BUSHFIRE ATTACK LEVEL

FOR
FUTURE DWELLINGS

AT STAGE 1
EASTWOOD GOONELLABAH

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Site Details:	224 INVERCAULD ROAD GOONELLABAH, NSW
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Prepared for:	McCloy Development Management
Reference No.	Goonellabah – McCloy Group
Document Status & Date:	November 2019

Disclaimer

Not withstanding the precautions adopted within this report, it should always be remembered that bushfires burn under a wide range of conditions. An element of risk, no matter how small always remains, and although the standard 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.

Executive Summary

This report provides an assessment of the Bushfire Attack Level (BAL) for Stage 1 at Eastwood Goonellabah at 224 Invercauld Road, Goonellabah in accordance with AS3959 (2009) *Construction of Buildings in Bushfire Prone Areas* Appendix A - Method 1. This report and mapping are not to be used to place wholesale restrictions on lots reflecting the resulting BAL mapping presented within. Future development of surrounding stages may result in lower BALs than detailed in this report.

This BAL report has shown that any future dwellings within the site will be able to meet the requirements of both AS3959-2009 and the addendum to Appendix 3 of Planning PBP 2006 (NSW Rural Fire Service NSW).

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

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Disclaimer:

The BALs as depicted within this report and mapping have been determined by management of vegetation to the east and south where land will be cleared for future stages. It should be noted that conditions may change over time that may result in different BALs for the lots.

Although every care has been taken in the preparation of this BAL Report, McCloy Group and the author accept no responsibility in errors in this report or damaged resulting from the information. It should be noted that upon lodgement of a Development Application (DA) with Council or Rural Fires Service they may recommend additional construction requirements (BALs).

Terms & Abbreviations

Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2009	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
EPA Act	*NSW Environmental Planning and Assessment Act 1979*
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
LCC	Lismore City Council
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection 2006
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation

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1 INTRODUCTION

Firebird ecoSultants Pty Ltd has been engaged by McCloys Pty Ltd to undertake a Bushfire Attack Level (BAL) report for Stage 1 Eastwood Goonellabah at 224 Invercauld Road, Goonellabah hereafter referred to as the "site". Refer to Appendix A for Sales Plan.

This BAL report assess the application of Australian Standard AS3959-2009 'Construction of Buildings on Bushfire Prone Land' and Appendix 3 of Planning for Bushfire Protection 2006 (PBP, 2006). AS3959 (2009) Appendix A – Method 1 has been used in this assessment.

This report has been prepared to provide guidance to prospective purchasers of what Bushfire Attack Levels (BALs) may be required for future dwellings within the site.

1.1 Site Particulars

Locality:	224 Invercauld Road, Goonellabah
LGA:	Lismore City Council (LCC)
Forest Danger Index:	100
Current Land Use:	Approved subdivision

2 METHODOLOGY

The Australian Standard for assessing the BAL and providing the detailed requirements for construction has been reviewed and amended with the latest version being adopted for use in bushfire prone areas of NSW in May 2010. This version is titled AS 3959-2009 'Construction of Buildings in Bushfire Prone Areas' (standards Australia 2009, incorporating amendment 1 (November 2009) and amendment 2 (February 2011), with amendment 2 being used in this assessment.

In addition, the NSW method of determining the bushfire attack level, found in Appendix 3 of the document 'Planning for Bushfire Protection 2006' (NSW Rural Fire Service 2006) has also been reviewed and amended to come into line with the process within AS 3959. Therefore, in NSW the methodology with AS 3959 is to be used to determine the bushfire attack level. AS3959 (2009) Appendix A – Method 1 has been used in this BAL assessment.

2.1 Vegetation Assessment

Vegetation surveys and vegetation mapping carried out on the site has been undertaken as follows:

- Aerial Photograph Interpretation to map vegetation cover and extent.

2.2 Slope Assessment

Slope assessment has been undertaken as follows:

- Aerial Photograph Interpretation in conjunction with analysis of electronic contour maps with a contour interval of 10m.

3 SITE ASSESSMENT

The following assessment has been undertaken in accordance with the requirements of PBP (RFS, 2006) and AS3959-2009.

3.1 Vegetation and Slope Assessment

An assessment of the slope affecting the bushfire behaviour was undertaken for a distance of 100m from the edge of the lot boundaries in the direction of the bushfire hazard. The slopes leading away from the site have been evaluated to identify both the average slope and by identifying the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the site. Refer to Table 1 for Vegetation and Slope Assessment.

