

20 September 2017

Mr. Neil Cocks  
Sustainable Urban Planning Manager  
Northern Beaches Council – Strategic Planning

By Email: [Neil.Cocks@northernbeaches.nsw.gov.au](mailto:Neil.Cocks@northernbeaches.nsw.gov.au)

Dear Mr Cocks,

**Re: Ralston Avenue, Belrose – Planning for Bushfire Protection**

Blackash Bushfire Consulting (**Blackash**) has been engaged by Northern Beaches Council (**Council**) to review the revised *Bushfire Protection Assessment (BPA)* by Travers Bushfire and Ecology (**TBE**) dated 13 April 2017 and the revised *Fuel Management Plan (FMP)* by TBE dated 10 April 2017. The revised documents have been prepared by TBE to address issues raised by the NSW Rural Fire Service (**RFS**).

The Metropolitan Local Aboriginal Land Council (**MLALC**) has provided a Planning Proposal to Northern Beaches Council (**NBC**) in the preparation of a Local Environmental Plan (**LEP**) to zone land within the Locality C8 – Belrose North under Warringah Local Environmental Plan 2000, to allow its future development for residential purposes.

The original proposal was lodged with Warringah Council in April 2013 and subsequent consultation and additional reports have been provided by the applicant in support of the Planning Proposal.

The Ralston Avenue Planning Proposal is seeking the rezoning of approximately 17 hectares of bushland to facilitate subdivision of approximately 156 residential lots (TBE Bushfire Protection Assessment p. 2).

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 Warringah Local Environmental Plan 2011 (**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 containing high voltage power lines, a communications tower and remnant bushland areas that are connected to the surrounding National Park.

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) of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* which requires Council to consult with the Commissioner of the NSW Rural Fire Service (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.

Gateway determination was issued by the Department of Planning and Environment in January 2015. Consultation has been undertaken with the RFS.

The RFS wrote to Council in June 2013, February 2015, June 2015 and July 2015 with concerns as to whether future development could meet the provisions of *Planning for Bush Fire Protection 2006 (PBP)*. The RFS letter of 23 September 2016 outlines high level concerns with the proposal and articulates how the development “*fails to demonstrate that future development can comply with PBP.*”

PBP 2006 is currently under review with a revised version likely to be released in April 2018. However, the implementation date and gazettal is not known. Similarly, transition arrangements are not known. The revised PBP, known as *Planning for Bushfire Protection 2017 (PBP 2017)* is an update of the 2006 version, incorporating Fast Facts and Practice notes and minor changes to the document. APZs have changed for most vegetation formations. However, PBP 2017 should not be relied upon for decisions as the final form and transition arrangements are not known. Due to the extended timeframes associated with the determination of Planning Proposals, subsequent applications (if the proposal is successful) may be assessed against PBP 2017.

The Planning Proposal amendments include;

1. Increased asset protection zones (**APZs**) reflecting smoother boundaries, including increased depth on the southern aspect and the provision of APZs on the TransGrid electrical easements, lands adjacent to Ralston Avenue and Wyatt Avenue and owned by MLALC.
2. A reduction of the reserve (E3 Zone) has occurred from 0.90ha to 0.70ha.
3. Changes to road alignment in the north east to Wyatt Avenue with larger APZs.
4. Notation of the available fire trails in the vicinity of the proposal.
5. Consideration of a community title approach to APZ management.

For the most part, the revised scheme addresses technical bushfire issues within the site. However, the site within context of the surrounding land is not adequately addressed in consideration of the fundamental question associated with a rezoning application: Should the area be rezoned?

The TBE PBA Foreword seeks to position the proposal as being similar with existing areas in the Sydney basin.

*This Planning Proposal is no different in topography to many nearby residential communities, and significant bushfire planning design measures have been implemented in regard to asset protection zones,*

*road access design as well as the ongoing fuel management of nearby hazards. (TBE Foreword – no page number in the report).*

The documentation supporting the planning proposal does not identify or discuss the broader site context that makes this proposal unique in many ways. The most unusual aspect of the broader site context is the proximity of the Sydney North Sub Station, associated infrastructure and the high voltage power lines to the east of the site.

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 have radiant heat levels that will be life threatening to people exposed in the open or in vehicles attempting to flee the site. The site risks are summarized at Appendix 1.

The RFS letter of 23 September 2016 recognises the challenges of the site stating:

*Vehicular access to and from the site is problematic due to unmanaged vegetation along Ralston and Wyatt Avenues, with no measures proposed to ensure these evacuation routes remain accessible during a bush fire. The design and layout of the proposal also means that the perimeter road is likely to be cut off in several places during a bush fire, endangering both residents and emergency workers.*

and

*The site is vulnerable at several pinch points along the perimeter road, particularly where a proposed forest reserve will provide a vegetated link, potentially isolating the peninsular in the event of fire. Safe evacuation may not be available, with no refuge space provided for.*

Blackash has provided an analysis of the bushfire attack levels on the planning proposal and the main access handles into and out of the site. These are shown in Appendix 3 for the site and Appendix 4 for the broader site context.

Environmental Planning Instruments regulate land use and development in NSW through the EPA Act. The Gateway process was introduced by the NSW Department of Planning in 2009 to streamline the process of determining Local Environment Plans (LEPs). The Gateway process allows planning proposals to be reviewed at an early stage and a decision to be made on whether to proceed further.

