

Our Ref: A15223: NVD/JT
Council Ref: 345/2016
RFS REF: D16/1014

Friday 1st December, 2016

Calmjoy Pty Ltd
Via email: guywalter@bigpond.com

Attention: Mr Guy Walter

Dear Guy

**Re: Additional Information response to the NSW RFS
238 Boomerang Drive, Blueys Beach, 2428**

Travers bushfire & ecology (TBE) has been engaged to provide a response to the NSW RFS letter (dated 18 May 2016).

A meeting was held between John Travers and Alan Bawden (Paul Creenaune) of the RFS, in the Coffs Harbour office to discuss the following additional information request. As a result of this meeting and to address unrelated Council requirements (i.e. environmental constraints) the subdivision layout has been amended as provided in Figure 1.

- 1. The proposed subdivision layout does not conform with the requirements of 'Planning for Bush Fire Protection 2006', primarily due to the proposal for a fire trail rather than a perimeter road. 'Planning for Bush Fire Protection 2006' specifically states that a fire trail is not a substitute for a perimeter road and any proposal will need to demonstrate clear benefits over the use of a perimeter road. The provision of a perimeter road needs to be addressed with respect to bush fire protection for the proposed subdivision.***

PBP states that a '*perimeter road is the preferred option to separate bushland from urban areas. Fire trails will only be considered acceptable in exceptional circumstances. This is based on the difficulties and costs associated with maintaining fire trails on private land. A perimeter fire trail cannot be imposed on the adjoining land and should not cross a number of residential allotments*'.

The development layout has been amended to ensure firefighting access to the rear of all allotments, with egress capability for residents available via the internal road network. For example:

- In the eastern sector all lots have direct access to an internal public road that has direct evacuation access to Boomerang Drive. Three (3) of these lots back onto a fire trail with five (5) lots backing onto a perimeter road.
- In the western sector all lots have direct access to the internal public road that has direct access to Boomerang Drive. Four (4) of these lots back onto a fire trail
- In the southern sector twenty (20) residential allotments back onto three (3) large allotments with an additional five (5) lots backing onto adjoining bushland. All these twenty five (25) lots have internal public road access to Boomerang Drive and do not rely on a perimeter fire trail for evacuation egress.

The exceptional circumstance involved in this proposal is based on the location, type of use and subdivision layout as described in the following dot points. Amendments to the subdivision plan have also been undertaken to further address maintenance requirements of the fire trail, including the dedication of the eastern fire trail into Council ownership and the retention of the western fire trail within Lot 43 and Council drainage reserve (refer Schedule 1 attached).

- The proposed development is located at the foot of a hill with the land sloping upslope (i.e. > 18 degrees to the south) adjacent to the fire trail. This steep upslope topography significantly decreases the overall bushfire risk posed to the site. As a result the proposed fire trail is considered a practical bushfire protection measure to separate hazardous vegetation from the residential landscape. In addition this measure also provides unimpeded firefighting access to the rear of the site.
- Evacuation for residents will be via the internal public road network and not a perimeter road which is much more dangerous due to the proximity of the bushland to the roadway. In addition the perimeter road is then used by residents evacuating and fire fighters all at the same time. Two (2) egress opportunities for residents and emergency services exist to the north-east and north-west away from the direct threat of bushfire, with the fire trail network being used by emergency services only.
- The proposed subdivision layout supports the implementation and ongoing maintenance of the fire trail. The fire trail will be constructed (formed concrete) by the developer with no ongoing maintenance required.

Amendments subsequent to the RFS meeting

1. The subdivision plan has been amended so the fire trail is now external to Lots 30–34 & Lots 19 & 20 in land to be managed by Council.
2. The fire trail now extends to the north of Lot 43 to provide a link with Boomerang Drive in the north. This portion of the fire trail (behind Lots 40–42) will also be maintained by Council.
3. The remainder of the western fire trail (extending from Council drainage reserve) is contained within Lot 43 only. The burden for ongoing maintenance is removed from Lot 49.

