

23 April 2018

NSW Independent Planning Commission
Level 3, 201 Elizabeth Street Sydney NSW 2000

Attention: David Mooney

Delivered by email: Robert.Bisley@ipcn@nsw.gov.au

SUBJECT: FINAL BUSHFIRE ASSESSMENT INDEPENDENT REVIEW

Kleinfelder (KLF) have been engaged by the NSW Independent Planning Commission (IPC) to provide an independent review for the Planning Proposal: Ralston Avenue, Belrose. In this report, I have presented my review findings to the Planning Commissioners Panel with regards to the ability for this Planning Proposal to meet the objectives of S117 Direction 4.4 (EP&A Act) and the aims and objectives of PBP 2006 (including specific objectives for residential subdivisions). This report is prepared for the IPC, its designated representatives or relevant statutory authorities. It should not be otherwise referenced without permission.

The Planning Proposal to rezone the site and design for residential subdivision development is critically constrained by the surrounding environment characteristics, in all directions. The Proposal has potential to be considered incompatible land use, which would place a relatively large population in a residential subdivision at high-extreme risk of bushfire impact, and having restrictions to access and egress (evacuation) in the event of a bushfire emergency. As such, I consider the site cannot adequately meet the fundamental aims, objectives or provisions of S117 Direction 4.4, PBP 2006 and NSW RFS Community Resilience Practice Note 2/12.

Yours sincerely

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Bushfire Assessment Independent Review

Planning Proposal Ralston Avenue, Belrose



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Kleinfelder Ref: 20183870

Prepared for:

NSW Independent Planning Commission
Level 3, 201 Elizabeth Street Sydney NSW 2000

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1. INTRODUCTION

Kleinfelder (KLF) have been engaged by the Independent Planning Commission (IPC) to provide an independent review for the Planning Proposal: Ralston Avenue, Belrose. The purpose of independent review:

On 21 December, the Department of Planning and Environment (DPE) wrote to the Planning Assessment Commission (PAC) requesting the Commission provide advice and make a recommendation on whether a planning proposal to rezone land at the western edge of Ralston Avenue, Belrose, should be made. The Planning Assessment Commission (Commission) is seeking the services of a highly qualified bushfire consultant to assist the Commission with reviewing the bushfire component of a planning proposal.

1.1 SCOPE

The IPC scope of works included:

1. A review of the relevant project bushfire documentation.
2. Summarise findings that are consistent and inconsistent within the reviewed documentation.
3. Where findings are inconsistent, detail how or why an inconsistency could have been reached.
4. Identify any NSW policies (that relate to this site) relevant to the inconsistencies and if the policies may provide guidance on resolving the inconsistency, in the particular circumstances of the site.

1.2 STAKEHOLDERS

- **Metro Aboriginal Land Council (MLALC)**, the applicant, is seeking to rezone the land acquired in 2012, to R2 Residential, E3 Environmental Management and RE1 Public

Recreation. **Travers Bushfire and Ecology** (TBE) has provided the consultancy services for both bushfire and ecological planning and assessments. **EcoLogical Australia** have provided review and support for TBE assessments.

- **Northern Beaches Council** (NBC) have concern over the project, with respect to bushfire planning, and have engaged an independent review from **Blackash Bushfire Consultants** (Blackash).
- The **NSW Rural Fires Service** (RFS) have been consulted and have provided multiple responses to the Planning Proposal since 2013.
- **Urbis** are engaged as the Planning Consultancy.
- The **Department of Planning and Environment** (DPE) have requested the **Planning and Assessment Commission** (PAC) provide advice and make a recommendation on whether a planning proposal to rezone land should be made.
- IPC have engaged a suitably qualified and experienced bushfire consulting firm, **Kleinfelder Australia Pty Ltd** (KLF), to conduct an independent bushfire review and analysis.

1.3 INDEPENDENT REVIEWER EXPERIENCE PROFILE

I, Dan Pedersen (KLF Bushfire Consultant) have completed the documentation review and provide this independent review to the IPC.

I have been a recognised Bushfire Practitioner under the Fire Protection Association Australia (FPAA) BPAD Scheme since 2009 and have gained an International Fire Engineer (IFE) and Engineering Council certification (2012). I conduct my services in a professional manner and strictly adhere to the Code of Conducts as agreed by both the FPAA and the IFE.

I have been preparing bushfire threat assessments for developments since 2004, initially under the Planning for Bushfire Protection (PBP) 2001, and then updated PBP 2006. My bushfire consulting role has provided opportunity for large volume of projects (small and large) and an extraordinarily broad range of development types. Each project offers a unique bushfire behaviour situation and site-specific solutions. Below I have provided a brief example of projects relevant to the Independent Review:

- Many residential subdivision assessments (since 2005).
- Fire and ecology assessments for LEP Shearwater, Great Lakes Council (2009).

