Building Code & Bushfire Hazard Solutions

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FPA AUSTRALIA
Certified Business
Bushfire Planning & Design
BPD-BA-02354

Meriton Group
Level 11, Meriton Tower
528 Kent Street
Sydney NSW 2000

7th June 2013
Our Ref. 130019b

Attn: Mr Joe Bevacqua

Re: MIXED USE DEVELOPMENT
150 EPPING ROAD, LANE COVE WEST NSW
DESIGN MODIFICATION TO CONCEPT APPROVAL
BUSHFIRE ASSESSMENT STATEMENT

Dear Joe,

The purpose of this statement is to provide an independent bushfire assessment of the proposed modification to the concept approval issued by the NSW Department of Planning and Infrastructure for mixed used development at 150 Epping Road, Lane Cove West on 14th August 2012.

Through the process of the original concept approval the submitted design and Bushfire Assessment Report (prepared by Barrie Eadie Consulting Pty Ltd, dated 3rd March 2011, version A) was referred to the NSW Rural Fire Service for comment.

As a result of the comments received from the NSW Rural Fire Service (dated 3rd July 2012 & 17th July 2012) and subsequent documentation prepared by Building Code and Bushfire Hazard Solutions P/L (dated 20th July 2012, ref 130019) the design was modified to incorporate the appropriate Bushfire Protection Measures.

Following the aforementioned modifications to the design supported by the documentation prepared by Building Code and Bushfire Hazard Solutions P/L the NSW Rural Fire Service issued recommended advice for consideration for any development application to be lodged in the future (dated 25th July 2012).

The primary recommendation stating that the area within the property in accordance with the plan prepared by Conybeare Morrison International Pty Ltd, dated July 2012, Drawing No. SK 137 Issue 1 be maintained in accordance with an inner protection area.

The proposed modification in design complies with the setback distances specified in the plan prepared by Conybeare Morrison International Pty Ltd, dated July 2012, Drawing No. SK 137 Issue 1.

The proposed access arrangements are consistent with the original concept approval.

The recommendations relating to water supply, construction, landscaping, electricity and gas can be satisfied in the more detailed specifications which will accompany the Development Application to Lane Cove Council.

The proposed amended layout of the residential / commercial units is therefore consistent with the existing concept approval.

In assessing the proposed design modification one significant change has been noted in relation to the application of Planning for Bush Fire Protection 2006, this being the inclusion of a childcare building.

Childcare development is considered Special Fire Protection Purpose development under Planning for Bush Fire Protection 2006 (PBP) and as such is assessed under section 4.2.7, where the existing concept approval relating to residential and commercial components were assessed under section 4.1.3 of PBP.

As detailed above the residential and commercial components of the proposed design modification can still satisfy the relevant specifications and requirements of Planning for Bush Fire Protection 2006.

The following summary details the ability of the proposed childcare building to satisfy the relevant specifications and requirements of Planning for Bush Fire Protection 2006 as detailed in section 4.2.7. This detail will be included in the future Bushfire Assessment Report to accompany the DA submission.

Asset Protection Zones:

Asset Protection Zones (APZs) are to be provided to ensure that radiant heat levels of greater than 10kW/m^2 are not experienced by occupants or emergency services workers entering or exiting a building. This Performance Criteria has been modified since the formal adoption of Planning for Bush Fire Protection 2006 by the NSW Rural Fire Service to no part of the building is to be exposed to >10kW/m^2.

To determine the minimum required Asset Protection Zones to ensure no part of the childcare building is exposed to greater than 10kW/m^2 a combination of bushfire design modelling and assessment against Table 2.6 of PBP was undertaken.

The inputs to determine the minimum required Asset Protection Zones are effectively the same as those previously reported in the documentation prepared by Building Code and Bushfire Hazard Solutions P/L (dated 20th July 2012, ref 130019) and subsequently agreed to by the NSW Rural Fire Service for the original concept approval.

The two (2) changes to the inputs are:

- A flame temperature of 1200K was used in the bushfire design modelling as specified for Special Fire Protection Purpose development in Planning for Bush Fire Protection 2006,
- The vegetation width to the west and southwest was reduced to 50 metres to represent the actual exposure of the hazard with respect to the subject building.

Note 1: Two bushfire design models were undertaken to the south-western hazard to allow for the larger exposure further south.

Note 2: Significant shielding will be provided to the subject building by the large multi-storey residential buildings proposed between the hazards and the proposed childcare building.

