



BUSHFIRE ATTACK LEVEL & FUEL MANAGEMENT PLAN

**FOR
FUTURE DWELLINGS**

**AT STAGE 2 & LOTS 426, 427 & 428
(STAGE 4)**

**BILLY'S LOOKOUT
TERALBA**

Prepared by:

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Site Details:	Stage 2 & Lots 426, 427 & 428 (Stage 4) at Billy's Lookout, Teralba
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Prepared for:	McCloy Teralba
Reference No.	Teralba - McCloy
Document Status & Date:	June 2018

Disclaimer

Notwithstanding 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) at Stage 2 within Billy's Lookout, Teralba 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).



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Disclaimer:

The BALs as depicted within this report and mapping have been determined by management of vegetation to the east. 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 Teralba 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).

It is also noted that the BALs determined for the lots is based on the 39m APZ on the adjoining land to the east of Stage 2 and to the north of Lots 426-428.



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
<i>EPA Act</i>	<i>NSW Environmental Planning and Assessment Act 1979</i>
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LMCC	Lake Macquarie City Council
LGA	Local Government Area
OPA	Outer Protection Area
PBP	Planning for Bushfire Protection 2006
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation



CONTENTS

1	INTRODUCTION	1
1.1	Site Particulars	1
2	METHODOLOGY	2
2.1	Vegetation Assessment	2
2.2	Slope Assessment	2
3	SITE ASSESSMENT	3
3.1	Vegetation and Slope Assessment	3
4	BUSHFIRE ATTACK ASSESSMENT	4
4.1	Bushfire Attack Assessment	4
4.2	Determination of Bushfire Attack Levels	4
4.2.1	Asset Protection Zones in Adjoining Land	13
5	CONCLUSION	15
6	BIBLIOGRAPHY	16
	APPENDIX A SALE PLAN	A-1
	APPENDIX B FUEL MANAGEMENT PLAN FOR TEMPORARY APZS	B-1

TABLES

Table 1	–Vegetation & Slope Assessment	3
Table 4-1:	Bushfire Attack Level Assessment	4

FIGURES

Figure 4-1:	BAL Map	14
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I INTRODUCTION

Firebird ecoSultants Pty Ltd has been engaged by Teralba McCloys Pty Ltd to undertake a Bushfire Attack Level (BAL) report for Stage 2 & Lots 426, 427 & 428 (Stage 4) at Billy's Lookout, Teralba hereafter referred to as the "site". Refer to Appendix A for Sales Plan.

This BAL report assesses 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.

I.1 Site Particulars

Locality:	Stage 2 & Lots 426, 427 & 428 (Stage 4) at Billy's Lookout, Teralba
LGA:	Lake Macquarie City Council (LMCC)
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.
- Confirmation of the vegetation assemblage typology present via a site inspection.

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.
- On site confirmation of slope measurements.



3 SITE ASSESSMENT

A site inspection was undertaken on the site. 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	Managed land	N/A
East	Managed land	N/A
	Open forest	Downslope 6 degrees
South	Residential development	N/A
West	Open forest	Upslope
	Remnant vegetation in accordance with pg 52 of PBP 2006	Downslope 6 degrees



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 100 was determined for LMCC 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.

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)	Construction Section
Lot 201	Open Forest to the west	Upslope	35-<48m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			48-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3



Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			36-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 202	Open Forest to the west	Upslope	35-<48m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			48-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			36-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3



Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section	
Lot 203	Open Forest to the west	Upslope	35-<48m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3	
			48-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3	
	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3	
			36-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3	
	Open Forest to the east	Downslope 6 degrees	53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3	
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3	
	Lot 204	Open Forest to the west	Upslope	48-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
		Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
36-<100m				BAL-12.5	Sect 3 & 6 of AS3959 and Sect	



Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 205	Open Forest to the west	Upslope	48-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			36-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3



Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 206	Open Forest to the west	Upslope	48-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			36-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 207	Open Forest to the west	Upslope	48-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3



Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			36-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Lot 208	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19
39-<53				BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Open Forest to the east		Downslope 6 degrees	53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect



Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					A3.7 of PBP Addendum Appendix 3
Lot 209	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 210	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3



Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					3
Lot 211	Remnant vegetation to the west	Downslope 6 degrees	26-<36m	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 212	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 213	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3



Lot Number	Vegetation Type within 100m & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 214	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 215	Open Forest to the east	Downslope 6 degrees	39-<53	BAL-29	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			53-<69	BAL-19	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			69-<100m	BAL-12.5	Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3

*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.