The current approach to planning is based on the community's desire for the future use of land and to ensure incompatible or high risk uses are not approved. In a planning sense, there are some areas in which the risk to life and property from bushfire is so high or the environmental impact to provide setbacks so great, that new settlements should not be established in these locations. This was a key finding in the 2009 Victorian Bushfires Royal Commission which identified that *the protection of human life is the overriding objective in implementing*

*bushfire protection measures through improved planning and building regulation*<sup>1</sup>. The Royal Commission went on to state that:

*there is much scope to substantially restrict development in areas thought to pose an unacceptably high bushfire risk by ensuring that strategic policies and the Victoria Planning Provisions give more emphasis to human safety.*<sup>2</sup>

and

*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. People should be prevented or discouraged from building new houses in such areas.*<sup>2</sup>

Where the existing zoning does not support new development or intensification of use through subdivision, an entitlement or expectation does not exist. It is understood that the site currently has an entitlement for seven dwellings, with the proposal seeking to increase this to 156 residential lots within the main development area (R2 Low Density Residential (R2) zone). Zoning land to prohibit certain uses in high risk locations, including use as a dwelling, limits that land for future development commensurate with risk and is entirely appropriate.

Over the decades, prior to current legislative provisions, many developments have been approved in areas of inherent bushfire risk. This legacy continues to present challenges for fire agencies, insurers, local and state governments, residents and affected communities (directly and indirectly affected). A fundamental principle of modern planning is that new development is guided away from known high hazard areas. In light of the changing climate, land use planning and building responses are the prime mechanisms that can address future risk. A layered approach to addressing expanding communities is needed to avoid areas of extreme risk while balancing the need to provide viable and sustainable new development for an expanding Sydney.

Rezoning considerations are required to be addressed through strategic planning and the S.117 Directive of the EPA Act. TBE provide background to the requirements of considering the suitability of the site for rezoning and state that the site complies with the S.117 Ministerial Direction. The fundamental issue being tested in this case, is the determination of the suitability of the site for rezoning. The strategic planning process provides the opportunity to determine if the site complies with the legislative requirements pertaining to safety and potential risk to life and the capability of the site to comply with various objectives.

The 117 Directive is given its power through the EP&A Act. Section 117 provides the Minister for planning the authority to direct a public authority (Council) to exercise various functions. The Minister for Planning, under section 117(2) of the 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* (attached at

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<sup>1</sup> Volume 2 Victorian Bushfire Royal Commission p 214

<sup>2</sup> Volume 2 Victorian Bushfire Royal Commission p 215

Appendix 2) identifies matters for consideration for planning proposals that will affect, or are in proximity to land mapped as bush fire prone.

Direction 4.4 has two legislative **objectives**:

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

*PBP provides guidelines for use once an area has been identified and zoned for development. Its primary purpose is to assist with the development of bush fire prone land (RFS Practice Note 2/12 p. 1). The RFS Practice Note recognises limitations within PBP of dealing with strategic planning issues and key considerations for the rezoning of land. The RFS Practice Note 2/12 provides clarity on matters to be considered in meeting legislative requirements. These requirements include:*

- (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.*

Neither the 117 Directive or PBP articulate what constitutes **inappropriate developments**. However, having set up and established the framework for *Planning for Bushfire Protection* at a State level as Manager Development Control and later as Group Manager Community Resilience for the RFS (where I worked at a state level for 10 years), I am in the position of having developed and implemented legislation, PBP and drafted the RFS practice note and knowing keenly the intent behind it and its application by the RFS. The TBE BPA identifies inappropriate development as including petrol stations schools and retirement villages. Inappropriate development refers to all forms of development and the appropriateness of the proposal.

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 or risk based assessment requirements of Plan 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, particularly as it relates to evacuation.

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.

The strategic considerations at the rezoning stage provide a series of gates to strategically assess and determine the suitability of a site for future development. PBP goes so far as to state in the Minister's Foreword that *improved landuse decisions for developments in bushfire prone areas are intrinsic to the fire management and environmental protection strategies of the Service* (PBP p 1). Rezoning and LEPs are the main planning tool to determine the suitability of an area for development and to shape the future of communities and ensure local development is done appropriately.

The *2009 Victorian Bushfires Royal Commission* wrestled with the challenges associated with landuse planning. It recognised the critical importance of landuse planning to be used as a mechanism *to prevent or deter people from living in areas of unacceptable high bushfire risk*<sup>3</sup>. The 2004 report of the *National Inquiry on Bushfire Mitigation and Management* cited land-use planning as *'the single most important mitigation measure in preventing future disaster losses in areas of new development'*<sup>4</sup>.

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:

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<sup>3</sup> Volume 2 Victorian Bushfire Royal Commission p 214

<sup>4</sup> Stuart Ellis, Peter Kanowski, Rob Whelan, (2009) National inquiry on bushfire mitigation and management, Council of Australian Governments p 90

*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, 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 (see Appendix 3 and 4) and will have radiant heat levels that will be life threatening to people exposed in the open or in vehicles attempting to flee the site.

A resilience-based approach focused on community wellbeing, liveability 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 risk<sup>5</sup>.

