Land and environment consultants

28 November 2025

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Subject: Flagstone Stage 1 – revised bushfire attack level assessment

1 Introduction

Land and Environment Consultants Pty Ltd (**LEC**) was engaged to undertake a revised bushfire attack level (**BAL**) assessment for lots 711-712 and 727-742 (**the lots**) within Flagstone Stage 1.

Condition 27b) of the priority development area (**PDA**) approval for Flagstone Stage 1 (Economic Development Queensland reference DEV2012/402/138) states:

> No building works are to commence on any lot within 100 m of hazardous vegetation unless the lot has been certified by a suitably qualified professional in bushfire hazard assessment that the separation distance from any hazardous vegetation will achieve a radiant heat flux level of 29kW/m² or less at the lot boundary.

The revised BAL assessment in this letter certifies the lots comply with condition 27b) of the PDA approval for Flagstone Stage 1.

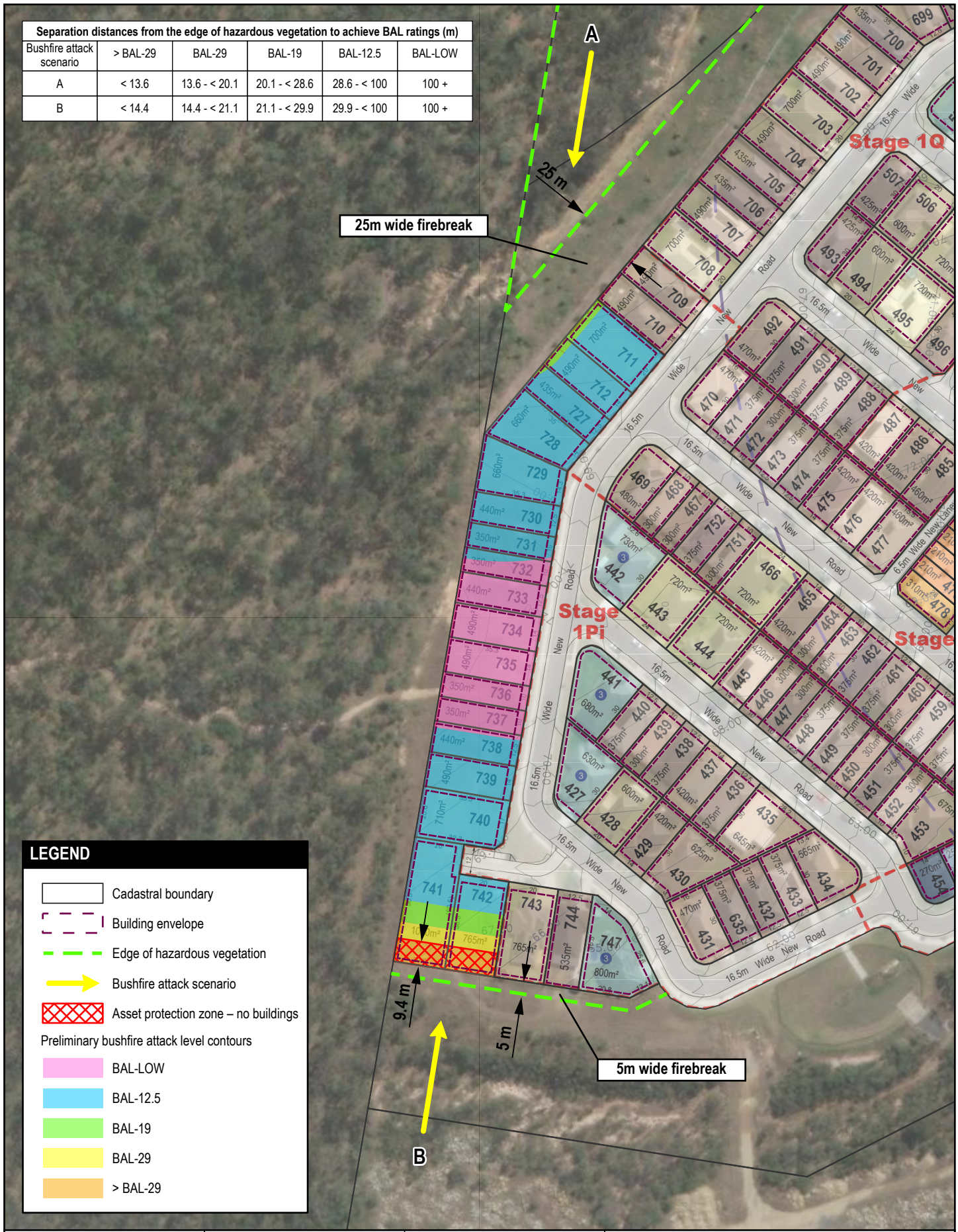
2 BAL assessment

LEC completed a site inspection on 29 July 2025 which determined that hazardous vegetation had been cleared from the western boundary of the lots by distance > 100 metres (**m**). The area of vegetation clearing is shown in the aerial image provided in Appendix 1.

Hazardous vegetation was observed adjacent to the north-western and southern boundaries of the lots. However, there were areas of maintained land between the hazardous vegetation and boundaries of the lots. A radiant heat exposure assessment of bushfire attack through these areas of hazardous vegetation was undertaken to determine the setbacks required to achieve different BAL ratings and a radiant heat flux level ≤ 29 Kilowatts (**kW**)/m^2.