A plan depicting these amendments is attached to this letter.

Again the proposed development provides increased protection ensuring residents can evacuate via the internal road of the subdivision which is further away from the direct threat of bushfire. The proposed fire trail use will to be limited to fire fighters, for the most part whilst still allowing access for residents of Lots 49 & 35.

As outlined in the following table the costs associated with fire trail construction will be undertaken by the developer. The concrete nature of the construction will require minimal maintenance.

Table 1 – Performance criteria for fire trails

Performance criteria set by the RFS	Acceptable solutions to the RFS	Compliant or not compliant
<p>The width and design of the fire trails enables safe and ready access for fire fighting vehicles.</p>	<p>A minimum carriageway width of 4m with an additional 1m strip on each side of the trail clear of bushes and long grass.</p> <p>Sealed trails have a maximum grade of 15° and not more than 10° for unsealed roads.</p> <p>A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches.</p> <p>The cross fall of the trail is not more than 10°. The trail has the capacity for passing by:</p> <ul style="list-style-type: none"> • reversing bays using the access to properties to reverse fire tankers, which are 6m wide & 8m deep to any gates, with a minimum turning radius of 6m and outer minimum radius of 12m and / or • a passing bay every 200m, 20m long x 3m wide, making a minimum trafficable width of 7m at the passing bay. 	<p>Yes – The fire trail will be constructed by <i>Calmjoy Pty Ltd</i> to provide a 4m concrete carriageway with an additional 0.5m strip on each side clear of bushes and long grass.</p> <p>Yes. Passing bays and / or reversing bays are to be provided every 200m in accordance with the acceptable solutions.</p>
<p>Fire trails are trafficable under all weather conditions. Where the fire trail joins a public road, access shall be controlled to prevent use by unauthorised persons.</p>	<p>The fire trail is accessible to fire fighters and maintained in a serviceable condition by the owner of the land.</p> <p>Appropriate drainage and erosion controls are provided.</p> <p>The fire trail system is connected to the property access road and / or through road system at intervals of at least 200m.</p> <p>Fire trails do not traverse a wetland or other land subject to periodic inundation (other than a flood or storm surge).</p> <p>Gates for fire trails are provided and locked with a key / lock system authorised by the local RFS.</p>	<p>Yes – the fire trail will be constructed by <i>Calmjoy Pty Ltd</i> and maintained by either the property owners and/or Council.</p> <p>A fire trail system is provided that circumscribes the development and returns to the proposed public roadway.</p> <p>The system does satisfy the performance criteria as they will be trafficable under all weather conditions and access shall be controlled to prevent use by unauthorised persons through the provision of locked gates.</p> <p>The fire trail system will link with the public road.</p>
<p>Fire trails designed to prevent weed infestation, soil erosion and other land degradation.</p>	<p>Fire trail design does not adversely impact on natural hydrological flows.</p> <p>Fire trail design acts as an effective barrier to the spread of weeds and nutrients.</p> <p>Fire trail construction does not expose acid-sulphate soils.</p>	<p>Yes</p>

- 2. The current fire trail proposal is inconsistent with 'Planning for Bush Fire Protection 2006' as it is located over several different lots. Fire trails should be under Council management or located on a community title lot with clear provisions for ongoing management. If a fire trail is proposed and is to be dedicated to Council, evidence of Council's agreement to the ownership and ongoing maintenance of the fire trail is required.**

As outlined above the proposed subdivision layout supports the implementation and ongoing maintenance of the fire trail. The fire trail will be constructed by the developer (*Calmjoy Pty Ltd*) with the ongoing maintenance being nil due to the concrete substrate being used. This will be assured via an 88B easement over the private lots or via a Fuel Management Plan for the Councils lands.

Lots 49 & 35 will be responsible for maintaining the central fire trail with a portion of the fire trail serving the purpose of private access. Lot 43 will be responsible for maintaining the majority of the western fire trail with Council responsible for maintaining the fire trail over their land.

