



Blackash

Bushfire Consulting

Peer Review of Ralston Avenue Planning
Proposal - Bushfire Planning

Prepared for
Warringah Council

Site
Ralston Avenue

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1. Summary

The Planning Proposal and supporting documents deal well with the technical issues associated with bushfire within the proposed site. However, they fail to adequately address the fundamental principle of the suitability of the site for development. It is recognised that a significant amount of time and energy has been devoted to the proposal to date. However, the Planning Proposal fails to look at the broader site context and bushfire safety provisions that need to be considered from a strategic planning perspective. The fundamental question of the suitability of the site for development has at best, been rudimentary. This report will demonstrate that the site is at extreme risk of bushfires and has a number of significant safety concerns that warrant refusal of the Planning Proposal.

The Planning Proposal seeks to bring land within the C8 Belrose North Locality under Warringah Local Environmental Plan (**WLEP 2000**), into the R2 Low Density Residential under Warringah Local Environmental Plan 2011 (**WLEP 2011**). The purpose of the zoning is to facilitate the subdivision of 159 residential lots for low-density residential development.

The proponent has focused attention in areas that suit the merits of the site being developed. It appears that the technical issues associated with width of asset protection zones (**APZs**), roads, and management of APZs have dominated the work to date, including during engagement and consultation with the NSW Rural Fire Service (**RFS**).

Planning decisions, which avoid the placement of inappropriate developments in high-risk locations, is consistent with actions identified in the NSW Department of Planning and Environments (**DoPE**) guideline 'A Plan for Growing Sydney' (**DoPE 2014**). Consistency with A Plan for Growing Sydney is a requirement specifically identified in the DoPE Gateway Determination for the Planning Proposal. The proposal does not examine the strategic planning requirements of Plan Sydney, nor does it comply or address the requirements established in the s.117 Direction 4.4 Planning for Bushfire Protection 2006.

This report identifies significant areas of concern in relation to the proposed development of the site. The concerns in relation to the site include the orientation and location of the subdivision which is located on a ridgetop peninsula surrounded by a range of highly bushfire prone vegetation, deep valley complexes with contiguous and significant amounts of bushland located within and adjacent to the site. Indeed, the site will be surrounded on four sides by connected bushland that has the potential to carry high intensity, large and complex fires into and through the site.

There is potential for future lots to be developed that may include vulnerable uses (such as home day care). The site is inherently risky and presents significant issues for vulnerable communities.

Proposed access to the site is by the extension of two existing roads through areas of unmanaged and highly bushfire prone vegetation. A number of pinch points are evident within and leading into the site that would compromise access and egress during a bushfire emergency. The access roads have the

potential to be cut (multiple times) at these pinch points. Furthermore, Wyatt Avenue and Ralston Avenue each have three 330kva high voltage power lines above them. The combination of dense smoke and hot gases generated by a large bushfire directly under or near a high voltage transmission line can create a conductive path that increases the potential for arcing to ground. There is a high risk that arcing can flow to the ground similar to a lightning strike. Fire fighting and power companies have guidelines that prohibit operation under high voltage power lines and require extensive exclusion zones to be enforced. The location of the power lines above the two access points into and out of the site will require access to be cut which will prevent fire fighter access and resident evacuation. This issue is extremely dangerous and has not been flagged in any of the documentation associated with the planning proposal.

The site is located at the western extremity of a peninsular that runs roughly east west and is upslope from the surrounding dense vegetation. I have outlined my concerns about the suitability of the site for development and non-compliance of access with *Planning for Bushfire Protection*, particularly in relation to evacuation. Other deficiencies of the application and the site include failure to meet bushfire protection measures such as the structure and layout of APZs, potential for inadequate water services for firefighting purposes, the failure to provide safe access throughout the site on the internal road network, and lack of clarity on provision and linkage of fire trails. Nor does the proposal address obligations and actions that can be taken under the *Rural Fires Act, 1997* to mitigate the impact of fire on communities. Such mechanisms place at risk, areas set aside for ecological reasons. The tension between the absolute need to protect life, will always take precedence over the need to maintain ecological values.

The Planning Proposal will place an increased burden on emergency services in the event of a bushfire in the vicinity of the site. In some circumstances, it might be possible for emergency services to carry this burden. However, during significant fire events the potential for the site to be exposed to multiple fire fronts, emergency services are likely to be stretched beyond reasonable limits and, more likely than not, services would not be able to be tendered to all of these new developments.

For these reasons, the Planning Proposal requires most careful consideration, both in terms of the capacity of emergency services to serve these communities during significant events and, indeed, for these communities themselves to cope with significant events.

Key Findings:

The inherent bushfire risks posed by the site are significant. The Planning Proposal does not adequately address:

- The broader site context;
- Bushfire threat;

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- Potential for the site to be isolated by fire;
- Potential for access to be cut and the implications for evacuation;
- Pinch points, asset protection zones and;
- Life safety issues associated with fire and proximity to high voltage power lines.

The impact throughout the site and off site resulting from the establishment and maintenance of APZs will be significant. Proposed APZs are inadequate in some areas and will need to be significantly increased in size throughout the site and off site including into proposed offset areas. Visual impacts from the APZ clearing on the hilltops will be significant.

Due to the placement of the proposed development, the difficulties for both affected residents and emergency services are so great, that no development should be permitted on this site.

2. Introduction

2.1. Background to the Planning Proposal

The Metropolitan Local Aboriginal Land Council (**MLALC**) has provided a Planning Proposal to Warringah Council in the preparation of a Local Environmental Plan (**LEP**) to zone land within the Locality C8 – Belrose North under WLEP 2000, to allow its future development for residential purposes. The applicants of the Ralston Avenue Planning Proposal are seeking Council's support for the rezoning of approximately 17 hectares (see **Figure 1**) of bushland to facilitate subdivision of 159 residential lots.

The proposal seeks to zone the central development area as R2 Low Density Residential whilst maintaining the land surrounding the development, as an offset area, which would be zoned as E3 – Environmental Management under WLEP 2011. The proposal also includes the rezoning of a small parcel of land to RE1 – Public Recreation. The land surrounding the property to the north, south and west is zoned as E1 – National Parks and Reserves. Land to the east of the site has a Transgrid asset, Sydney East Sub Station with associated infrastructure such as high voltage power lines, a communications tower and remnant bushland areas that are connected to the surrounding National Park.

The original proposal was lodged with Warringah Council in April 2013 and subsequent consultation and additional reports have been provided in support of the Planning Proposal. Gateway determination was issued by the Department of Planning and Environment in January 2015. In accordance with s117 *Direction 4.4 Planning for Bushfire Protection*, consultation is required with the Commissioner of the NSW Rural Fire Service (**RFS**) following receipt of a gateway determination to consider the merits of the proposal and its ability to achieve the requirements of *Planning for Bushfire Protection 2006 (PBP)*.

The proposal is located on land mapped by Warringah Council as being bushfire prone. As such, the proposal is subject to the requirements of Section 117(4.4(4)) of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* which requires Council to consult with the Commissioner of the NSW RFS and to take into account any comments by the Commissioner. *Direction 4.4, Planning for Bushfire Protection* identifies matters for consideration for planning proposals that will affect, or are in proximity to land mapped as bushfire prone.

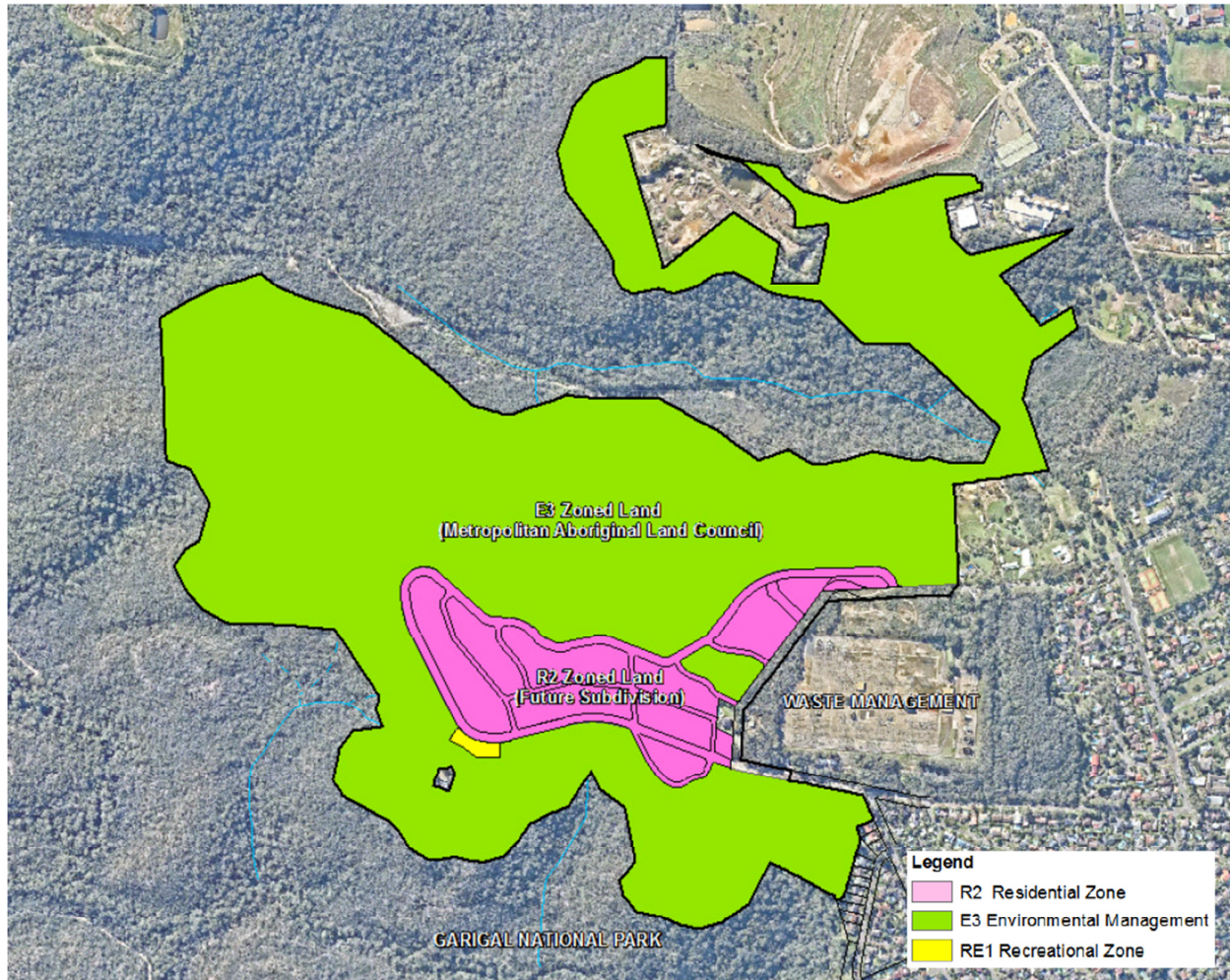


Figure 1 Zoning Plan - source TBE Fuel Management Plan

2.2. Scope of Work

Blackash has been engaged by Warringah Council to peer review the bushfire planning documentation submitted with the Ralston Avenue Planning Proposal. To assist with the assessment of the Planning Proposal in relation to bushfire matters, Council is seeking comment from Blackash of relevant aspects from the following items:

- Ralston Avenue, Belrose - Updated Planning Proposal – December 2015;
- Appendix B - Bushfire Protection Assessment (Travers Bushfire & Ecology 2015);
- Appendix C - Fuel Management Plan (Travers Bushfire and Ecology 2015);
- Appendix D and E Ecological Assessment (e.g. proposed offset commitments and vegetation type) (Travers Bushfire and Ecology 2015) and Biodiversity Assessment and Biocertification Strategy (offset measures only);

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- Appendix G – Updated LEP Maps and Indicative Subdivision Plan;
- Appendix H – Draft Voluntary Planning Agreement. Bushfire APZ design and timing; and
- Referral responses and correspondence from the NSW RFS (provided in the Fuel Management Plan and Bushfire Protection Assessment).

Council has also sought review of the suitability of proposed bushfire protection measures associated with the Planning Proposal and consistency with relevant legislation. A brief review of the key documents is at Attachment 3. However, many of the issues identified within this report were not identified or discussed in documents associated with the Planning Proposal. Hence, this report identifies and discusses many issues that require further consideration.

3. Background for Bushfire and Strategic Planning

Bushfires are an intrinsic part of the NSW landscape. They are a natural hazard to which both rural and urban communities are exposed, and which are capable of inflicting tremendous consequences on communities¹ and the sustainability of ecosystems. The consequences of bushfires can be significant in terms of lives lost, psychosocial impact, infrastructure and asset loss and the opportunity cost on the environment and other values to reduce risk and manage fuel.

The likelihood of bushfires, longer bushfire seasons and extreme bushfire behavior associated with intense weather occurring in NSW is predicted to rise due to climate change. As fire threat increases, disaster risk reduction and adaptation policies will play a critical role in reducing risks to people and their assets. Longer fire seasons will reduce the window of opportunity for planned burning.

The RFS has a statutory obligation for the protection of persons from injury or death, and property from damage, arising from fires. Indeed, all land managers have responsibilities to reduce bushfire risk and all community members have a role to play to understand their risk and to take action to ensure their safety. At a landscape scale, a range of strategies are utilised to achieve this aim, including fire prevention, community education, hazard reduction burning, fire suppression and planning and building controls in bushfire prone areas.

In 2002, the Council of Australian Governments concluded that land use planning which takes into account natural hazard risks was the single most important mitigation measure in preventing future disaster losses in areas of new development. The important role of land use planning was reinforced by the 2009 *Victorian Bushfires Royal Commission (VBRC)*, with nearly one third of its recommendations relating to the planning and building system. NSW has a long history of strong land use planning and building controls, which have been tested to assess and mitigate bushfire risk.

Improved land use planning decisions and building controls for developments in bushfire prone areas are intrinsic to the fire management strategies of the RFS and indeed the State of NSW. The application of various pieces of legislation, policy, and guidelines (including PBP) provides one of the most effective means of bushfire planning currently available in Australia.

Making planning decisions, which avoid the placement of inappropriate developments in high-risk locations, is consistent with actions identified in the NSW Department of Planning and Environments (**DoPE**) guideline '*A Plan for Growing Sydney*' (DoPE 2014). Consistency with *A Plan for Growing Sydney* is a requirement specifically identified in the DoPE Gateway Determination for the Planning Proposal. Planning decisions must be based on the best available evidence and a rigorous assessment of risks to

¹ Climate Council (2013)

ensure that people, homes and businesses are not at unacceptable risk from natural hazards. Direction 4.2 seeks to build Sydney's resilience to natural hazards and recognizes the risk posed to existing and new development specifically from bushfire. Where good outcomes cannot be provided a viable option is to halt development in high-risk areas (see Section 7.2 for more information).