The radiant heat flux models for these bushfire attack scenarios are provided in Appendix 2, and the results, ie BAL contours, are shown in Figure 1. The BAL rating for building envelopes within the lots are confirmed in Appendix 3.

Separation distances from the edge of hazardous vegetation to achieve BAL ratings (m)					
Bushfire attack scenario	> BAL-29	BAL-29	BAL-19	BAL-12.5	BAL-LOW
A	< 13.6	13.6 - < 20.1	20.1 - < 28.6	28.6 - < 100	100 +
B	< 14.4	14.4 - < 21.1	21.1 - < 29.9	29.9 - < 100	100 +



LEC
Land and environment consultants

Client:
Peet Flagstone City Pty Ltd

BAL assessment
Flagstone Precinct 1

Aerial image: ESRI World Imagery

Scale: 1:2,000

0 30 60 90 m

N

Design: Land and Environment Consultants
Date Saved: 05/08/2025 17:53 Created by: JR
Scale: 1:2,000
Name: J25067_Flagstone Precinct 1_BAL_Contour _BAL

Title: BAL contour plan

Figure 1

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3 Discussion

Figure 1 demonstrates the lots have building envelopes which are ≤ BAL-29 and achieve a radiant heat flux level ≤ 29 kW/m^2. However, this outcome relies on the following bushfire management measures:

- Existing firebreaks adjoining the north-western and southern boundaries of the lots must continue to be maintained with mown grass at a nominal height < 300 millimetres – the north-western firebreak is 25 m wide, and the southern firebreak is 5 m wide.
- The building envelopes in lots 741 and 742 must be adjusted so they do not intrude into the 9.4 m wide asset protection zone (**APZ**) shown in Figure 1. Except for fencing, retaining walls and swimming pools, buildings and structures are not permitted within the APZ.

4 Closing

This letter provides a revised BAL assessment for lots 711-712 and 727-742 within Flagstone Stage 1 and certifies compliance with condition 27b) of the PDA approval, subject to the implementation of bushfire management measures specified in Section 3.

Please contact the undersigned if you have any questions about this report.