## Site Access

Proposed access to the site is by the extension of two existing roads through areas of unmanaged and highly bushfire prone vegetation. Five significant pinch points (**see Figure 1**) 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. Pinch points are not defined in PBP. NSW Roads and Maritime define pinch points as:

*Pinch points are traffic congestion points, intersections or short lengths of road at which a traffic bottleneck exists slowing down the broader network. They cause a build up of traffic and travel delays at these spots and on the wider road network<sup>6</sup>.*

In the bushfire sense a pinch point could be defined as:

*Pinch points are roads that are exposed to bushfire attack (radiant heat, ember or flame) or smoke that results in traffic congestion and bottleneck that slows down the broader network or prevents the safe operational access or evacuation of an area. In particular, they are roads that are exposed to greater than*

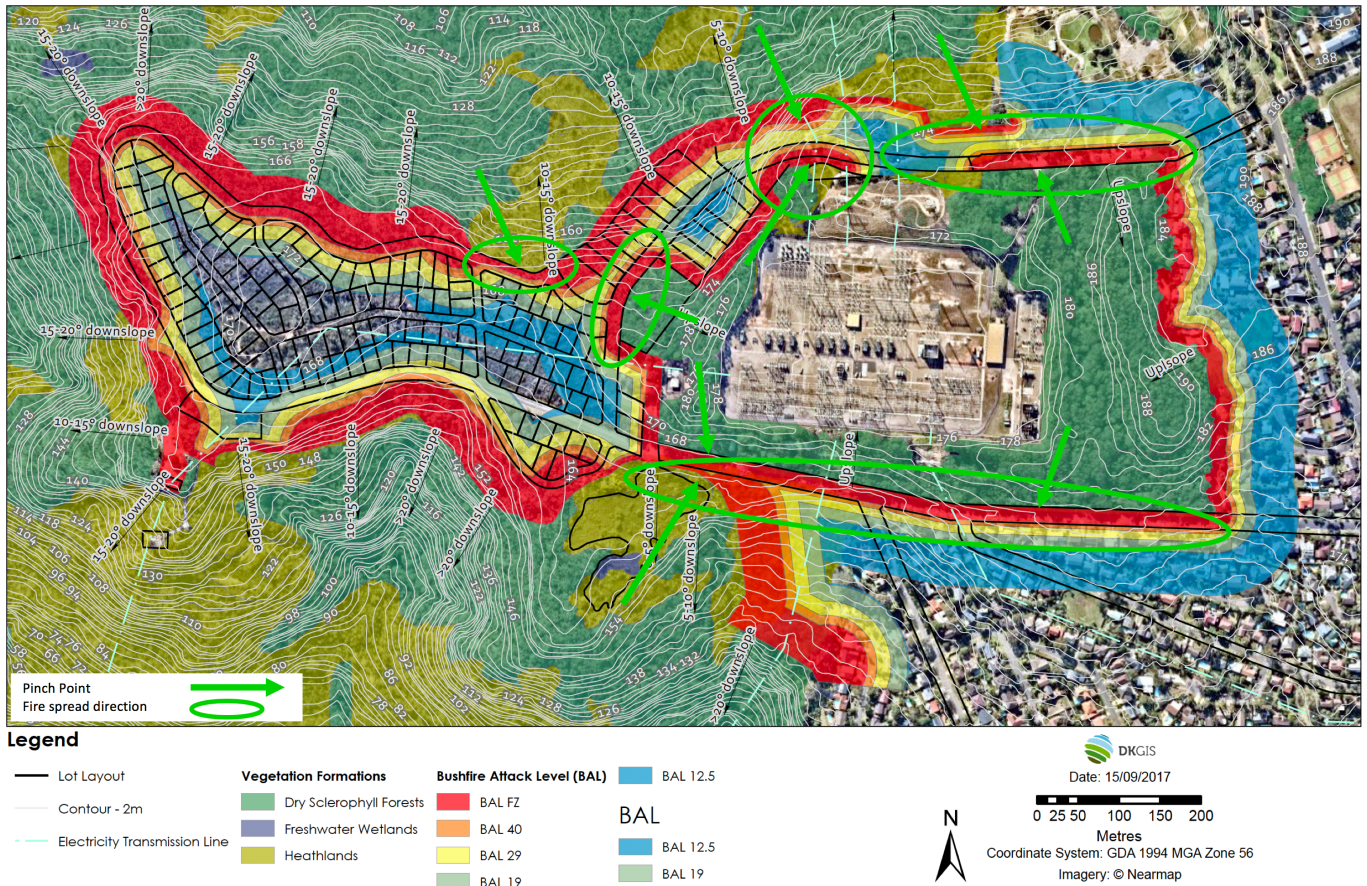
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<sup>5</sup> NSW RFS Practice Note 2/12 Planning Instruments and Policies

<sup>6</sup> <http://www.rms.nsw.gov.au/projects/easing-sydneys-congestion/pinch-point-program/index.html>

10kW of radiant heat.

Figure 1 Pinch Points



The pinch points within and surrounding the Ralston Avenue proposal are significant.

