BUSHFIRE THREAT ASSESSMENT REPORT

- Newcastle East Public School-
Proposed additions
Brown & Tyrell Streets
The Hill

PREPARED BY:

PEAK LAND MANAGEMENT

APRIL 2018

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

PEAK LAND MANAGEMENT

Land management consulting services:

-Bushfire- **-Ecological-** **-Environmental-**

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Cover Photo: View of subject site.

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Document History

Document Id.	Prep. Date	Version	Submitted to
Bushfire Report	10.4.18	1	Jason Condon-EJE Architecture

AUTHOR DETAILS

Ted Smith is the director of PEAK LAND MANAGEMENT. He is a qualified Land Management Consultant with a Bachelor of Science Honours Degree in Physical Geography, and also a qualified Ecologist. He has over 25 years experience commercially consulting with PEAK LAND MANAGEMENT PTY LTD and working within state government.

Ted has completed a Graduate Diploma in Design for Bushfire Prone Areas from the University of Western Sydney and is a member of the Fire Protection Association of Australia (FPA of Australia), being a BPAD Accredited Bushfire Practitioner Level 3.

CERTIFICATION

Ted Smith of PEAK LAND MANAGEMENT has carried out a bushfire threat assessment including a site inspection on the subject property. A detailed Bushfire Assessment Report is attached which includes the submission requirements set out in *Appendix 2 & 4* of *Planning for Bushfire Protection 2006* together with recommendations as to how the relevant specifications and requirements are to be achieved.

I hereby certify, in accordance with Section 79BA of the *Environmental Planning and Assessment Act 1979 No 203*:

1. That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in Bushfire Risk Assessment; and

2. That subject to the recommendations contained in the attached Bushfire Risk Assessment Report the proposed development conforms to the ***relevant specifications and requirements*** being the document entitled *Planning for Bush Fire Protection* prepared by the NSW Rural Fire Service in co-operation with the Department of Planning and any other document as prescribed by Section 79 BA(1)(a) of the *Environmental Planning and Assessment Act 1979 No 203*.

10th April, 2018

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Signature Date

1.0 INTRODUCTION

PEAK LAND MANAGEMENT has been engaged by EJE Architecture on behalf the NSW Education Department to prepare a Supplementary Bushfire Threat Assessment Report for proposed new additions and alterations over Newcastle East Public School located at Brown Street, The Hill (referred to hereafter as "subject site").

Figures 1-4 show the subject site location, topographic map, aerial photos and vegetation map, Appendix 1 shows photos of the subject site and Appendix 2 shows plans prepared by the NBRS Architecture.

Under the *Environmental Planning and Assessment Act, 1979* (and its regulations), and the *Rural Fires Act 1997* (and its regulations), councils are required to assess and control new developments in bushfire prone areas. This land has been assessed as being part of a Bushfire Prone Area as mapped by Council (Figure 5).

This development falls under Section 100B of the *Rural Fires Act 1997* (and its regulations) which requires integrated development approval/ Bushfire Safety Authority from the Rural Fire Service. PBP 2006 states that School development is identified as Special Fire Protection Development, and must conform to Asset Protection Zone widths as shown under Table A2.6 of PBP 2006. It should have required Asset Protection Zones, adequate access, water, and services as stated under the Act, and conform to performance criteria set out in Section 4.2.7 of PBP, 2006.

This report has been prepared in accordance with "*Planning for Bushfire Protection* (PBP) 2006" guidelines, and makes reference to AS 3959, which is applicable in this situation. Clause 46 of the *Rural Fires Regulation 2002* sets out these requirements, which are addressed in this report. A Bushfire Threat Assessment Report is required showing the current situation and recommending how the risk may be ameliorated.

Eco logical 2018, prepared the original Bushfire Threat Assessment Report. It should be read in conjunction with this report, and some items are not re-reported on again within this report.