Note 3: The fuel loads for the bushfire design modelling are consistent with Appendix 2 of Planning for Bush Fire Protection 2006 as previously agreed upon with the NSW Rural Fire Service.

Note 4: It must be noted that while a 100 metre fire front was used on various aspects to determine the minimum required Asset Protection Zones it would be considered extremely unlikely that any fire impacting from these aspects could uniformly impact the subject building at a 100 metre width.

The following table sets out the childcare buildings compliance with *Planning for Bush Fire Protection – 2006* **for <u>Special Fire Protection Purpose</u> as dictated by <u>Appendix 2</u> *Planning for Bush Fire Protection* 2006.**

	North	East	Southeast	South	Southwest	West
Vegetation Structure	Remnant	Forest	Remnant	Forest	Forest	Forest
Fuel Load	8/10 t/ha	20/25 t/ha	8/10 t/ha	20/25 t/ha	20/25 t/ha	20/25 t/ha
Vegetation width	100 metres	40 metres	100 metres	100 metres	100 metres 50 metres	50 metres
Flame Temperature	1200K	1200K	1200K	1200K	1200K	1200K
Slope	0 degrees & up	0 degrees across	15 – 20 degrees down	0 - 5 degrees down	10 degrees down	7 degrees down
Required Asset Protection Zone	30 metres	44 metres	65 metres	70 metres	67 metres 87 metres	60 metres
Proposed Asset Protection Zone	>30 metres	>65 metres	>69 metres	80 metres	>67 metres >100 metres	>67 metres
Significant Environmental Features	Epping Road	Epping Road / Lake	Private access road	Private access road	Private access road	Private access road
Bushfire Attack Level (AS3959-2009)	BAL 12.5	BAL 12.5	BAL 12.5	BAL 12.5	BAL 12.5 BAL Low	BAL 12.5

The above Asset Protections Zones were determined utilising both Table A2.6 of PBP and Bushfire Design Modelling (report attached) consistent with Appendix 2 of PBP. Please refer to the attached APZ overlay for a depiction of the available setback distances.

As demonstrated above the proposed childcare building can achieve compliance with the minimum required Asset Protection Zones as determined from Appendix 2 of Planning for Bush Fire Protection 2006 for Special Fire Protection Purpose development.

<u>Access:</u>

As previously established the proposed access arrangements are consistent with the original concept approval. The proposed childcare building will have direct frontage to Epping Road and will also be serviced by the proposed internal access provisions.

These access arrangements are considered adequate and can satisfy the requirements for Special Fire Protection Purpose development.

In summary it is of our opinion that the proposed design modification as detailed in design package prepared by Conybeare Morrison International Pty Ltd (project no 10127, dwg no A010, A101, A102, A103, A104, A105, A106, A201, A202, A203, A204 & A205, issue 3) satisfies the technical requirements of Planning for Bushfire Protection 2006. Furthermore the broader issues raised by the NSW Rural Fire Service relating to residential high rise development within bushfire prone areas have been addressed in the documentation prepared by Building Code and Bushfire Hazard Solutions P/L (dated 20th July 2012, ref 130019).

Should you have any further questions please do not hesitate in contacting myself.

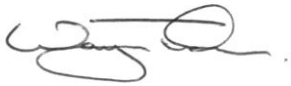
Prepared by

Building Code & Bushfire Hazard Solutions

Stuart McMonnies

G. D. Design in Bushfire Prone Areas.
Certificate IV Fire Technology
Fire Protection Association of Australia BPAD – A Certified Practitioner
Certification number – BPD – PA-09400

Building Code & Bushfire Hazard Solutions P/L



Wayne Tucker

G. D. Design in Bushfire Prone Areas.
Certificate IV Fire Technology
Ass Dip Applied Science
Manager - Bushfire Section
Fire Protection Association of Australia BPAD – A Certified Practitioner
Certification number – BPD – PA-09399

Attachment 01

Bushfire Design Modelling

Bushfire Attack Assessment Report

AS3959 (2009) Version 1.4.2

Print Date: 28/05/2013 **Assessment Date:** 22/05/2013

Site Street Address: 150 Epping Road, Lane Cove

Assessor: admin; admin

Fire Danger Index: 100 (Fire Weather Area: Greater Sydney Region)

Local Government Area: Lane Cove **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: East

Vegetation Information

Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
Surface Fuel Load(t/ha):	20	**Overall Fuel Load(t/ha):**	25

Site Information

Site Slope	0 Degrees	**Site Slope Type:**	Level
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	44

