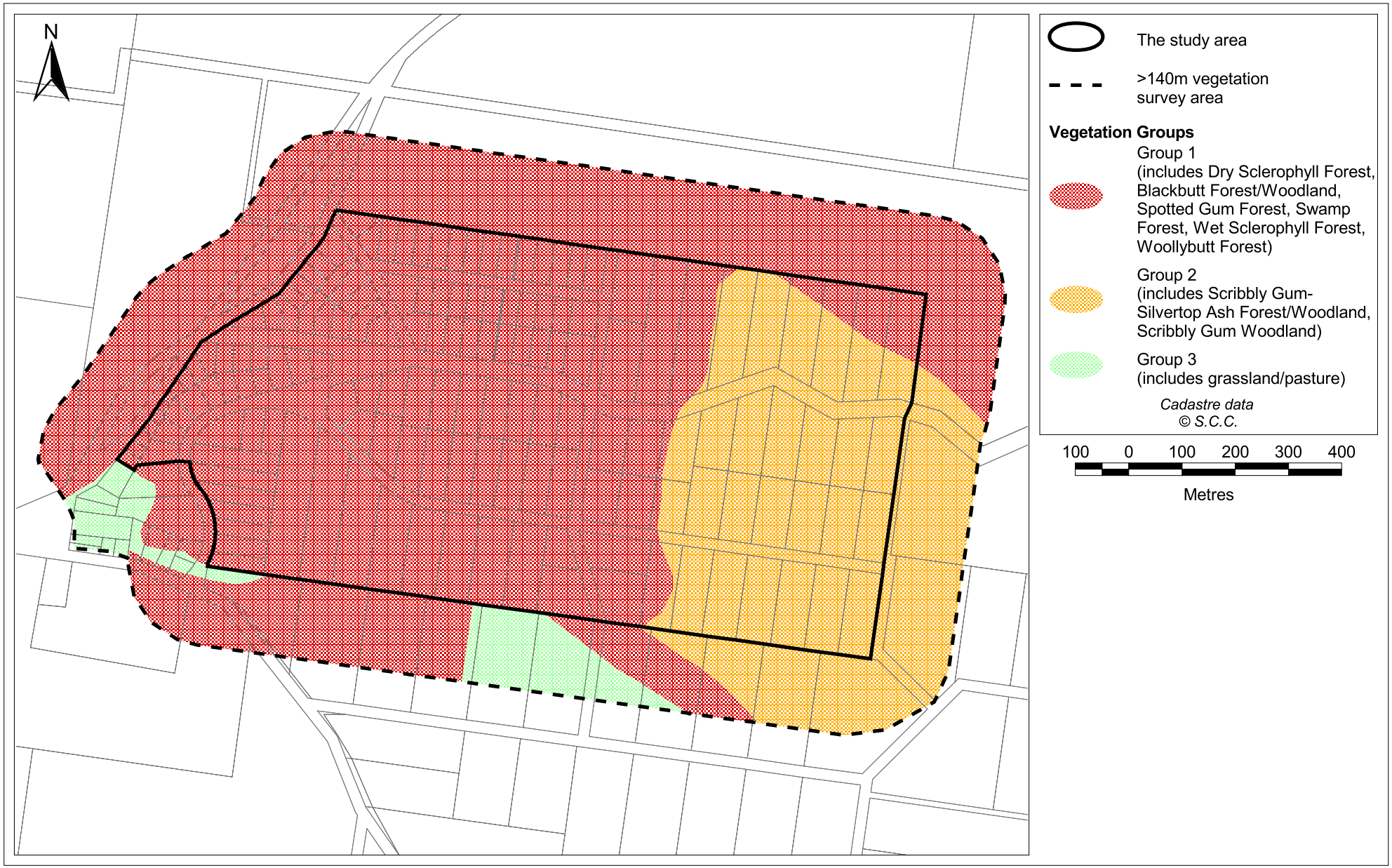


Figure 4: Slope

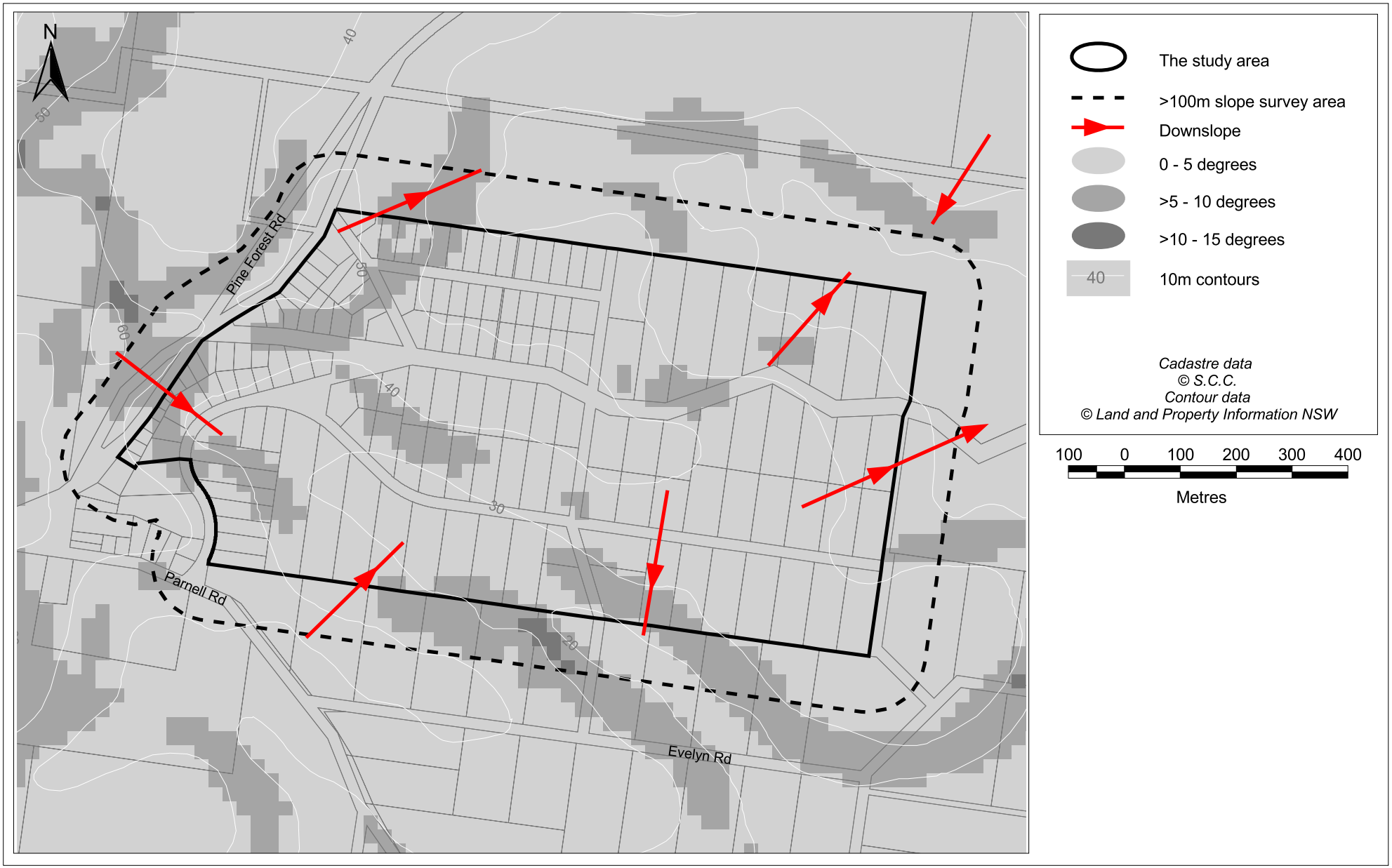


Figure 5: Bushfire behaviour potential