- Fire and ecology assessments for LEP Salamander Bay, Port Stephens Council (2009).
- Bushfire Management Plan Audit for Australian Defence Force (ADF) national bases - Aurecon (2009).
- Victorian Department of Education, Victorian Schools Bushfire Project (2011-2012).
- Fire and ecology assessments for Southwest Rocks Residential Rezoning application (2012).
- Gosford City Council APZ Extreme sites risk assessments (2013).
- Fire and ecology assessments for Lochinvar Urban Release Area Rezoning – Stocklands (2014).
- Asplundh Bushfire Prevention Audit – Auditing bushfire preparedness and prevention plans for electricity easement maintenance contract providers (2015-2016).
- NSW Crown (NSWCHPT) – Review bushfire risk to Inland Waters Holiday Parks and provide recommendations to reduce risk (2015-2017).
- Fire and ecology assessments for NSW Department of Education, Manly Vale Public School Redevelopment – (2015 - Current).
- Northern Beaches Council (NBC) Bushfire planning for Currawong Cottages (2017-current).

1.4 CURRENT (2018) PLANNING PROPOSAL POSITION

TBE most recent letter (25 Oct 2017) states that the applicant's Planning Proposal (MLALC) with regards to bushfire planning, demonstrates that the S117 Directions have been comprehensively addressed in the overall design, and that the assessment approach enables the proposed low density residential zoning to be considered as appropriate land use for this landscape (as design complies with EP&A Act S117(2) and PBP 2006).

The NBC position on the Planning Proposal (informed by Blackash) is that it does not meet the aims and objectives of EP&A Act S117(2) and PBP 2006.

The conclusions from the bushfire assessment and review (TBE and Blackash) are conflicting. The Blackash review does not entirely concur with TBE. Blackash states the TBE assessment, although adequately considers technical issues within the site, does not adequately consider the broader (macro scale) strategic influences on the proposed future development and critical life safety issues, which are beyond the ability of the Planning Proposal to control.



The position held by the NSW RFS has developed since original consultation (2013), and the current (2018) position status of RFS is *“the NSW RFS does not support the Planning Proposal and consider it inconsistent with the Directions under s.117(2) Environmental Planning and Assessment Act 1979. The proposal does not achieve the primary objective to protect life, property and the environment. The NSW RFS therefore considers that the proposal has not demonstrated that the site and the locality have the capacity to support the significant increase in residential density, and consequently should not proceed.”* (RFS email 18 Feb 2018).



2. METHODOLOGY

The review process attained all relevant documents, as detailed below. The documents were reviewed by order of date, commencing at TBE BPA, 2013.

A site visit was conducted on 22 March 2018, to gain a better understanding of the broader bushland environment and terrain, existing urban development surrounding the Garigal National Park, and infrastructure assets. The site visit also observed the site characteristics (including proposed construction/development area, APZ management and adjacent slopes).

The independent review by Kleinfelder has taken into consideration, and without predetermined outcome, all the information acquired and provided. The position is independent and has been supported by quantitative data and qualitative or judgement based on experience and/or information provided.

3. REVIEW OF THE RELEVANT PROJECT BUSHFIRE DOCUMENTATION

The documentation reviewed (reports, letters and responses) have been accessed via the Northern Beaches Council (NBC) website (<https://yoursay.northernbeaches.nsw.gov.au/Ralston-planning-proposal/documents>), as directed by the PAC. The following list identifies documents that have been reviewed or have been referenced (unable to be reviewed).

1. Travers Bushfire and Ecology Bushfire Protection Assessment 2013.
2. Rural Fires Service (RFS) response 6th June 2013 – **not reviewed** (unavailable – not directly received or on the NBC website).
3. RFS Rezoning Assessment Report – **not reviewed** (unavailable – not directly received or on the NBC website).
4. RFS advice to Council 20th Feb 2015.
5. Travers Bushfire and Ecology Bushfire Protection Assessment 2015 – **not reviewed** (superseded).
6. Northern Beaches Council (NBC) Letter 28th May 2015 – **not reviewed** (unavailable – not directly received or on the NBC website).
7. Travers Bushfire and Ecology Response 11th Aug 2015.
8. RFS Response 23rd Sep 2016.
9. Blackash report to Council 28th April 2016.
10. Travers Bushfire and Ecology Response 4th Nov 2016.
11. Travers Bushfire and Ecology Response to Blackash 9th Dec 2016.
12. Travers Bushfire and Ecology Bushfire Protection Assessment 2017.
13. Travers Bushfire and Ecology Fuel Management Plan 2017.
14. Blackash Response 20th Sep 2017.
15. EcoLogical Australia (ELA) – Ralston Avenue Planning Proposal: Peer Review 16 Aug 2017.
16. RFS Response 18th Oct 2017.
17. Travers Bushfire and Ecology Response 25th Oct 2017.
18. PAC Letter 2017.
19. RFS Response email - 28th Feb 2018.
20. Travers Bushfire and Ecology Response March 2018 – Slopes and Vegetation Issue.
21. PAC submission 2018.
22. Section 117(4.4) Environmental Planning and Assessment Act 1979 (EP&A Act).