**Asset Protection Zones**

A detailed review of the APZ has not been undertaken as part of this review. Figures 2, 3 and 4 show the changes of APZs since 2012. The location and extent of APZs has changed markedly since the original proposal. The TBE report provides APZs that meet or exceed PBP requirements. However, the radiant heat levels indicated by Figure 1 demonstrate the critical life safety issues throughout the proposed subdivision.



Figure 2 APZs 2012. Source TBE BPA December 2012

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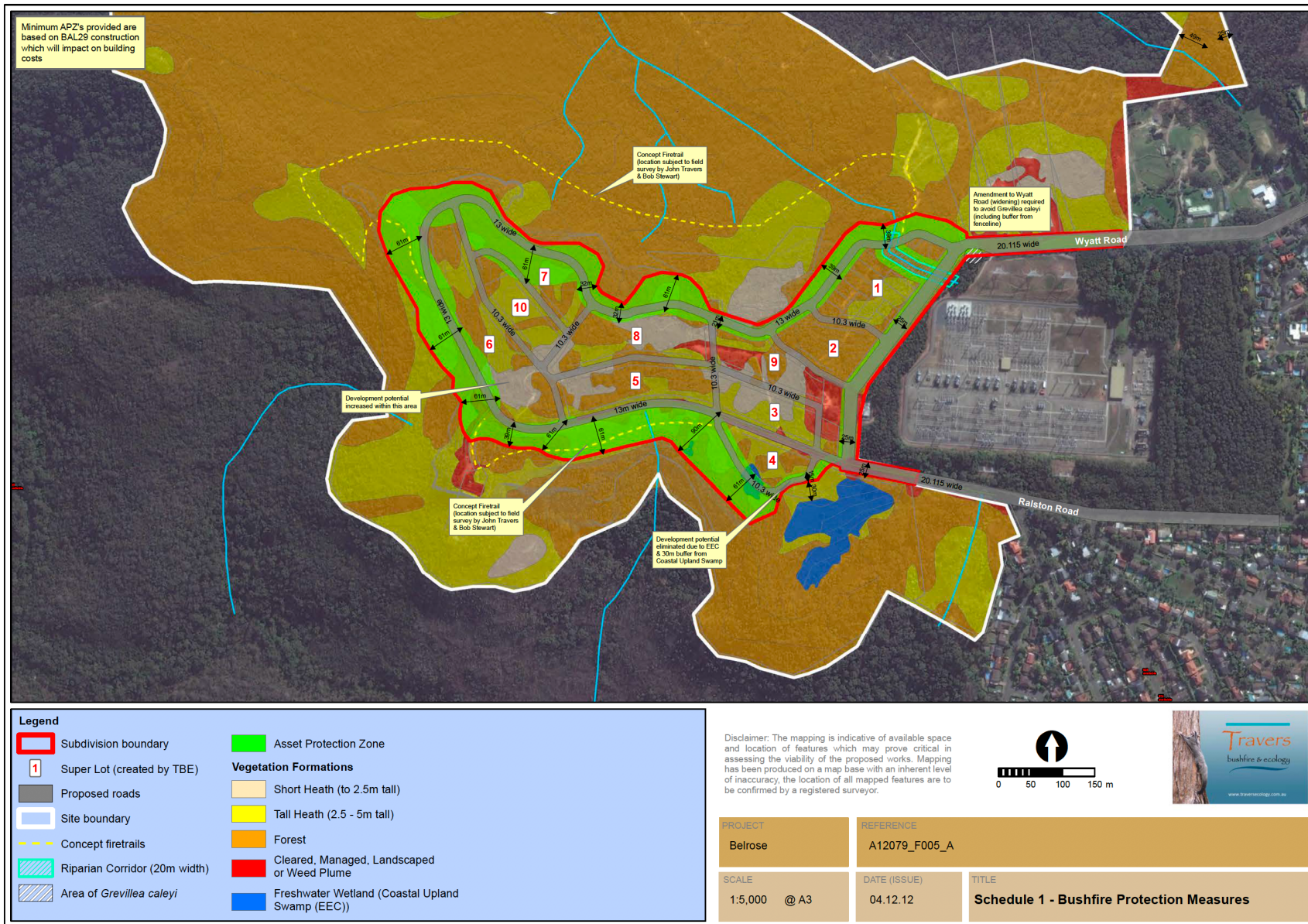


Figure 3 APZs 2015. Source TBE BPA December 2015.