Between 1994 and 2016 there have been a number of significant bushfires in NSW, which have subsequently triggered associated inquiries by government authorities. As a result several significant legislative amendments have been made since 2002 to improve bushfire management in NSW. Improved bushfire management administration has also been achieved through amendment of the EPA Act and RF ACT.

The *Rural Fires Amendment Act 2000* introduced planning legislation reforms which strengthened the RFS Commissioner's role with regard to the development control process for new developments. The *Rural Fires and Environmental Assessment Legislation Amendment Act 2002* amended the *RF Act* and the *EP&A Act*. The impetus for the reforms stemmed from the 2001-2002 NSW bushfires and the Joint Select Committee inquiry into them. The reforms had two overarching objectives: greater integration of fire prevention into the planning regime; and improved bushfire risk management. This has been enshrined in legislation and practice in NSW to ensure appropriate risk based development in bushfire prone areas.

In accordance with ISO31000 (International Standard for Risk Management), the fundamental principle of good risk management (and strategic planning) is to avoid the risk. In a planning sense, this involves the assessment of the proposal and its exposure to risk at a broader level to determine suitability, constraints associated with the Site, the benefits and threats. *The National Disaster Resilience Strategy* (p. iii) identifies that governments have a significant role in strengthening the nation's resilience to disasters by:

developing and implementing effective, risk-based land management and planning arrangements and other mitigation activities

The national strategy articulates that land use planning systems and building control arrangements should reduce, as far as is practicable, community exposure to unreasonable risks from known hazards. Sound strategic planning that is risk based should address fundamental issues associated with risk and viability of proposals against a range of considerations.

LEP's guide planning decisions within a local government area and are an integral part of the NSW system to understand and reduce bushfire risk to new communities. Through land use zoning and development standards, LEPs allow local government to manage the ways in which land is used and the extent to which future development and people are exposed to bushfire. PBP (p.4) identifies that

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LEPs are *the best way of strategically achieving bushfire protection objectives*. Unfortunately, PBP does not directly link these strategic provisions to questions of risk and suitability of development. However, the RFS Practice Note 2/12 - *Planning Instruments and Policies* provides detail of planning considerations and the principles that need to be considered (See section 7 for further discussion on Practice Note 2/12).

Whilst NSW has a long history of catastrophic bushfire, the Victorian bushfires of 2009 resulted in 173 lives being lost and over 2,500 houses being destroyed. These fire marked a turning point in the importance at a national level of good planning decisions and is reflected in the findings of the Victorian Bushfires Royal Commission², which states that:

The current approach to planning does not take account of the fact that there are some areas in which the risk to life from bushfire is so high that new settlements should not be established in these locations.

A resilience-based approach focused on community wellbeing, livability and sustainability through strategic planning and sound risk management is essential. The NSW planning system recognises that not all areas should be developed and that consideration is to be given to limiting or excluding incompatible development in bushfire affected areas commensurate with the level of risk³.

² Victorian Bushfire Royal Commission p215

³ NSW RFS Practice Note 2/12 Planning Instruments and Policies

4. Site Description

The site (as per Figure 1) is located at Lot 1 DP 1139826, Ralston Avenue, Belrose. The proposed rezoning area is located on an undeveloped bushland plateau of approximately 17 ha. The site is accessed through unmanaged bushland from existing residential areas to the east of the site via Ralston and Wyatt Avenues. The concept plan is shown in **Figure 2**.

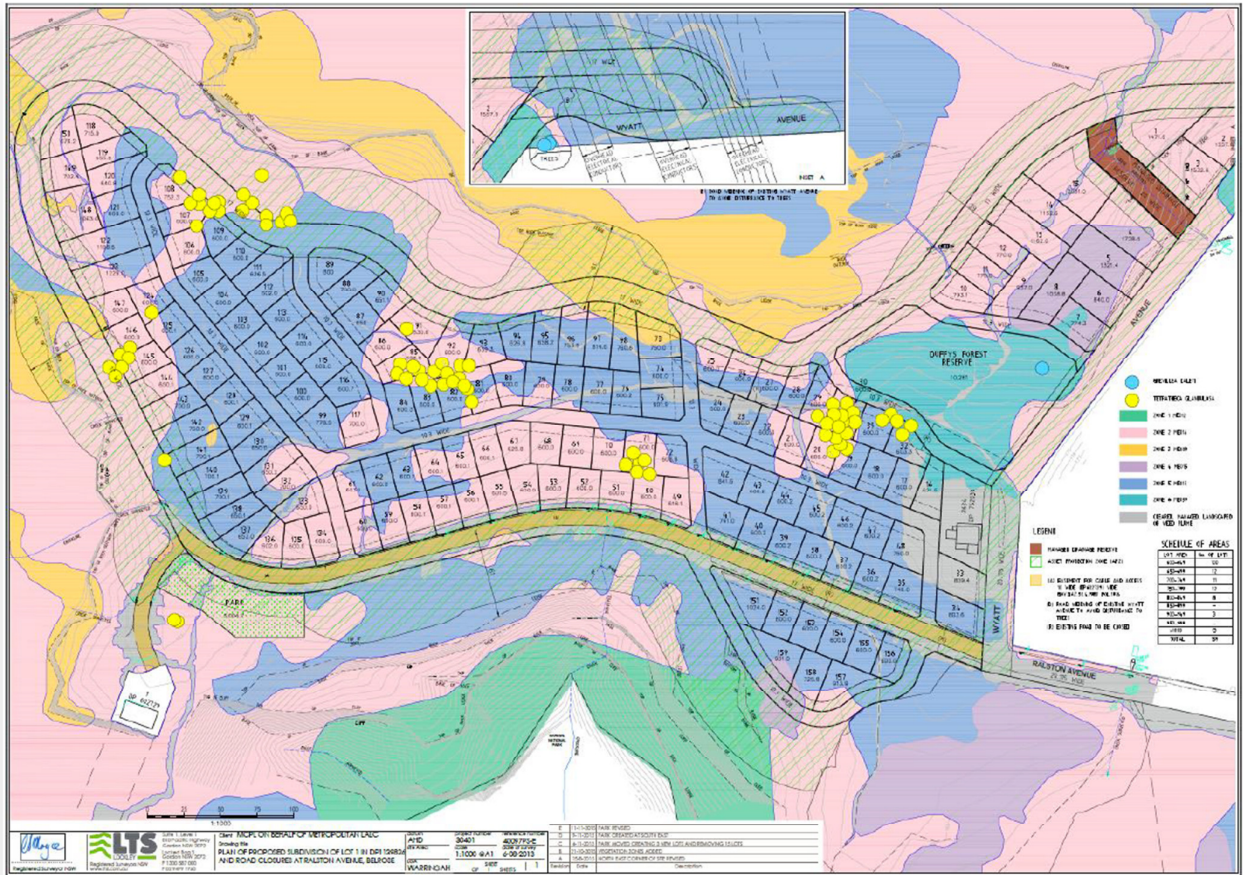


Figure 2 Plan of Proposed Development - source TBC Ecological Assessment p.4

The Planning Proposal seeks to create three distinct land uses as per figure 1:

- Zone R2 Low Density Residential (approximately 13.5% of the site when combined with RE1)
- Zone RE1 Public Recreation (approximately 13.5% of the site when combined with R2)
- Zone E2 Environmental Conservation (approximately 86.5% of the site)

The site is located at the western extremity of a ridgetop peninsular that runs roughly east west and is upslope from the surrounding dense vegetation. The site is surrounded on 4 sides by contiguous bushland and deep bushland valleys. Garigal National Park is to the north, west and south of the Site, while unmanaged bushland under the care, control and management of Transgrid is to the east of the site. Transgrid's 330kV / 132kV Sydney East Substation is located adjacent to the proposed development to the east. The substation is supplied via 330kV overhead transmission lines from the north of the substation site. The electricity substation is surrounded by dense remnant and regrowth vegetation acting as a visual and sound buffer zone between the substation and adjacent residential areas. The substation provides multiple 132kV feeders to the local electricity distributor (Ausgrid).

The site is designated as being Bushfire Prone on Warringah Council's Bushfire Prone Land Map. The Bushfire Prone Land Map identifies land that can support a bushfire or is likely to be subject to bushfire attack⁴. The bushfire hazard across the site is generally considered to be extreme, reflecting the contiguous bushland, steep slopes, high fuel loads and propensity for high intensity bushfires to be carried by bushfire weather into the site. The site consists of a variety of vegetation formations ranging from heathland to forest. For the purpose of assessment, much of the site and importantly the areas directly adjacent to the areas proposed to be subdivided is considered to be forest which presents potential for high intensity crown fires to impact the proposed future residential houses.

The site does not have a history of wildfire. However, strategic hazard reduction burns were completed over parts of the site in 1998 and most recently over a three-day period from Friday 4 March to Sunday 6 March 2016. This hazard reduction burn burnt most of the proposed development area and required significant resourcing to be undertaken safely. A site inspection undertaken on 15 March 2016 shows that the hazard reduction burn was of high intensity with significant areas of the burn involving crown fire. It is understood that perimeters of the hazard reduction burn were on adjoining National Parks fire trails and that the burn had been on the Warringah Pittwater Bushfire Management Committees planned burning schedule for the last five years. Implementation of the burn was delayed due to unsuitable weather and fuel conditions.

The site contains a number of ecological values that are currently listed under State and Commonwealth legislation. The site is located high in the catchment with a number of creeks and riparian areas flowing from the site into Middle Harbour.

⁴ NSWRFBS Bushfire Prone Mapping Guidelines p. 4

5. Site Context and Bushfire Risk

The importance of the broader context of the site from a bushfire position is critical and cannot be understated. The site is located on a narrow ridgeline/ peninsular that runs roughly east west. The peninsular is surrounded to the north, east and west by deeply carved sandstone valley complexes that are heavily timbered with a categorization of forest in accordance with *Planning for Bushfire Protection 2006* (PBP). Within the site, eight vegetation communities have been identified and mapped by Travers Bushfire and Ecology (TBE) in the Bushfire Report dated 2015. This is shown in **Figure 3**.

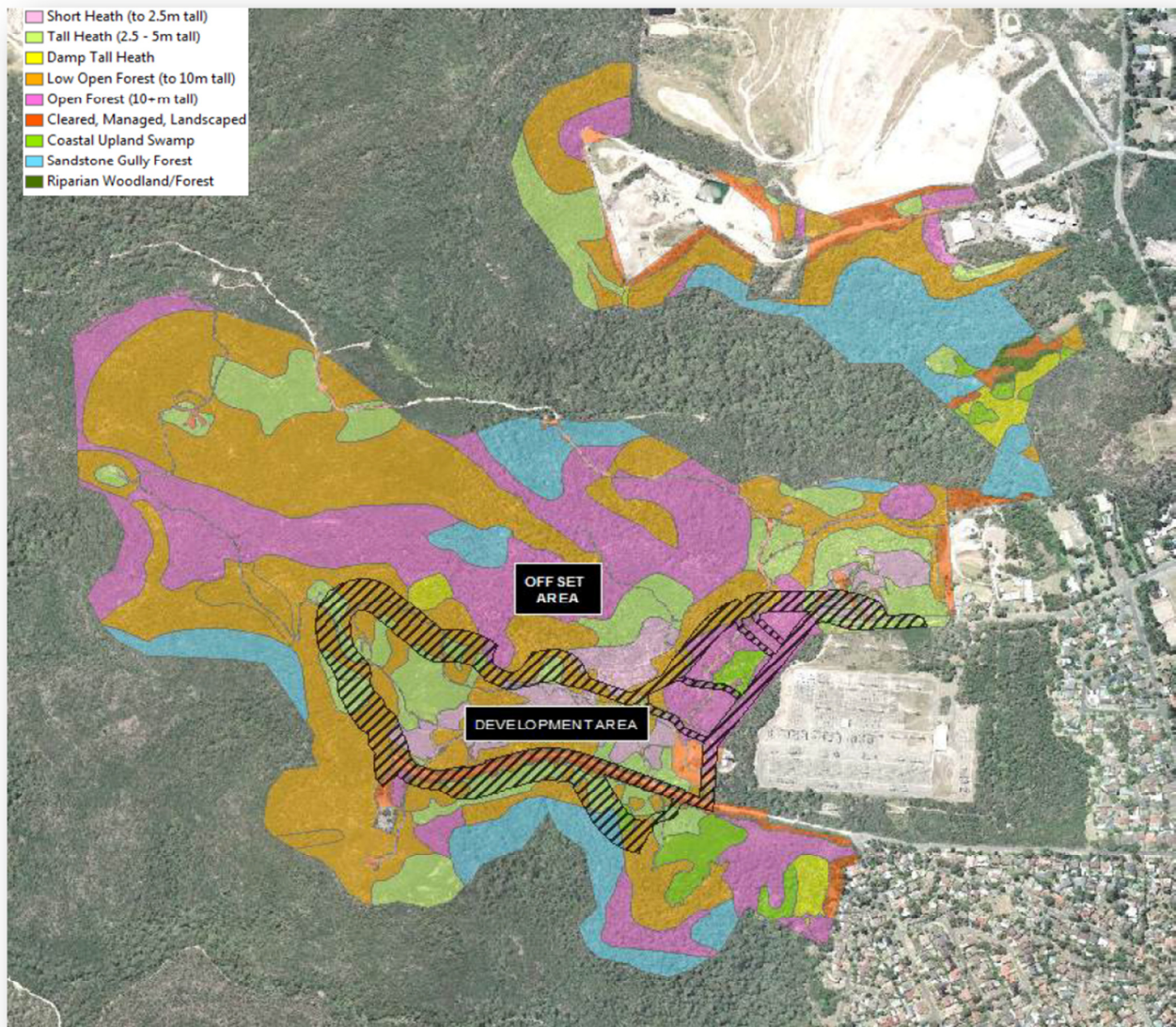


Figure 3 Vegetation Communities - source TBE Bushfire Report p. 14

The slopes within the offset area (as per figure 3) are steep and in combination with vegetation communities that have a propensity to contain high fuel loads, facilitates the potential for high intensity bushfire to be sustained leading into the site. The *Warringah Pittwater Bushfire Risk Management Plan (Risk Plan)* identifies that:

The typical / average climate in the Warringah Pittwater BFMC area is for uniform rainfall throughout the year, although higher rainfall can be experienced in the months of February to March and the bushfire season generally runs from October to March. Prevailing weather conditions associated with the bushfire season in the Warringah Pittwater BFMC area are North-westerly winds accompanied by high daytime temperatures and low relative humidity⁵.

Furthermore, the Risk Plan notes that The Warringah Pittwater Bushfire Management Committee area has on average 48 bushfires per year, of which 7 to 5 years on average can be considered to be major fires⁶.

Major fires in the Sydney basin are driven by hot and dry winds from the west to northwest. The potential for extreme bushfire weather driving large scale and intense bushfires into the site is significant. Figure 4 (see over) shows the broader site context with unbroken bushland in the adjoining Garigal National Park. Indeed, Garigal is connected to Ku-ring-gai Chase National Park to the north across Mona Vale Road. This presents opportunity for not only short run fires, but also large 'campaign' fires to impact the site. The predominant bushfire weather will drive fires from the northwest up the steep slopes with ferocious intensity.