Table 1 –Vegetation & Slope Assessment

Direction from Site	Vegetation Classification	Effective Slope
North	Pasture land that has been assessed as Grassland Vegetation	Downslope 5 – 10 degrees then upslope
East	Open Forest	Downslope 10 – 15 degrees
South	Pasture land that has been assessed as Grassland Vegetation	Flat / cross-slope
West	Remnant vegetation being classified as Rainforest vegetation being less than 50m wide and therefore classified as Rainforest vegetation in accordance with page 52 of PBP 2006Residential allotments	Upslope

4 BUSHFIRE ATTACK ASSESSMENT

4.1 Bushfire Attack Assessment

To determine the bush fire attack and required Bushfire Attack Level (BAL) for the proposed subdivision the following steps were followed:

1. Determination of the vegetation types within 100m of the site, as assessed in section 3 of this report.
2. Determination of the distance between the vegetation and future dwellings has been assessed in section 4.2 of this report.
3. Determination of the effective slope as assessed in section 3 of this report.
4. A FDI of 80 was determined for Lismore LGA.

4.2 Determination of Bushfire Attack Levels

The results from the above steps were used to calculate the required BAL in accordance with Method 1 of AS 3959 – 2009.

The results from this bush fire attack assessment are detailed below in Table 4-1– Bushfire Attack Level (BAL) Assessment and Figure 4-1 Bushfire Attack Level Map.

Note that although forest occurs to the west of the site, the BALs from the remnant vegetation overrule any BALs from the forest. As such, the BALs from the forest to the west have not been included in Table 4-1.

Table 4-1: Bushfire Attack Level Assessment

Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)
Lot 37	Grassland vegetation to the north-east	Downslope 5 – 10 degrees then upslope	<8m	BAL-FZ
			8- 10m	BAL-40
			10 - <16m	BAL-29
			16 - <23m	BAL-19
			23-<50m	BAL-12.5
Lot 102	Remnant	Downslope >0-5	<6m	BAL-FZ

Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)
	vegetation to the west	degrees	6 – 9m	BAL-40
			9-<13m	BAL-29
			13-<19m	BAL-19
			19-<100m	BAL-12.5
Lot 103	Remnant vegetation to the west	Downslope >0-5 degrees	<6m	BAL-FZ
			6 – 9m	BAL-40
			9-<13m	BAL-29
			13-<19m	BAL-19
			19-<100m	BAL-12.5
	Grassland vegetation to the north	Downslope 5 – 10 degrees	23-<100m	BAL-12.5
Lot 104	Remnant vegetation to the west	Downslope >0-5 degrees	<6m	BAL-FZ
			6 – 9m	BAL-40
			9-<13m	BAL-29
			13-<19m	BAL-19
			19-<100m	BAL-12.5
	Grassland vegetation to the north	Downslope 5 – 10 degrees	23-<50m	BAL-12.5
Lot 105	Grassland vegetation to the north	Downslope 5 – 10 degrees then upslope	<8m	BAL-FZ
			8- 10m	BAL-40
			10 - <16m	BAL-29
			16 - <23m	BAL-19
			23-<50m	BAL-12.5
Lot 106	Grassland vegetation to the north	Downslope 5 – 10 degrees then upslope	<8m	BAL-FZ
			8- 10m	BAL-40

Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)
			10 - <16m	BAL-29
			16 - <23m	BAL-19
			23-<50m	BAL-12.5
Lot 107	Grassland vegetation to the north	Downslope 5 – 10 degrees then upslope	<8m	BAL-FZ
			8- 10m	BAL-40
			10 - <16m	BAL-29
			16 - <23m	BAL-19
			23-<50m	BAL-12.5
Lot 108	Grassland vegetation to the north	Downslope 5 – 10 degrees then upslope	<8m	BAL-FZ
			8- 10m	BAL-40
			10 - <16m	BAL-29
			16 - <23m	BAL-19
			23-<50m	BAL-12.5
Lot 109	Grassland vegetation to the north	Downslope 5 – 10 degrees then upslope	<8m	BAL-FZ
			8- 10m	BAL-40
			10 - <16m	BAL-29
			16 - <23m	BAL-19
			23-<50m	BAL-12.5
Lot 110	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	23-<50m	BAL-12.5
Lot 111	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	23-<50m	BAL-12.5
Lot 112	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	23-<50m	BAL-12.5
			>50m	BAL-LOW
Lot 113	Grassland	Downslope 5 – 10	>50m	BAL-LOW

Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)
	vegetation to the north- east	degrees		
Lot 114	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	>50m	BAL-LOW
Lot 115	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	>50m	BAL-LOW
Lot 116	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	>50m	BAL-LOW
Lot 117	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	>50m	BAL-LOW
Lot 118	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	>50m	BAL-LOW
Lot 119	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	>50m	BAL-LOW
Lot 120	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	>50m	BAL-LOW
Lot 121	Grassland vegetation to the north- east	Downslope 5 – 10 degrees	>50m	BAL-LOW
Lot 122	Remnant vegetation to the west	Downslope >0-5 degrees	23-<50m	BAL-12.5
			>50m	BAL-LOW
Lot 123	Remnant vegetation to the west	Downslope >0-5 degrees	23-<50m	BAL-12.5

*To Note: The construction requirements for the next lower BAL than that determined for the site may be applied to an elevation of the building where the elevation is not exposed to the source of the bushfire attack. An elevation is deemed to be not exposed to the source of bushfire attack if all the straight lines between that elevation and the source of bushfire attack are obstructed by another part of the building. However, this does not apply to BAL-12.

This report and mapping are not to be used to place wholesale restrictions on lots reflecting the resulting BAL mapping presented within. Building location and design will influence the application of the required BALs. For example, a lot indicated as being affected by BAL-29 may have those facades that are not exposed to the bushfire threat constructed to a lower BAL (i.e. BAL-19), reducing the costs of construction and providing more flexibility in choice of external building materials.

Disclaimer
The BALS as depicted on this map have been determined by vegetation within 100m of Stage 1 at the time of the assessment in November 2019. It should be noted that conditions may change over time, that may result in different BALs for the site.
Although every care has been taken in the preparation of this map the author accepts no responsibility for any misprints, errors, omissions, inaccuracies in these maps or damages resulting from the use of this information.

INVERCAULD ROAD

STEVENSON STREET

37

8m
2m
6m
7m
11m

102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123

Legend

- Stage 1
- Stage Boundary
- 100m Buffer
- APZ
- Rainforest
- Woodland
- Grassland
- BAL FZ
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5

Note:
Boundaries are not survey accurate.
Although all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

FIGURE 5-1: BUSHFIRE ATTACK LEVELS MAP

Ref No 2568

CLIENT	Client
SITE DETAILS	No.224 Invercauld Road Goonellabah
DATE	30 October 2019

NORTH

0 50 100 150

SCALE 2500 @ A3

PIXELDRAFTING

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firebird

5 CONCLUSION

This report provides an assessment of the Bushfire Attack Level (BAL) in accordance with AS3959-2009 Construction of Buildings in Bushfire Prone Areas for Stage 1 at Eastwood Goonellabah.

This BAL report assess the application of Australian Standard AS3959-2009 'Construction of Buildings in Bushfire Prone Land' and Appendix 3 of Planning for Bushfire Protection 2006 (PBP, 2006).

This report and mapping are not to be used to place wholesale restrictions on lots reflecting the resulting BAL mapping presented within. Future development of surrounding stages may result in lower BALs than detailed in this report.

This BAL report has shown that any future dwellings within the site will be able to meet the requirements of both AS3959-2009 and the addendum to Appendix 3 of Planning PBP 2006 (NSW Rural Fire Service NSW).