Yours sincerely,

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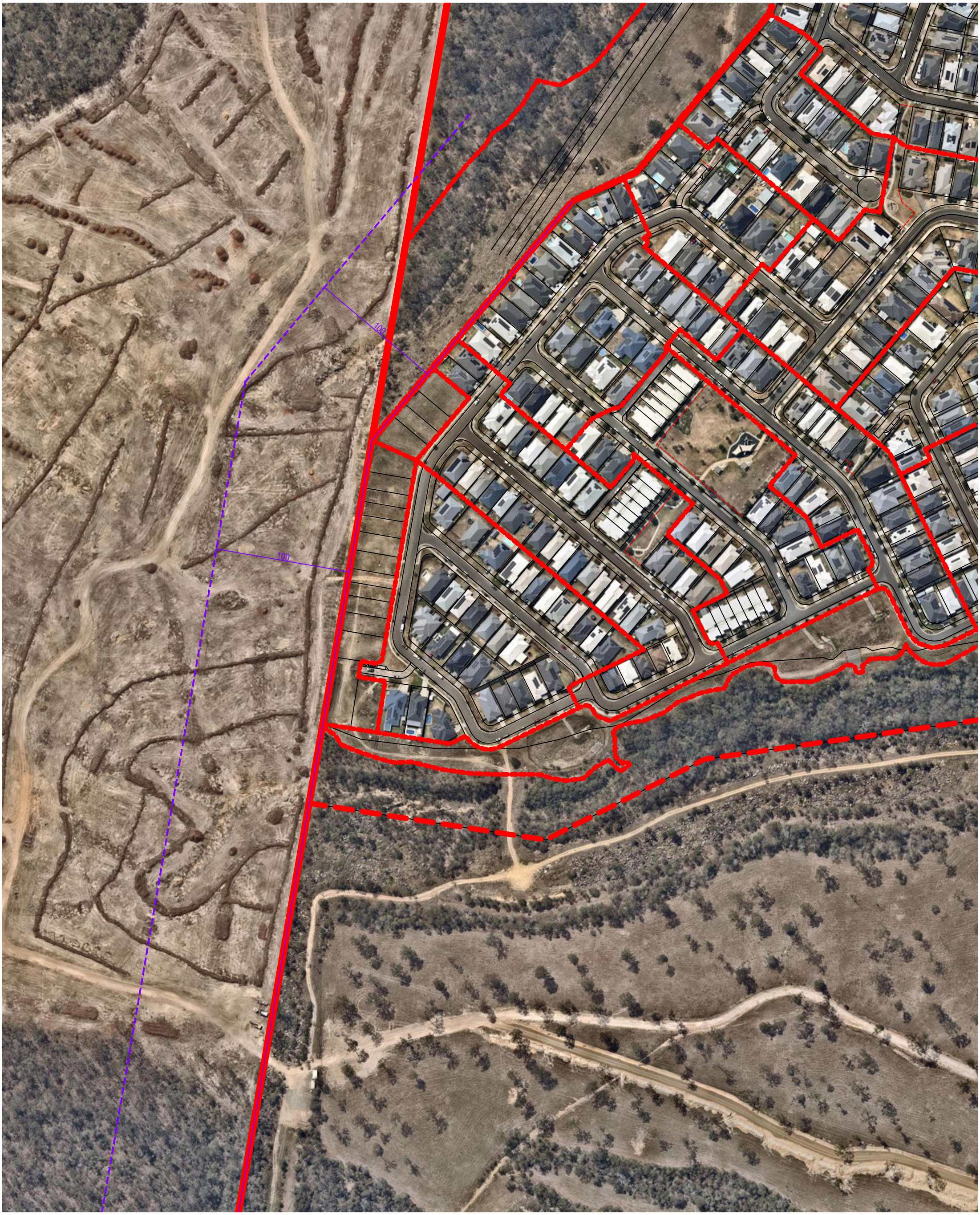
Disclaimer

Notwithstanding the precautions adopted in this report, it should always be remembered that bushfires burn under a range of conditions. An element of risk, no matter how small always remains, and although AS 3959-2018 is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any building will withstand bushfire attack on every occasion.

It should be noted that upon lodgement of a development proposal, State Government, council and/or the fire service may recommend additional construction requirements.

Although every care has been taken in the preparation of this report, Land and Environment Consultants Pty Ltd accept no responsibility resulting from the use of the information in this report.

Appendix 1 Vegetation clearing


100
100

Appendix 2 Radiant heat flux models

Bushfire attack scenario A

- Forest fire danger index - 56
- Vegetation – *VHC 10.1 Spotted gum dominated open forests*
- Understorey fuel load –19.3 tonnes/hectare(**t/ha**)
- Total fuel load – 20.8 t/ha
- Effective slope – 2° slope
- Site slope – 0° slope
- Flame width – 100 meters (**m**)
- Flame temperature – 1090 Kelvin (**K**)

FLAMESOL
FPA AUSTRALIA

Calculated July 29, 2025, 2:57 pm (MDc v.4.9)