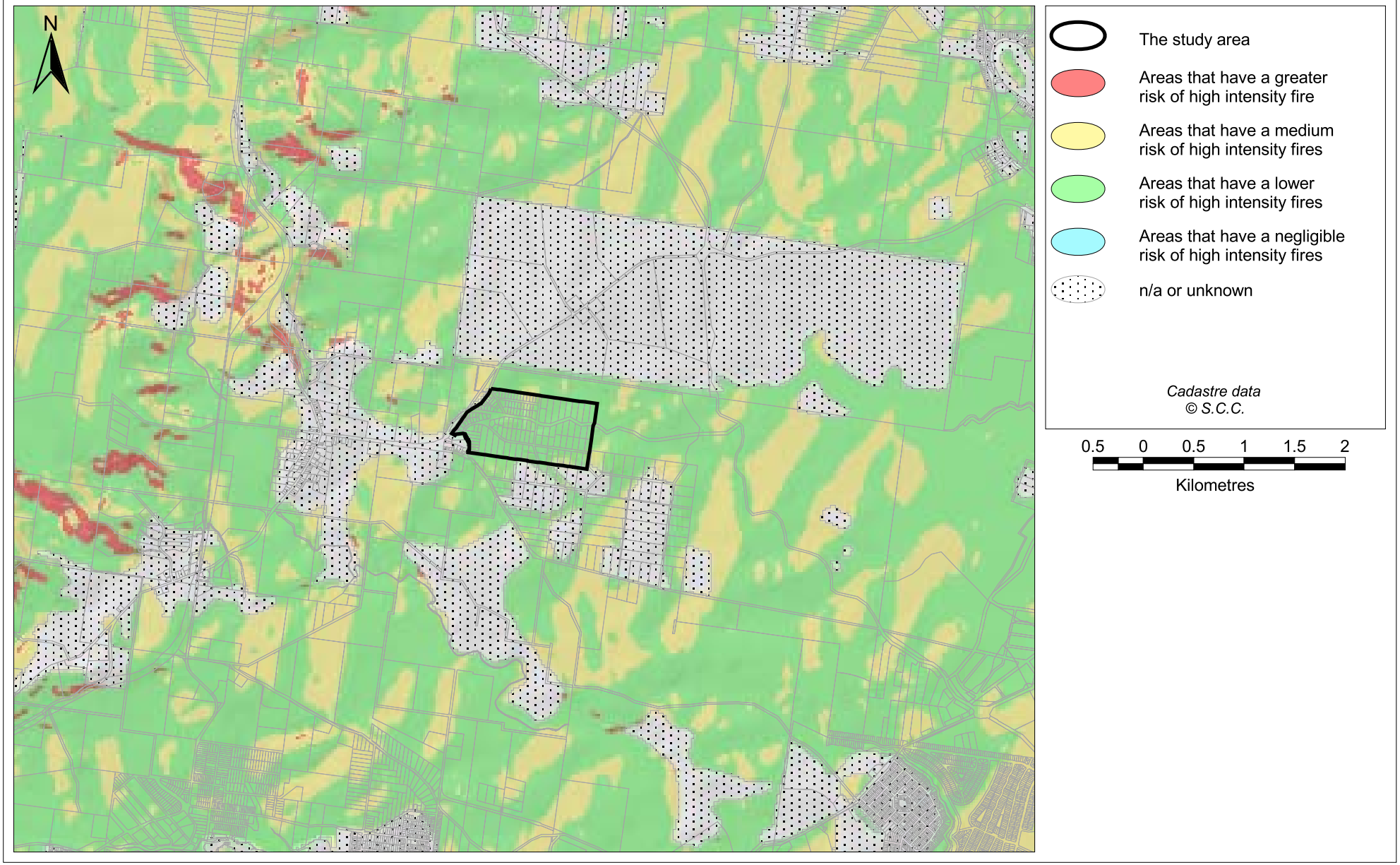


Figure 6: Bushfire intensity potential under extreme weather conditions and N - SW winds