In this case the proposal has been assessed by the NSW Rural Fire Service, and consultation has occurred with them (10th April by phone with Mr Calandra) to address Rural Fire Service additional information requirements (as shown within Rural Fire Service letter – Appendix 3). This supplementary report utilizes modelling to achieve Rural Fire Service additional information requirements, and is based upon site information as stated by Rural Fire Service as being relevant and correct for this site.

An alternate or performance based solution is presented in this case as the development has been modelled using Bushfire Modelling data from NBC Bushfire Attack Assessment Report V2.1 under AS 3959 (2009) Appendix B- Detailed Method 2. Modelling results are shown within Appendix 2.

Figure 1: Aerial photo showing subject site (imagery from Lands Department). North to top of all images.

Figure 2: Aerial photo showing vegetation types within 100m of the proposal (imagery from Nearmap, dated 7/12/17).

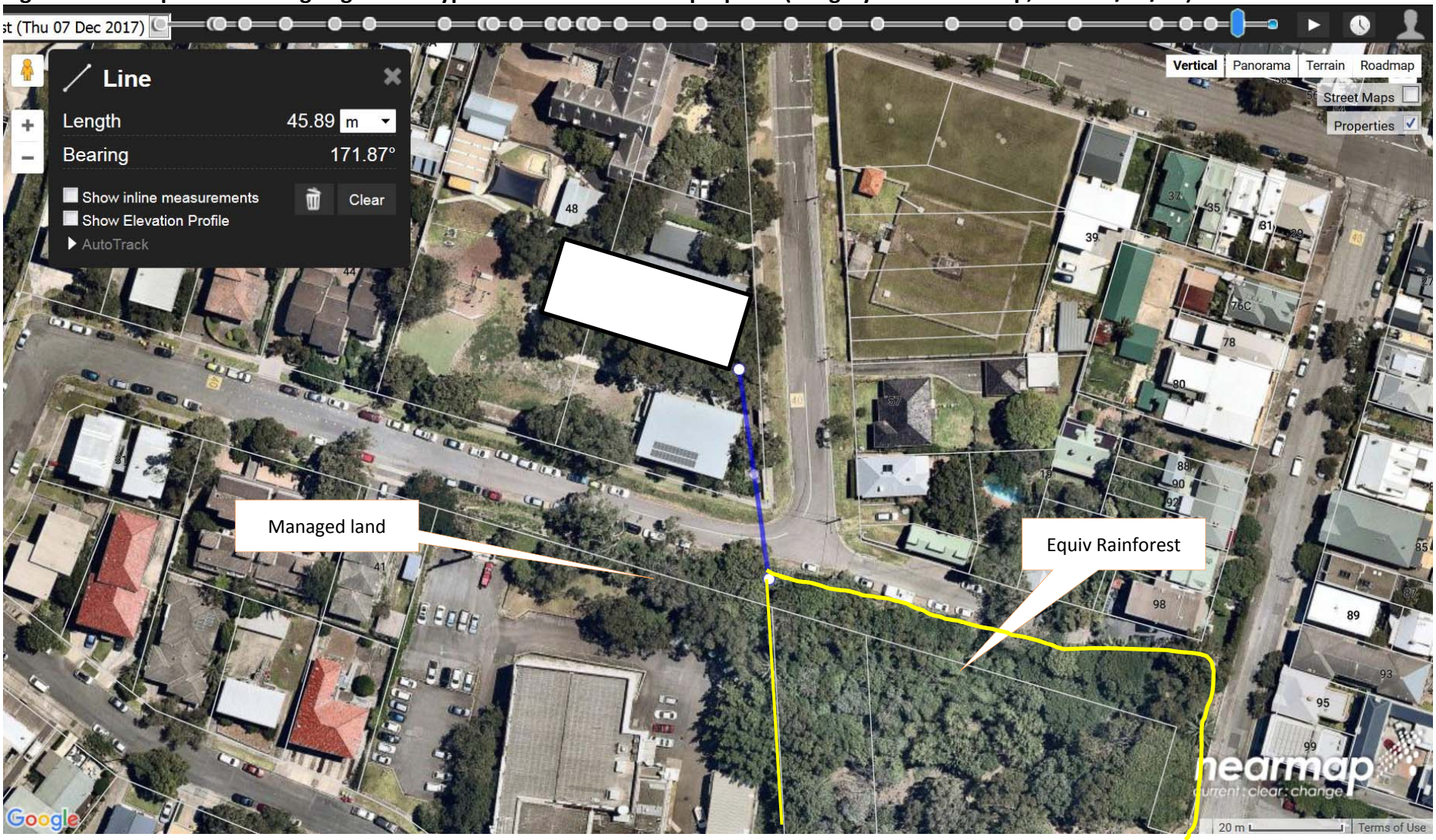
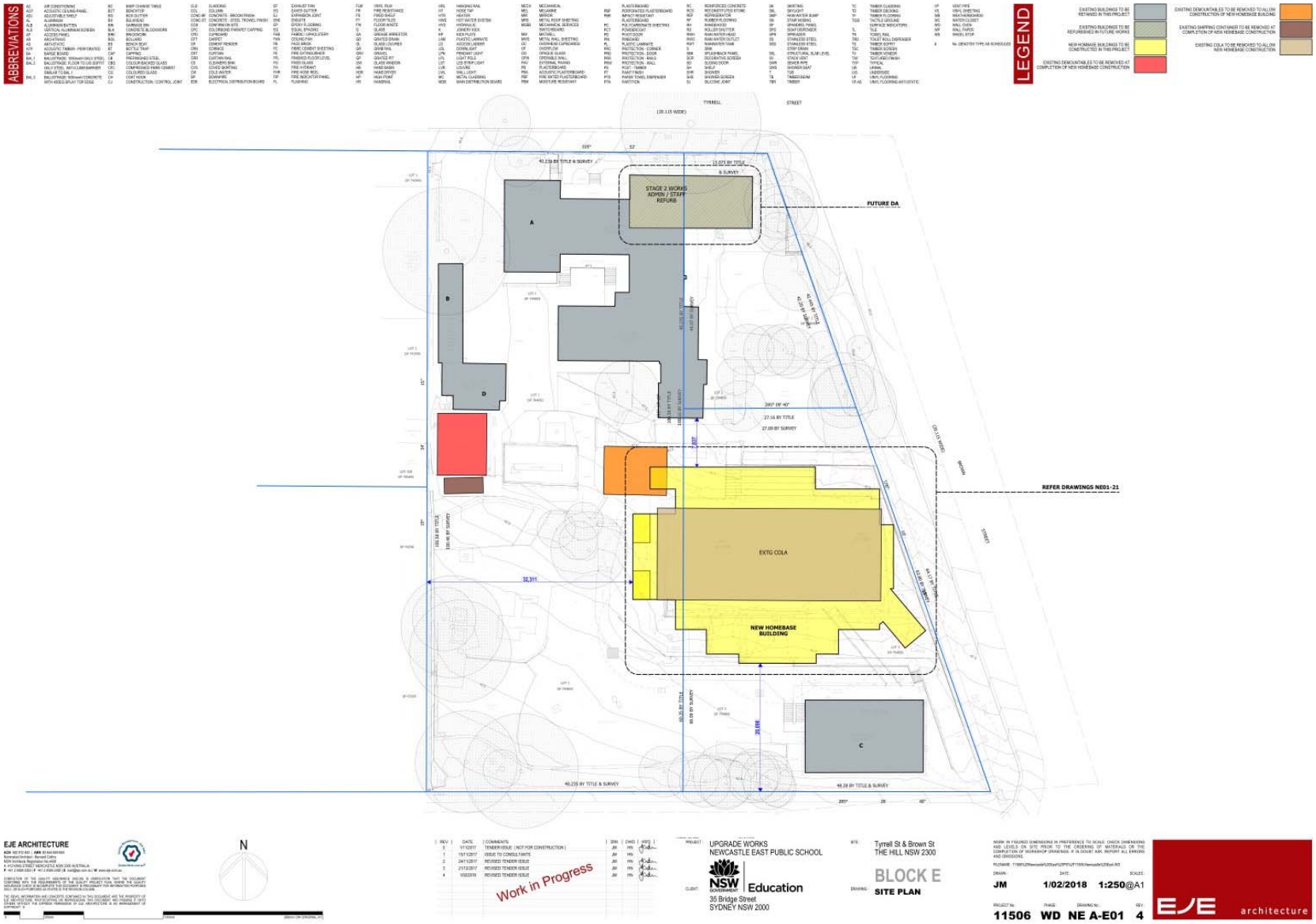