The site Peninsula is bounded to the east by existing densely populated residential areas of Belrose, which also include vulnerable community (school and aged care) developments. These areas also carry a high bushfire risk due to the nature of the topography and surrounding vegetation, including steep, densely vegetated slopes leading up to developed areas and large pockets/ fingers of remnant vegetation that can carry fire. The surrounding residential areas are developed on a broader ridgetop peninsular and have complex urban bushland interfaces with extreme bushfire risk. Most of these surrounding peninsulas have narrow access and egress roads, with the majority of dwellings constructed prior to the introduction of modern planning documents intended to mitigate

⁵ Warringah Pittwater Bushfire Risk Management Plan p. 9

⁶ Warringah Pittwater Bushfire Risk Management Plan p. 9

the impact of bushfires, such as Australian Standard 3959 Construction of Buildings in Bushfire-prone Areas (**AS3959**) and PBP 2006. While the existing development is identified as being at “extreme” risk in the Bushfire Risk Management Plan, the planning proposal seeks new development that is more at risk than existing development.

The configuration of the land and adjoining unmanaged bushland provides a high likelihood that the site will be isolated by high intensity fire. The narrowness and configuration of the site lends itself to be heavily impacted by the most intense bushfires being driven by strong northwesterly winds. There is potential for the site to be impacted from four sides with prolonged bushfire attack in the form of ember attack, smoke, radiant heat and direct flame contact. The number of pinch points (see the section on Access), location of bushfire fuel and connection of unmanaged remnant areas presents an extreme risk to life. All access and egress points could be immersed in flame and will at some point have radiant heat levels that will be life threatening to people exposed in the open or in vehicles attempting to flee the site.



Figure 4 Broader Site Context and Predominant Fire Weather Path (Six Maps)

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6. Adjoining Land & Risk Management

Land immediately to the east of the site includes the Transgrid Sydney East Sub Station, unformed road corridors, including Wyatt and Ralston Avenue and existing residential development. Figure 5 identifies the significant parcels of adjoining land that has potential to carry bushfire.

Area 1 is Crown Land with a pending MLALC land claim. The land is bushfire prone, riparian land, has Aboriginal potential and contains critically endangered threatened species. It is currently deferred land under WLEP 2000 and is located within the C8 Belrose North Locality. The proposed zoning under the Oxford Falls Belrose North strategic review is E3 Environmental Management. The E3 zone permits - Aquaculture; Bed and breakfast accommodation; Building identification signs; Business identification signs; Community facilities; Dwelling houses; Emergency services facilities; Environmental facilities; Environmental protection works; Extensive agriculture; Farm buildings; Home businesses; Home industries; Horticulture; Recreation areas; and Roads.

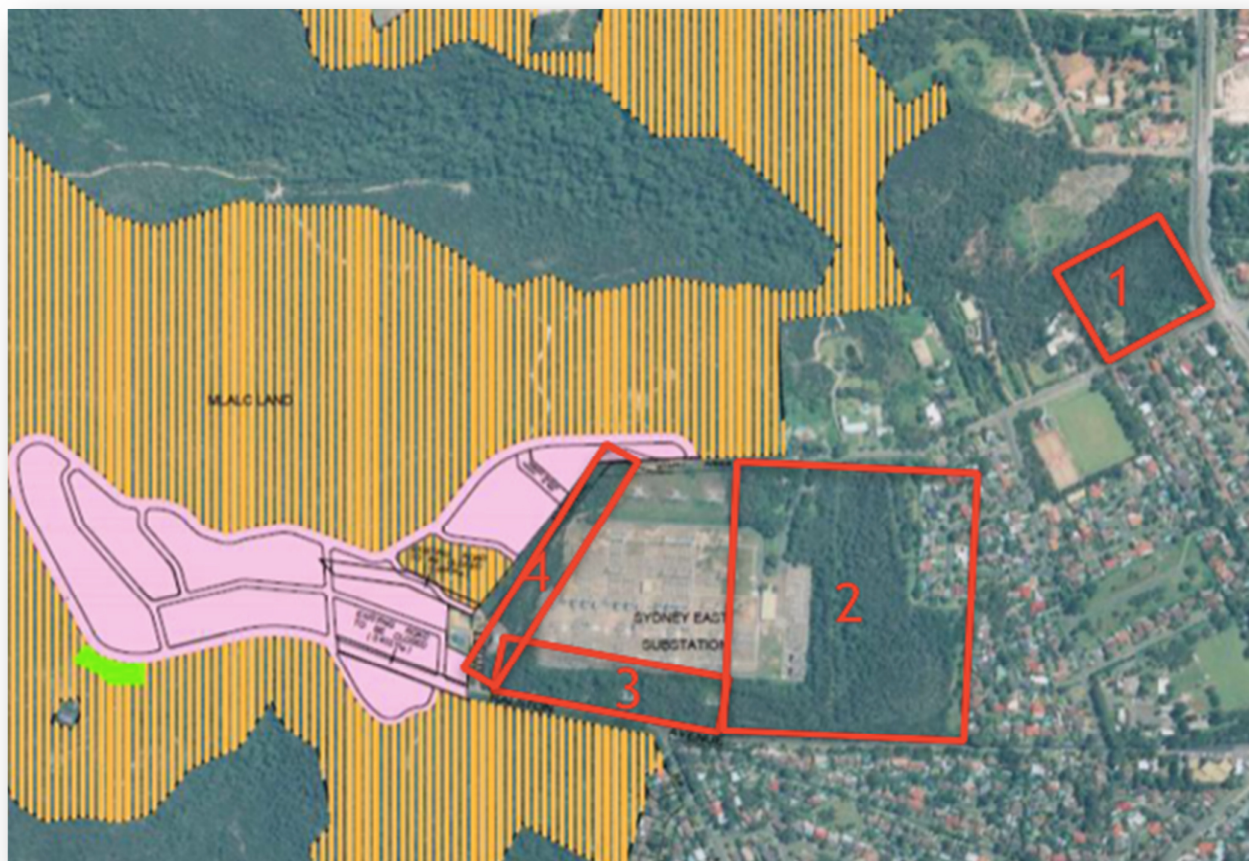


Figure 5 Adjoining Land

Transgrid owns areas 2 – 4. It is unlikely that this land will be developed, unless the land is sold (and then rezoned) or the substation expands. The land is currently deferred land under WLEP 2000 and is

located within the C8 Belrose North Locality. The proposed zoning under the Oxford Falls Belrose North Planning Proposal is SP2 Public Utility Undertaking, which does not permit residential accommodation. The SP2 zone permits any development that is ordinarily incidental or ancillary to development for that purpose; Environmental protection works; and Roads. Vegetation within area 2 on the substation land also includes a local population of the critically endangered plant species, *Grevillea caleyi*.

Ralston Avenue and Wyatt Avenue form the primary access to the site. There is a range of significant bushfire management issues associated with this configuration. Figure 5 shows areas 2, 3 and 4 to contain forested vegetation, which is contiguous to the adjoining Garigal National Park. The vegetation is directly adjacent to the connecting roads and the site. These areas are known as “pinch points”. It is possible that any of the forms of bushfire attack including smoke could cut the site off from surrounding areas, preventing access and evacuation. Several natural funnels lead into the site and surrounding areas. Such natural funnels can channel the direction of fires, which has significant potential to focus and increase the delivery of embers and other forms of bushfire attack into and through the site, the pinch points and surrounding development.

Given the number of proposed lots and the nature of the proposed future development west from the pinch points presents particular concern. The connecting roads will most likely be cut during bushfire due to smoke, embers, spot fires and indeed crown fires running through these areas. Matters further complicating the access issues associated with the electricity transmission lines are discussed in section 11 of this report that present critical life safety issues that will not be able to be addressed by the Planning Proposal.

If approved, the future use of the site will place an increased burden on emergency services in the event of a bushfire in the vicinity of or running through the site. In some circumstances, it might be possible for emergency services to carry this burden. However, during significant bushfire events, there is potential for the site (and other nearby peninsulas) to be exposed to multiple fire fronts. Access to the site could be cut off at the pinch points and emergency services are likely to be stretched beyond reasonable limits. More likely than not, services will not be able to be tendered to all of these developments. The Australasian Fire and Emergency Services Council (**AFAC**) position paper on community safety (p. 5) notes that:

There will be circumstances, such as on days of very high or extreme fire danger, when fire agencies are unable to provide fire-fighting resources in sufficient time and strength to prevent all loss of life and damage to property.

The Planning Proposal requires most careful consideration, both in terms of the capacity of emergency services to serve these communities during significant events and, indeed, for these communities themselves to understand risk and to cope with significant events.

Figure 6 is an extract from the Warringah Pittwater Bushfire Risk Management Plan (**Risk Plan**). The Risk Plan assesses the bushfire risk posed to assets. One of the core components of the risk planning process is to avoid the risk where possible. **Table 1** (see over) identifies the consequences and risks associated with the surrounding land use. Of note, the John Colet School on Wyatt Avenue and transmission lines have been assessed as having extreme risk. The consequences associated with bushfire impact on the Sydney East Sub Station have been assessed as catastrophic.

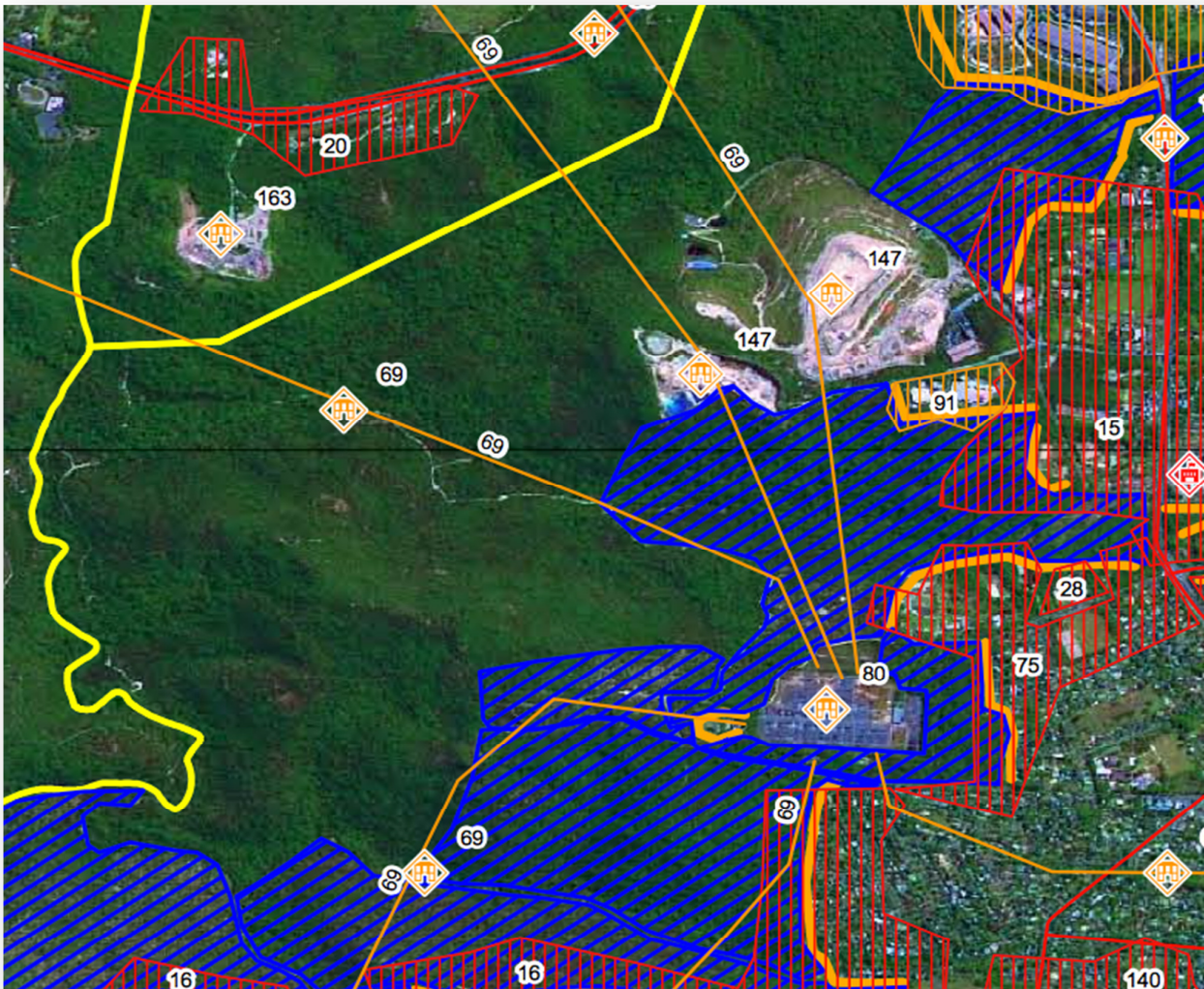


Figure 6 Map extract covering the planning proposal from Bushfire Risk Management Plan

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Priority	Map reference number	Asset type	Asset sub type	Asset name	Asset Location	LGA	Likelihood	Consequence	Risk
1A	28	Human Settlement	Special Fire Protection	The John Colet School	Wyatt Avenue Belrose NSW	Warringah	Almost certain	Catastrophic	Extreme
1C	69	Economic	Infrastructure	Power Lines and Support Towers.	Various Locations	Warringah	Almost certain	Major	Extreme
2A	75	Human Settlement	Residential	Wyatt Avenue Rural / Urban	Wyatt Avenue Belrose	Warringah	Likely	Major	Very High
Priority	Map reference number	Asset type	Asset sub type	Asset name	Asset Location	LGA	Likelihood	Consequence	Risk
2A	78	Human Settlement	Residential	Jamieson Park Urban North East	Jamieson Park Collaroy Plateau	Warringah	Likely	Major	Very High
2A	79	Human Settlement	Residential	Anzac Avenue Reserve Urban	Hendy Avenue Collaroy NSW	Warringah	Likely	Major	Very High
2B	80	Economic	Infrastructure	Sydney East Sub Station	Belrose	Warringah	Possible	Catastrophic	Very High

Table 1 Risk and Consequences from Bushfire Risk Management Plan

The NSW Bushfire Risk Management Framework is consistent with *Australian and New Zealand Standard AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines*, which provides a generic, internationally accepted basis for best practice risk management. Planning for and understanding and mitigating risk is a core function of government, both local and state. It is the responsibility of agency leaders and all staff to think about and manage risk commensurate with good practice, legislation, policy and guidelines. The challenge presented in this Planning Proposal is to consider the context for managing risk as well as continuing to identify new risks that emerge over the life of the development. Referral and assessing agencies need to look at the wider risk environment and how cross-functional risks may stack up. Inter-agency risks and benefits must be considered on an integrated approach by assessing agencies to ensure that future occupants and emergency services are not placed at extreme risk during bushfires within and adjacent to the site.