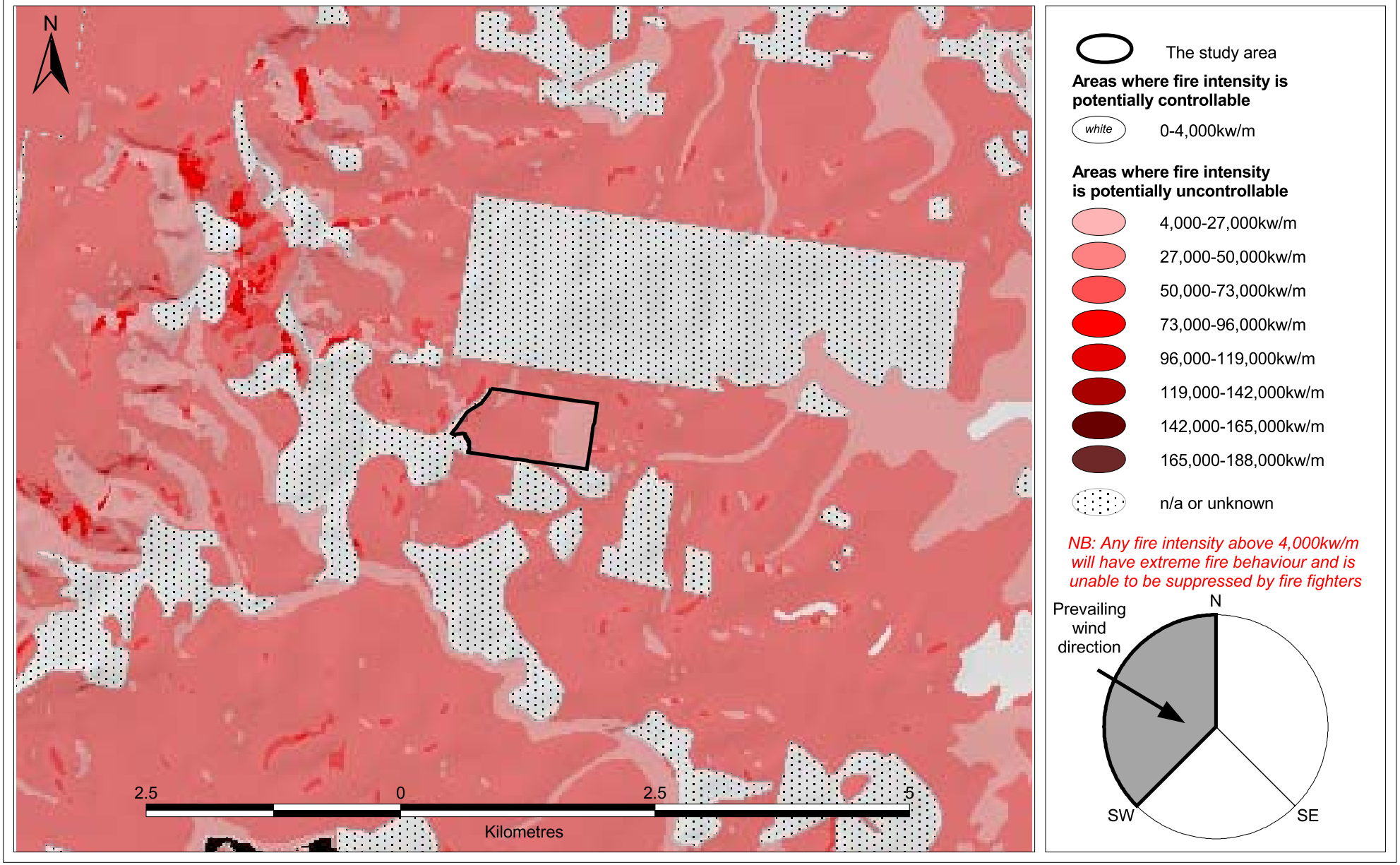


Figure 7: Bushfire intensity potential under extreme weather conditions and N - SE winds

