

16 February 2020

**PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL**



Approval no: DEV2019/1074

Date: 26 March 2020

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Addendum to radiant heat exposure modelling - Carseldine Urban Village – 532 Beams Road, Carseldine, Queensland.

In 2017, Land and Environment Consultants Pty Ltd (LEC) was engaged to undertake a bushfire assessment and prepare a bushfire management plan (LEC 2018) for the Carseldine Urban Village (**proposed development**), at 532 Beams Road, Carseldine, properly described as lot 322/SP172124.

In 2019, LEC reviewed and revised assumptions and inputs used in the radiant heat exposure modelling in the bushfire management plan (LEC 2018) and prepared new bushfire attack level (**BAL**) contour plans for the proposed development which identify approximate BAL contours and the 10 kilowatt/square meter (**kW/m²**) and 29 kW/m² radiant heat flux contours from which asset protection zones were determined for 'vulnerable' use development and other development, respectively. The new BAL contour plans for the proposed development are provided at Appendix 1.

The revised radiant heat exposure modelling is consistent with technical guidelines and options for radiant heat exposure modelling by the Queensland Fire and Emergency Services (**QFES**) in *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience - Bushfire'* (QFES 2019) (**Bushfire resilient communities**). The exception is that LEC did not adopt the recommended input for flame temperature in Bushfire resilient communities, ie 1,200 kelvin (**K**), over the standard flame temperature input specified in the *Australian Standard for Construction of Buildings in Bushfire Prone Areas* (AS 3959-2018) for the 'method 2' BAL assessment procedure, which is 1,090 K.

AS 3959-2018 recognises that there is overwhelming difficulty accurately measuring flame temperature in both laboratory and field environments and that results of the 'method 2' procedure are very sensitive to the flame temperature input. It also states that existing scientific literature suggests that flame temperature for determining flame emissive power vary greatly and the majority of them fall within a range between 1,000-1,200 K. The recommended flame temperature input in Bushfire resilient communities is at the highest end of the flame temperature range reported in AS 3959-2018.

The proposed development is infill development with a suburban context and is exposed to a relatively small and isolated bushfire hazard area as opposed to a large continuous bushfire hazard area associated with a wildland setting, eg Mt Coot-tha Forest Park which adjoins the D'Aguiar National Park, etc. Therefore, it was considered that a balanced approach was warranted when reviewing and revising the radiant heat exposure modelling in the bushfire management plan (LEC 2018) and the standard flame temperature input specified in AS 3959-2018 for the 'method 2' BAL assessment procedure was used, ie 1,090 K.

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 one building will withstand bushfire attack on every occasion.

