



BUSHFIRE ATTACK LEVEL (BAL) CONTOUR ASSESSMENT

Lot 21 Eleventh Rd, Hilbert

Version: A1 Reference: 8086 April 2018



DISCLAIMER AND LIMITATION

This report is prepared for **Land Developments Pty Ltd** (the 'proponent') and any future landowners (or their representatives) of the lots identified within this report.

This Bushfire Attack Level (BAL) Contour Assessment is limited to the BAL Contour Map scope as identified in SPP 3.7 Guidelines for Planning in Bushfire Prone Areas Appendices, Appendix three (3). The BAL Contour Map has been undertaken post subdivision works as part of the completed subdivision.

AS3959:2009 Methodology one (1) was used for the determination of the desktop assessment. It is expressly stated that RUIC Fire and the writer do not guarantee that if such standards are complied with or if a property owner exercises prudence, that a building or property will not be damaged or that lives will not be lost in a bush fire.

Fire is an extremely unpredictable force of nature. Changing climatic factors (whether predictable or otherwise) either before or at the time of a fire can also significantly affect the nature of a fire and in a bushfire prone area it is not possible to completely guard against bushfire.

Further, the growth, planting or removal of vegetation; poor maintenance of any fire prevention measures; addition of structures not included in this report; or other activity can and will change the bushfire threat to all properties detailed in the report. Further, the achievement of the level of implementation of fire precautions will depend on the actions of the landowner or occupiers of the land, over which RUIC Fire has no control. If the proponent becomes concerned about changing factors then a new Fire Risk Management Plan should be requested.

To the maximum extent permitted by the law, RUIC Fire, its employees, officers, agents and the writer ("RUIC Fire") excludes all liability whatsoever for:

1. claim, damage, loss or injury to any property and any person caused by fire or as a result of fire or indeed howsoever caused;
2. errors or omissions in this report except where grossly negligent; and
3. the proponent expressly acknowledges that they have been made aware of this exclusion and that such exclusion of liability is reasonable in all the circumstances.

If despite the provisions of the above disclaimer RUIC Fire is found liable then RUIC Fire limits its liability to the lesser of the maximum extent permitted by the law and the proceeds paid out by RUIC Fire's professional or public liability insurance following the making of a successful claim against such insurer.

RUIC Fire accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report and its supporting material by any third party.

This report is a desktop assessment only, and must be updated upon agreement and issue of enforceable mechanisms to meet the assumptions as detailed in Section 1.2 of this report.



DOCUMENT DETAILS

Project Number: 8086
Project Name: Lot 21, Eleventh Road, Hilbert (DP 412894)
Prepared By: Darrel Krammer
Version: A1 DRAFT ISSUE
Date of issue: 29TH April 2018



Grad Dip Bushfire Protection, BPAD Level 3 (BPAD33412)

Date: 29/04/2018

In signing the above, I declare the report is true and accurate to the best of my knowledge at the time of issue.

RUIC Fire is a trading name of
Rural Fire Risk Consultancy Pty Ltd
ABN: 48 151 451 713

EXECUTIVE SUMMARY

Rural Fire Risk Consultancy Pty Ltd, trading as RUIC Fire, was engaged by the proponent to prepare this desktop Bushfire Attack Level (BAL) Contour Map to support residential development within Lot 21 Eleventh Road, Hilbert (Figure i) as per Deposited Plan DP 412894 (Figure ii) post subdivision civil works.

The BAL Contour Map was prepared in accordance with State Planning Policy 3.7 Guidelines for Planning in Bushfire Prone Areas (the Guidelines), Appendix three (3). The BAL assessment was carried out in accordance with AS3959:2009 Simplified Procedure (Method 1) for all plots.