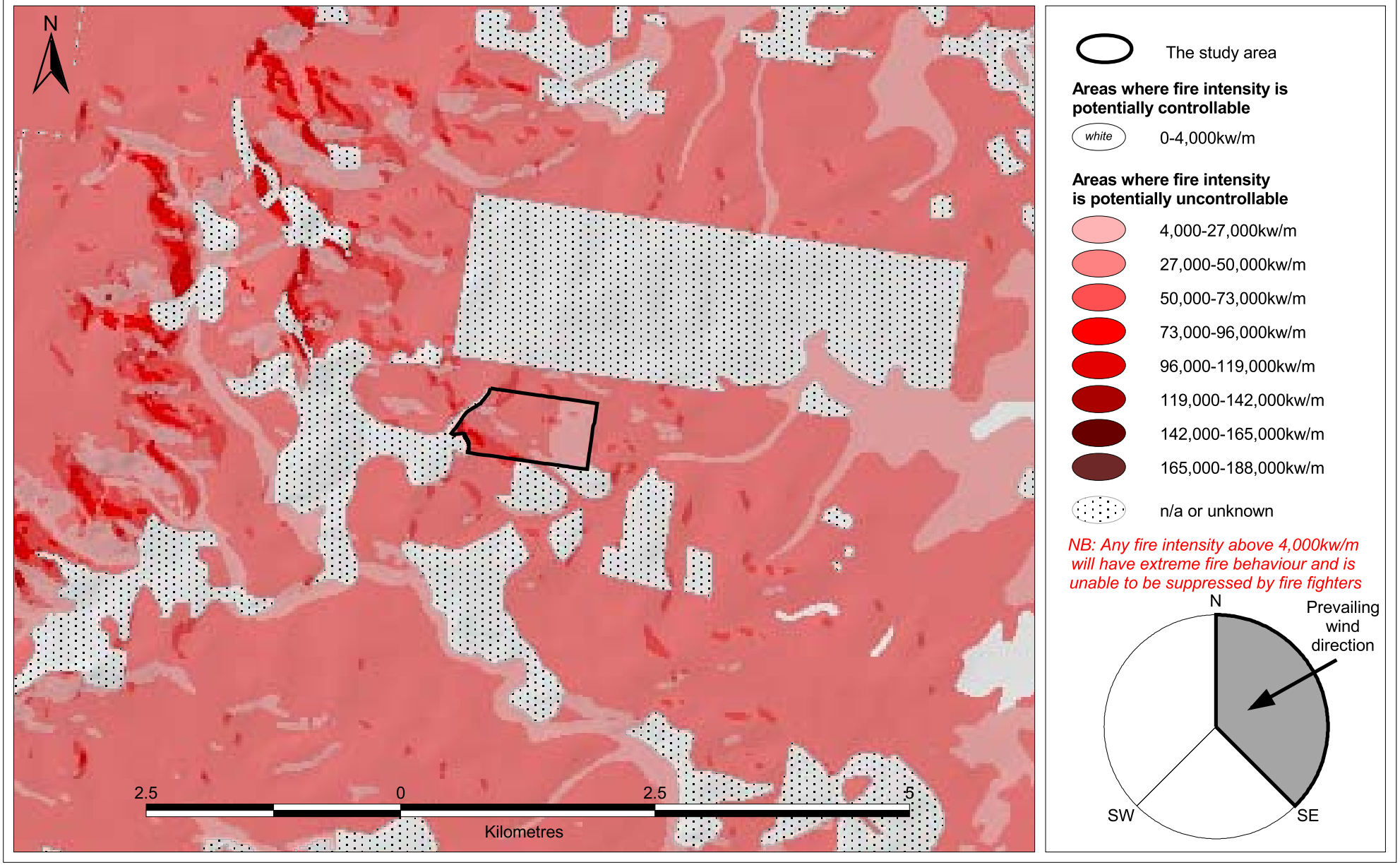


Figure 8: Bushfire intensity potential under extreme weather conditions and SE - SW winds