Figure 3: Topographic map showing subject site (imagery from Lands Department)

Figure 4: Bushfire Prone Land Map (from Newcastle City Council, 2009)

Figure 5: Site plan (from EJE Architecture, 2018)



2.0 PROPOSAL, SITE DESCRIPTION AND SURROUNDING LANDUSE

The proposed school building development concept plans are shown in Appendix 2. The proposal consists of a proposed new Homebase building, located over the existing school grounds. A site plan is shown in Figure 5.

Further details are shown in Eco logical 2018 report.

3.0 VEGETATION

The predominant vegetation type within 140m is Forest either <1Ha/and/or <50m wide fire run towards the subject building, assessed as equivalent to Rainforest, as per PBP, 2006, and agreed with NSW Rural Fire Service.

It is setback 46m from the proposed building.

4.0 SLOPE

Slope assessment has been carried out around the subject site under hazardous vegetation out to 100 metres as specified under the Guidelines Assessment Procedure. The angles have been measured in the field by an inclinometer. Table 1 shows the results, as agreed with NSW Rural Fire Service.

5.0 ENVIRONMENTAL FEATURES

The subject development site has been mainly cleared, and is slashed regularly. No further clearing of vegetation is proposed, apart from an exotic tree. This will addressed within the proponents approvals process.

6.0 ABORIGINAL FEATURES

No Aboriginal archaeology assessment has occurred to the author's knowledge; however the site is already disturbed, and regularly slashed.

7.0 BUSHFIRE ASSESSMENT

The legislation as it relates to this site calls for asset protection zones (APZ) to be established around the proposed development, provision of adequate access, design staging and citing of the development and provision of appropriate water supply for bushfire fighting purposes.

7.1 Setbacks including asset protection zones

Table 1 shows the bushfire threat assessment for the subject site. An adequate Asset Protection Zone is provided on site which meets all setback requirements shown in Table 1.

Table 1: Bushfire Threat Site Assessment

DIRECTION TO BUSHFIRE HAZARD	MOST SIGNIFICANT GRADIENT	PREDOMINANT VEGETATION TYPE WITHIN 140m as per PBP 2006	Distance to hazard (from proposed building)	Required minimum Asset Protection Zone (Table A2.4 PBP,2006)
South-east	12^0 downslope	Rainforest	46m	*46m to achieve BAL 10kw/m2 radiant heat loading or less

*See Bushfire modelling results – Appendix 2.

7.2 Water supplies and utilities

The subject school site is serviced by reticulated town water supplies, and a fire hydrant is located in front of the school.

The proposal is to be serviced by overhead electricity transmission wires from the nearby street, which will then either be supplied underground or overhead to the proposed building.

7.3 Access

The proposal is accessed from Brown & Tyrell Street, being two way sealed public roads.

7.4 Construction standards

The building should be constructed from materials that are non combustible, and/or compliant with BAL 12.5. AS 3959 is not relevant to non habitable buildings, however as a guide under AS 3959 it would be equivalent to BAL 12.5 and in conjunction with PBP, 2010 Amended Appendix 3 (on Rural Fire Service web site) which overrides and amends certain parts of AS 3959 these standards should be used where feasible.

7.5 Other fire protection measures/Evacuation Plan/Landscaping

The site has adequate managed Asset Protection Zones in place (Fig 3), and landscaped grounds. The school has an Emergency Evacuation Plan in place, nominating an emergency meeting point, and preferred evacuation route, and methodology for ensuring all occupants are safe and accounted for.