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

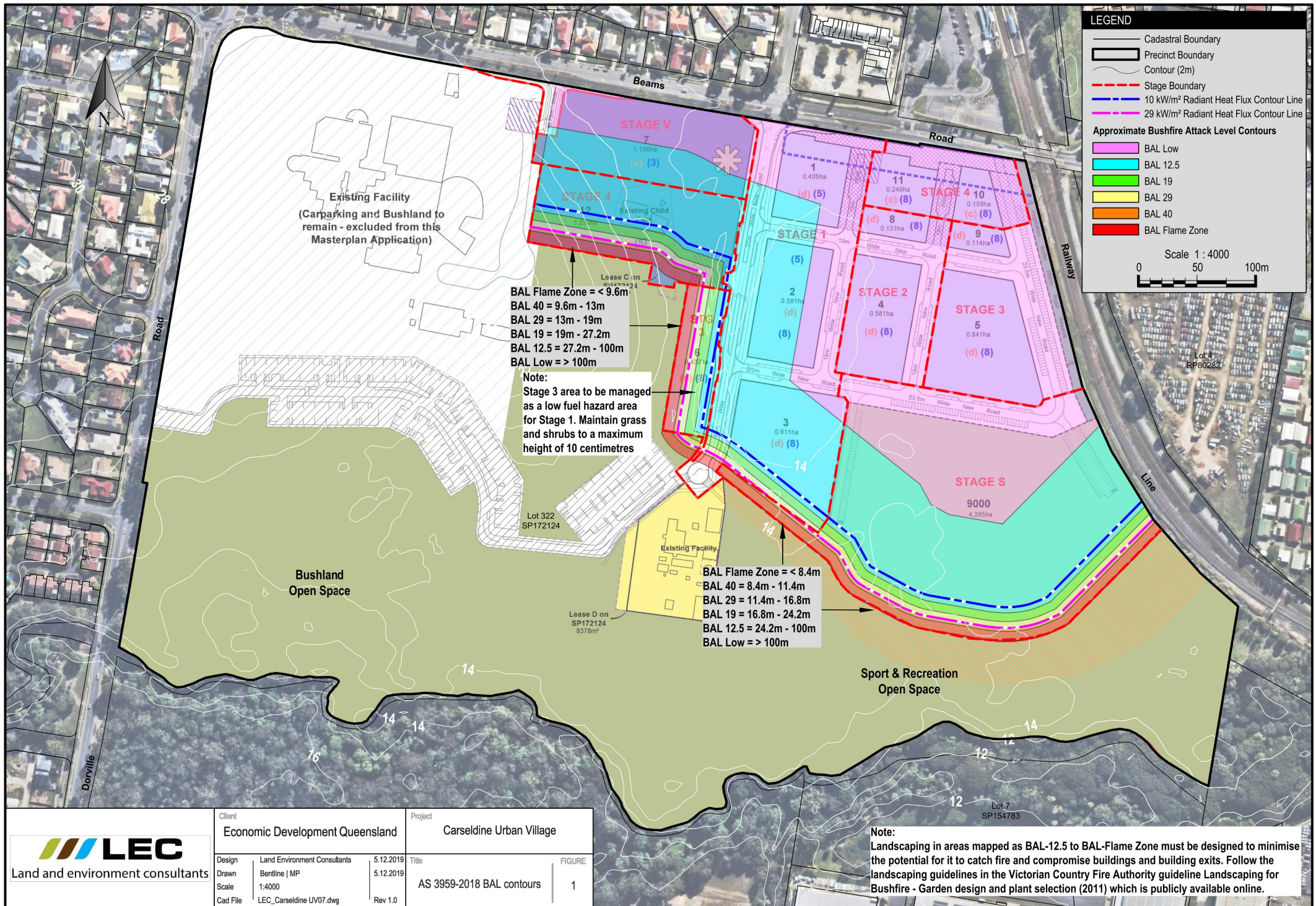
Although every care has been taken in the preparation of this report, Land and Environment Consultants Pty Ltd accept no responsibility resulting from the use of the information in this report.

References

Land and Environment Consultants (LEC) 2018, *Bushfire assessment and management plan, Carseldine Urban Village*, Final V2, 1 May 2018

Queensland Fire and Emergency Services (QFES) 2019, *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience - Bushfire'*, October 2019

Appendix 1 Carseldine Urban Village AS 3959-2018 BAL contours



LEGEND

- Cadastral Boundary
- ▭ Precinct Boundary
- Contour (2m)
- - - Stage Boundary
- - - 10 kW/m² Radiant Heat Flux Contour Line
- - - 29 kW/m² Radiant Heat Flux Contour Line

Approximate Bushfire Attack Level Contours

- BAL Low
- BAL 12.5
- BAL 19
- BAL 29
- BAL 40
- BAL Flame Zone

Scale 1 : 4000
0 50 100m

Existing Facility
(Carparking and Bushland to remain - excluded from this Masterplan Application)

BAL Flame Zone = < 9.6m
BAL 40 = 9.6m - 13m
BAL 29 = 13m - 19m
BAL 19 = 19m - 27.2m
BAL 12.5 = 27.2m - 100m
BAL Low = > 100m