23. NSW RFS Planning for Bushfire Protection (PBP) 2006.
24. NSW RFS Community Resilience Practice Note 1/12 – Establishment of Easements for the Purpose of Asset Protection Zones
25. NSW RFS Community Resilience Practice Note 2/12 – Planning instruments and Policies.
26. AS3959-2009 Construction for Building in Bushfire Prone Areas.
27. Warringah LEP 2000 and 2011.
28. A Plan for Growing Sydney (DoPE 2014).
29. Fire and High Voltage (Powerlink Qld) March 2015.
30. Emergency Services' Standard Operating Guidelines' SOG 3.5 Fire fighter Safety.
31. Emergency Services' Standard Operating Guidelines' SOG 14.4 Working Near Powerlines.

4. DISCUSSION

The fundamental question under review is: *does the Planning Proposal adequately demonstrate the primary objective: 'protect life, property and the environment from bushfire hazards'?; and 'will rezoning this land to R2 Low Density Residential and E3 Environmental Management, for the purposes of developing a residential subdivision, meet the objectives of S117 Direction 4.4 and achieve the aims and objectives PBP 2006'?*

The Bushfire Protection Assessment for the Planning Proposal prepared by TBE, commenced in 2012. This Bushfire Protection Assessment has developed over the 5-year period, responding to concerns raised by RFS and NBC. TBE on behalf of the applicant states that *'The Planning Proposal has demonstrated that the S117 Directions objectives have been comprehensively addressed in the overall design. Indeed, it is through this exhaustive assessment approach that enables the proposed low density residential zoning to be the appropriate land use for this landscape as it complies with the S117 Directions, PBP 2006 and the draft PBP through the significant bushfire design elements which have been proposed to be implemented'* (TBE Oct 2017).

Over the 5-year period between initial lodgement to present, the Proposal has not yet received concurrence with the relevant authorities (RFS, NBC). The RFS position has developed from *'not opposed to the development of this site "in principle", recognizing the significant bushfire threat'* (RFS Response 2015), to: *'the NSW RFS does not support the Planning Proposal and consider it inconsistent with the Directions under s.117(2) Environmental Planning and Assessment Act 1979'* (RFS Response email - 28th Feb 2018).

The NBC engaged an independent bushfire consultant (Blackash) to provide a bushfire peer review of the Planning Proposal (2016). This comprehensive peer review concluded that *'the risk to life for residents and emergency services personnel was so great, that no development should be permitted on the site'* (Blackash 2016).

The main point of difference between the TBE assessment and the Blackash review is the scale of assessment. TBE essentially identifies the bushfire risk directly adjacent to and within the proposed development area, whereby Blackash (although considering the TBE assessment provides sound development focused bushfire protection measures) identifies the bushfire risk at

a broader landscape scale (macro scale), both with regards to potential wildfire impact and the provision for residents to evacuate while emergency services are attending.

4.1 BUSHFIRE PRONE LANDSCAPE

The proposed development area is bounded by extensive bushland areas within the subject site (MLALC landholdings) and the adjacent Garigal National Park. The landscape has bushfire prone vegetation on rugged and steep terrain extending north, west and south, having significant potential for landscape scale wildfires. The suggested worst fire weather is under hot and dry northwesterly conditions, however, the development site has considerable bushfire related characteristics surrounding the development area from all directions (vegetation, fuel loading, fire runs and topography).

The extent of bush fire prone vegetation to the south, west and north has potential to spread rapidly from point of ignition and impact directly upon the proposed development site. It has been discussed that a wildfire could reach maximum intensity and rate of spread and impact the proposed development site within 1 hour of ignition or identification (EcoLogical Australia 2017). This factor raises significant issues with regards to early response and stay or go decision making (i.e. early evacuation and/or stay and defend).

The landscape characteristics described above, which determine the bushfire risk, are also the same characteristics that constrain the potential development design (layout). The proposed residential subdivision development design is restricted to a narrow plateau with steep down slopes to the south, west and northwest, thus extending westward out into the bushland environment, such that bushfire prone vegetation will surround the subdivision on all aspects, and most significantly south, west and north. There are no formal specifications for the term 'narrow plateau' specifically relating to bushfire impact.

The developable areas at this site are constrained on a narrow plateau, which encourages a longer linear design. This in turn maximizes the residential development exposure to a bushfire hazard (interface). When overviewing this linear layout, it is conceivable that the Planning Proposal design emulates an hourglass shape. Although there is no clarification as to what

specifications the term 'narrow' refers, these design constraints conflict with specific objectives for subdivisions as stated in Section 4.1.2, PBP 2006.

The Sydney East Sub Station location and its functions provide a unique landscape feature that has not been thoroughly considered in the Planning Proposal, specifically at the macro scale. The landscape position of the Sub Station places the potential residential subdivision further to the west along the narrow crest, isolating the residential developable areas by up to 400m from the existing Belrose urban precinct.

TBE have suggested this development is not too dissimilar to other existing residential developments in the Garigal National Park peripheral. It is noted that these existing residential developments have been established prior to the current planning procedures (pre 2001). However, the subsequent isolation of the Planning Proposal is unique, and the Planning Proposal is not comparable to any other residential developments observed in the Garigal National Park periphery.