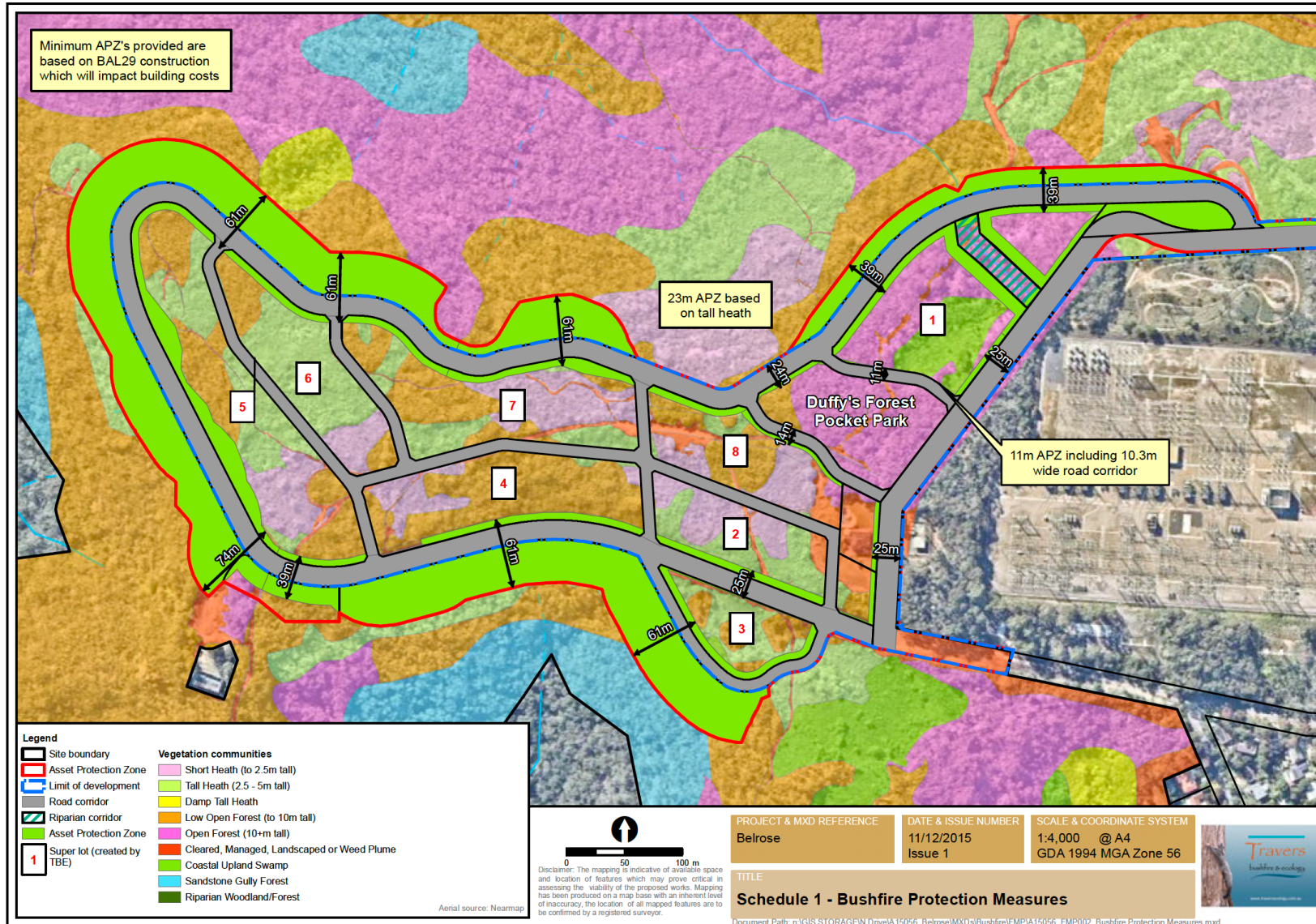
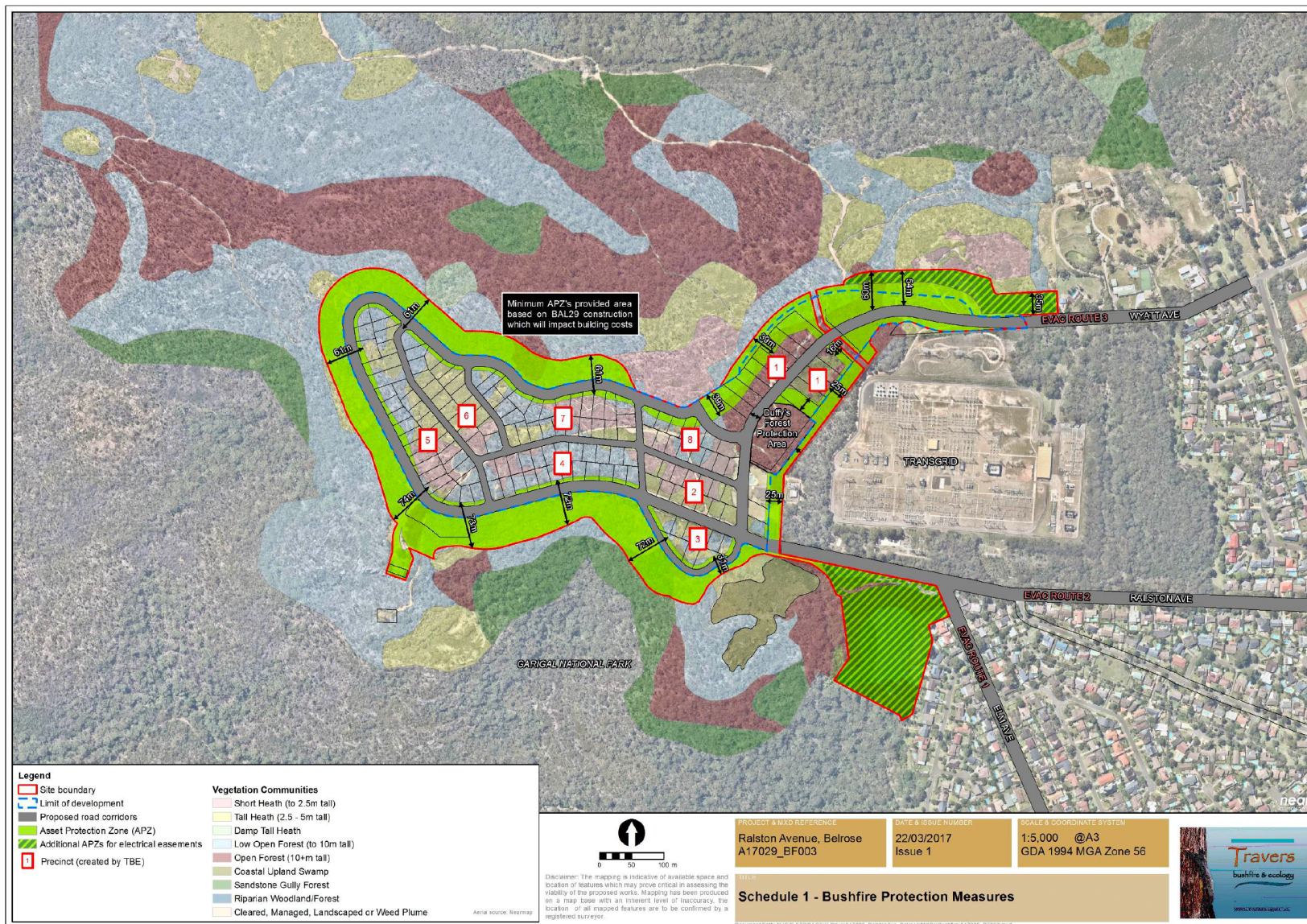