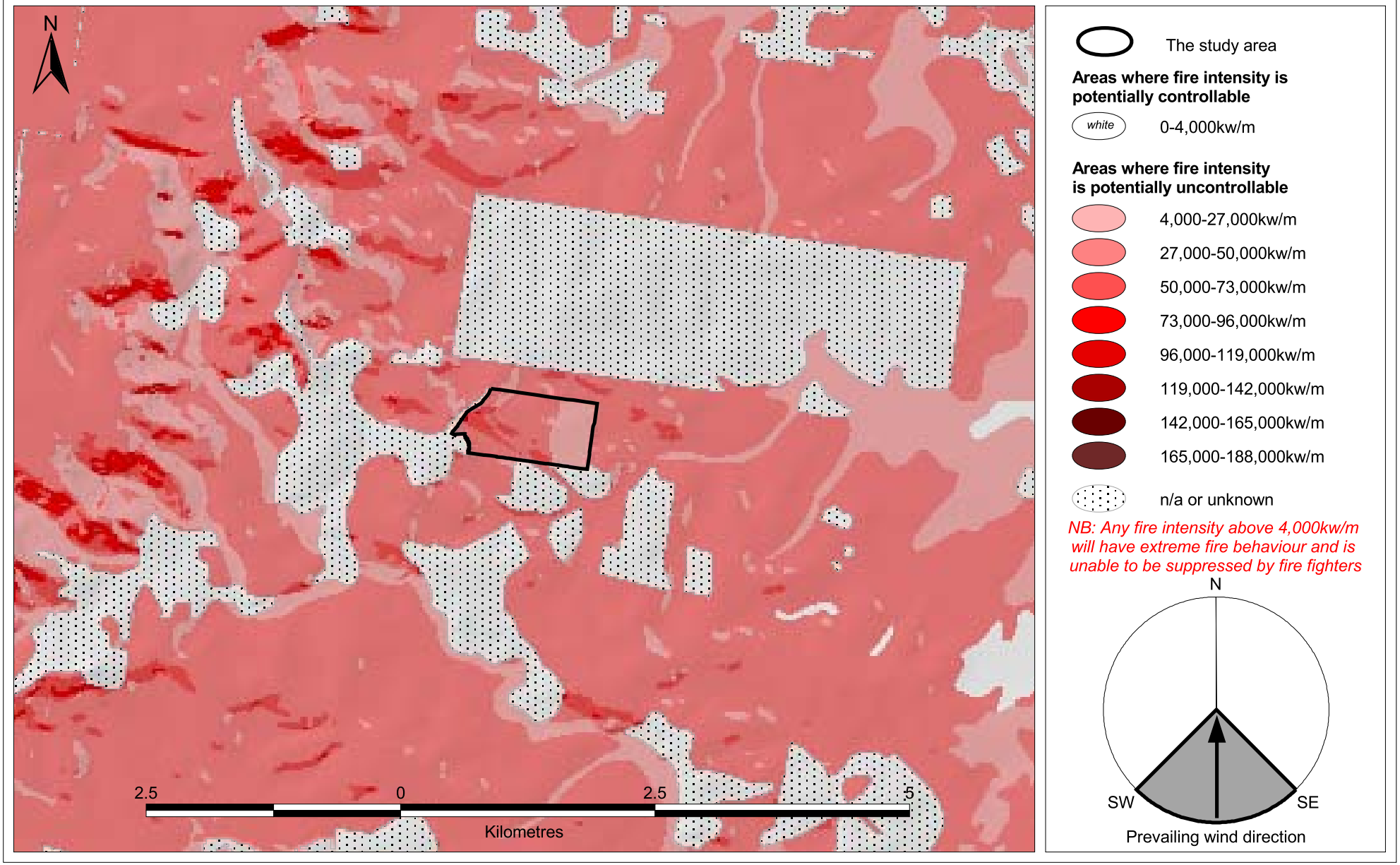


Figure 9: Perimeter APZ setbacks (does not include internal APZs)

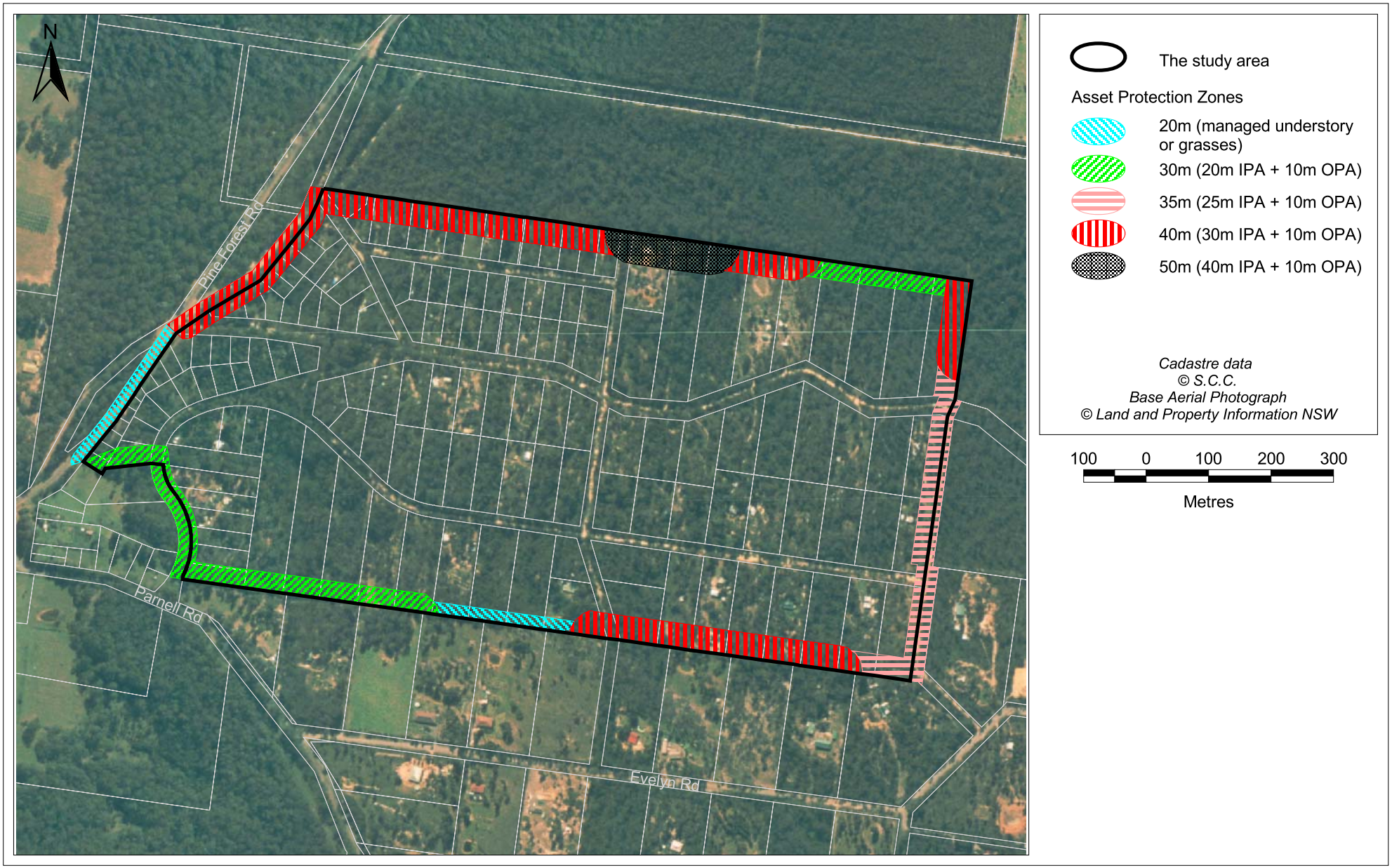


Figure 10: Bushfire constraints model - Asset protection zones for internal areas