4.2 BUSHFIRE RISK

The Blackash (2016) review demonstrates Warringah Pittwater Bushfire Risk Management Plan (BFRMP) risk ratings for development and assets in the locality, essentially as very high -extreme risk. TBE (Dec 2016) responded to this issue and conducted an independent risk assessment consistent with the ISO31000 risk assessment process methodology. The TBE risk assessment resulted in a medium to high rating, with consideration of the proposed BPMs (the risk assessment is somewhat qualitative with regards to consequence). Although the BFRMP and the TBE assessment use differing methods (and subsequently inconsistent outputs), the results are comparable, in that the risk rating is in the high – extreme levels. Using ISO31000 risk assessment process, and without BPMs, the proposed development site at this location has an extreme risk (likely fires are expected to spread and reach assets, and catastrophic consequences). With the BPMs proposed, and with provisions for suitable safe evacuation and access, or suitable safe refuge during a bushfire event, the site could be considered as High risk (major consequences). However, at the broader or landscape scale, the development site should be considered as extreme risk, particularly considering unpredictable bushfire behaviour (i.e. speed of fire impact



from ignition, and behaviour on such steep slopes) and the issues surrounding the peninsula design and associated occupant evacuation and emergency services access.

4.3 SAFE REFUGE

TBE have identified safe refuge or a Neighborhood Safer Place (NSP). The nearest NSP offsite is within close proximity and accessible through non-hazardous areas.

The onsite NSP location, on review, is demonstrated as capable at the western area (or precinct), due to the topographical constraints and resulting development design (hourglass shape) conforming to the narrow plateau. This proposed NSP location has the potential to isolate occupants on the peninsula during a bushfire event, a long distance from areas free of bushfire prone vegetation and from another safe refuge. This factor should raise significant concerns regarding protection of life and safety.

4.4 SITE ACCESS

Access (and emergency evacuation) to the site should be considered at both a macro scale and site scale. The Sydney East Sub Station location and its functions, including bushfire prone vegetation management and high voltage powerlines, provide a unique landscape feature that has not been thoroughly considered in the Planning Proposal, specifically at the macro scale. The landscape position of the Sub Station places a potential residential subdivision further to the west along the narrow plateau, isolating the potential residential developable areas by up to 400m from the existing Belrose urban precinct. This 400m has significant bushfire prone vegetation on both applicants' lands and the adjacent Transgrid-managed lands.

Further to this, Ralston Avenue southern access has two (2) high voltage powerlines extending over a length of 200m inclusive of 25m exclusion zones, and three (3) 330kV powerlines at the northern access (Wyatt Avenue) extending over a length of 180m inclusive of 25m exclusion zones. These are significant distances to cover during a bushfire for occupant evacuation or emergency services response (potential for flames and thick smoke), with the risk of powerline



arc or plasma strike present. Emergency Services 'Standard Operating Guidelines' (SOG 14.4) deter operating under or within 25m of powerlines when fire or thick smoke alter environmental conditions.

This fact was raised initially through the Blackash 2016 review, and the TBE BPA (2017) refers to APZs and Transgrid easements management as suitable protection measures. The access provisions do not determine the accessibility under the powerlines during bushfire condition and involves vegetation management responsibilities afforded to Transgrid (an external party). This fact has potential to constrain the opportunities for evacuation and bushfire fighting responses.

Further, the TBE response (4th Nov 2016) has compared this development to other similar residential developments in the Garigal National Park peripheral. A desktop aerial review and site visit of the site and neighbouring existing urban areas indicates that the isolation of the proposed residential development site of this Planning Proposal is unique, and that many similar surrounding subdivision developments would not be required to consider such constraining access features.

4.5 HIGHER LEVEL OF COMMUNITY BUSHFIRE PREPAREDNESS

The EcoLogical Australia (ELA) report – Ralston Avenue Planning Proposal: Peer Review (16 Aug 2017) proposed that the new development would provide a higher level of preparedness to the existing urban development and the Sub Station infrastructure via a net improvement in safety/resilience. The ELA report states that *'if the planning proposal was considered in isolation to the existing interface risks, it would be considered inappropriate; however, the proposal lowers an unacceptably high bushfire risk associated with the existing urban interface and older housing stock'*.

The ELA report notes the issues associated with evacuation (Section 6.6) particularly associated with timing. The report details the potential future occupants of the new development would have inadequate response time to safely and effectively evacuate the site in the event of a wild fire (as reiterated in the RFS letter, 18 October 2017). The report states the number and quality of



evacuation routes have little effect on this risk as evacuation is not possible, and on-site refuge is necessary.

This higher level of community preparedness includes bushfire shielding benefits for the existing interface enhanced by in-perpetuity and reliable fuel management within the TransGrid Sydney east substation lands. This involves responsibility of an external stakeholder.

ELA suggests that the community-wide bushfire risk associated with the subject planning proposal (i.e. providing greater bushfire preparedness) can be considered as an appropriate way to fulfil the EPA Act Section 117(2) directions. In summary the ELA report supports the TBE position, and provides recommendations for 'refinement', including:

- a) A management agreement between community title and TransGrid
- b) Application of a garden landscape covenant based upon national best practice design
- c) Provision of a Neighbourhood Safer Place and/or larger APZs for lots most at risk of a head fire under an FFDI >50

4.6 FUEL MANAGEMENT

The RFS have stated that they will not support the rezoning of the site where it relies so heavily upon an alternate solution to meet the aims and objectives of PBP 2006 (RFS 26 June 2015).