Figure 4 APZs 2017. Source TBE BPA April 2017



The size of the “pocket park’ has been reduced in area (to .67ha) to accommodate a larger APZ. The Pocket Park is connected directly to adjoining bushland to the east which makes it a contiguous area of bushland greater than 1ha. For the purposes of PBP, this area would need to provide APZs within the proposed residential Lots from the Pocket Park. The APZs should not extend into the pocket park to ensure ecological integrity is maintained. It is unclear from the revised BPA what APZ has been provided. The Fuel Management Plan identifies the area as Land Management Zone 3 (p. 63). Appendix 4 shows detailed BAL assessment across the precinct. Of note, the pocket park pushes APZs into a number of Lots.

If the proposal is successful, future owners of houses can lodge a hazard complaint with the RFS. If the land is found to present a risk to the houses, the RFS can issue a hazard reduction notice on the manager of the land to reduce bushfire fuels.

Appendix 4 shows the BAL 29 line throughout the precinct. From this initial analysis, it appears that a number of lots would not be considered viable for a building footprint.

## High Voltage Power Lines

The proposal has been modified to provide a minimum of 25m APZs to the power lines. However, TBE fails to address access issues and evacuation in the event of a bushfire and what will be done when smoke causes the access below the power lines to be stopped due to potential plasma strike. The TBE fails to address concerns associated with the risk associated with arcing to ground from the 330kva power lines and disruption of planned evacuation routes.

The RFS and power companies have guidelines that prohibit operation under high voltage power lines during fires or smoky conditions 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 may require access to be cut which will prevent fire fighter access and resident evacuation. This fails one of the fundamental requirements of PBP to provide safe operational access.

While the revision to the planning proposal modifies access arrangements within and to the site. However, it does not provide acceptable or safe outcomes due to the number of pinch points within and to the site and issues associated with the high voltage power lines.

## Conclusion

The configuration of the Planning Proposal and adjoining unmanaged bushland provides a high likelihood that the site will be isolated by high intensity fire. Potential exists 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 narrowness and configuration of the site lends itself to be heavily impacted by the most intense bushfires being driven by northwesterly winds.

All access and egress points to the site have a high likelihood of being 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 number of pinch points, location of the site and connection to unmanaged areas presents an extreme risk to life.

TBE fails to address access issues associated with access to the site and evacuation from the site in the event of a bushfire and what will be done should smoke cause the access below the power lines to be stopped due to potential plasma strike. The TBE fails to address concerns associated with the risk associated with arcing to ground from the 330kva power lines and disruption of planned evacuation routes.

I remain of the view that 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 the rezoning should not proceed and that no further development should be permitted on the site.



Lew Short

Principal  
B.A., Grad. Dip. (Design for Bushfires),  
Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management)



## Appendix 1 Site Risks

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 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 Pocket Park provides a pinch point and significant area of fire penetration into the site.
- A number of lots appear not to be able to provide a compliant house footprint that meets BAL 29 requirements.
- 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 considering smoke and fire impacts resulting in the potential for arcing, the Planning Proposal is fundamentally flawed.

## Appendix 2 Section 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. The following is an extract from Direction 4.4.

### 4.4 Planning for Bushfire Protection

#### Objectives

(1) *The objectives of this direction are:*

1. (a) *to protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and*
2. (b) *to encourage sound management of bush fire 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 bush fire prone land map under section 146 of the Environmental Planning and Assessment Act 1979 (the EP&A Act), or, until such a map has been certified by the Commissioner of the NSW Rural Fire Service, a map referred to in Schedule 6 of that Act.*

#### When this direction applies

(3) *This direction applies when a 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,

### **LOCAL PLANNING DIRECTIONS**

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.