Conclusions of the BAL Contour Map assessment are depicted in Figure iii:

1. The desktop assessment relies on several assumptions, subject to confirmation, as per below;
 - There is a management agreement between Peet & Co. and the City of Armadale, that enforces the ongoing low threat management of Lot 1000 Brightstone Ave, Hilbert, located to the south west of the site. This site is for a future school;
 - That the City of Armadale agrees to and provides a Firebreak Variation to establish and maintain in perpetuity (or until the lots are developed to low threat state), Lot 20 Eleventh Ave, and Lot 16 Forrest Rd, Hilbert, in a low threat state consistent with that of an Asset Protection Zone (APZ) as detailed within Schedule 1 of the Guidelines;
 - That the 'Reserves for Recreation' located within the subject site, are subject to an approved Landscape Management Plan detailing how the drainage reserve will be maintained in perpetuity as low threat, meeting AS3959 Clauses 2.2.3.2 (e) &/or (f).
2. The maximum radiant heat impact applicable to any of the identified lots is BAL-LOW;
3. The BAL ratings are not prohibitive of any proposed development; and
4. Future Class 1, 2, 3 and associated Class 10a buildings will not be required to comply with the construction requirements of AS3959:2009 if the above assumptions are carried out.



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Size: A4
 Scale: 1:4,000

LOCATION PLAN

Lot 21 Eleventh Road, Hilbert

0 20 40 60 80 100 m



Roads



Cadastral



Site Boundary



Proposed Site Plans

Ref: 8086_001_01_Location_20170427
 Projection: GDA94 MGA50
 Author: MW - RUIC | Date: 2018-04-27
 Data Source: Cadastre - Landgate; Imagery - Nearmap;
 Roads, Site Boundary, Veg, BAL, Buffers, BW6 - RUIC.

Disclaimer: Although the data within this map is considered accurate at the time of creation, RUIC Fire does not guarantee, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any data used within this map.