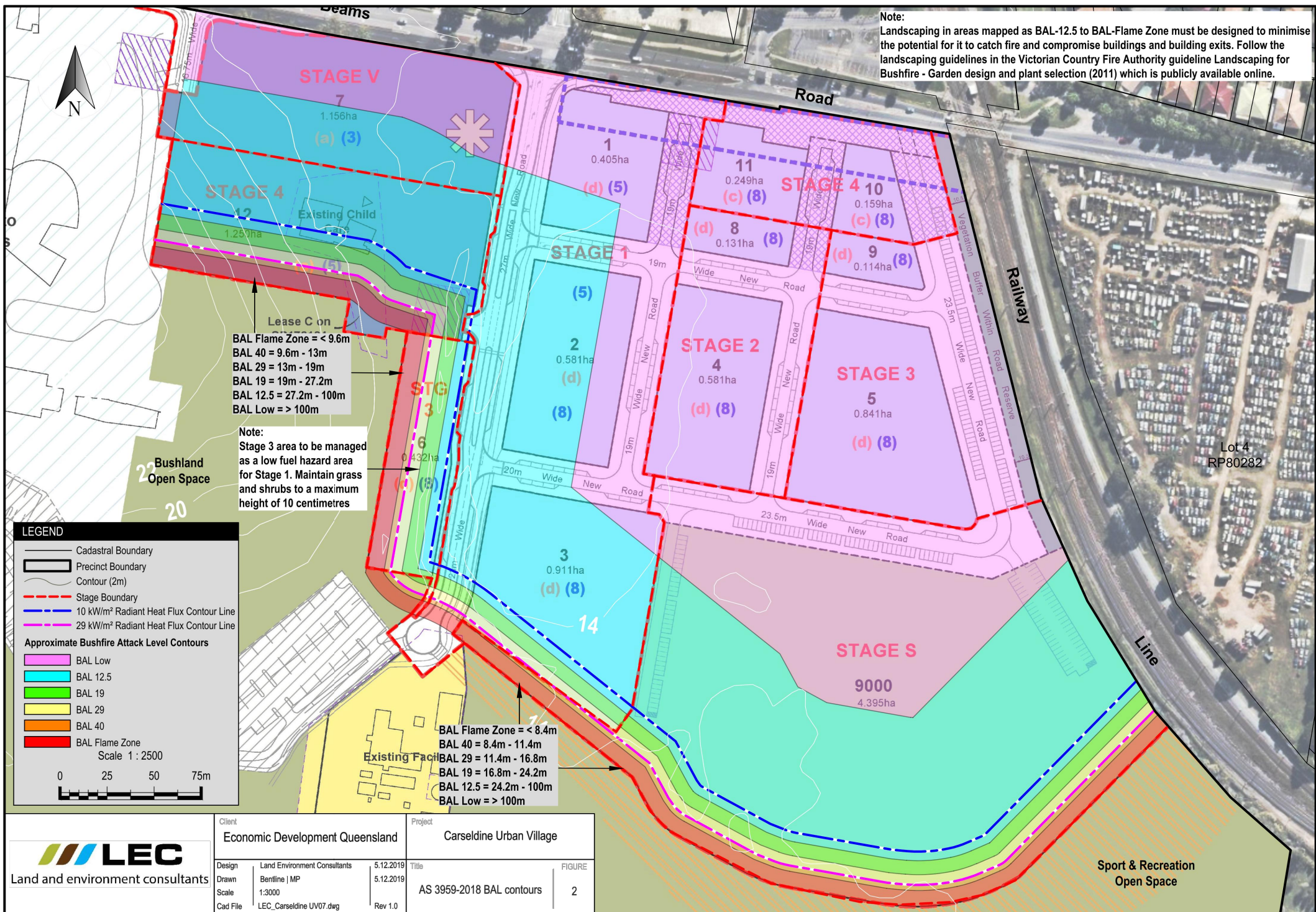
Note:
Stage 3 area to be managed as a low fuel hazard area for Stage 1. Maintain grass and shrubs to a maximum height of 10 centimetres

BAL Flame Zone = < 8.4m
BAL 40 = 8.4m - 11.4m
BAL 29 = 11.4m - 16.8m
BAL 19 = 16.8m - 24.2m
BAL 12.5 = 24.2m - 100m
BAL Low = > 100m

Note:
Landscaping in areas mapped as BAL-12.5 to BAL-Flame Zone must be designed to minimise the potential for it to catch fire and compromise buildings and building exits. Follow the landscaping guidelines in the Victorian Country Fire Authority guideline Landscaping for Bushfire - Garden design and plant selection (2011) which is publicly available online.

Client Economic Development Queensland		Project Carseldine Urban Village	
Design 5.12.2019	Land Environment Consultants	Title AS 3959-2018 BAL contours	FIGURE 1
Drawn 5.12.2019	Bentline MP		
Scale 1:4000			
Cad File LEC_Carseldine UV07.dwg	Rev 1.0		

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Approximate Bushfire Attack Level Contours

- BAL Low
- BAL 12.5
- BAL 19
- BAL 29
- BAL 40
- BAL Flame Zone

Scale 1 : 2500

0 25 50 75m

Client Economic Development Queensland		Project Carseldine Urban Village	
Design Land Environment Consultants 5.12.2019	Drawn Bentline MP 5.12.2019	Title AS 3959-2018 BAL contours	FIGURE 2
Scale 1:3000	Cad File LEC_Carseldine UV07.dwg	Rev 1.0	



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