- 3. A separate plan is required for each stage of the subdivision clearly showing proposed asset protection zones for that stage (including temporary asset protection zones over areas of future stages) and staged access arrangements.**

Revised plans have been prepared for each stage of the subdivision to depict the temporary APZ and access requirements (refer Figures 1–3). Temporary APZ's have been applied to those aspects (within the adjoining stages) and can be removed once the vegetation is removed for the proceeding development. APZ's for each stage are detailed on the following pages.

Access for Lots within Stage 1 will via individual driveways onto Boomerang Drive. Access within Stage 2 will be provided via a loop road providing egress to Boomerang Drive in the north away from the direct threat of bushfire. Stage 2 will also include the construction of the central fire trail within Lots 35 & 49. Access to Stage 3 will be provided via a temporary dead end road (with future through road access following the construction of Stage 4). A temporary turning circle is to be provided at the termination of the dead end road (within future Stage 4).

Table 2 – Stage 1

Aspect	Vegetation	Effective land of slope	APZ provided
North	Managed land	N/A	>100m
South	Forest (future Stage 4)	6 degrees up	30m (temporary APZ)
West	Forest (future Stage 3)	Level	21m (temporary APZ)
East	Forest (future Stage 2)	Level	

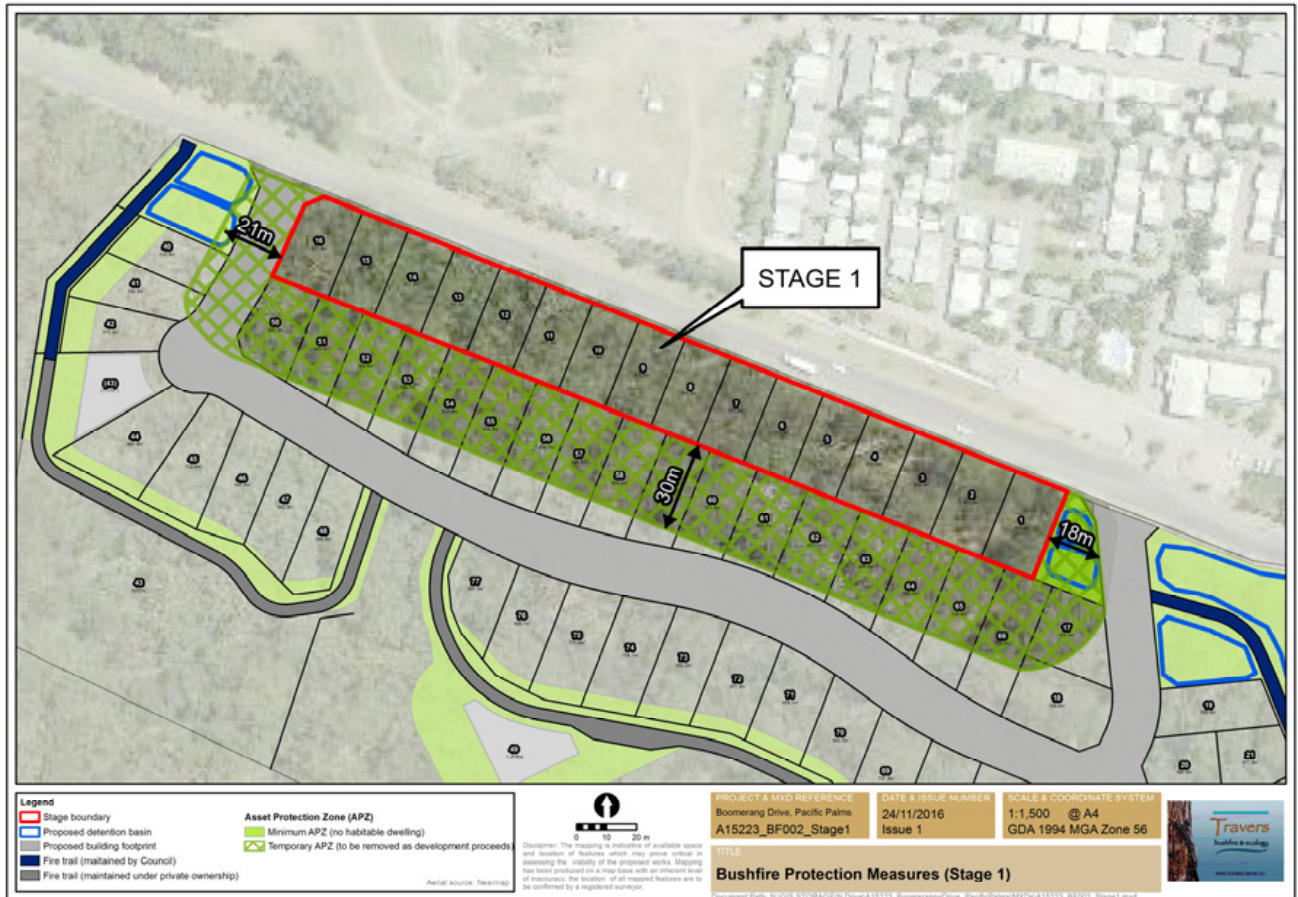


Figure 1 – APZ's for Stage 1

Table 3 – Stage 2

Aspect	Vegetation	Effective land of slope	APZ provided
North	Managed land / Council managed detention basins	N/A	>100m
East	Forest	0-5 degrees downslope	27m
South	Forest	>18 degrees upslope	12m
West	Forest (future Stage 4)	Level	30m (temporary APZ)
Lot 13	Forest	>18 degrees upslope	13m