Figure i: Site Location

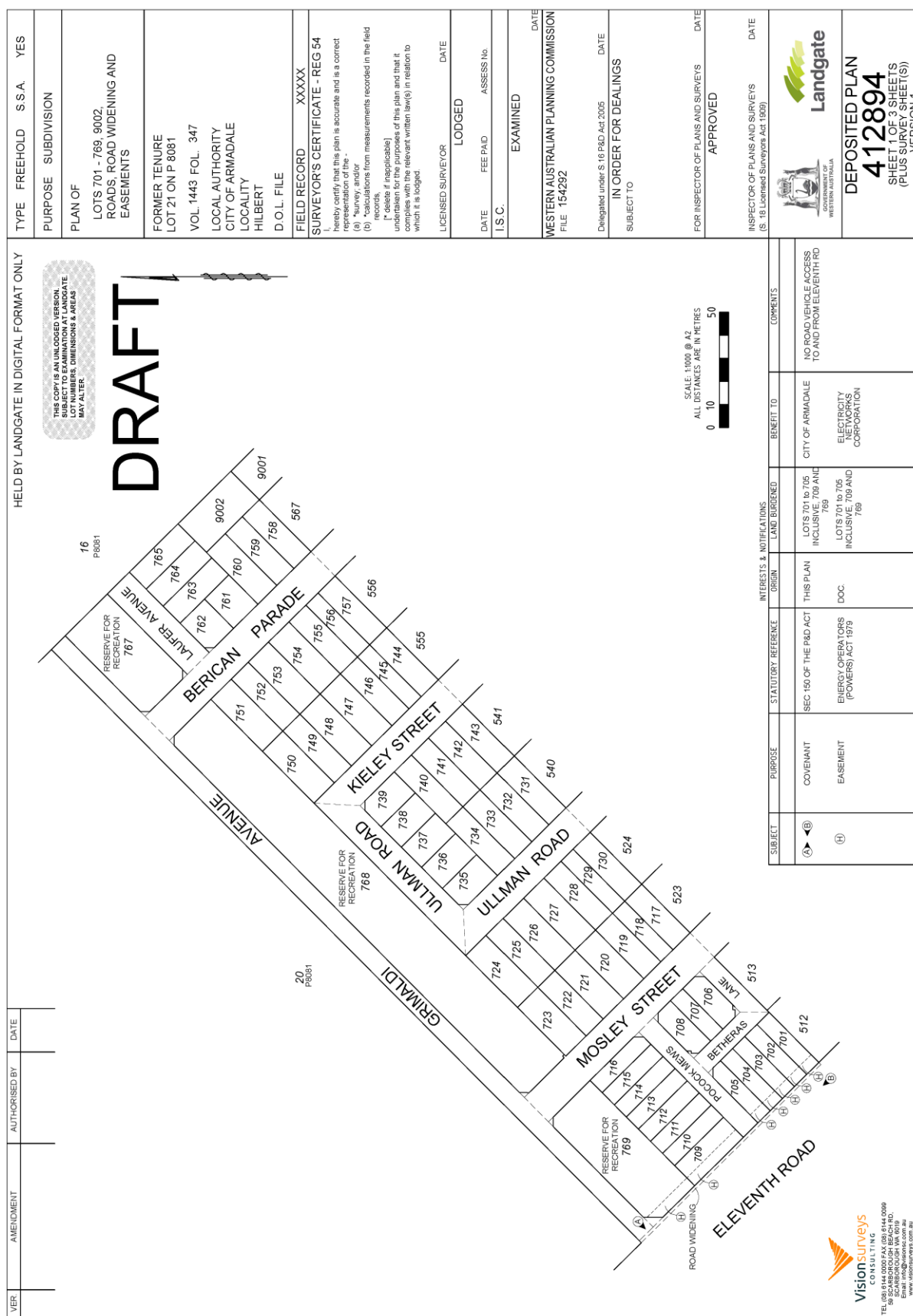


Figure ii: Deposited Plan



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Size: A4
Scale: 1:3,300

BAL CONTOURS

Lot 21 Eleventh Road, Hilbert

0 20 40 60 80 100 m

Ref: 8086_003_01_Bal Contours_20170427
Projection: GDA94 MGA50
Author: MM - RUIC | Date: 2018-04-27
Data Source: Cadastre - Landgate; Imagery - Neam ap;
Roads, Site Boundary, Veg, BAL, Buffers, BMS - RUIC.

- Roads
- Cadastre
- Site Boundary

Disclaimer: Although the data within this map is considered accurate at the time of creation, RUIC Fire does not guarantee, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any data used within this map.

Figure iii: BAL Contour map

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1.0 Introduction

1.1 Purpose of Report

Rural Fire Risk Consultancy Pty Ltd, trading as RUIC Fire, was engaged by the proponent to prepare this Bushfire Attack Level (BAL) Contour Map to support residential development within Lot 21 Eleventh Road, Hilbert (Figure i), post subdivisional civil works.

The purpose of this desktop BAL Contour map is to:

1. Illustrate the potential radiant heat impacts and associated indicative BAL ratings in reference to any classified vegetation remaining within 100 meters of the assessment area after the development is complete
2. Determine whether the radiant heat impacts (post-development) will be prohibitive of future works.

This report is not a Bushfire Management Plan. Should a Bushfire Management Plan be required a separate report is required.

1.2 BAL Assessment

The BAL assessment was conducted as a preliminary desktop assessment to demonstrate the applicable BAL ratings per lot, post development, with the following report assumptions being implemented and maintained through enforceable planning mechanism:

- There is a management agreement between Peet & Co. and the City of Armadale, that enforces the ongoing low threat management of Lot 1000 Brightstone Ave, Hilbert, located to the south west of the site. This site is for a future school;
- That the City of Armadale agrees to and provides a Firebreak Variation to establish and maintain in perpetuity (or until the lots are developed to low threat state), Lot 20 Eleventh Ave, and Lot 16 Forrest Rd, Hilbert, in a low threat state consistent with that of an Asset Protection Zone (APZ) as detailed within Schedule 1 of the Guidelines;
- That the 'Reserves for Recreation' located within the subject site, are subject to an approved Landscape Management Plan detailing how the drainage reserve will be maintained in perpetuity as low threat, meeting AS3959 Clauses 2.2.3.2 (e) &/or (f).

With the implementation and ongoing management of land, as identified within the above assumptions, there would be no classifiable vegetation located within 100m of the subdivision lots, and therefore no BAL ratings would apply. Refer to Figure iii for the BAL Contour map, that illustrates that all lots are BAL-LOW.

The highest BAL rating that applies to any lot within the development is **BAL-12.5**.