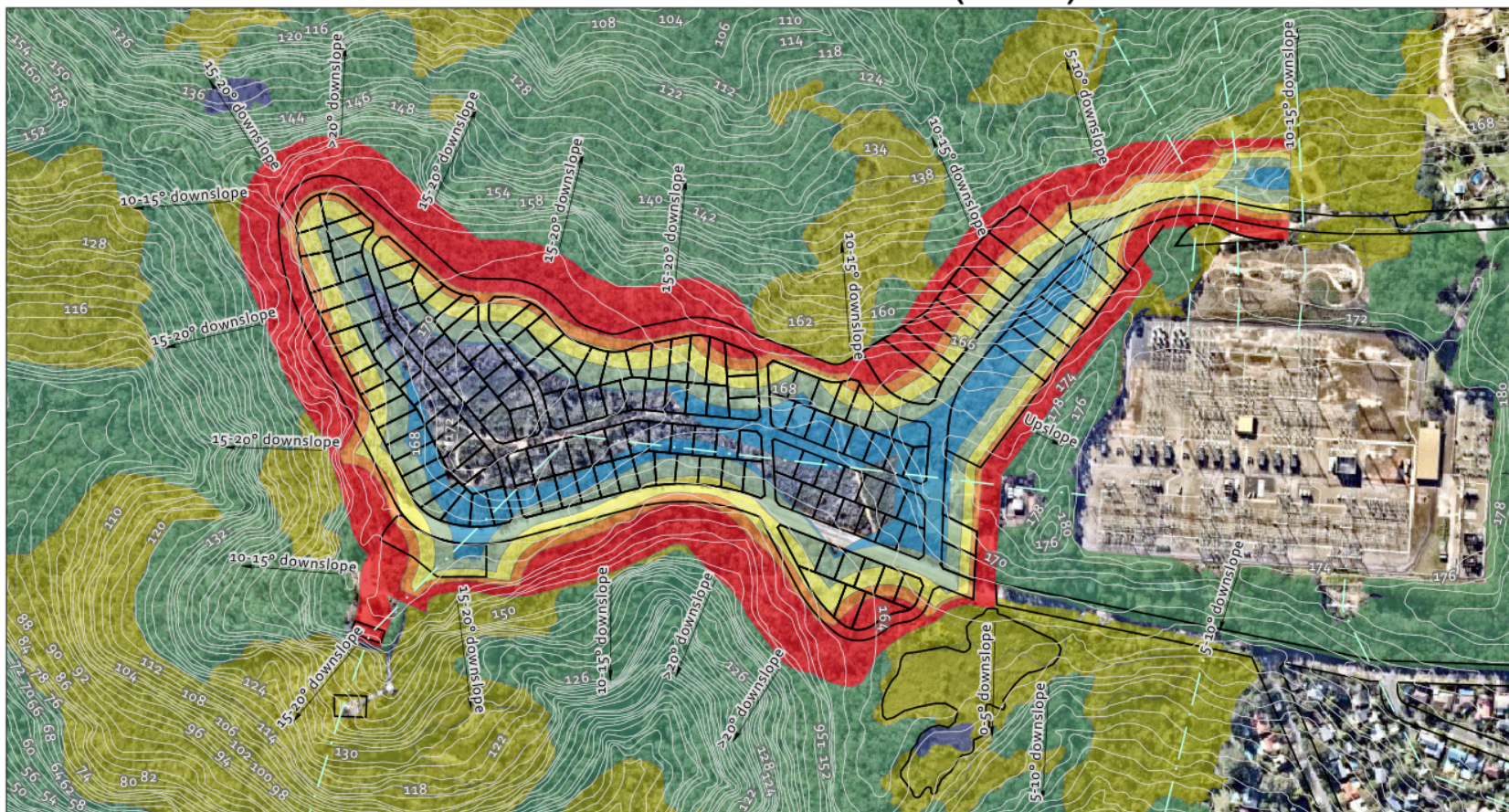
### **Consistency**

*(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**



## Bushfire Attack Level (BAL)

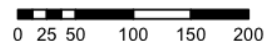


### Legend

- |                                 |  |  |  |
|---------------------------------|--|--|--|
| — Lot Layout                    | <b>Vegetation Formations</b>                                 | <b>Bushfire Attack Level (BAL)</b>           | <span style="color: green;">■</span> BAL 19  |
| — Contour - 2m                  | <span style="color: green;">■</span> Dry Sclerophyll Forests | <span style="color: red;">■</span> BAL FZ    | <span style="color: blue;">■</span> BAL 12.5 |
| — Electricity Transmission Line | <span style="color: blue;">■</span> Freshwater Wetlands      | <span style="color: orange;">■</span> BAL 40 |  |
|                                 | <span style="color: yellow;">■</span> Heathlands             | <span style="color: yellow;">■</span> BAL 29 |  |