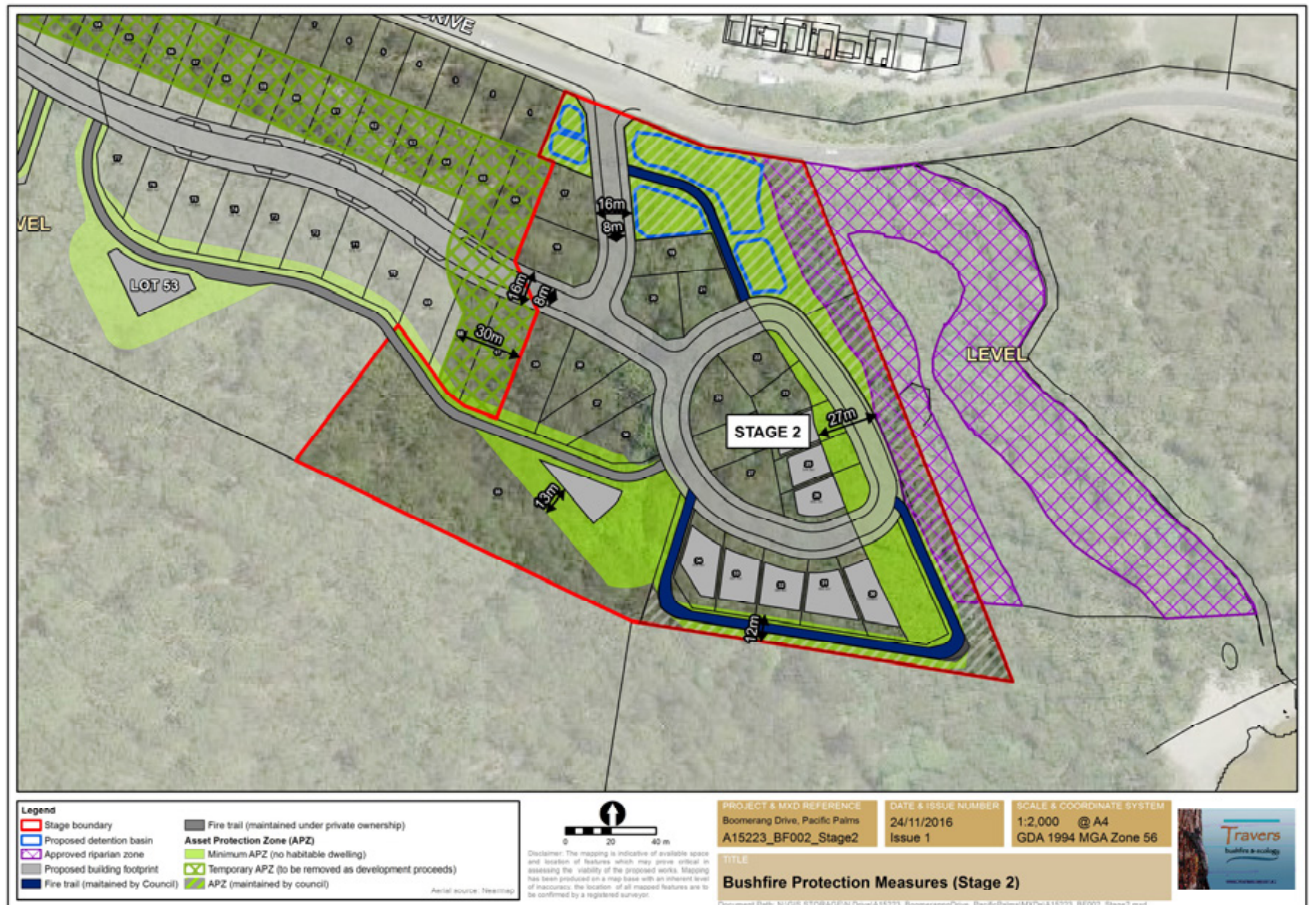


Figure 2 – APZ's of Stage 2

Table 4 – Stage 3

Aspect	Vegetation	Effective land of slope	APZ provided
North	Managed land / Council managed detention basins	N/A	>100m
East	Forest (future Stage 4)	Level	30m (temporary APZ)
South	Forest	>18 degrees upslope	12m
West	Forest	Level	17.5m
Lot 53 (north and south-west)	Forest	Level	17-18m (temporary APZ)
Lot 53 (south-east)	Forest	>18 degrees upslope	13m



Figure 3 – APZ's of Stage 3

- 4. Further details are required with respect to the proposed stormwater detention basins including the proposed vegetation management within and around the detention basins, and details of who will undertake ongoing management of asset protection zones around the detention basins. If the asset protection zones are to be dedicated to Council, Council's agreement to the ownership and ongoing maintenance of the asset protection zones is required.**

The APZ's (including the detention and water quality basins) will be implemented by the developer (*Calmjoy Pty Ltd*) with the ongoing maintenance being the responsibility of Council. This is a standard practice by the Council who have recently taken over care and control of a fire trail in the Palms Area (they charged a maintenance fee of \$30k on the DA). This asset protection zone be assured through the implementation of a Plan of Management or Fuel Management Plan (or both).

- 5. Details of access to the building envelope on Lot 53, particularly with respect to proximity of the reticulated water supply / hydrants and the ability for a firefighting appliance to manoeuvre on site in accordance with the requirements of 'Planning for Bush Fire Protection 2006'.**

A hydrant will be provided at the street frontage and access to Lot 49 (previously Lot 53) will comply with Chapter 4.1.3 (2) of PBP. Road access will be provided via a portion of the fire trail. This access road will provide compliance with the following in accordance with the acceptable solutions outlined in PBP.

- A minimum carriageway width of four (4) metres
- A minimum vertical clearance of four (4) metres to any overhanging obstructions, including tree branches
- Curves are to have a minimum inner radius of six (6) metres and are minimal in number to allow for rapid access and egress.
- The minimum distance between inner and outer curves is six (6) metres
- The cross fall is not more than 10 degrees
- Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.

Provision for turning for firefighting vehicles is not required as through access can be provided via the fire trail link. Fire fighters have the ability to refill tanks from the hydrant system provided on the internal road network if required.