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6 BIBLIOGRAPHY

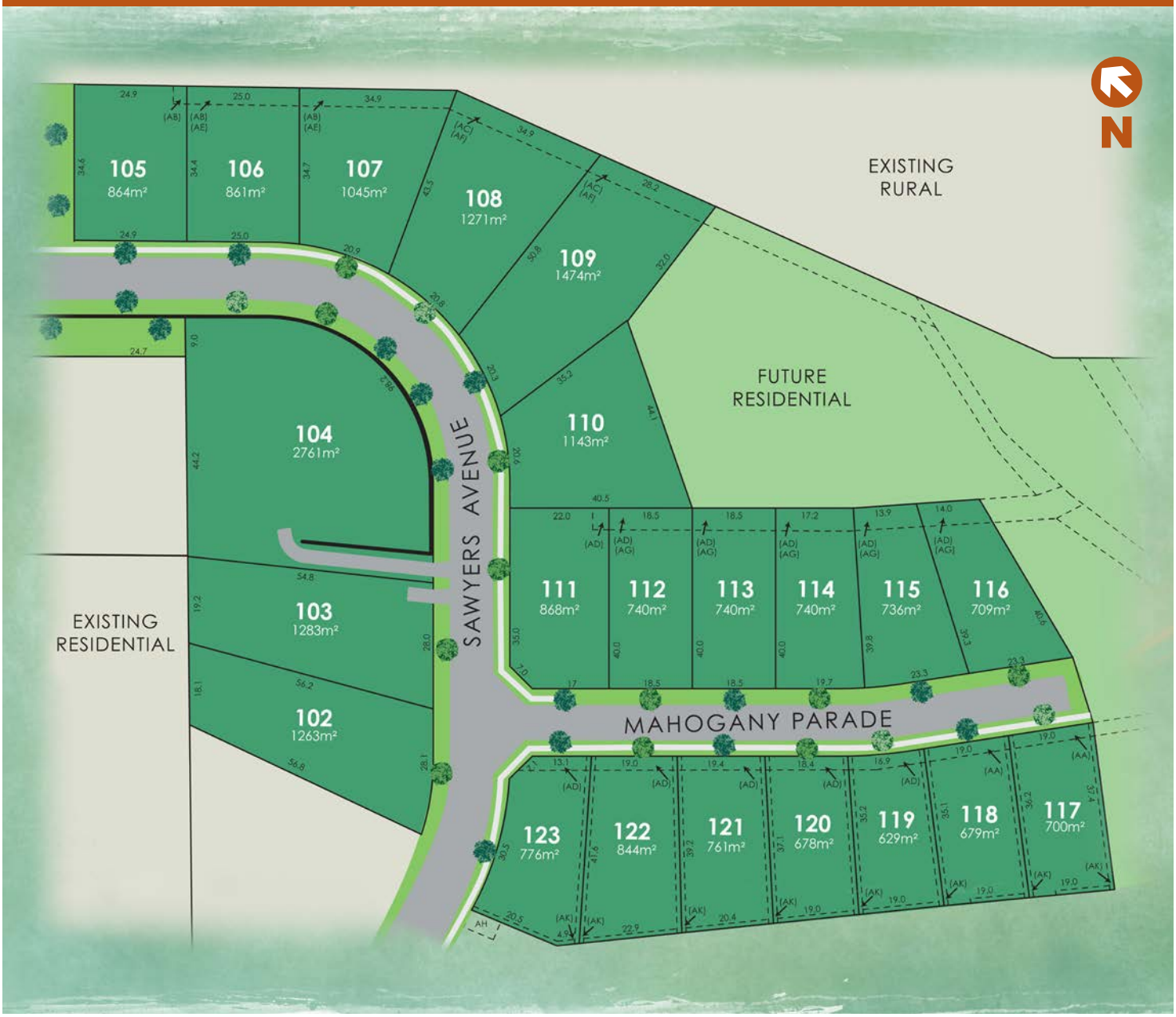
NSW Rural Fire Service (RFS) 2006. Planning for Bushfire Protection: A guide for Councils, Planners, Fire Authorities, Developers and Home Owners. Australian Government Publishing Service, Canberra.

Standards Australia. 2009. Construction of buildings in bushfire-prone Ares, AS3959, Third Edition 2009, Incorporating Amendment 1, Standards Australia International Ltd Sydney

APPENDIX A SALE PLAN

eastwood
GOONELLABAH

STAGE 1
Cedar Release



- CEDAR RELEASE
- EXISTING RESIDENTIAL
- FUTURE RESIDENTIAL
- RETAINING WALL

AA - Easement for sewer gravity main 3 wide
AB - Easement for sewer gravity main 4 wide
AC - Easement for sewer gravity main 4.5 wide
AD - Easement for sewer gravity main variable width
AE - Easement to drain water 4 wide
AF - Easement to drain water 4.5 wide
AG - Easement to drain water variable width
AH - Easement for multi-purpose electrical installation 4.2 wide
AK - Easment for maintenance and repair 1 wide (for retaining wall)

All areas, dimensions and easements are subject to final survey and approval.
General restrictions on the use of land effects all lots.