The NSW Bushfire Risk Management planning process follows the key elements of risk management. Section 3.2 of the Risk Plan identify strategic planning considerations⁷:

⁷ Warringah Pittwater Bushfire Risk Management Plan p. 17

- *Ensuring developments in bushfire prone land comply with Planning for Bushfire Protection.* This assessment process requires new applications for development to include bushfire protection measures; and
- *Using the Local Environment Plan/s (LEPs) to control developments in areas with a bushfire risk.*
Importantly, the risk plan cites that "LEPs can be used to exclude development in extreme bushfire risk areas or where bushfire protection measures cannot be incorporated."

One of the fundamental principles of risk management is to implement treatment options. Strategies to manage risks including bushfire typically include avoiding the threat, reducing the negative effect or probability of the threat, transferring all or part of the threat to another party, and even retaining some or all of the potential or actual consequences of a particular threat (emergency response and insurance). Risk avoidance includes not undertaking an activity where that activity exposes future assets (people and assets) to an unacceptable level of threat or where the opportunity costs such as environmental impact are significant.

Strategic planning by its very virtue requires these matters to be considered and decisions to be in the best interest of those that will realise and bear the burden of this future risk. This is enshrined in legislation in NSW that requires an integrated approach to considering new development in Bushfire Prone Areas. PBP⁸ goes so far as to state that:

Improved land use planning decisions for developments in bushfire prone areas are intrinsic to the fire management and environmental protection strategies of the Service.

The aim of PBP⁹ is:

to use the NSW development assessment system to provide for the protection of human life (including firefighters) and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, on-site amenity and protection of the environment.

Sound risk management and decisions that prevent exposing future occupants and fire fighters to an unacceptable level of bushfire risk should be a the key consideration of the Planning Proposal and rezoning process. Unfortunately, the bushfire matters considered to date are of a technical nature and do not consider or address the broader risk management framework, principles of good risk management or consider exclusion of the development.

⁸ Planning for Bushfire Protection 2006 p. i

⁹ Planning for Bushfire Protection p. 1

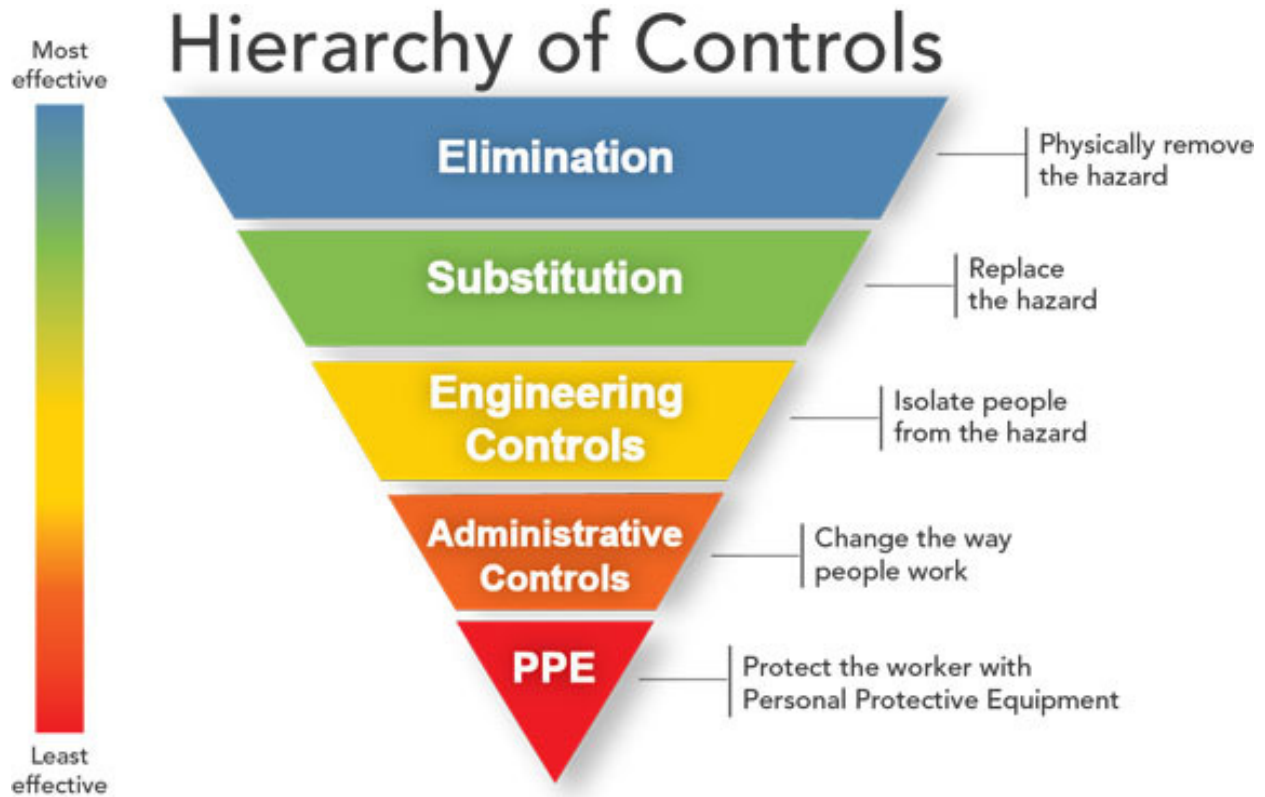


Figure 7 Risk Management Hierarchy of Controls (CDC)

Figure 7 shows the hierarchy of different types of risk management treatments, which reflects the hierarchy of risk control mechanisms that may be applied. The top element, which is the most effective control is to “eliminate” or avoid the risk altogether and provides inherent safety by excluding the threat or risk. Elimination and substitution are the most effective at reducing hazards and future risks.

It is recommended that consent authorities and government agencies including the NSW Department of Planning and Environment, Warringah Council and the RFS re-evaluate the planning proposal to address fundamental risk management in relation to planning matters. In particular, matters associated with avoiding the risk needs to be considered in relation to the s.117 Directive and the RFS Practice Note 2/12 as discussed in the following section.

7. Planning Directions

7.1. Planning Direction 4.4

Section 117 of the EPA Act allows the Minister for Planning to give directions to councils regarding the principles, aims, objectives or policies to be achieved or given effect to in the preparation of draft LEPs. Issues relating to consistency with section 117 directions must be settled before draft LEPs are certified for exhibition.

LEPs guide planning decisions for local government areas and are an intrinsic part of the integrated approach to mitigating bushfire risk through appropriate planning considerations based on significant past bushfire consequences in NSW, as outlined in Section 3. They do this through zoning and development controls, which provide a framework for the way land can be used. LEPs are the main planning tool to shape the future of communities and also ensure local development is done appropriately.

If a proposed amendment to land use zoning or land use affects a designated Bushfire Prone Area, then the section 117(2) Direction No 4.4 must be applied. Section 117 of the EP&A Act provides for the Minister for Planning to direct a council, in relation to the preparation of a draft LEP, to apply the planning principles specified in that direction.

The section 117 Direction requires councils to:

consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 56 of the Act and to take into account any comments by the Commissioner; and

In accordance with Direction 4.4, a planning proposal must:

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

LEP amendments that affect Bushfire Prone Areas need to address the planning principles of PBP. The Planning Principles within PBP for Rezoning to Residential Land in Bushfire Prone Areas (PBP p 4) include:

- 1. Provision of a perimeter road with two way access which delineates the extent of the intended development;*
- 2. Provision, at the urban bushland interface, for the establishment of adequate asset protection zones for future housing;*

3. *Specifying minimum residential lot depths to accommodate asset protection zones for lots on perimeter roads;*
4. **Minimising the perimeter of the area of land, interfacing the hazard, which may be developed;**
5. **Introduction of controls which avoid placing inappropriate developments in hazardous areas; and**
6. *Introduction of controls on the placement of combustible materials in asset protection zones.*

These controls have been outlined in the TBE Bushfire Report (p.5) of 2015. However, the TBE reports do not adequately discuss or determine Directive 4.4 (b) which is to ensure that rezoning of an area is appropriate for future development and that inappropriate development is not facilitated in hazardous areas.

7.2. A Plan for Growing Sydney

The NSW Government strategic planning document *A Plan for Growing Sydney* will guide land use planning decisions for the next 20 years; decisions that determine where people will live and work as the city expands. The plan provides the strategic vision and context for landuse planning and the livability of our community. Plan Sydney seeks to balance the need to provide new housing with natural amenity and ensuring the appropriateness of development. Direction 4.2 seeks to *build Sydney's resilience to natural hazards*. The Plan recognizes that *Sydney is one of the more bushfire prone areas in Australia* and that *major fires can affect a significant proportion of the Sydney Metropolitan Area* (P 101). Importantly, the plan recognizes that urban planning can *manage some risks from natural hazards through design, landscaping, emergency management, infrastructure and, in some cases, halting development in high risk areas* (p101).

A Plan for Growing Sydney recognizes the need for a risk-based approach to planning and considering development and ensuring that *new developments will not be placed in harms way and will not increase risk* (p103). The Ralston Avenue proposal fails to achieve this as is demonstrated throughout the report, particularly as it relates to evacuation (see Section 10.2).

7.3. RFS Practice Note 2/12 - Planning Instruments and Policies

RFS Practice Note 2/12 - Planning Instruments and Policies provides more detail on the matters to be considered in LEPs. Practice Notes are matters that the RFS Commissioner needs to consider in reviewing applications as they provide clarity on RFS policy positions, which may not have been adequately addressed in PBP. As such, the Practice Note 2/12 articulates RFS policy and should be addressed in Planning Principles, particularly when there are so many matters that conflict with good bushfire planning outcomes. Relevant considerations from the practice note include:

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It may be appropriate to apply zones that limit or exclude incompatible development in bushfire affected areas where:

- *development is likely to be difficult to evacuate during a bushfire,*
- *development is likely to create control difficulties during a bushfire,*
- *development will adversely affect other bushfire protection strategies or place existing development at increased risk,*
- *development is likely to result in a substantially increased requirement for government spending on bushfire mitigation measures, infrastructure or services,*
- *environmental constraints to the site cannot be overcome,*
- *required bushfire protection measures would incur significant environmental costs.*

*To achieve this it will be necessary to undertake a risk assessment of the area in respect to bushfire to identify potential bushfire risks to individual sites, localities and proposed forms of development. A constraint assessment will identify elements which may restrict development or that will be impacted upon by development such as water supply, access and **evacuation**.*

8. Consultation with the NSW Rural Fire Service

In the preparation of a planning proposal the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 56 of the Act, and prior to undertaking community consultation in satisfaction of section 57 of the Act, and take into account any comments so made.

Consultation with the RFS consistent with s117 Direction 4.4 Planning for Bushfire Protection is required prior to undertaking community consultation under section 57 of the EP&A Act.

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

This consultation has been undertaken and the RFS have provided a number of comments in regard to the planning proposal. However, the matters considered have been technical in nature and do not implicitly or explicitly consider or address consideration of the appropriateness of the development, particularly in relation to RFS Practice Note 2/12 - Planning Instruments and Policies.

The section 117 Direction requires that a planning proposal must (among other matters):

- *have regard to Planning for Bushfire Protection 2006,*

The PBP 2006 guidelines are performance-based, seeking to achieve a safe outcome based on innovation and the specific circumstances of the individual site and development proposal.

PBP provides a planning framework for developments in rural and urban areas close to land, which is likely to be affected by bushfire. The intent (aim) of PBP is to protect people and property from the impact of bushfires. It also helps ensure that the firefighters who come to their aid in an emergency are not placed in greater danger because of unsuitable or unsafe developments.

PBP sets out an overall framework consisting of an aim and objectives, specific objectives for defined development types, types of bushfire protection measures (**BPMs**), which may be employed in a development, and performance criteria for each BPM. In this regard, the structure of PBP 2006 is similar to the structure of the Building Code of Australia (**BCA**) and provides considerable flexibility for outcomes. However, the aim of PBP in terms of ensuring appropriate consideration of risk and protection is paramount.

In general terms, an acceptable level of protection from bushfires is achieved through a combination

of strategies outlined in Section 3.1 of PBP¹⁰ which:

- Control the types of development permissible in bushfire prone areas;
- Minimise the impact of radiant heat and direct flame contact by separating the development from the bushfire hazard;
- Reduce the rate of heat output (intensity) of a bushfire close to a development through control of fuel levels;
- Minimise the vulnerability of buildings to ignition from radiation and ember attack;
- Enable relatively safe access for the public and facilitate fire-fighting operations;
- Provide adequate water supplies for bushfire suppression operations;
- Facilitate the maintenance of APZs, fire trails, access for firefighting and on-site equipment for fire suppression.

The PBP Specific Objectives for Subdivisions (p16) are to:

- Minimise perimeters of the subdivision exposed to the bushfire hazard. Hourglass shapes, which maximise perimeters and create bottlenecks, should be avoided.
- Minimise bushland corridors that permit the passage of bushfire
- Provide for the siting of future dwellings away from ridge-tops and steep slopes - particularly up-slopes, within saddles and narrow ridge crests.
- Ensure that separation distances (APZ) between a bushfire hazard and future dwellings enable conformity with the deemed- to-satisfy requirements of the BCA.
- Provide and locate, where the scale of development permits, open space and public recreation areas as accessible public refuge areas or buffers (APZs)
- Ensure the ongoing maintenance of asset protection zones
- Provide clear and ready access from all properties to the public road system for residents and emergency services
- Ensure the provision of and adequate supply of water and other services to facilitate effective firefighting.

PBP requires that a planning and development proposal satisfy:

- The broad aim and objectives of PBP 2006;

¹⁰ Planning for Bushfire Protection p. 9

- The planning principles;
- Specific objectives for the development type under consideration;
- The intent of measures for the various (BPM's);
- The performance criteria for the various proposed BPMs, which can be achieved by providing either the “acceptable solutions” specified in PBP 2006 or alternative solutions, which fulfill the intent of the relevant performance criterion.

Of particular concern with this Planning Proposal are issues associated with the likelihood for the site to be isolated by high intensity bushfire on four sides. PBP articulates issues associated with subdivision creating isolated rural developments. PBP (p. 15) states:

Subdivision for the creation of isolated rural developments, particularly in rugged, heavily timbered country, poses additional problems in the provision of adequate levels of protection from bushfires. Where developments are located in these areas, occupants and firefighters may have to travel large distances through bushfire prone vegetation. In addition, the isolation means that, if a fire impacts on the development, occupants may also be a long way from firefighting assistance.

While it is acknowledged that the current Planning Proposal is not for “rural” development, the configuration of the land and adjoining unmanaged bushland does provide a high likelihood that the site will be isolated by high intensity fire. There is potential for the site to be impacted from four sides with prolonged bushfire attack in the form of ember attack, smoke, radiant heat and direct flame contact. Indeed, the narrowness and configuration of the site lends itself to be heavily impacted by the most intense bushfires being driven by northwesterly winds. The number of pinch points (see the section on Access), location of bushfire fuel and connection of unmanaged areas presents an extreme risk to life. All access and egress points could be immersed in flame and will at some point have radiant heat levels that will be life threatening to people exposed in the open or in vehicles attempting to flee the site.