The emergency evacuation plan should be updated to include the latest proposed building addition. It should be consistent with the NSW Rural Fire Service *Guide to developing a Bush Fire Emergency Management and Evacuation Plan*. I

All landscaping should be in accordance with Asset Protection Zone requirements as detailed within the Rural Fire Service document NSW Rural Fire Service, 2005. *Standards for Asset Protection Zones*.

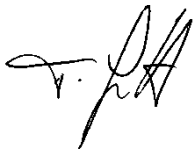
8.0 BUSHFIRE RECOMMENDATIONS

In order to gain development approval for the proposal the following recommendations are made which are consistent with Eco logical 2018 BTA, and bushfire modelling as outlined within this report:

- The proposed building conforms to PBP 2006, with BAL 12.5 construction recommended in conjunction with PBP Amended Appendix 3 2010.
- Asset Protection Zone: -The school grounds are managed to an Asset Protection Zone standard and comply with PBP, 2006;
- Electricity, water and gas services (if applicable) should conform to Section 4.2.7 PBP 2006 (services).
- An Evacuation and Emergency Response Plan compliant with the requirements of the NSW RFS guidelines is required prior to occupation of the new buildings.

The bushfire risk is considered to be adequately managed through the recommendations made above, and in conjunction with any recommendations from the Rural Fire Service/ Council then the proposed development should proceed. Thank you for considering this report.

Report prepared by:



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9.0 REFERENCES

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Websites

www.rfs.nsw.gov.au
Lands Department- SIX Maps
Nearmap
http://www.rfs.nsw.gov.au/plan-and-prepare/1050-vegetation-clearing

Bushfire Modelling

Bushfire Modelling data from NBC Bushfire Attack Assessment Report V2.1 under AS 3959 (2009) Appendix B- Detailed Method 2.

APPENDIX 1: PHOTOS OF SITE AND SURROUNDS

Subject site –closest existing building to hazard, new propsoed building located behind this to north

Forest assessed as Rainforest to the south-east

Subject site to right of frame showing APZ/setback provided by Kitcherne Parade & Pit Street

Limited hazard (Rainforest to south-east of site) looking upslope towards school from hazard

Grassed areas within hazard managed by Landcare Group

APPENDIX 2: BUSHFIRE MODELLING RESULTS (using NBC Bushfire Attack Assessment Report V2.1 under AS 3959 (2009) Appendix B- Detailed Method 2)

Parameters used:

- 1200kw flame temperature
- 35m flame width is based upon modelled flame width using Short fire run modelling results (derived from NSW Rural Fire Service)
- 12^0 downslope
- Remnant Vegetation/Rainforest
- 6m high building
- 46m separation
- Shielding is also present from adjoining building, however has not been modelled here

NBC Bushfire Attack Assessment Report V2.1

AS3959 (2009) Appendix B - Detailed Method 2

Print Date: 10/04/2018 **Assessment Date:** 10/04/2018

Site Street Address: Newcastle East Primary School -Brown St, The Hill, The Hill

Assessor: Ted Smith, PEAK LAND MANAGEMENT

Local Government Area: Newcastle **Alpine Area:** No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001
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: South-east

Vegetation Information

Vegetation Type:	Remnant Vegetation	**Vegetation Group:**	Remnant Vegetation
Vegetation Slope:	12 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	10	**Overall Fuel Load(t/ha):**	12

Site Information

Site Slope	0 Degrees	**Site Slope Type:**	Level
Elevation of Receiver(m)	6	**APZ/Separation(m):**	46

Fire Inputs

Veg./Flame Width(m):	35	**Flame Temp(K)**	1200

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

Category of Attack:	LOW	**Peak Elevation of Receiver(m):**	9.01
Level of Construction:	BAL 12.5	**Fire Intensity(kW/m):**	17028
Radiant Heat(kW/m2):	8.51	**Flame Angle (degrees):**	68
Flame Length(m):	19.29	**Maximum View Factor:**	0.096
Rate Of Spread (km/h):	2.75	**Inner Protection Area(m):**	46
Transmissivity:	0.79	**Outer Protection Area(m):**	0