J25067

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	56	Rate of spread	1.48 km/h
Vegetation Classification	Forest	Flame length	12.17 m
Understorey fuel load	19.3 t/ha	Flame angle	53 °, 63 °, 71 °, 76 °, 78 ° & 83 °
Total fuel load	20.8 t/ha	Elevation of receiver	4.86 m, 5.42 m, 5.75 m, 5.9 m, 5.95 m & 6.04 m
Vegetation height	n/a	Fire intensity	16,000 kW/m
Effective slope	2 °	Transmissivity	0.877, 0.86, 0.836, 0.8110000000000001, 0.798 & 0.733
Site slope	0 °	Viewfactor	0.596, 0.4421, 0.2972, 0.2019, 0.1643 & 0.0447
Flame width	100 m	Minimum distance to < 40 kW/m²	10.1 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	13.6 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	20.1 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	28.6 m
		Minimum distance to < 10 kW/m²	34.1 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Bushfire attack scenario B

- Forest fire danger index - 56
- Vegetation – *VHC 10.1 Spotted gum dominated open forests*
- Understorey fuel load –19.3 t/ha
- Total fuel load – 20.8 t/ha
- Effective slope – 3° slope
- Site slope – 0° slope
- Flame width – 100 meters (m)
- Flame temperature – 1090 Kelvin (K)

FLAMESOL
FPA AUSTRALIA

Calculated July 29, 2025, 3:02 pm (MDc v.4.9)

J25067

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	56	Rate of spread	1.59 km/h
Vegetation Classification	Forest	Flame length	12.86 m
Understorey fuel load	19.3 t/ha	Flame angle	53 °, 63 °, 71 °, 76 °, 77 ° & 83 °
Total fuel load	20.8 t/ha	Elevation of receiver	5.13 m, 5.73 m, 6.08 m, 6.24 m, 6.26 m & 6.38 m
Vegetation height	n/a	Fire intensity	17,143 kW/m
Effective slope	3 °	Transmissivity	0.876, 0.858, 0.833, 0.8080000000000001, 0.795 & 0.731
Site slope	0 °	Viewfactor	0.6002999999999999, 0.4411, 0.2984, 0.2029, 0.1649 & 0.0449
Flame width	100 m	Minimum distance to < 40 kW/m²	10.6 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	14.4 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	21.1 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	29.9 m
		Minimum distance to < 10 kW/m²	35.6 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Appendix 3 BAL ratings

BAL ratings and construction requirements for the residential allotments in stage 1Pii and Stage 1Tii

Lot number	BAL rating[1]	AS 3959-2018 construction requirements[1]
711	BAL-19[2]	Sections 3 and 6
712	BAL-19[2]	Sections 3 and 6
727	BAL-19[2]	Sections 3 and 6
728	BAL-12.5[2]	Sections 3 and 5
729	BAL-12.5	Sections 3 and 5
730	BAL-12.5	Sections 3 and 5
731	BAL-12.5	Sections 3 and 5
732	BAL-12.5	Sections 3 and 5
733	BAL-LOW	There is insufficient risk to warrant specific construction requirements
734	BAL-LOW	There is insufficient risk to warrant specific construction requirements
735	BAL-LOW	There is insufficient risk to warrant specific construction requirements
736	BAL-LOW	There is insufficient risk to warrant specific construction requirements
737	BAL-LOW	There is insufficient risk to warrant specific construction requirements
738	BAL-12.5	Sections 3 and 5
739	BAL-12.5	Sections 3 and 5
740	BAL-12.5	Sections 3 and 5
741	BAL-29[2 and 3]	Sections 3 and 7
742	BAL-29[2 and 3]	Sections 3 and 7

Notes

1 BAL ratings and construction requirements are only relevant to Stage 1Pii and Stage 1 Tii shown in *Plan of Subdivision- Stage 1- Allotment layout* - plan reference 110056-121, revision number AK, dated 8 August 2023.

2 It is the responsibility of PEET to ensure firebreaks adjoining residential allotment boundaries within Stage 1Pii and Stage 1Tii are maintained to the width identified in the BAL contour plan for Stage 1Pii and Stage 1 Tii, dated 5 August 2025 and referenced J25067 (**BAL contour plan**).

3 The BAL contour plan identifies a 9.4 m wide asset protection zone within lots 741 and 742. The BAL ratings and construction requirements for these allotments assume no buildings or structures are constructed within the asset protection zone. It is PEET's responsibility to ensure this assumption is communicated to the prospective purchasers of lots 741 and 742.