The FMP proposal to manage the landscape (including SFAZ and fire trails) to reduce bushfire impact toward the APZ and future dwelling development is an innovative approach, and in a society seeking innovation this potentially fits well. However, the long term, perpetual management of APZs, SFAZ and fire trails (e.g. by a contractor) is not yet clear.

TBE demonstrates funding by the Community Title is in accordance with the NSW RFS Community Resilience Practice Note 1/12, e.g. the owner/occupier of the land that is benefited by the easement is responsible for maintaining the APZ (or SFAZ, or fire trail maintenance). In

NSW such mitigation works (hazard reduction burning in SFAZ) are predominantly conducted by the NSW RFS, and it may not be inappropriate to suggest that this perpetual work, in time, could fall back on the agency. Hence the RFS position that this will result in increased demand for RFS resources. That being said, TBE has demonstrated that RFS resource capacity can be funded through insurance, State and Federal initiatives.

Additional to the onsite fuel management, the Transgrid landholdings and Ausgrid easements over the subject site support bushfire prone vegetation that present direct bushfire hazard to potential evacuating occupants and attending emergency services personnel. This fact requires adjacent landholders (Transgrid) to bear some responsibility for bushfire fuel management for the safe passage for evacuation and emergency operations. Subsequently the development may require agreement from adjacent landholders, a matter that has not been addressed in detail at this stage.

4.7 DEFINITION OF INAPPROPRIATE OR INCOMPATIBLE DEVELOPMENT

No definitions of “inappropriate” development or “incompatible” land use with regards to bushfire were identified within the review to better clarify their meaning. The following statements are made throughout the reviewed documents:

- TBE 4 Nov 2016 describes incompatible land use as child care centres, community facilities, educational establishments, group homes, health consulting rooms, hospitals, places of public worship, respite day care centres and or veterinary hospitals.
- TBE describes inappropriate development in this location as per Section 3.1 of PBP (page 9).
- Section 3.1 of PBP: developments that should not be permitted on bushfire grounds, including those that may start bushfires or are a potential hazard to adjacent areas or to firefighters if they are impacted upon by a bushfire.
- Blackash (Sep 2017) note that the term inappropriate land use refers to all forms of development and the appropriateness of the proposal.
- Blackash considers incompatible land use as any development on bushfire prone land that cannot satisfy the aims and objective of S117 Direction 4.4 and PBP 2006.

The S117 (Direction 4.4) objective clearly states to “*protect life, property and the environment for bushfire hazards by discouraging the establishment of incompatible land uses from bushfire prone areas, and also states that a planning proposal must introduce controls that avoid placing inappropriate developments in hazardous areas*”. However, no specific clarification of inappropriate developments in hazardous areas or incompatible land use is defined.

This Planning Proposal challenges the concept of “incompatible” land use, the Proposal being an increased residential population in a high-extreme risk location with recognised access and evacuation issues.

4.8 SITE DESIGN

At a site scale, the design includes bushland corridors (such as Duffy’s Forest Pocket Park and the Transgrid property bushland areas) that potentially permit the passage of bushfire. These corridors are either on adjacent landholdings or contain a Critically Endangered Ecological Community and is designed for retention. These factors conflict with PBP 2006 specific objective for subdivision: “*to minimise bushland corridors that permit the passage of bushfire*”.

The proposed APZ (at **site scale**) has been designed based on the deemed to satisfy separation distance prescriptions identified in AS3959-2009, however the effective slopes at the site (slopes containing the predominant bushfire hazard/vegetation) are greater than the prescribed slopes (>20 degrees downslope) to the south, west and in some areas to the north (reference TBE BPA 2017, figures 2.2 and 3.2). A performance of bushfire behaviour is required to adequately assess the separation distances to achieve 29kW/m² or less at bushland interface building surfaces, considering flame contact.

The ongoing bushfire protection measures (**site scale**), specifically the maintenance of APZ, the management of SFAZ fuel load (hazard reduction burns) and the fire trail maintenance, have been detailed in the FMP. The RFS position that this could result in increased demand for RFS resources is pertinent and relevant. The security of long term (perpetual) management and funding capacity is broadly demonstrated (Community Arrangement) but not entirely clear. The



management approach proposed in the Planning Proposal relying on Community Title has precedence as an acceptable approach.

5. CONCLUSION

On 27 March 2018, I presented my review findings to the Planning Commissioners Panel with regards to the ability for this Planning Proposal to meet the objectives of S117 Direction 4.4 (EP&A Act) and the aims and objectives of PBP 2006 (including specific objectives for residential subdivisions). This conclusion summarizes my position on the Planning Proposal.

