BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Member of the Fire Protection Association of Australia

Thursday, 21 December 2023.

- ***Purpose;*** To provide advice to RFS.
- ***Address;*** 102 Wakehurst Parkway Elanora Heights and 100a Wakehurst Parkway Elanora Heights.
- ***Lot and DP number;*** lot 12, DP1014199 and lot 2, DP1177671.
- ***Referenced documents***; Previous Bushfire Risk Assessment dated Tuesday, 2 May 2023. RFS RFI DA20231019004709
- ***Proposed works;*** Simple boundary adjustment between 2 adjoining lots.

The General Manager, Northern Beaches Council.

Dear Sir/Madam.

This proposal is for a simple boundary adjustment between two lots[1] with no plans to undertake any new works within the re sized lots.

The RFS has requested further information regarding the potential to achieve BAL-29 building envelopes within the new lots once the boundary approval is completed. For the purpose of this exercise an indicative building envelope has been used on proposed lot 2 using the same building footprint as the existing dwelling on lot 12.

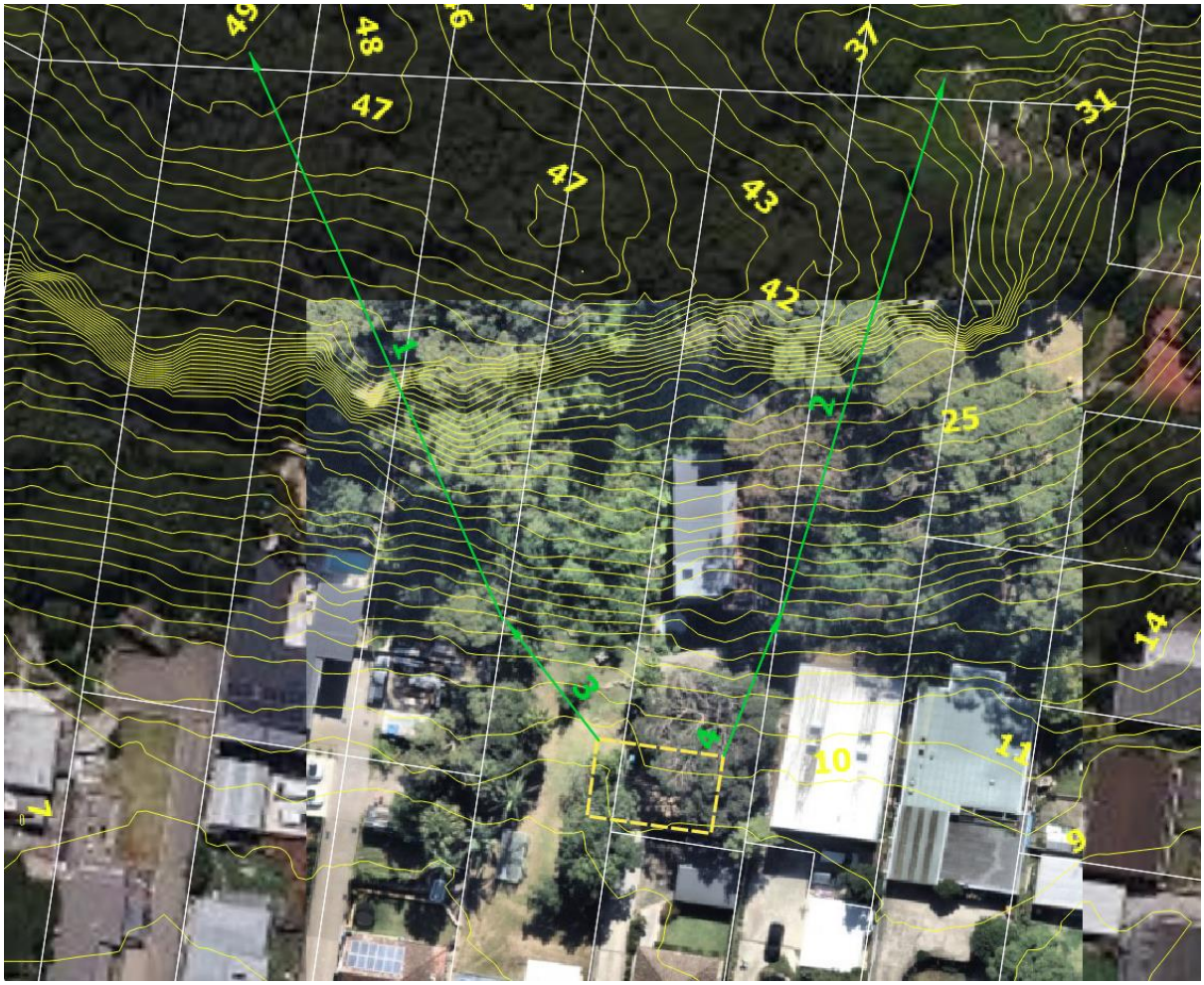
Method 2 calculations have been used to justify the BAL of 29 for the indicative building envelope, the BAL for the existing dwelling on lot 12 has already been outlined on page 15 of the previous assessment as referenced above and is not shown in this document.