1.3 Low Threat Exclusions

Internally and within 100m of the site, low threat exclusions in accordance with AS3959:2009 have been identified as;

- Clause 2.2.3.2 (f) – Managed vegetation areas, nature strips and parklands;
- Clause 2.2.3.2 (e) – Non-vegetated areas

1.4 Bushfire Attack Levels Explained

A Bushfire Attack Level (BAL) assessment is a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact in a bushfire event, and thereby determining the construction measures required for the dwelling.

The methodology used for the determination of the BAL rating, and the subsequent building construction standards, are directly referenced from Australian Standard AS3959:2009 *Construction of buildings in bushfire prone areas*.

The BAL rating is determined through identification and assessment of the following parameters;

- Fire Danger Index (FDI) rating; assumed to be FDI-80 for WA,
- All classified vegetation **within 100m** of the subject building,
- Separation distance between the building and the classified vegetation source/s, and
- Slope of the land under the classified vegetation.

AS3959:2009 has six (6) levels of BAL, based on the radiant heat flux exposure to the building, and also identifies the relevant sections for building construction, as detailed below;

Bushfire Attack Level (BAL)	Classified vegetation within 100m of the site and heat flux exposure thresholds	Description of predicted bushfire attack and levels of exposure	Construction Section (within AS3959)
BAL-LOW	See clause 2.2.3.2	There is insufficient risk to warrant specific construction requirements	4
BAL-12.5	$\leq 12.5\text{kW/m}^2$	Ember attack	3 & 5
BAL-19	$>12.5\text{kW/m}^2$ to $\leq 19\text{kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux	3 & 6
BAL-29	$>19\text{kW/m}^2$ to $\leq 29\text{kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux	3 & 7
BAL-40	$>29\text{kW/m}^2$ to $\leq 40\text{kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux with the increased likelihood of exposure to flames	3 & 8
BAL-FZ	$>40\text{kW/m}^2$	Direct exposure to flames from fire front in addition to heat flux and ember attack	3 & 9

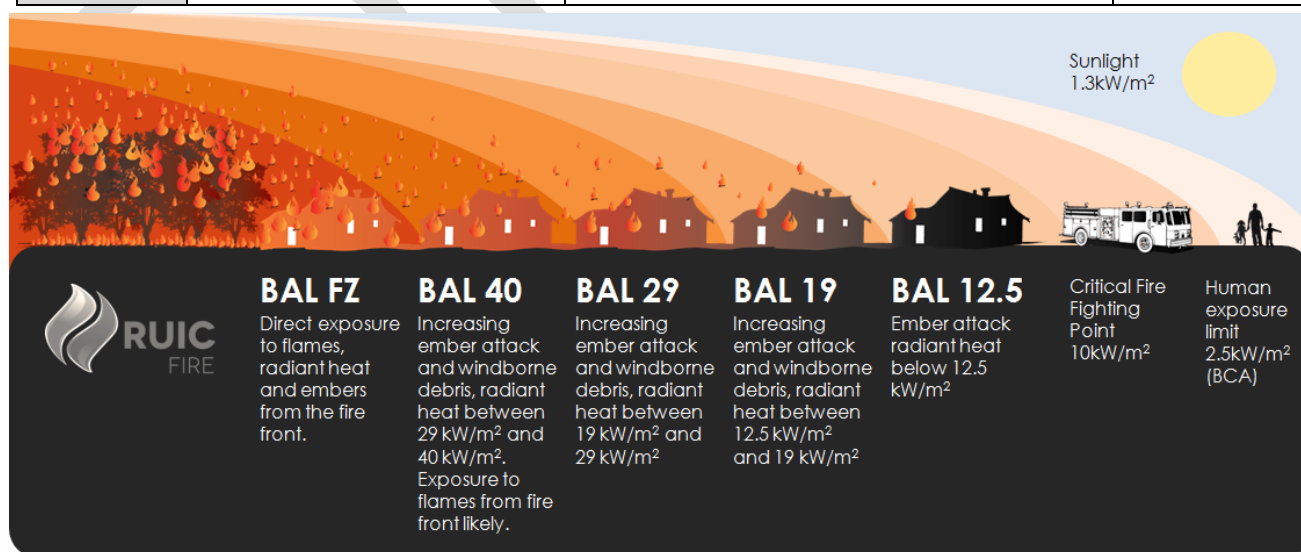


Figure 1A: BAL Overview