In conclusion, the Planning Proposal does not adequately meet the objectives of S117 Direction 4.4 of the EP&A Act (**Section 5.1.1 below**) and the aims and objectives of PBP 2006 (including specific objectives for residential subdivisions **Section 5.1.2 below**) for the following reasons:

- **The Proposal does not adequately address the risk to life and property on the future residential development from bushfire risk at the macro scale.** The extensive bushland areas associated within the subject site, the adjacent Garigal National Park north, west and south, and within the Sydney East Sub Station landholdings to the east, in combination with the rugged and steep terrain, provide a significant potential for landscape scale wildfires (under the right conditions) with potential to spread rapidly from point of ignition and impact directly upon the proposed development site. This poses risk to life and property, and when considered with respect to the access related issues toward the east (high voltage power lines and pinch points to access roads), the risk to life and property could be considered as High-Extreme based on potential for consequences.
- **The landscape characteristics that afford the bushfire risk are also the same characteristics that constrain the development design (layout).** The residential subdivision development design is proposed on a narrow plateau extending out as a peninsula (and isolated further west by the Sydney East Sub Station infrastructure), into the bushland environment, such that bushfire prone vegetation on steep slopes on the south, west and north would surround the proposed subdivision. The narrow and linear design does emulate an hourglass shape, which inherently maximizes the perimeter of the subdivision exposed to the bushland. These factors conflict with PBP 2006 specific objective for subdivision:

- o Minimise perimeters of the subdivision exposed to the bush fire hazard. Hourglass shapes, which maximise perimeters and create bottlenecks, should be avoided.
- o Provide for the siting of future dwellings away from ridge-tops and steep slopes - particularly up-slopes, within saddles and narrow ridge crests.
- **Site access at both a macro/landscape scale and local/site scale.** The Sydney East Sub Station location and its functions provide a unique landscape feature that has not been adequately considered in the Planning Proposal, specifically at the macro scale. The landscape position of the Sub Station forces the location for the potential residential subdivision further to the west along the narrow plateau, isolating the proposed residential developable areas by up to 400m from the existing Belrose urban precinct. This isolation includes potential for evacuating occupants and/or attending fire fighters to be exposed to direct and unsafe bushfire attack from adjacent vegetation.
- The **high voltage power lines and easements** associated with the Sydney East Sub Station provide a significant impediment to the proposed development area. The potential for arcing or plasma strike has been called up through the Blackash peer review. The provision of safe access for emergency service personnel during a wildfire event (including direct fire front, spot fires, thick smoke) has not been adequately demonstrated. The Planning Proposal also requires fuel management actions that are the responsibility of an external party (Transgrid).

The Planning Proposal to rezone the site for residential subdivision development is critically constrained by the surrounding environment, in all directions. The Proposal can be considered incompatible land use, which would place a relatively large population in a residential subdivision at high-extreme risk of bushfire impact, and having restrictions to access and egress in the event of a bushfire emergency. As such the site cannot adequately meet the fundamental aims, objectives or provisions of S117 Direction 4.4, PBP 2006 and NSW RFS Community Resilience Practice Note 2/12.

5.1 SUMMARY OF PLANNING OBJECTIVES

5.1.1 Meet the objectives of S117 Direction 4.4	
Objective	Comment
A 'protect life, property and the environment from bush fire hazards by discouraging the establishment of incompatible land uses in bush fire prone areas' and	Planning Proposal does not satisfy: It is considered that incompatible land use would include placing a relatively large population in a residential subdivision that would be at high-extreme risk of bushfire, and having restrictions to access and egress in the event of a bushfire emergency.
B 'to encourage sound management of bush fire prone areas'	The Proposal provides the basis for sound management of the bushfire prone areas (FMP). The FMP proposal to manage the landscape to reduce bushfire impact toward the APZ and future dwelling development is an innovative approach, and in a society seeking innovation this fits well.
5.1.1.1 What a relevant planning authority must do if this direction applies	
(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	Proposal has consulted with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination

<p>(5) A planning proposal must:</p> <ul style="list-style-type: none"> (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. 	<p>This proposal has regarded PBP 2006</p> <p>The Proposal has sought to avoid placing inappropriate developments in hazardous areas. Inappropriate in the Proposal refers to Section 3.1 of PBP 'Controlling Development Types'. However, no specific clarification of inappropriate developments in hazardous areas is defined, and it could mean that Residential Subdivision in a hazardous area is inappropriate.</p> <p>Issues relating to steepness, canopy fuel connectivity, erosion and manageability of APZ suitably managed</p>
<p>(6) A planning proposal must, where development is proposed, comply with the following provisions, as appropriate:</p> <ul style="list-style-type: none"> (a) provide an Asset Protection Zone (APZ) incorporating at a minimum: <ul style="list-style-type: none"> (i) an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and (ii) an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road, (b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the 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, (c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks, (d) contain provisions for adequate water supply for firefighting purposes, (e) minimise the perimeter of the area of land interfacing the hazard which may be developed, 	<ul style="list-style-type: none"> (a) APZ are proposed as specified. (b) Not an infill development. (c) 2-way roads linking to perimeter roads and fire trails proposed. (d) Adequate water supplies proposed. (e) Planning Proposal does not satisfy: the landscape and topography put the Proposal on an isolated peninsula surrounded by vegetation, and that factor maximizes the hazard interface. (f) Proposal can place Controls on the placement of combustible materials in the Inner Protection Area.