Fire Inputs

Veg./Flame Width(m):	40	**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		

Program Outputs

Category of Attack:	LOW	**Peak Elevation of Receiver(m):**	8.68
Level of Construction:	BAL 12.5	**Fire Intensity(kW/m):**	31000
Radiant Heat(kW/m2):	10	**Flame Angle (degrees):**	69
Flame Length(m):	18.6	**Maximum View Factor:**	0.113
Rate Of Spread (km/h):	2.4	**Inner Protection Area(m):**	44
Transmissivity:	0.793	**Outer Protection Area(m):**	0

Run Description: Southwest - 1

Vegetation Information

Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	10 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	20	**Overall Fuel Load(t/ha):**	25

Site Information

Site Slope	2 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	67

Fire Inputs

Veg./Flame Width(m):	50	**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		

Program Outputs

Category of Attack:	LOW	**Peak Elevation of Receiver(m):**	13.24
Level of Construction:	BAL 12.5	**Fire Intensity(kW/m):**	61805
Radiant Heat(kW/m2):	10	**Flame Angle (degrees):**	66
Flame Length(m):	34.1	**Maximum View Factor:**	0.117
Rate Of Spread (km/h):	4.78	**Inner Protection Area(m):**	67
Transmissivity:	0.766	**Outer Protection Area(m):**	0

Run Description: Southwest - 1 - Construction

Vegetation Information

Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	10 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	25	**Overall Fuel Load(t/ha):**	35

Site Information

Site Slope	2 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	67

Fire Inputs

Veg./Flame Width(m):	50	**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		

Program Outputs

Category of Attack:	LOW	**Peak Elevation of Receiver(m):**	16.31
Level of Construction:	BAL 12.5	**Fire Intensity(kW/m):**	108159
Radiant Heat(kW/m2):	8.86	**Flame Angle (degrees):**	60
Flame Length(m):	43.08	**Maximum View Factor:**	0.153
Rate Of Spread (km/h):	5.98	**Inner Protection Area(m):**	50
Transmissivity:	0.76	**Outer Protection Area(m):**	17

Run Description: Southwest - 2

Vegetation Information

Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	10 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	20	**Overall Fuel Load(t/ha):**	25

Site Information

Site Slope	2 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	87

Fire Inputs

Veg./Flame Width(m):	100	**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		

Program Outputs

Category of Attack:	LOW	**Peak Elevation of Receiver(m):**	13.33
Level of Construction:	BAL 12.5	**Fire Intensity(kW/m):**	61805
Radiant Heat(kW/m2):	10	**Flame Angle (degrees):**	74
Flame Length(m):	34.1	**Maximum View Factor:**	0.12
Rate Of Spread (km/h):	4.78	**Inner Protection Area(m):**	87
Transmissivity:	0.745	**Outer Protection Area(m):**	0

Run Description: West

Vegetation Information

Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	7 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	20	**Overall Fuel Load(t/ha):**	25