6. Confirmation of the length of the roads in Stages 2 and 3.

The proposed road within Stage 2 is a circular road with an approximate length of 435m. Egress opportunities for lots fronting the bushfire hazard (southern & eastern portion) have two options (east or west) onto the internal road network away from the direct threat of bushfire. This road access complies with PBP.

The proposed road within Stage 3 is approximately 170m in length. This road will provide through-road connection once Stage 4 is constructed to provide a secondary egress point to the subdivision.

The road within Stage 3 complies with the acceptable solutions of PBP (Section 4.1.3(1)) and is to provide a temporary turning circle (24m diameter) or turning 'T' head which can be removed once the road network within Stage 4 is completed.

Should you require further information, please do not hesitate to contact Nicole van Dorst or the undersigned on 4340 5331 or info@traverseecology.com.au.

Yours faithfully

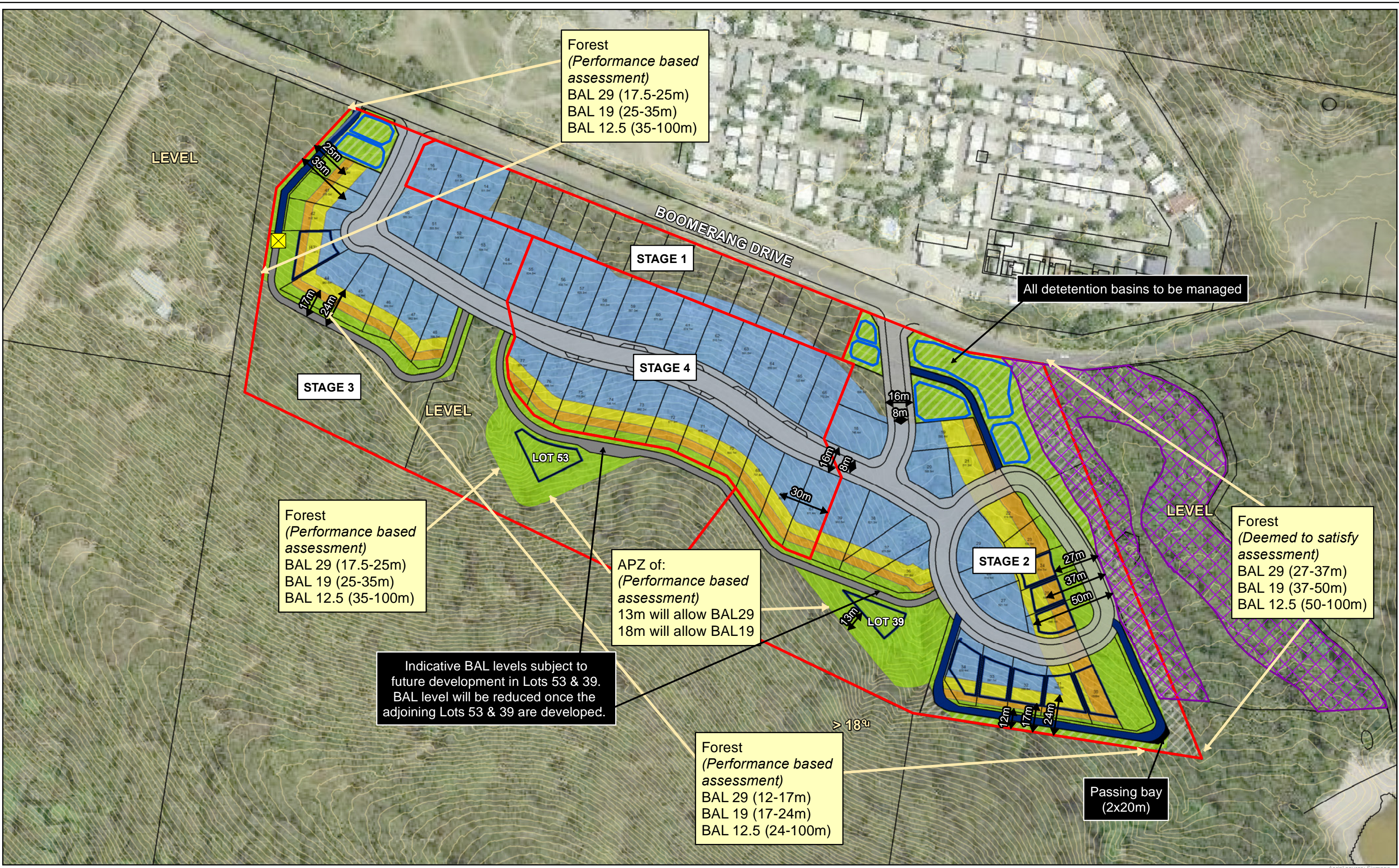


John Travers
BA Sc. / Ass Dip / Grad Dip / BPAD-Level 3-15195 (FPA)
Managing Director – **Travers bushfire & ecology**



**Travers bushfire & ecology employs
Bushfire Planning and Design (BPAD) Accredited Practitioners**

John Travers and Nicole van Dorst are BPAD consultants. Both are certified by the Fire Protection Association. FPA Australia administers the Bushfire Planning and Design (BPAD) Accreditation Scheme. The Scheme accredits consultants who offer bushfire assessment, planning, design and advice services. It accredits practitioners who meet criteria based on specific accreditation and competency requirements, including a detailed knowledge of the relevant planning, development and building legislation for each State and Territory. Through the Accreditation Scheme, BPAD Accredited Practitioners are recognised by industry, regulators, fire agencies, end-users and the community as