<p>(f) introduce controls on the placement of combustible materials in the Inner Protection Area.</p>	
<h2>5.1.2 PBP 2006 aims and objectives</h2>	
<p>The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (community, residents and fire fighters) 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</p>	<p>The NSW development assessment system is currently being used to determine if this site can provide for the protection of human life (community, residents and fire fighters) 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.</p>
<p>Objective 1: Afford occupants of any building adequate protection from exposure to a bushfire;</p>	<p>Planning Proposal does not satisfy: The occupants of any building have the potential to be exposed to bushfire impacts, specifically with regards to evacuation constraints. The site has a high bushfire risk, considered to be in the path of potential fast moving fires. The design (hourglass) and pinch points can create bottlenecks which have potential to expose occupants to bushfire.</p>
<p>Objective 2: Provide for a defendable space to be located around buildings;</p>	<p>TBE have identified APZ in accordance with AS3959-2009. This is considered as adequate defendable space.</p>
<p>Objective 3: Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;</p>	<p>TBE have identified APZ in accordance with AS3959-2009.</p> <p>There is an issue associated with accepting the AS3959-2009 APZ prescriptions, whereby the prescribed APZ have been calculated up to 20 degree down slopes (18-20 degrees), however the effective slopes exceed this to the south, west and northwest.</p> <p>Performance assessment of fire behaviour on slopes exceeding 20 degrees should be provided to conclude appropriate separation distances.</p>

<p>Objective 4: Ensure that safe operational access and egress for emergency service personnel and occupants is available;</p>	<p>Planning Proposal does not satisfy: The safe operational access and egress for emergency service personnel and occupants has significant constraints. The long narrow ridgetop/plateau development has identified pinch points that have potential to disrupt accessibility and expose emergency service personnel and occupants to unacceptable bushfire impacts.</p> <p>The high voltage power lines on Ralston Avenue and Wyatt Avenue, which have potential to arc (plasma strike) in thick smoke conditions. Emergency services' Standard Operating Guidelines deter operating under or within 25m of powerlines when fire or thick smoke alter environmental conditions.</p>
<p>Objective 5: Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the Asset Protection Zone (APZ); and</p>	<p>The TBE Fuel Management Plan (FMP) demonstrates the bushfire protection measures, including management of fuel loads in the Asset Protection Zone (APZ).</p>
<p>Objective 6: Ensure that utility services are adequate to meet the needs of fire fighters (and others assisting in bushfire fighting)</p>	<p>This objective can be provided to a site through engineering and design.</p>
<p>5.1.3 Achieve the Specific Objectives for Subdivisions (Section 4.1.2 PBP 2006)</p>	
<p>Minimise perimeters of the subdivision exposed to the bush fire hazard. Hourglass shapes, which maximise perimeters and create bottlenecks, should be avoided</p>	<p>Planning Proposal does not satisfy: The Planning Proposal is inherently constrained by the natural topography, such that the design cannot avoid an hourglass shape, creates bottlenecks and maximizes perimeter of subdivision exposed to bushfire hazard.</p>

<p>Minimise bushland corridors that permit the passage of bush fire</p>	<p>Planning Proposal does not satisfy: The Planning Proposal provides for a bushland parcel (Duffy's Forest Pocket Park) which could act as a corridor that permits the passage of bush fire across the eastern section of the Planning Proposal design.</p> <p>Adjacent landholdings (Transgrid) bushland parcels, not managed within this proposal, could act as a corridors that permit the passage of bush fire across the eastern section of the Planning Proposal design.</p>
<p>Provide for the siting of future dwellings away from ridge-tops and steep slopes - particularly up-slopes, within saddles and narrow ridge crests.</p>	<p>Planning Proposal does not satisfy: The Planning Proposal will locate dwellings on a plateau along the long narrow ridge crest, bound by steep slopes south, west and northwest.</p> <p>Although the development design provides APZ to separate dwellings away from the steep slopes, the overall design is constrained by the topography and the whole development is sited on ridge-tops and steep slopes - particularly up-slopes, within saddles and narrow ridge crests.</p>
<p>Ensure that separation distances (APZ) between a bush fire hazard and future dwellings enable conformity with the deemed- to-satisfy requirements of the BCA. In a staged development, the APZ may be absorbed by future stages.</p>	<p>TBE have identified APZ in accordance with AS3959-2009.</p> <p>There is an issue associated with accepting the AS3959-2009 APZ prescriptions, whereby the prescribed APZ have been calculated using 20 degree down slopes (18-20 degrees), however the effective slopes (slopes that contain vegetation) exceed this to the south, west and northwest.</p> <p>Performance assessment of fire behavior on slopes exceeding 20 degrees should be provided to conclude appropriate separation distances.</p>
<p>Provide and locate, where the scale of development permits, open space and public recreation areas as accessible public refuge areas or buffers (APZs)</p>	<p>Open space has been provided as APZ.</p>
<p>Ensure the ongoing maintenance of asset protection zones</p>	<p>The FMP proposal would manage the landscape to reduce bushfire impact toward the APZ and future dwelling development.</p>