Date: 12/09/2017



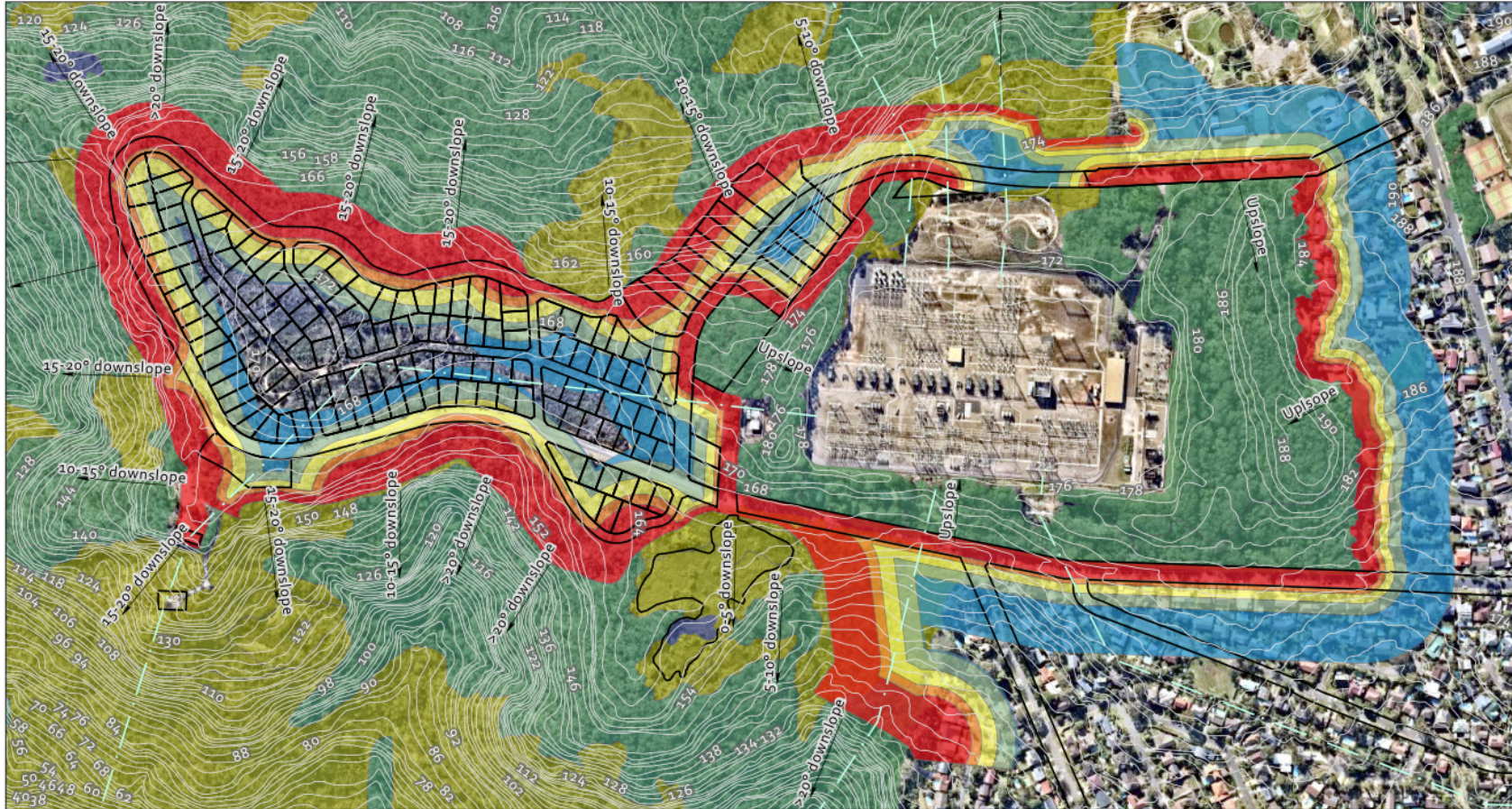
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Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap



## Bushfire Attack Level (BAL)



**Legend**

- Lot Layout
- Contour - 2m
- Electricity Transmission Line

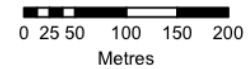
- Vegetation Formations**
- Dry Sclerophyll Forests
  - Freshwater Wetlands
  - Heathlands

- Bushfire Attack Level (BAL)**
- BAL FZ
  - BAL 40
  - BAL 29
  - BAL 19

- BAL**
- BAL 12.5
  - BAL 19



Date: 15/09/2017



Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap





#### **Bushfire Attack Level Methodology used for Appendix 3 & 4.**

To determine the Bushfire Attack Level (BAL) for the Planning Proposal, the following methodology was used.

Slopes and vegetation were classified into the slope and vegetation classifications in Table 2.4.2 of AS3959.

Effective Slopes were calculated out 100m from the site boundary and classified as per Table 2.4.1 of AS3959.

The vegetation data used to determine the vegetation classification was 'The Native Vegetation of The Sydney Metropolitan Area' 2016 from Office of Environment and Heritage using the 'State Formations' classification. The vegetation data used was consistent with the vegetation data supplied by Northern Beaches Council (A17029\_EcoLogical\_Vegetation). The vegetation was then classified in accordance with Table 2.3 of AS3959 with Forest remaining as Forest and all Heath becoming Shrubland.

Bushfire Attack Level calculations were then run from the outside of the Asset Protection Zone boundary provide by council in towards the development in accordance with Table 2.4.2 of AS3959. Where there was no Asset Protection Zone present the BAL was taken from the edge of the vegetation.