The variables used in the method two calculations are as follows.

- FDI 100.
- Vegetation is forest with fuel loads as per Planning for Bushfire Protection.
- Setbacks from vegetation and site slope are indicated in the following table by runs numbered 3 and 4.
- The slope beneath the hazard is shown as runs 1 and 2.
- The vegetation extent is to the approximate edge of the unmanaged vegetation on the neighbouring lots to the east and west. It is assumed that all the vegetation within new lot 2 can be managed as needed.

The following map and table show both the site slopes used in the method 2 calculations and the slope beneath the hazard. However, as the slope beneath the hazard exceeded 10 degrees upslope, 10 degrees upslope has been used in the method two calculations to satisfy the RFS practice.

[1] See page 5



ID	Start	End	Length	Diff	Degrees
1	13.81	48.76	69.80	34.95	26.60
2	14.70	35.76	65.06	21.06	17.94
3	9.45	13.81	16.90	4.36	14.46
4	10.45	16.30	17.21	5.85	18.77

The tables on the following pages outline the variables used to assess the indicative building envelope and the results of the method 2 calculations to determine the BAL.

Site Street Address:	102 Wakhurst Parkway, Elanora Heights		
Assessor:	Matthew Willis; Bushfire Planning Services		
Local Government Area:	Northern Beaches	**Alpine Area:**	No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005

Run Description:	North west		
Vegetation Information			
Vegetation Type:	Forest (including Coastal Swamp Forest)		
Vegetation Group:	Forest and Woodland		
Vegetation Slope:	10 Degrees	**Vegetation Slope Type:**	Upslope
Surface Fuel Load(t/ha):	22	**Overall Fuel Load(t/ha):**	36.1
Vegetation Height(m):	2	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	14.82 Degrees	**Site Slope Type:**	Upslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	17
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	9.68
Radiant Heat(kW/m2):	27.5	**Flame Angle (degrees):**	53
Flame Length(m):	12.94	**Maximum View Factor:**	0.424
Rate Of Spread (km/h):	1.32	**Inner Protection Area(m):**	9
Transmissivity:	0.853	**Outer Protection Area(m):**	8
Fire Intensity(kW/m):	24698		

Site Street Address:	102 Wakhurst Parkway, Elanora Heights		
Assessor:	Matthew Willis; Bushfire Planning Services		
Local Government Area:	Northern Beaches	**Alpine Area:**	No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005

Run Description:	North east		
Vegetation Information			
Vegetation Type:	Forest (including Coastal Swamp Forest)		
Vegetation Group:	Forest and Woodland		
Vegetation Slope:	10 Degrees	**Vegetation Slope Type:**	Upslope
Surface Fuel Load(t/ha):	22	**Overall Fuel Load(t/ha):**	36.1
Vegetation Height(m):	2	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	18.77 Degrees	**Site Slope Type:**	Upslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	17
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K):**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100
Program Outputs			
Level of Construction:	BAL 29	**Peak Elevation of Receiver(m):**	10.68
Radiant Heat(kW/m2):	28.64	**Flame Angle (degrees):**	49
Flame Length(m):	12.94	**Maximum View Factor:**	0.441
Rate Of Spread (km/h):	1.32	**Inner Protection Area(m):**	9
Transmissivity:	0.854	**Outer Protection Area(m):**	8
Fire Intensity(kW/m):	24698		

As can be seen, using the variables as outlined previously and using method 2 calculations, a compliant BAL-29 building envelope is available on the resized lot 2.

Should any further clarification be necessary please do not hesitate to contact me.

Yours Sincerely

Matthew Willis
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Bushfire Planning Services Pty Limited.

Proposed lot design.