Provide clear and ready access from all properties to the public road system for residents and emergency services	All properties would provide clear and ready access 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	Adequate supply of water and other services to facilitate effective firefighting can be provided.
<p>5.1.4 Achieving provisions and objectives in NSW RFS Community Resilience Practice Note 2/12</p>	
Development is likely to be difficult to evacuate during a bush fire,	Planning Proposal does not satisfy: Due to the long narrow design and potential pinch points, and the surrounding bushland extent and terrain and potential for rapid bushfire impact, the Planning Proposal design is likely to be difficult to evacuate during a bushfire.
Development is likely to create control difficulties during a bush fire,	Planning Proposal does not satisfy: The Planning Proposal would have an extensive perimeter exposed to bushfire impacts, and is likely to create control difficulties during a bush fire event.
Development will adversely affect other bush fire protection strategies or place existing development at increased risk,	The development would not adversely affect other bush fire protection strategies or place existing development at increased risk
Development is likely to result in a substantially increased requirement for government spending on bush fire mitigation measures, infrastructure or services,	The FMP proposal would manage the landscape to reduce bushfire impact toward the APZ and future dwelling development.
Environmental constraints to the site cannot be overcome,	This objective has not been assessed in this review.
Required bush fire protection measures would incur significant environmental costs.	This objective has not been assessed in this review.
<p>Appendix 2 Practice Note 2/12: Example Principal LEP Bush Fire Provision</p>	

(1) The objectives of this clause are as follows:	
a) to prohibit development that is likely to cause a significant increased risk to the lives of residents, visitors or emergency services personnel as a result of the development.	Planning Proposal does not satisfy: The Planning Proposal would place a relatively large population into a high risk bushfire area, and has potential to cause a significant increased risk to the lives of residents, visitors or emergency services personnel with regard to bushfire emergency.
b) to minimise the bush fire risk to life, property, heritage values and the natural environment associated with the use of land consistent with the principles of ecologically sustainable development, and	This objective (ESD) has not been assessed in this review.
c) to allow development on land that is compatible with the land's bush fire risk, and	Planning Proposal does not satisfy: This independent review assesses the land proposed for development as incompatible land use, due to the landscape (macro) scale bushfire risk, rapid fire rate of spread (less than 1 hour from ignition) and the design constraints associated with the narrow plateau and surrounding steep slopes.
d) to ensure ongoing maintenance of bush fire protection measures will be feasible, and	The FMP proposal would manage the landscape to reduce bushfire impact toward the APZ and future dwelling development.
e) to avoid significant environmental and visual impacts of the clearing of vegetation for hazard reduction activities related to the development, and	This objective has not been assessed in this review.
f) to avoid significant adverse impacts on the ability of emergency services to effectively control major bush fires, and	This Planning Proposal will not result in adverse impacts on the ability of emergency services to effectively control major bush fires.
(3) Development consent must not be granted to development on land, to which this clause applies unless, in the opinion of the consent authority the development:	

<p>a) does not result in the location of increased development or infrastructure in areas exposed to unreasonable bush fire risk, or require an increase in measures to manage bush fire risk by other land owners/managers, and</p>	<p>Planning Proposal does not satisfy: The Planning Proposal would result in the location of increased development or infrastructure in areas exposed to unreasonable bush fire risk. The site would be a high risk location, and residential subdivision is considered incompatible.</p> <p>The FMP demonstrates limited requirement for increase in measures to manage bush fire risk by other land owners/managers.</p>
<p>b) will achieve an appropriate balance between the conservation of the natural environment and the provision of appropriate bush fire protection measures, taking into account the significance of the vegetation and biodiversity corridors, and</p>	<p>This objective has not been assessed in this review.</p>
<p>c) will include adequate measures to enable the safe evacuation of people from the locality during a bush fire, and</p>	<p>Planning Proposal does not satisfy: The Planning Proposal does not adequately address the evacuation of a relatively large population from a fast moving wildfire, through significant pinch points, and through high voltage power line easements.</p>
<p>d) will enable adequate access to that locality by emergency services, during a bush fire including the provision of fire trails where necessary, and</p>	<p>Planning Proposal does not satisfy: The Planning Proposal would not enable adequate access due to the pinch points and the uncertainty of high voltage power lines on Ralston Avenue and Wyatt Avenue during a bushfire emergency.</p> <p>The provision of fire trails and associated maintenance would enable adequate access to the locality.</p>
<p>e) is unlikely to result in unsustainable social and economic costs to the community as a consequence of managing bush fire risk, and</p>	<p>The FMP demonstrates the perpetual management arrangements through a Community Title funding.</p>
<p>f) will ensure ongoing provision and maintenance of the full suite of bush fire protection measures without unreasonable cost to the community, and neighbouring properties, and</p>	<p>As detailed above.</p>
<p>g) will ensure the ongoing maintenance of the suite of bush fire protection measures to be carried out, and</p>	<p>As detailed above.</p>

h) conforms with the aims and objectives set out in the document entitled Planning for Bush Fire Protection, ISBN 0 9751033 2 6, prepared by the NSW Rural Fire Service in cooperation with the Department of Planning, dated December 2006, or any document/s that supersedes this.

Planning Proposal does not satisfy: This independent review assesses the Planning Proposal cannot conform to the aims and objectives set out in the document entitled Planning for Bush Fire Protection 2006.

6. LIMITATIONS

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