As such, PBP requires careful consideration in terms of the potential for the site to be cut off from surrounding areas of safety, with fires preventing access and egress to the site. The reports from various experts supporting the Planning Proposal have not dealt with pinch points, the penetration of high intensity fire onto, within and through the site and the vulnerability of people within and adjacent to the site to extreme fire behavior. Omission of such information is a major flaw in the proposal.

The major issues for isolated rural developments arise from the need to protect firefighters as well as residents in less accessible areas. As a result greater emphasis is placed on:

- *the provision of safe access/egress to the proposal so occupants leaving, and firefighters/rescuers accessing the property, can do so in relative safety;*
- *the provision of adequate APZs, including to roads and critical life safety pathways to create an area where occupants and firefighters remaining on site will have a good chance of survival.*

The TBE Bushfire Report deals well with the technical issues within the site. However, it fails to address issues from adjoining land and critical life safety issues that are beyond the ability of the Planning Proposal to control. One of the fundamental principles of PBP is that the Bushfire Protection Measures are contained within the overall development. In this case, the integrity of the Proposal and the linkages to surrounding areas are so great that the broader site context and associated issues must be more fully addressed.

Failure to consider and address these issues in line with the strategic planning requirements of the S.117 Directive and linkages throughout PBP regarding development in high-risk areas would provide grounds for refusal of the planning proposal. The RFS should consider the advice it has given to the proponent to date in light of these adaptive issues.

9. Site Access

9.1. Proposed Public Roads

The Planning Principles of PBP for Rezoning to Residential Land in Bushfire Prone Areas (PBP p 4) requires the provision of a perimeter road with two-way access, which delineates the extent of the intended development. This has been provided in the proposed rezoning lot layout.

The access provisions for public roads are *to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.* The performance criterion for this BPM is that roads and access to the site must enable safe access for emergency services and allow fire and emergency service crews to work with equipment about the emergency vehicles. It must also provide alternative means of egressing a site and provide for safe egress for residents in the event of a bushfire emergency. The proposal through its configuration, fails to provide safe access. The proposal while providing perimeter roads, fails to provide safe access without direct contact with unmanaged bushland areas.

The access leading from Ralston Ave and Wyatt Ave into the site has significant potential to be cut by bushfire due to the proximity of the adjacent forested areas within Garigal National Park and adjoining land. The remnant areas have potential to carry fire that significantly compromises the access and egress into and out of the site. The TBE Bushfire Report and Bushfire Fuel Management Plan adequately covers the provision of access within the site that complies with the requirements of PBP. However, the reports do not address or consider the suitability of wider access. This is a significant

oversight in the reports and is not in keeping with the principle of considering broader precinct level impacts of issues associated with a Planning Proposal.

Figure 8 shows the points of fire penetration into and through the site. It is clear from this figure that safe access is compromised at multiple levels.

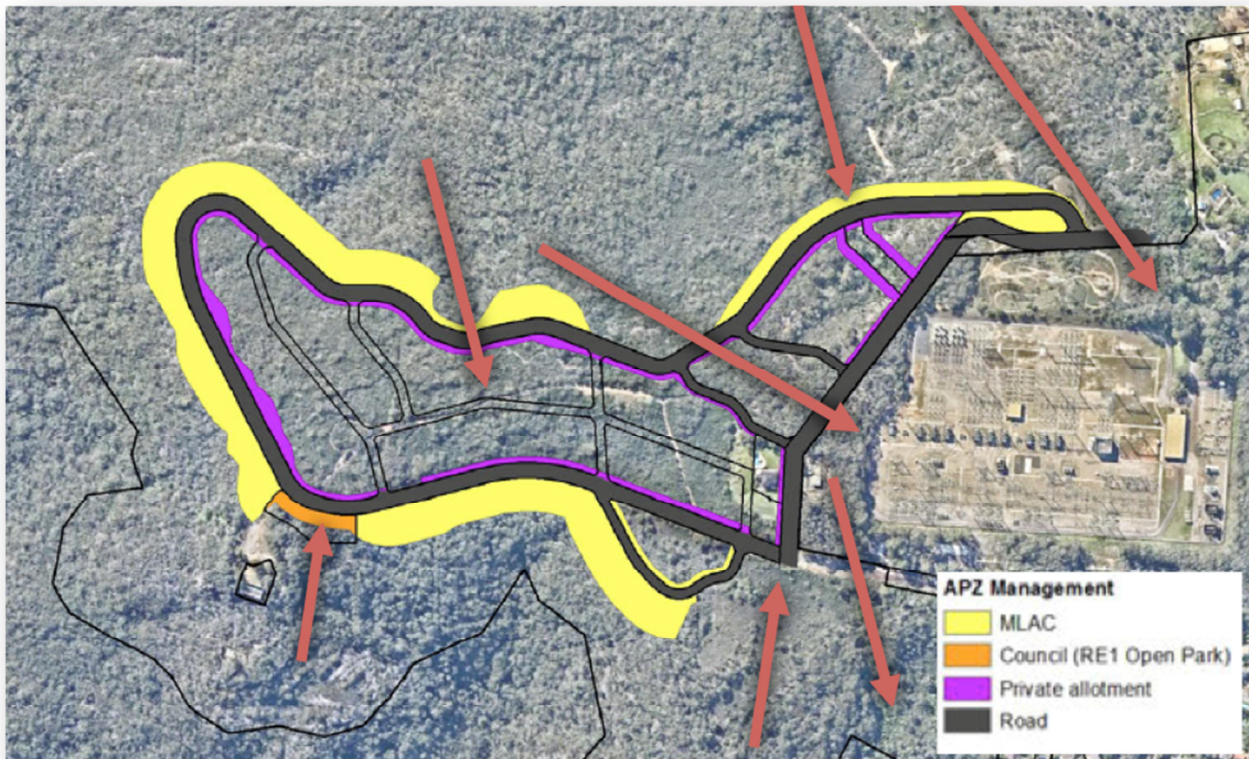


Figure 8 Likely Bushfire Penetrations into and Through the Site (base map TBE Bushfire Protection Assessment p. 17)

Of particular concern are the areas where no APZ is provided. Each of these penetration points represents a pinch point that will carry fully developed fire over areas that are critical to life and safety.

Table A3.1 of PBP (p. 60) provides radiant heat levels and their likely affects. The inside edge of the purple line on Figure 8 depicts a radiant heat range of 29kWm. The TBE Bushfire Report does not provide modeled details for areas that do not have APZ, namely the pinch points. In the absence of detailed Bushfire Attack Level calculations/ contours across the site, it can be drawn from Table 2 (see over) and Figure 8 that much of the access areas within the site will receive radiant heat levels that are above life safety thresholds. Indeed, the entry and exit points are all within the flame zone.

Radiant Heat Flux	Likely Effects	Approx. distances
>29 – 110 kW/m ²	<i>Flame Zone</i>	<i>0 - 20 metres</i>
29 kW/m ²	<i>Ignition of most timbers without piloted ignition (3 minutes exposure) (Level 3 construction) during the passage of a bush fire. Toughened glass could fail.</i>	<i>20 metres</i>
19 kW/m ²	<i>Screened float glass could fail (Level 2 construction) during the passage of a bush fire.</i>	<i>27 metres</i>
12.5 kW/m ²	<i>Standard float glass could fail (Level 1 construction) during the passage of a bush fire. Some timbers can ignite with prolonged exposure and with piloted ignition source (eg embers).</i>	<i>40 metres</i>
10 kW/m ²	<i>Critical conditions. Firefighters not expected to operate in these conditions although they may be encountered. Considered to be life threatening < 1 minute in protective equipment. Fabrics inside a building could ignite spontaneously with long exposures.</i>	<i>45 metres</i>
7 kW/m ²	<i>Likely fatal to unprotected person after exposure for several minutes</i>	<i>55 metres</i>
4.7 kW/m ²	<i>Extreme conditions. Firefighter in protective clothing will feel pain. (60 seconds exposure)</i>	<i>70 metres</i>
3 kW/m ²	<i>Hazardous conditions. Firefighters expected to operate for a short period (10 minutes)</i>	<i>100 metres</i>
2.1 kW/m ²	<i>Unprotected person will suffer pain after 1 minute exposure – non fatal.</i>	<i>140 metres</i>

Note: assumes flame temperature of 1090K for all scenarios.

Table 2 Radiant Heat Flux and Likely Effects on Buildings and People - source PBP p. 60

The loss of life of civilians in vehicles during bushfires in Australia has been of concern for several decades and has accounted for a high proportion of past bushfire related fatalities in Australia. Between June 2000 and July 2005, at least four out of every 18 recorded bushfire fatalities were vehicle-related. In Victoria's black Saturday bushfires of February 2009, 16 people died in or near cars¹¹.

The CSIRO undertook testing of the impact of radiant heat on cars in 2010. The tests were conducted at different peak radiant intensities (in the range of 10-40 kW/m²), simulating different separation distances from the main fine fuel load. The research showed that sheltering in a vehicle is now regarded as being well below the 'second best option' to one of extreme risk and to be avoided wherever and whenever possible.

The configuration of the site and road infrastructure will expose people in cars to life threatening radiant heat levels as the fire impacts the site. The Victorian bushfires of 2009 demonstrated that bushfires can impact areas from multiple directions for sustained periods of time, in some cases up to 2 hours.

¹¹ CSIRO Passenger Vehicle Burnover in Bushfires 2010

In terms of a technical review of the TBE report, access for fire fighting operations is outlined in section 3.4 (p.18) of PBP. Table 3.3 of the TBE Bushfire Report outlines the performance criteria and acceptable solutions for future public roads within future subdivision design. The table has utilised the performance criteria for public roads from PBP, which is correct. The road widths comply with PBP. All perimeter public roads have provision for a carriageway width of 8 metres wide.

However, it is worth noting that adaptive issues associated with the road layout and shelter options have not been included in the considerations of the Planning Proposal with reliance on technical aspects of PBP, particularly in light of a highly likely scenario of people being isolated either on foot or in cars within the site.

9.2. Proposed Fire Trails

A number of the reports mention fire trails. However, the reports do not show the location of proposed new fire trails with the existing fire trail network within the adjoining Garigal National Park. Fire trails play a critical control point in the provision of safe planned burning. This is a particularly relevant matter, as the boundary between the APZ, SFAZ and Land Management Zones (**LMZ**) will need to be delineated to facilitate ongoing management. The boundary between the LMZ and SFAZ will require a fire trail to provide access for fire fighters to undertake strategic planned burning in a safe way.

The provision of new fire trails will need to comply with PBP which requires a 4 metre wide trafficable surface plus vegetation clearance to allow passage of large fire appliances. PBP requires passing bays every 200m and good linkage out of bushland areas. If these trails are required by the RFS, this will require significant construction and associated environmental impacts within the proposed offset areas.

Recommendation 6 from the TBE Bushfire Report states that:

A fire trail system should be designed and constructed in order to link with existing peripheral trails (if possible) to ensure the ongoing management of the peripheral landscape (see Rec '3 above) is maintained in both fire management terms and environmental protection terms. There is ample scope for this to occur.

However, no reference is provided in the report for the location of proposed new fire trails, for existing trails or for maintenance of existing trails. Clarification of this should be sought from the applicant regarding intended locations of fire trails, construction implications, maintenance and agreement from adjoining managers of linkages.

10. Asset Protection Zones

An APZ is a buffer zone between a bushfire hazard (such as dense vegetation) and an asset or building, which is managed to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack. The appropriate width for an APZ in a particular situation will depend on factors such as the characteristics of nearby vegetation, the degree of slope approaching the relevant building, the applicable fire danger index (otherwise known as "forest fire danger index" or FDI), the type of the proposed development and the design characteristics of the relevant building. The APZ can include perimeter roads in new subdivisions.

10.1. Proposed APZ Width and Building Construction Standards

For Residential/Rural Residential Subdivision, the APZ distances are designed to meet the deemed-to-satisfy arrangement under the Building Code of Australia by reference to Australian Standard 3959 – Construction of Buildings in Bushfire Prone Areas. In NSW, APZ requirements for new subdivisions are based on keeping radiant heat levels at buildings (other than Special Fire Protection Purposes below 29kW/m²)(PBP p 12). This requirement must be achievable as one of the immutable components of PBP.

Appendix 2 of PBP provides the required methodology for calculating the APZ and is based on vegetation type, slope and assumed construction levels. The TBE 2015 Bushfire Report provides analysis of the bushfire threat assessment at section 2. The first "acceptable solution" for the APZ is the provision of an APZ of at least the prescribed width for the particular circumstances of the development. In the TBE Bushfire Report, slope and vegetation has been used as a base for the assessment of APZs. The TBE methodology is in keeping with the assessment requirements of PBP. However, it is difficult to make a comparative assessment of the APZ as transects for slope have not been provided to assist readers to understand the nature of slopes on the site. Indeed, the TBE 2015 report does not contain a slope analysis. A subsequent TBE letter dated 11 August 2015 provides a response to the RFS regarding concerns with slopes over 18 degrees.

Slope is a key-determining factor in the calculation of APZs. Section 2.2 of the TBE provides a cursory descriptor of slope at best. Of note in the Bushfire Report, TBE suggest larger APZ's (p 9) for the development:

We suggest that BAL 19 be considered but this would require larger APZ's to be provided in order to offset higher construction costs.

The TBE report justification for APZs based on the lower BAL of 19 is to reduce construction costs of future houses. The lower BAL also has the affect of significantly increasing the size (width) of APZs that are required under PBP. This is a good strategy to reduce risk to both future assets and liability to TBE.

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This could be recognition from TBE of the high risk associated with the site and a means of flagging this with the applicant or reducing TBE future liability given the high risk posed to the site. However, this is unsupported in the TBE bushfire documents as the assessment of perimeter dwelling within the planning proposal is based on BAL 29 which requires a smaller APZ in comparison to BAL 19.

10.2. APZs and Evacuation

A *Plan for Growing Sydney* (Section 4.2.3) highlights the need for new developments to ensure the survival of people. One of the key considerations is the provision of safe evacuation such that the government will:

Restrict development to areas that can be safely evacuated by requiring planning authorities to undertake an evacuation capacity assessment that considers regional and cumulative issues as necessary, prior to rezoning land in areas threatened by natural hazards.

This assessment has not been completed.

A planning proposal must, 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,

As previously mentioned above, the TBE Bushfire Report (in general) does offer compliant APZs where they are provided in full. However, there are a number of areas where APZs are not provided that result in pinch points and non-compliant APZs throughout the site.