Site Information

Site Slope	2 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	60

Fire Inputs

Veg./Flame Width(m):	50	**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		

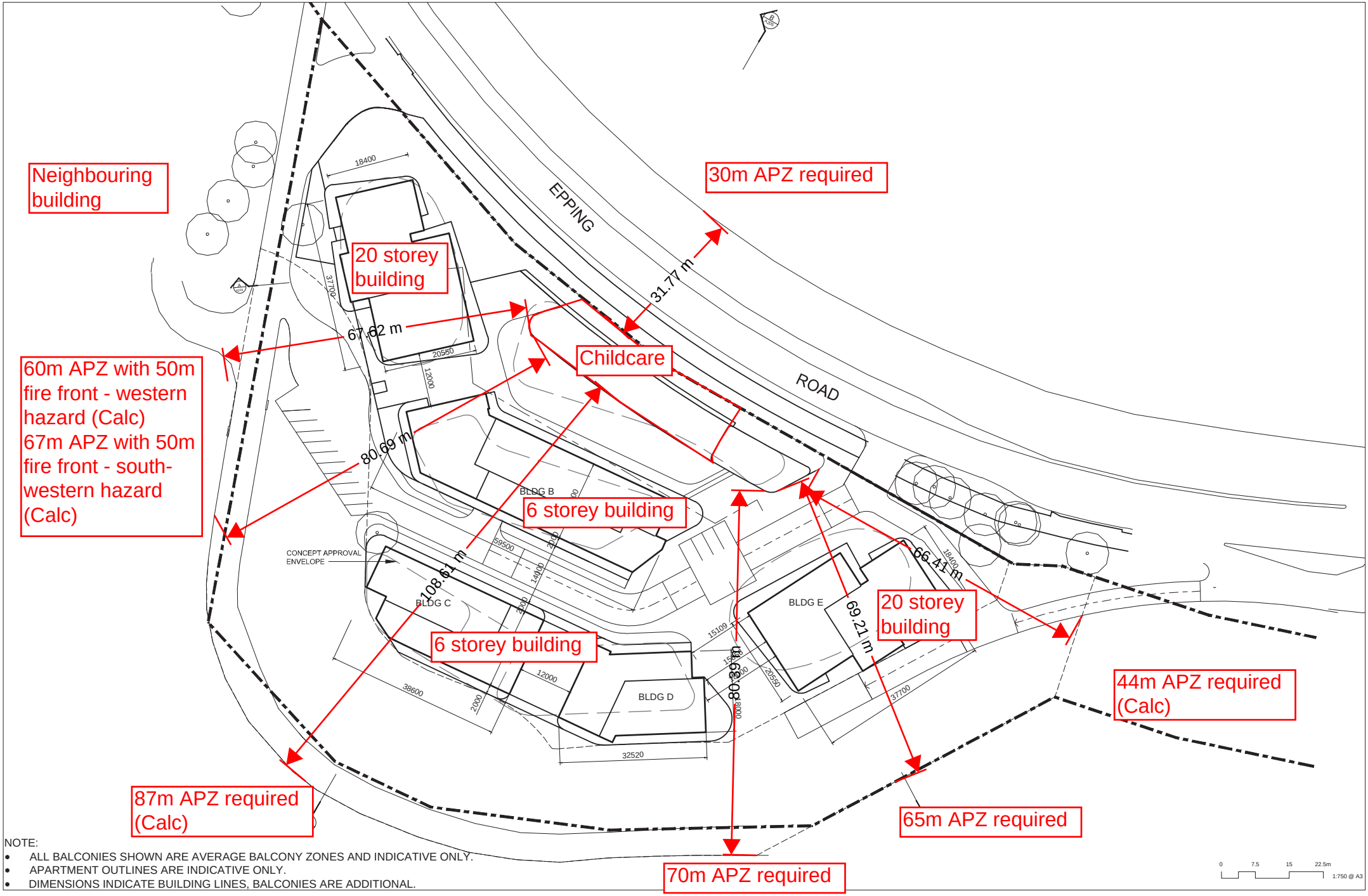
Program Outputs

Category of Attack:	LOW	**Peak Elevation of Receiver(m):**	11.01
Level of Construction:	BAL 12.5	**Fire Intensity(kW/m):**	50249
Radiant Heat(kW/m2):	10	**Flame Angle (degrees):**	68
Flame Length(m):	28.29	**Maximum View Factor:**	0.116
Rate Of Spread (km/h):	3.89	**Inner Protection Area(m):**	60
Transmissivity:	0.772	**Outer Protection Area(m):**	0

Run Description:	West - Construction		
Vegetation Information			
Vegetation Type:	Forest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	7 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	25	**Overall Fuel Load(t/ha):**	35
Site Information			
Site Slope	2 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m)	Default	**APZ/Separation(m):**	67
Fire Inputs			
Veg./Flame Width(m):	50	**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		
Program Outputs			
Category of Attack:	LOW	**Peak Elevation of Receiver(m):**	13.89
Level of Construction:	BAL 12.5	**Fire Intensity(kW/m):**	87935
Radiant Heat(kW/m2):	7.1	**Flame Angle (degrees):**	65
Flame Length(m):	35.81	**Maximum View Factor:**	0.124
Rate Of Spread (km/h):	4.86	**Inner Protection Area(m):**	51
Transmissivity:	0.756	**Outer Protection Area(m):**	16

Attachment 02

Asset Protection Zone Overlay



NOTE:

- ALL BALCONIES SHOWN ARE AVERAGE BALCONY ZONES AND INDICATIVE ONLY.
- APARTMENT OUTLINES ARE INDICATIVE ONLY.
- DIMENSIONS INDICATE BUILDING LINES, BALCONIES ARE ADDITIONAL.

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Project	10127
	150 Epping Road,Lane Cove
Client	Meriton
Title	Building Envelope Plan
Date	6 June 2013 Dn/Ch CN/AK
Dwg No	A010 Issue 3