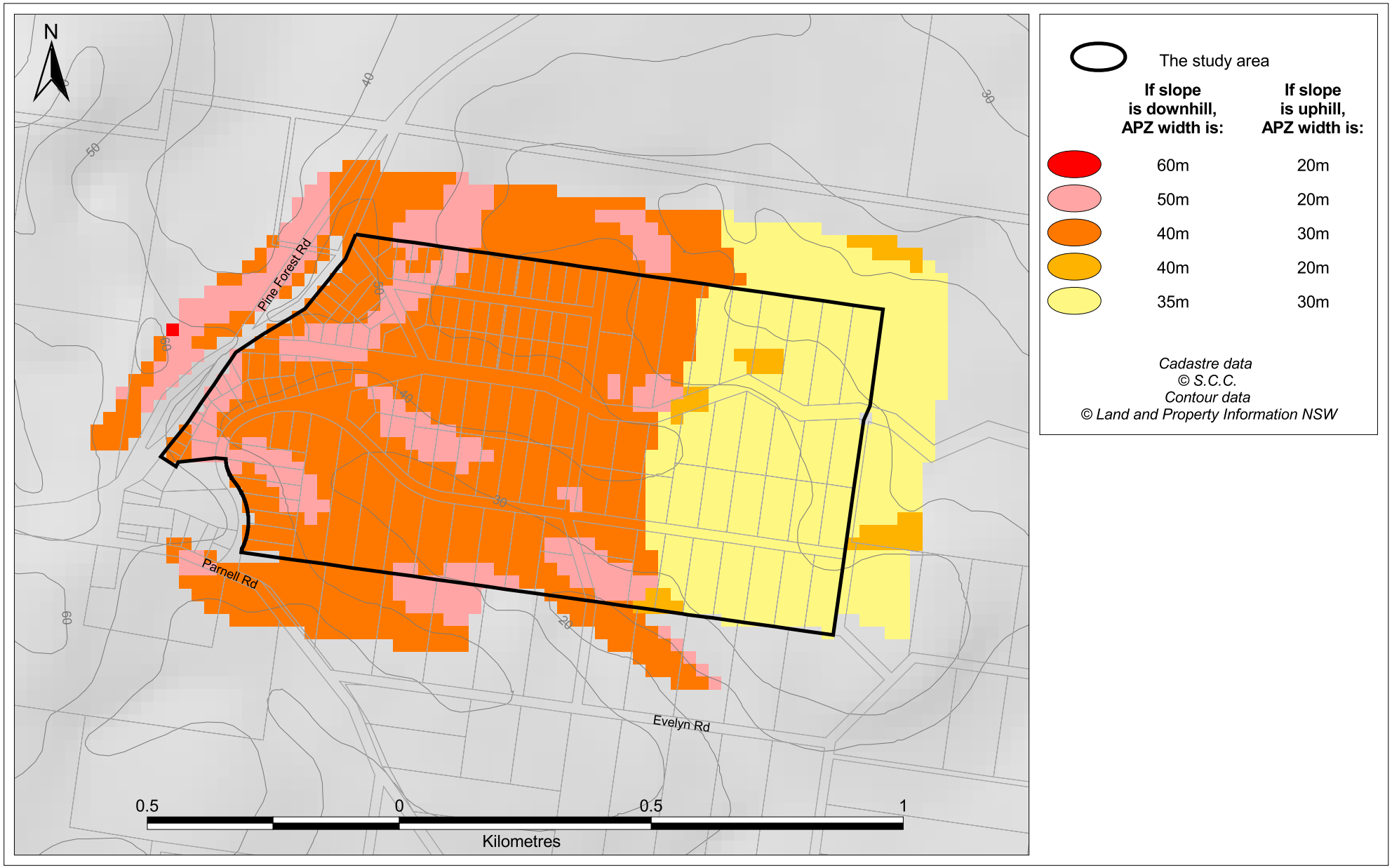


Figure 11: Access

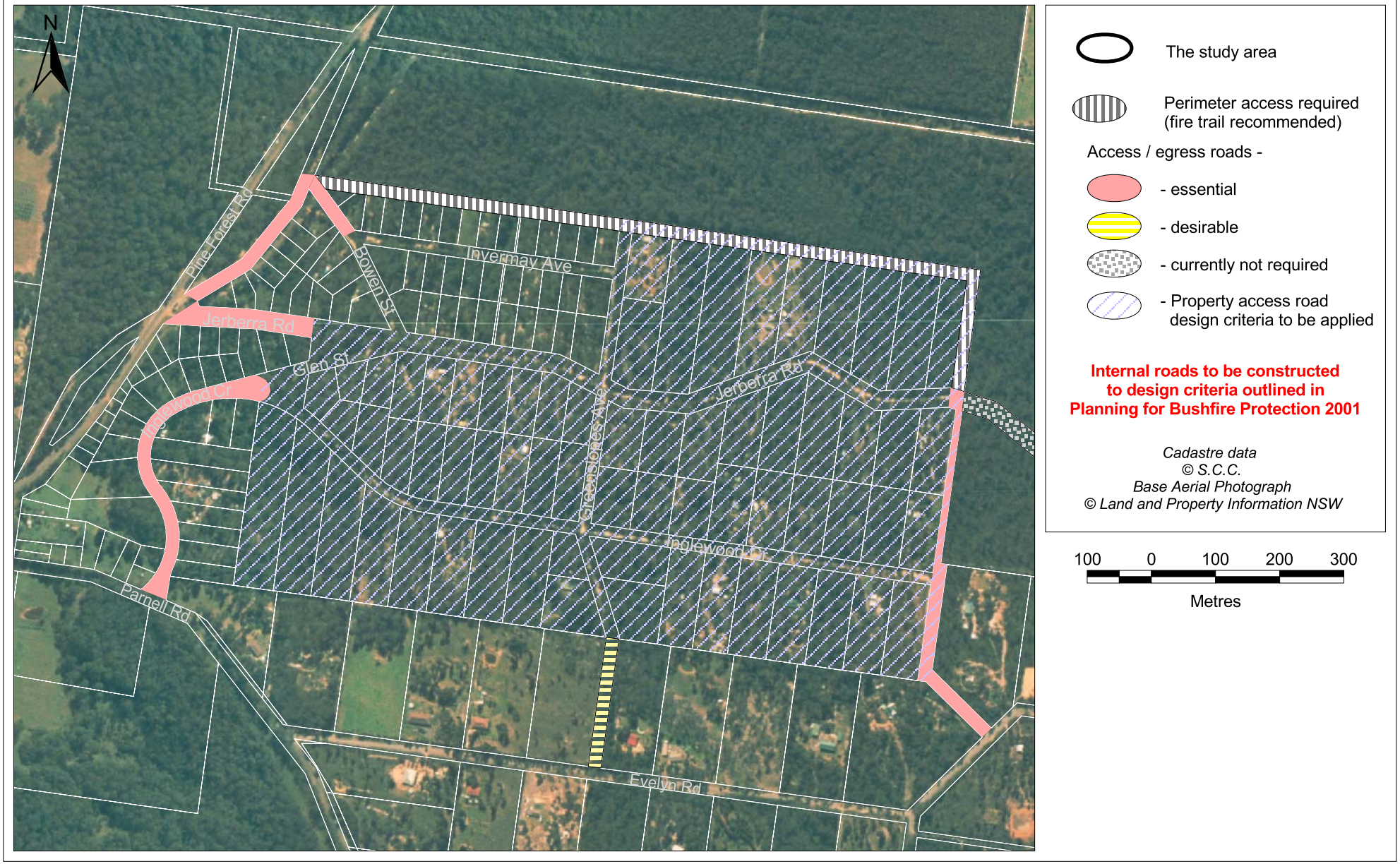


Figure 12: AS3959 Building construction standards