One of the shortcomings of PBP is that the APZs are based on the future house(s) being able to be developed at a radiant heat level of no greater than 29kWm. PBP also requires the provision of perimeter roads that can be incorporated in the APZs. PBP 2006 was drafted in an era where the Australian bushfire management agencies and jurisdictions policy positions were based on “stay and defend or leave early”. The policy position was predicated on the fact that often the safest option for people caught in the path of a bushfire was to remain in their homes so that they are protected from the radiant heat of the oncoming fire and able to take measures such as putting out invading embers to protect their homes from being destroyed by the fire. If homeowners feel they are unable to protect

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their homes whether it is due to physical impairment or lack of preparedness, then it would be safer for these people to leave early long before the danger of the fire presents itself.

The policy also recognized that the most dangerous option was to evacuate at the last minute and be caught in the fire. PBP was drafted in this context and the focus on the safety of houses is reflected in performance and deemed to satisfy provisions throughout the document. However, the 2009 Victorian Black Saturday Bushfires, which claimed 173 lives with a loss of over 2,500 houses led to the 2009 Victorian Bushfires Royal Commission and a substantial shift in policy positions across the Country. A national review resulted in a new policy position being established focused on “the safest option is to leave early”. This is not clearly defined, however, it requires people within bushfire prone areas to understand their risk and take action to be out of bushfire prone areas before a bushfire starts which could impact them. This has resulted in a significant recent focus on situational awareness and warnings systems from fire agencies. Indeed, recent bushfire policy is clearly focused on life safety as opposed to building integrity.

The leave early policy position requires a very good understanding of risk, people's vulnerability, the trigger points for evacuation and time to evacuate. This could be a strategy if the site is rezoned which would require trigger points throughout the site when people would have to be out of the precinct and it could be incorporated into conditions associated with the proposal. Trigger points would need to be established based on risk and peoples vulnerability. Large campaign fires that start well away from the site could also be dealt with in a similar way, again with triggers for action for all occupants to evacuate the site and based on the knowledge that fire agencies would triage out the need to attend the site. If this were the case, it is highly likely that most or all of the houses would be lost in a high intensity bushfire. Insurance would be a significant issue if it were known that the houses would be undefended and based on the Australian Standard (AS3959) that accepts loss of the house after the passage of the fire. It is likely that houses would not be insurable or at such a high insurance premium as to be unaffordable for people.

Victoria has a system of sirens that are activated to warn communities to take action. This is a very active measure and could be considered as a fall back option. Fast run fires that start and take hold in close proximity to the site present significant challenges and are likely to result in people being exposed to life threatening radiant heat levels. Particularly as the perimeter road system will result in radiant heat levels that will result in death for people caught moving about the site as a fire impacts.

Isolated rural developments such as this can incorporate larger APZs and should consider the provision of APZs for the access roads that are below critical life safety thresholds. This would require in the APZs being calculated from the edge of the roads at a radiant heat level of 10kWm. As a result, APZs would

be significantly larger. At a minimum, APZs should be provided along the length of Wyatt and Ralston Avenue that eliminate pinch points and provide for the passage of people below critical for life safety thresholds. Agreement for such an approach would need to be entered into with adjoining landowners and incorporated in an ongoing management regimen for the life of the development. This would be a significant burden to these landowners and mechanisms could be explored for a legally binding arrangement that does not burden them with the maintenance obligation but delivers the outcome for associated roads. Cross cutting considerations will need to be undertaken with regard to opportunity cost on vegetation communities, fauna, visual impact and character of the area.

The absence of an integrated APZ regimen can be seen from Figure 9, which shows the proposed APZs from within the site. Significant additional work needs to be undertaken to provide APZs, which provide safe passage for people to and from the site.

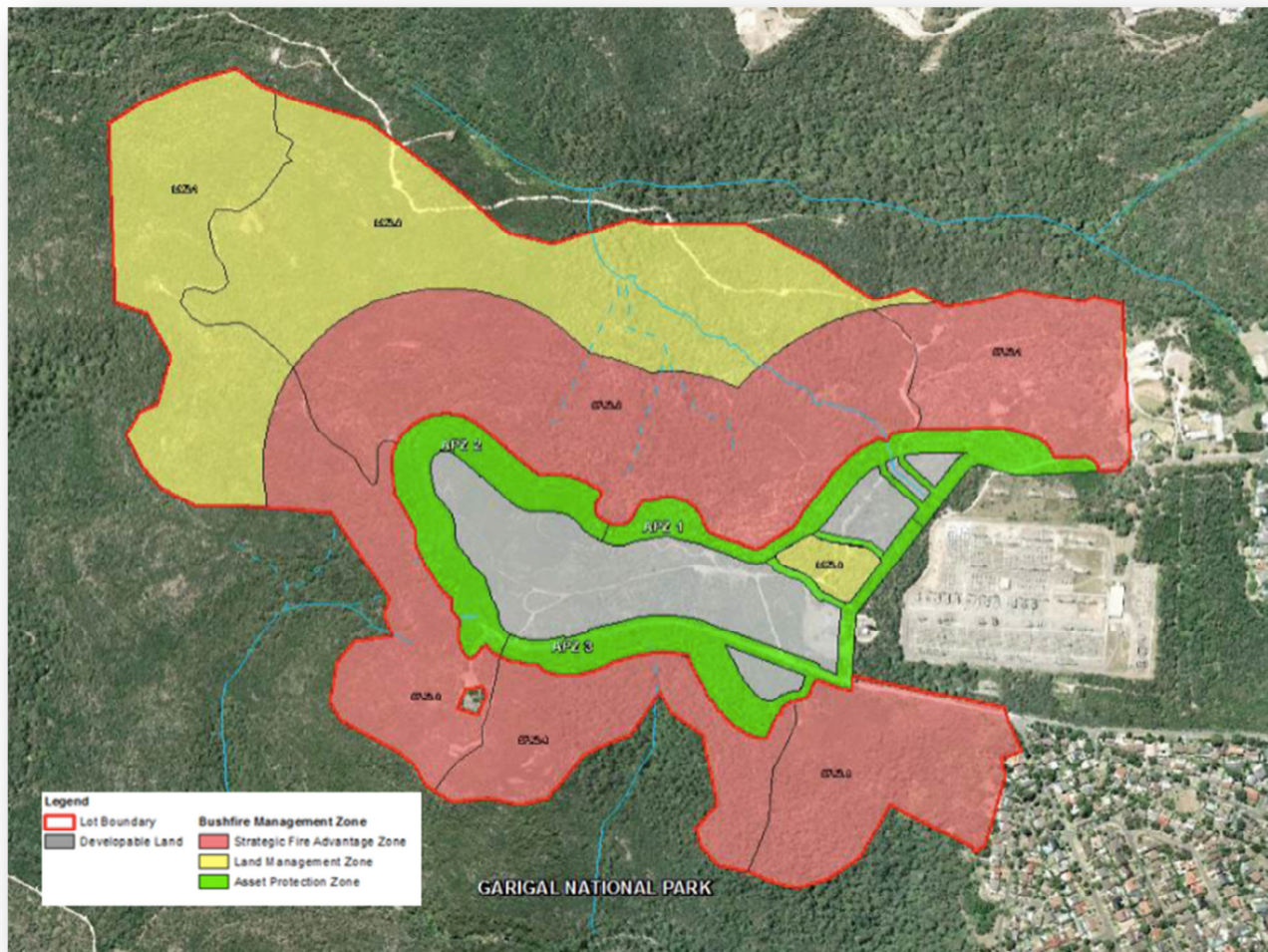


Figure 9 Proposed APZs within the site

The peer review has accepted vegetation mapping undertaken by TBE. Vegetation community or vegetation type is a critical element in the determination and calculation of APZs. Boundaries of the vegetation communities associated with the Planning Proposal should be validated to ensure that the APZ location and widths are sufficient. A brief site inspection was undertaken on 15 March 2016 and initial observations show cause for a level of concern with areas identified as having heath vegetation communities, particularly on the north and west of the site, which is exposed to the highest impact from running bushfires.

10.3. Adequacy of Proposed APZs

Figure 11 shows the APZ's and associated vegetation communities throughout the site. Reference to 'Super Lots' in the following text is based on those identified in the TBE Bushfire Report as shown in Figure 11 (see over). A number of anomalies are evident from the APZ configuration. Of particular concern are:

1. Super Lot 1 provides a Duffy's Forest Pocket Park. This remnant area of open forest has direct linkage with unmanaged vegetation from the northwest and should not be classified as remnant with reduced APZ requirements. A detailed assessment of slope and commensurate APZs should be undertaken by TBE. A range of slopes is located within this area. At minimum, APZs of 25m should be provided. However, the Pocket Park provides a pinch point and significant area of fire penetration into the site. Consideration should be given to managing this area as an intensive APZ, housing or open space to remove the pinch point entirely. This is a significant life safety issue and compromises the safety of the entire development. In addition, this is a critical access route into and out of the site. APZs should be provided to all roads. The riparian corridor presents a pinch point and area for penetration of fire into and through the site. This area should be managed as an APZ to prevent the spread of fire.
2. Super Lot 3 is bound to the south by a 10m wide road. However, the perimeter road will be cut by fire on the southeast aspect. The perimeter road is above threshold points for life safety.
3. Super Lot 7 has significant issues with a "cookie cut" to the APZ (see **Figure 10**). The cookie cut presents a pinch point which will not only cut the road but which will most likely result in Lots 90, 91, 92, 93, 94 and potentially Lots 80 – 87 (on the draft plan of subdivision) being above the 29kWm minimum of PBP. It is appreciated that the cookie cut is in an area with steep slopes, which may preclude the establishment and maintenance of the APZ. However, this requires further investigation. The APZ is almost directly adjacent to the perimeter road, which will result in maximum intensity fire at this point. This presents significant life safety issues. An internal linking road has been provided to the west of the pinch point, which provides an option for people. However, the internal roads where they link to Wyatt Ave and Ralston Ave are pinch points that present life safety issues.

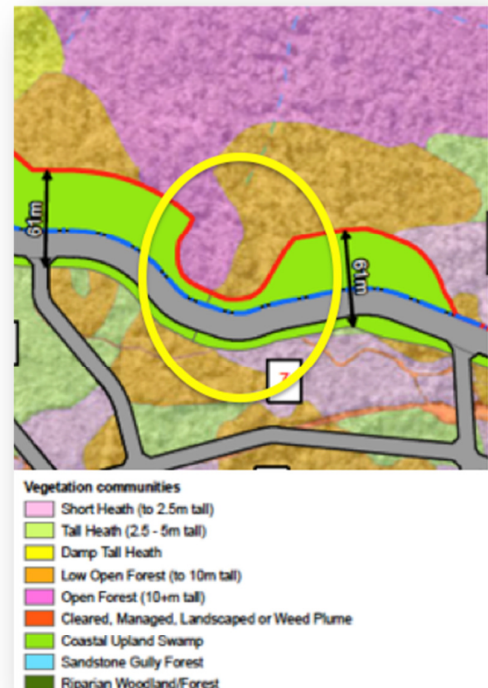


Figure 10 "Cookie Cut" within APZ and Vegetation

10.4. Ownership and Proposed Management of APZs

The management of the adjacent APZs, including the SFAZ will need to be provided in perpetuity and should be legally binding through easements or community title arrangements. APZs and the surety of ongoing management in perpetuity will need to be to the satisfaction of Council. The documents

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reviewed do not provide clarity for the funding mechanism for the ongoing management of APZs. It is understood that the future users of the land will not be required to fund such works. This ongoing burden will be met in its entirety by the MLALC and must include arrangements to ensure ongoing financial viability, management and transfer arrangements in the eventuality that funding for works becomes an issue.

The TBE report notes that it is envisaged that a positive covenant will be entered into at DA stage for the adjoining lands. This will be critical to the ongoing management of the APZ. TBE notes two separate owners/ management authorities associated with management of the APZ – the LALC and the Metropolitan Local Aboriginal Land Council (MLALC). It is assumed that these are in fact two separate organisations. The relationship between these organisations should be clarified.

Where an APZ easement has been established to the benefit of a community title, it shall be maintained in accordance with a plan of management (see Part 5 of the Management Statement) for the community titled land. It is unusual to maintain adjacent areas within the APZs under the

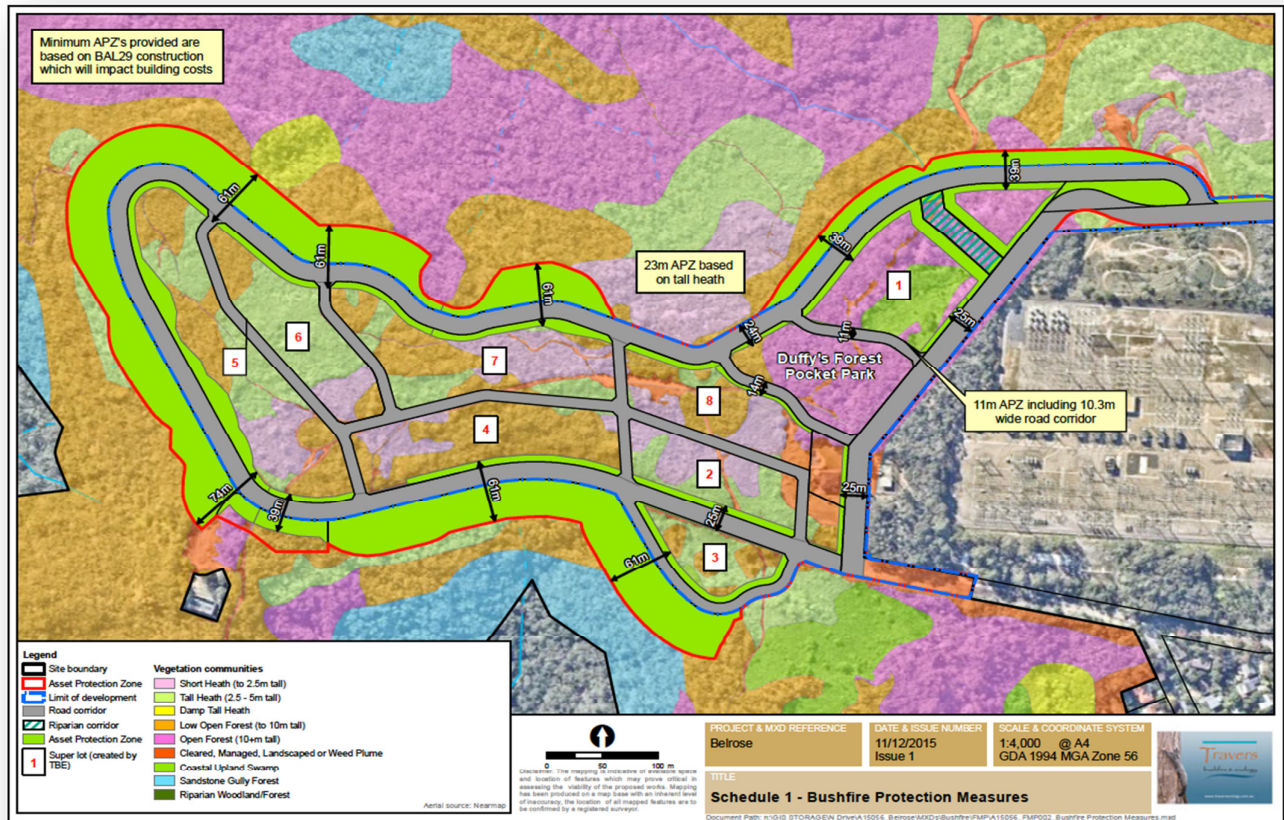


Figure 11 APZ & Vegetation Communities - source TBE Bushfire Report

ownership of the Local Aboriginal Land Council (LALC) without direct links to the development.