providers of professional bushfire assessment, planning, design and advice services. The Scheme provides an enhanced level of confidence for government and the community that practitioners are accredited by a suitably robust scheme that is administered by the peak national body for fire safety. Note: L3 is the highest level and L1 is the lowest level.



Forest
(Performance based assessment)
BAL 29 (17.5-25m)
BAL 19 (25-35m)
BAL 12.5 (35-100m)

Forest
(Performance based assessment)
BAL 29 (17.5-25m)
BAL 19 (25-35m)
BAL 12.5 (35-100m)

Forest
(Deemed to satisfy assessment)
BAL 29 (27-37m)
BAL 19 (37-50m)
BAL 12.5 (50-100m)

Forest
(Performance based assessment)
BAL 29 (12-17m)
BAL 19 (17-24m)
BAL 12.5 (24-100m)

APZ of:
(Performance based assessment)
13m will allow BAL29
18m will allow BAL19

Indicative BAL levels subject to future development in Lots 53 & 39. BAL level will be reduced once the adjoining Lots 53 & 39 are developed.

All detention basins to be managed

Passing bay
(2x20m)

Legend

- ▬ Stage boundary
- Proposed detention basin
- Approved riparian zone
- Proposed building envelope
- ▬ Contour (1m) (source - LiDAR)

Fire trail

- Fire trail (maintained by Council)
- Fire trail (maintained under private ownership)

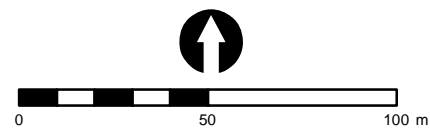
Asset Protection Zone (APZ)

- APZ (maintained under private ownership)
- APZ (maintained by council)

Bushfire Construction Standards AS3959 (2009)*

- BAL 12.5
- BAL 19
- BAL 29

* Please refer to additional construction requirements for BAL levels which are contained in Addendum Appendix 3 of 'Planning for Bushfire Protection' (2006).



Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

PROJECT & MXD REFERENCE Boomerang Drive, Pacific Palms A15223_BF001	DATE & ISSUE NUMBER 23/11/2016 Issue 1	SCALE & COORDINATE SYSTEM 1:2,000 @A3 GDA 1994 MGA Zone 56
Schedule 1 - Bushfire Protection Measures		

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