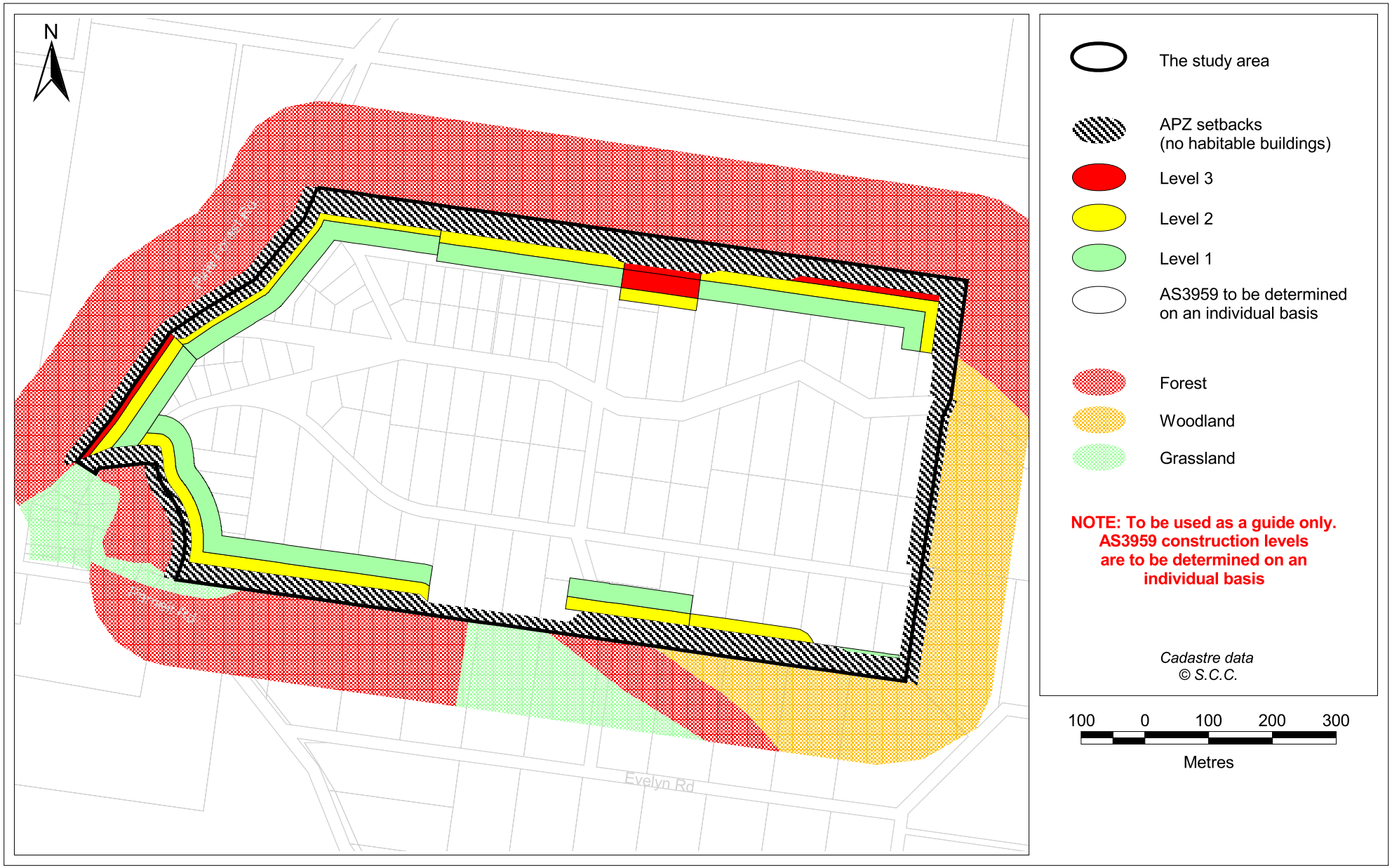


Figure 13: Opportunities

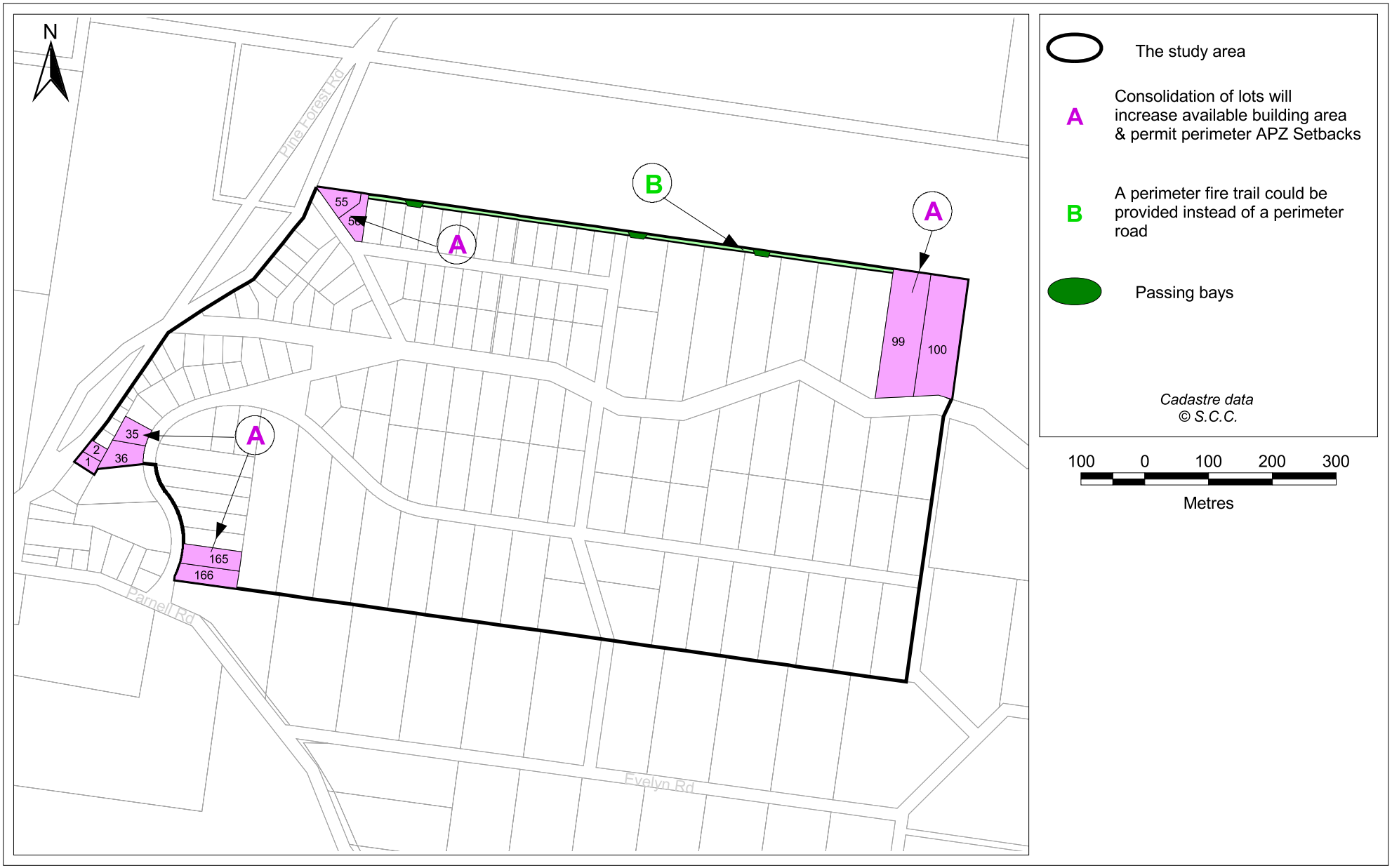


Figure 14: Lots affected through the provision of perimeter asset protection zone setbacks

Figure 15: Recommendations 1 & 2 (location of building envelopes)