The interrelationship between APZ's and the provision of access and critical life safety has not been demonstrated in the Planning Proposal.

While the TBE Fuel Management Plan provides a schedule of works for ongoing management of APZs, it does not address the likely external drivers for additional areas to be established and maintained as APZs. Section 63 of the RF Act provides that owners, occupiers and public authorities have a duty to take certain steps to prevent the occurrence and spread of bushfires, on and from land, for which they are responsible. The RF Act also provides for persons to make a complaint when a bushfire hazard exists because of the failure of an owner, occupier and public authority to carry out bushfire hazard reduction work. The RFS may issue written Bushfire Hazard Reduction Notices requiring owners, occupiers and public authorities to carry out hazard reduction work.

A bushfire hazard may be identified:

- as a failure under section 63 of the Act as a “duty of care” observation by Rural Fire Service (RFS) staff, or
- in writing under section 74A of the RF Act, from the public.

The RFS Commissioner has sole responsibility for investigating and taking action in respect of bushfire hazard complaints regardless of land tenure. This notice can be served on land regardless of other protection measures such as easements, conservation agreements and the like. Additional measures have also been introduced to provide a streamlined process for owners to manage fuel within their property. The 10/50 scheme is known as '*10/50 Vegetation Clearing Code of Practice for New South Wales (10/50 Code)*' and has been prepared in accordance with Section 100Q of the RF Act. The Code was developed in partnership with the Department of Planning and Environment and the Office of Environment and Heritage.

The 10/50 Code does not provide an approval but rather a person is not guilty of an offence for clearing vegetation in accordance with the Code. In accordance with Part 4 Division 9 of the RF Act, a landowner may carry out the following vegetation clearing work on their own land for:

- *the removal, destruction (by means other than fire) or pruning of any vegetation (including trees) within 10 metres; and*
- *the removal, destruction (by means other than fire) or pruning of any vegetation, (except for trees) within 50 metres of an external wall of a building containing habitable rooms that comprises, or is*

*part of residential accommodation or a high-risk facility; or of an external wall of a building that comprises or is part of a farm shed*¹².

Exemptions are available if land is mapped as being excluded from the Code. The Code provides opportunity for additional vegetation clearance within privately held land once a house is developed. This, when combined with opportunity for future residents to make a hazard complaint against any land (for example the Duffy's Forest Pocket Park) make it likely that additional clearing will extend well beyond areas identifies with the Planning Proposal.

11. High Voltage Power Lines

Bushfire smoke is a mixture of different-sized particles, water vapour and gases, including carbon monoxide, carbon dioxide and nitrogen oxides. The larger particles contribute to the visible haze when a fire is burning¹³.

During a bushfire or hazard reduction burn significant amounts of smoke are generated as can be seen from Figure 12.

The combination of dense smoke and hot gases generated by a large fire directly under or near a high voltage transmission line can create a conductive path that increases the



Figure 12 Smoke associated with burning in Sydney Sandstone Vegetation

potential for arcing to ground. This occurs when electricity, especially at higher voltages, jumps across an air gap to create a conductive path. Arcing may occur between wires or from wires to the ground - this may be seen as a flash or heard as an explosion or loud cracking sound¹⁴.

Under everyday conditions, the height of wires and their separations are designed to be entirely safe. However, a bushfire burning under or very close to the powerline can increase the distance that an electricity arc can jump.

¹² 10/50 Code p. 9

¹³ <https://www.betterhealth.vic.gov.au/health/healthyliving/bushfire-smoke>

¹⁴ <http://fire.nsw.gov.au/wwwcfu/sites/default/files/SWISS%20%20-%20Power%20Lines.pdf>

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Arcing from the High voltage power lines to the ground is life threatening to a person standing in the near vicinity of the arc (much like when lightning strikes the ground near a person). Arcing can also cause damage to nearby equipment and the transmission line, and can cause possible interruptions to power supply to homes and industry.

The site has 6 High Voltage power lines running through it or directly adjacent to it (see Figure 13). All 6 of the high voltage power lines cross over roads designated as access and evacuation points.

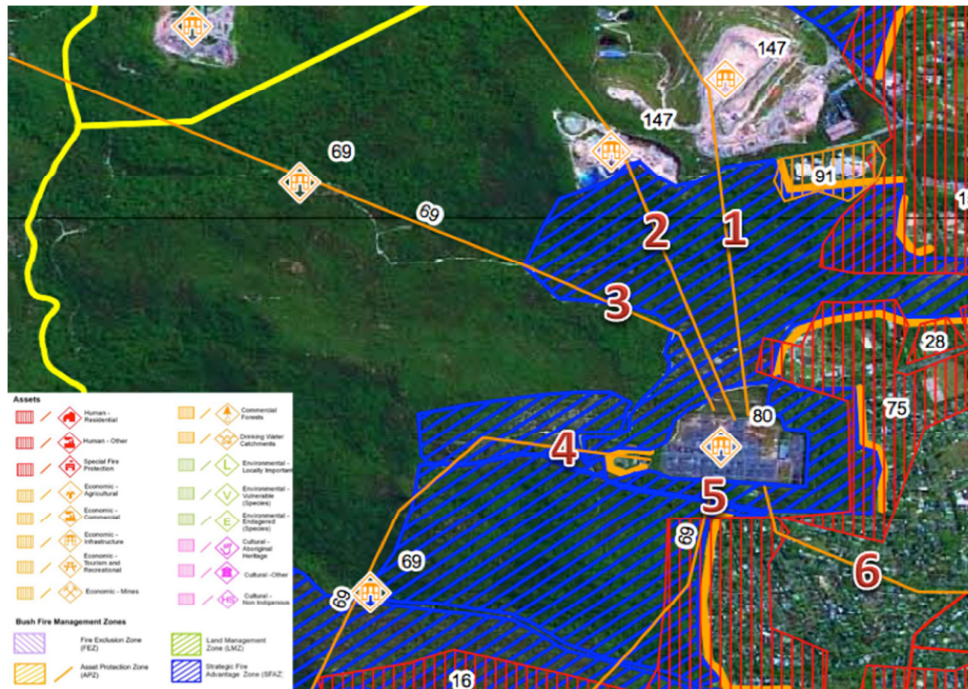


Figure 13 Fire Fighting Exclusion Zones Near High Voltage Power Lines (Source: Warringah – Pittwater Bushfire Risk Management Plan 2010)

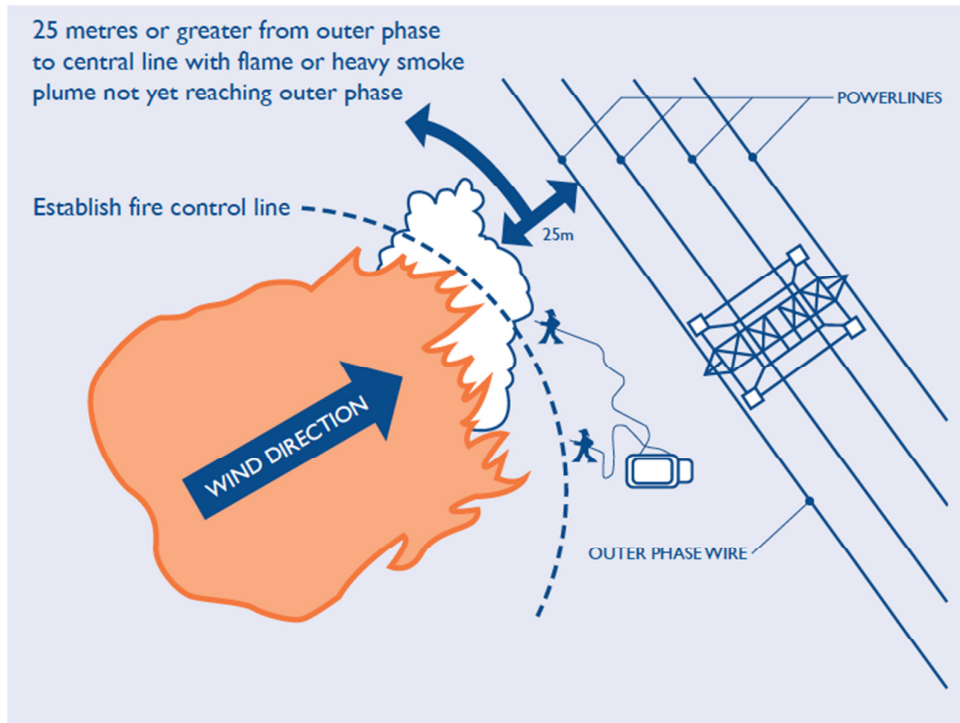


Figure 14 Fire Fighting Exclusion Zones - source National Guidelines on Electrical Safety for Emergency Personnel

The Energy Networks' Association, in consultation with emergency services groups across Australia has produced National Guidelines on Electrical Safety for Emergency Personnel (EN A DOC 009-2006). These should be reviewed in light of the significant potential for arcing to ground. The RFS does not allow firefighting under or within 25 metres of high voltage power lines.

The DEP Consulting Pty Ltd (2012) *Electrical Infrastructure Report For Proposed Residential Development Ralston Avenue, Belrose* does not mention bushfire or smoke and consequences of these matters under or near the power lines or the Sydney East Sub Station. In terms of electricity infrastructure the DEP Consulting Report notes the following:

Transgrid's 330kV / 132kV Sydney East Substation is located adjacent to the proposed development. The substation is supplied via 330kV overhead transmission lines from the north of the substation site. The substation provides multiple 132kV feeders to the local electricity distributor (Ausgrid). Of these 132kV feeders, two exit the substation to the south as overhead transmission lines, and the remainder exit the substation underground and are installed in Ralston Ave, Elm Ave and Wyatt Ave.

Ausgrid own multiple 132kV overhead and underground feeders in the vicinity of the proposed development. Of all the 132kV feeders there is only one (1) that passes through the proposed

development. This 132kV feeder exits the substation as an underground feeder to the south and runs west along Ralston Ave for approximately 800m where it then transitions to an overhead feeder (132kV UGOH -Under Ground to Overhead connection).

Ausgrid also have an existing 11kV overhead feeder in Ralston Ave supplying a 11kV/415V distribution pole transformer (PT.15881). This PT is located adjacent to the existing residential dwelling approximately 65m North of Ralston Ave and provides low voltage supply to the telecommunications tower and the residential dwelling.

The configuration of the powerlines running directly above the two main access points into the site present clear and significant safety issues that should be considered as a matter of priority. If unimpeded access cannot be guaranteed to the site in light of smoke and fire impacts resulting in the potential for arcing, the Planning Proposal is fundamentally flawed. This would constitute grounds for refusal, as the proposal is incompatible with surrounding uses that present critical life safety issues.

12. Proposed Zoning

12.1. Zone R2 - Future Uses

The Land Use Table extracts from the R2 Low Density zones under WLEP 2011 provides significant opportunity for development within the site at a future date. The Objectives of the R2 zone are:

- *To provide for the housing needs of the community within a low density residential environment.*
- *To enable other land uses that provides facilities or services to meet the day-to-day needs of residents.*
- *To ensure that low density residential environments are characterised by landscaped settings that are in harmony with the natural environment of Warringah.*

Of particular relevance is that home-based child care is permitted without consent. This is a designated Special Fire Protection Purpose (SFPP) development in accordance with s.100B of the RF Act, 1997 and requires special considerations in accordance with PBP. Development without consent could facilitate vulnerable occupants being exposed to risk that is not acceptable.

Further development are permitted with consent including:

Bed and breakfast accommodation; Boarding houses; Boat sheds; Building identification signs; Business identification signs; Child care centres; Community facilities; Dwelling houses; Educational establishments; Emergency services facilities; Environmental protection works; Exhibition homes; Group homes; Health consulting rooms; Home businesses; Hospitals; Places of public worship; Recreation areas; Respite day care centres; Roads; Veterinary hospitals

Some of these developments are also SFPP and would require close scrutiny by the RFS and the issue of a Bushfire Safety Authority.

12.2. Zone E3 - Environmental Management

The Land Use Table extracts from the E3 Environmental Management under Warringah Local Environmental Plan provide a range of objectives that are most likely incompatible with the future use and impacts across the site and surrounds for the provision of APZ's and potential for future clearing as a result of the 10/50 Code or Hazard Complaints. The Objectives of E3 zone are:

- *To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.*
- *To provide for a limited range of development that does not have an adverse effect on those values.*
- *To ensure that development, by way of its character, design, location and materials of construction, is integrated into the site and natural surroundings, complements and enhances the natural environment and has minimal visual impact.*
- *To protect and enhance the natural landscape by conserving remnant bushland and rock outcrops and by encouraging the spread of an indigenous tree canopy.*
- *To protect and enhance visual quality by promoting dense bushland buffers adjacent to major traffic thoroughfares.*

The RF Act objectives are for the protection of life, property and the environment. The hierarchy of legislative controls and the focus on life safety will ensure that all reasonable measures are taken to reduce bushfire impact on people and assets. Over time, it is likely that the impact associated with mitigating bushfire risk will be greater than that which is expressed in the TBE Fuel Management Report. Such impacts should be considered in light of the high risk of the site and surrounds and the likely conservative approach that will be taken to mitigate bushfire impact on future assets and people.

13. Conclusion

The inherent characteristics of the site and design of the Planning Proposal fail to meet the strategic planning requirements, asset protection zone requirements, access requirements and siting principles for new development in bushfire prone areas.

The configuration of the Planning Proposal and adjoining unmanaged bushland provides a high likelihood that the site will be isolated by high intensity fire. There is potential for the site to be impacted from four sides with prolonged bushfire attack in the form of ember attack, smoke, radiant heat and direct flame contact. Indeed, the narrowness and configuration of the site lends itself to be heavily impacted by the most intense bushfires being driven by northwesterly winds. The number of pinch points, location of bushfire fuel and connection of unmanaged areas presents an extreme risk to life. All access and egress points to the site have a high likelihood of being immersed in flame and will at some point have radiant heat levels that will be life threatening to people exposed in the open or in vehicles attempting to flee the site.

As such, the proposal requires careful consideration in terms of the potential for the site to be cut off from surrounding areas of safety, with fires preventing access and egress to the site. The reports from various experts supporting the Planning Proposal have not dealt with pinch points, the penetration of high intensity fire onto, within and through the site and the vulnerability of people within and adjacent to the site to extreme fire behavior. The existing Sydney East Sub Station and six high voltage power lines can arc to ground preventing Ralston Ave and Wyatt Ave being used safely in the event of bushfires in the vicinity of the proposed development.

The consultation to date with the RFS has provided a number of comments in regard to the planning proposal. However, the matters considered have been technical in nature and do not implicitly or explicitly consider or address the appropriateness of the development, particularly in relation to RFS Practice Note 2/12.

The Planning Proposal will place an increased burden on emergency services in the event of a bushfire in the vicinity of the site. In some circumstances, it might be possible for emergency services to carry this burden. However, during significant fire events, due to the potential for the site to be exposed to multiple fire fronts and the number of new developments proposed, emergency services are likely to be stretched beyond reasonable limits and, more likely than not, services will not be able to be tendered to all of these new developments.

The inherent bushfire risks posed by the site are significant. In particular:

- The site is located on a ridge top peninsula above steep slopes and narrow ridge crests;
- The narrowness and configuration of the site lends itself to be isolated by high intensity bushfire on four sides and heavily impacted by the most intense bushfires being driven by northwesterly

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winds.

- The Travers Bushfire and Ecology Bushfire Report, deals well with the technical issues within the site. However, it fails to address issues from adjoining land and critical life safety issues that are beyond the ability of the Planning Proposal to control.
- The number of pinch points, location of bushfire fuel and connection of unmanaged areas presents high likelihood of the penetration of high intensity fire onto, within and through the site.
- All access and egress points could be immersed in flame and will present radiant heat levels that will be life threatening to people exposed in the open or in vehicles attempting to flee the site.
- The reports do not address or consider the suitability of wider access issues. This is a significant oversight in the reports and is not in keeping with the principle of considering broader precinct level impacts of issues associated with a Planning Proposal.
- The fire trail network is not clearly understood.
- Where APZs are provided in full they are compliant with Planning for Bushfire protection. However, there are a number of areas where APZs are not provided or they are inadequate that result in pinch points and non-compliant APZs throughout the site.
- APZs may be required off site to provide protection to the access roads and pinch points;
- The Pocket Park provides a pinch point and significant area of fire penetration into the site.
- Heavy smoke associated with a bushfire can cause life-threatening arcing from the six high voltage power lines into the site. The configuration of the powerlines running directly above the two main access points into the site present clear and significant safety issues. The RFS does not allow firefighting under or within 25 metres of high voltage power lines.
- If unimpeded access cannot be guaranteed to the site in light of smoke and fire impacts resulting in the potential for arcing, the Planning Proposal is fundamentally flawed. This would constitute grounds for refusal, as the proposal is incompatible with surrounding uses that present critical life safety issues.
- A Plan for Growing Sydney recognises the need for a risk-based approach to planning and considering development and ensuring that new developments will not be placed in harms way and will not increase risk (p103). The Ralston Avenue proposal fails to achieve this, particularly as it relates to evacuation.
- The assessment of the proposal by Council and the Department of Planning and Environment and the application of the strategic planning controls and powers of determination are critical

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to avoid placing inappropriate and unsafe development in an extreme risk location. The proposal has a number of design flaws within the site and external factors that present a critical and clear risk to life and the integrity of the development.

- The proposal does not comply with the requirements established in the s.117 Directive 4.4 Planning for Bushfire Protection 2006. The TBE reports do not adequately examine Directive 4.4 (b), which is to ensure that rezoning of an area is appropriate for future development and that inappropriate development is not facilitated in hazardous areas.

For these reasons, the Planning Proposal requires most careful consideration, both in terms of the capacity of emergency services to serve these communities during significant events and, indeed, for these communities themselves to cope with significant events.

It is recommended that:

1. The planning proposal should more fully consider the strategic planning requirements of the S.117 Directive and linkages throughout *Planning for Bushfire Protection* regarding development in high-risk areas;
2. The linkages to surrounding areas and the broader site context and associated issues should be more fully addressed;
3. The RFS should reconsider the advice it has given in light of the findings of this report;
4. Clarification be sought regarding the intended locations of fire trails, construction implications, maintenance and agreement from adjoining managers of linkages;
5. APZs complying with *Planning for Bushfire Protection* should be provided throughout the site;
6. Consideration be given to managing the pocket park as an intensive APZ, housing or open space to remove the pinch point entirely;
7. The National Guidelines on Electrical Safety for Emergency Personnel (EN A DOC 009-2006) be reviewed in light of the significant potential for arcing to ground;
8. Council, the RFS and the NSW Department of Planning re-evaluate the bushfire issues to address the fundamental planning question of site suitability and introducing controls that avoid placing inappropriate developments in hazardous areas.

The difficulties (for both residents and emergency services personnel) associated with the placement of new development and people in an area with such risks are so great, that no development should be permitted on the site.



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Principal Blackash Bushfire Consulting

Fire Protection Association of Australia BPAD Level 3 – NSW BPD-PA 16373



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Travers Bushfire and Ecology *Ecological Assessment Planning Proposal for Lot 1 DP 1139826 Ralston Avenue, Belrose*

Urbis (2015) *Ralston Avenue, Belrose - Updated Planning Proposal*

Draft Voluntary Planning Agreement. Bushfire APZ design and timing

15. Attachment 1 - 117(2) Direction 4.4 Planning for Bushfire Protection

The Minister for Planning, under section 117(2) of the Environmental Planning and Assessment Act 1979 (EP&A Act) issues directions that relevant planning authorities (such as local councils) must follow when preparing planning proposals for new LEPs. Direction 4.4 Planning for Bushfire Protection identifies matters for consideration for planning proposals that will affect, or are in proximity to land mapped as bushfire prone.

<http://www.planning.nsw.gov.au/~media/Files/DPE/Directions/local-planning-directions-section-117-2015-pdf.ashx>

4.4 Planning for Bushfire Protection

Objectives

(1) The objectives of this direction are:

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

Where this direction applies

(2) This direction applies to all local government areas in which the responsible Council is required to prepare a bushfire prone land map under section 146 of the *Environmental Planning and Assessment Act 1979* (the EP&A Act), or, until such a map has been certified by the Commissioner of the NSW Rural Fire Service, a map referred to in Schedule 6 of that Act.

When this direction applies

(3) This direction applies when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to land mapped as bushfire prone land.

What a relevant planning authority must do if this direction applies

4. (4) In the preparation of a planning proposal the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 56 of the Act, and prior to undertaking community consultation in satisfaction of section 57 of the Act, and take into account any comments so made,
5. (5) A planning proposal must:
 1. (a) have regard to *Planning for Bushfire Protection 2006*,
 2. (b) introduce controls that avoid placing inappropriate developments in hazardous areas, and
 3. (c) ensure that bushfire hazard reduction is not prohibited within the APZ.
6. (6) A planning proposal must, where development is proposed, comply with the following provisions, as appropriate:
 1. (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,
 2. (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 planning proposal permit Special Fire Protection Purposes (as defined under section 100B of the *Rural Fires Act 1997*), the APZ provisions must be complied with,

3. (c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks,

Section 117(2) of the *Environmental Planning and Assessment Act 1979*

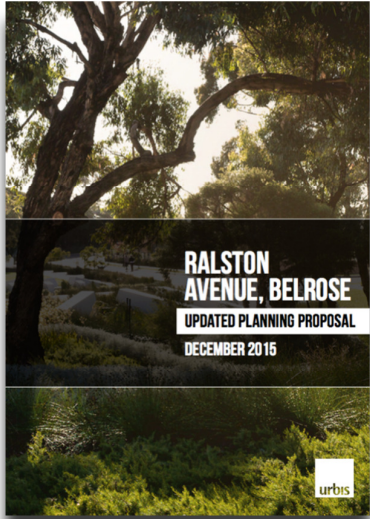
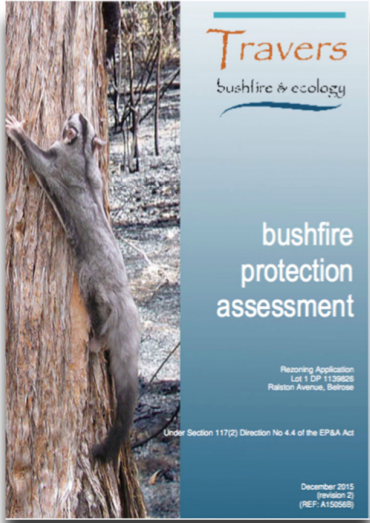
4. (d) contain provisions for adequate water supply for firefighting purposes,
5. (e) minimise the perimeter of the area of land interfacing the hazard which may be developed,
6. (f) introduce controls on the placement of combustible materials in the Inner Protection Area.

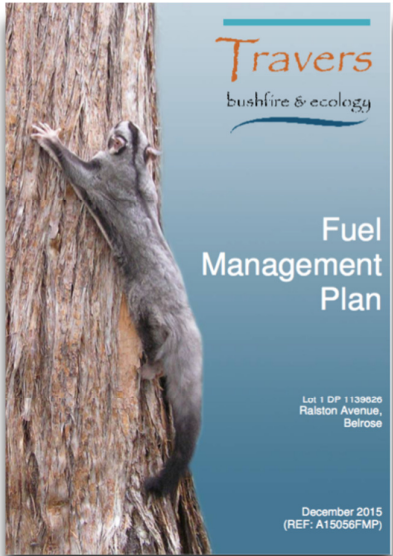
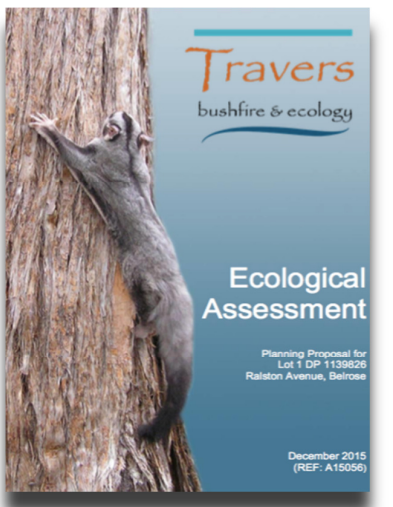
Consistency

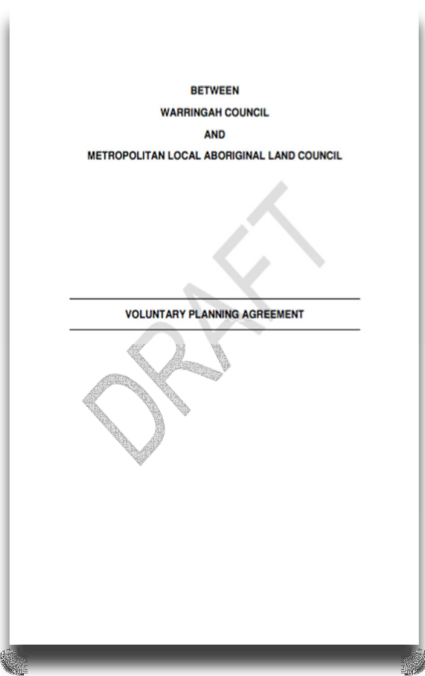
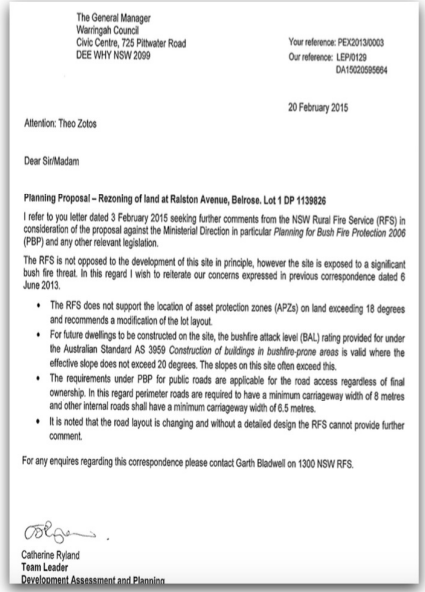
(7) A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General) that the council has obtained written advice from the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

Direction 4.4 – issued 1 July 2009

16. Attachment 2 - Review of Key Documents - Summary

Document	Review
	<ul style="list-style-type: none"> • Summarises issues to date and addresses issues raised by RFS • Major flaw is not of the proponents making. However, the proponent has managed to focus attention in areas that suits their end point. • Urbis focus on technical issues (i.e. APZs, road widths) rather than adaptive issues (appropriateness, threat, broader context) • RFS have failed to get the right focus on planning issues and have not addressed the planning requirements of Practice Note 2/12 • RFS are not opposed to the development of the site in principle. However they have recognised that the site is exposed to significant risk. • RFS have not raised issues with isolated development or potential for the site to be cut off during fires, including evacuation routes being compromised by being directly under 330Kva power lines that can arc to ground causing death.
	<ul style="list-style-type: none"> • A solid Bushfire Report that complies with standard subdivision requirements • Minor issues with some of the calculations. Unable to test the slopes as no transects provided • APZs are substantial. Links with Fuel Mgt plan well; • Assessment focussed "within the site" • Misses the broader context, threat, isolation, potential for access to be cut, pinch points and issues associated with high voltage power lines

	<ul style="list-style-type: none"> • Solid and well documented Fuel Management Plan. • Some issues with fire history and implementation of prescribed burning - looks to be Metropolitan Local Aboriginal Land Council. Interesting development • links with Bushfire Risk Management Plan • Will need to establish control lines and fire trails • Potential for perimeter roads and pinch points to be immersed in flame • APZs will require significant modification to meet RFS APZ Guidelines. Fuel Mgt Plan acknowledges simplification of species and habitat. • Physical works for APZ • Burning for SFAZ & LMZ • <i>The fire behaviour in this hazard zone (SFAZ) will see fast moving fires move up the slopes. The zone for 100m below the APZ will be the Strategic Fire Management Zone and this zone will be burnt to reduce fire intensity (p.10)</i>
	<ul style="list-style-type: none"> • More detail of the broader site context than the Bushfire Report • Simplification of systems • Riparian areas to be left untreated. Good linkages with Fuel Mgt Plan. • Significant opportunity cost on the flora and fauna • Regardless of protection measures put in place s.63 of the Rural Fires Act requires land owners to prevent the spread and occurrence of bushfires from their land. • This facilitates 10/50, hazard complaints and general pressure to reduce/ remove fuels from the landscape once assets are in place.

	<ul style="list-style-type: none"> • The Planning Agreement provides for the following contributions by the Developer: • The design and implementation of a Bushfire asset protection zone (APZ) to the perimeter of the development area, including the ongoing management in accordance with the APZ Fuel Management Plan. • This meets minimum provisions • assumed that it provides for the ongoing management arrangements in perpetuity. • mechanisms for alteration or withdrawal • enforcement or failure to comply • may be worth considering a works schedule that is appended to the Bushfire Risk Management Plan and that the Warringah Fire Control is aware of the actions associated with the VPA. • how could it link with provisions that future residents will understand and accept. • the fuel management plan calls up guidelines from the NSW RFS. May be worth considering appending the guidelines or calling them up specifically
	<ul style="list-style-type: none"> • Have not linked to the broader issues of the 117 directive or the triggers within PBP: • isolated development; • inappropriate development - this is a challenge as RFS have stated they are not “opposed to the development” yet they have flagged that “the site is exposed to significant bushfire threat