The BALS determined in Table 41. Is based on an APZ of 39m occurring on the adjacent land to the east. Refer to Section 4.2.1 below for further information.

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. Refer to Appendix B for Summary of AS3959-2009 Construction Standards and Appendix C for Additional Building Requirements.

4.2.1 Asset Protection Zones in Adjoining Land

As discussed in the previous section the BALs have been based on the establishment and management of a 39m APZ This 39 m is comprised of 5m of the stage 2 lots and 34-39m of the adjoining land to the east of the site. This APZ of 39m will be provided along the eastern edge of stage 2 and will be managed by McCloys Teralba for a period of 12 months, after which time the management of the APZs will be the responsibility of the land owners and tied to an 88B instrument. The APZ will incorporate a 24m IPA (inner protection area) and a 15m OPA (outer protection area). Refer to Appendix B for the fuel management plan for this APZ.

Legend

- Stage 2
- 100m Buffer
- APZ
- 26m APZ
- Open Forest
- Remnant Vegetation
- Managed Land
- BAL 40
- BAL 29
- BAL 19
- BAL 12.5

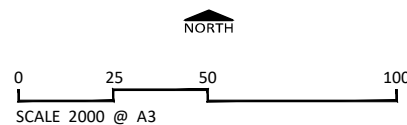
Disclaimer
 The BALS as depicted on this map have been determined by vegetation within 100m of Stage 2 at the time of the assessment in June 2018. It should be noted that conditions may change over time, that may result in different BALS for the site.
 Although every care has been taken in the preparation of this map, McCloy's Teralba and the author accepts no responsibility for any misprints, errors, omissions, inaccuracies in these maps or damages resulting from the use of this information.



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 4-1: BUSHFIRE THREAT ASSESSMENT & FUEL MANAGEMENT PLAN FOR STAGE 2 AND LOTS 426, 427 & 428 (STAGE 4)

CLIENT McCloy's Pty Ltd
SITE DETAILS 20 Pitt Street & Myrtle Street Teralba
DATE 8 August 2018



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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 2 & Lots 426, 427 & 428 (Stage 4) at Billy's Lookout, Teralba. This BAL report assesses 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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Disclaimer:

The BALs as depicted within this report and mapping have been determined by vegetation within 100m of Stage 2 & Lots 426, 427 & 428 (Stage 4) at the time of the assessment June 2018 and the establishment and management of a 39m APZ on the adjoining land to the east of stage 2 and to the north of Lots 426-428. It should be noted that conditions may change over time that may result in different BALs for the lots.



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 Areas, AS3959, Third Edition 2009, Incorporating Amendment 1, Standards Australia International Ltd Sydney



APPENDIX A SALE PLAN



APPENDIX B FUEL MANAGEMENT PLAN FOR TEMPORARY APZS



**FUEL MANAGEMENT PLAN
FOR TEMPORARY APZs
AT
STAGE 2 & LOTS 426, 427 &
428 (STAGE 4) BILLY'S
LOOKOUT
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Prepared for:	McCloy Teralba
Reference No.	Teralba - McCloys



Executive Summary

This Fuel Management Plan has been undertaken in relation to management of vegetation as an Asset Protection Zones on the adjoining land to the east of stage 2 & Lots 426, 427 & 428 (Stage 4) at Billy's Estate, Teralba. The APZs will be managed by McCloys Teralba for a period of 12 months, after which time the management of the APZs will be the responsibility of the land owners and tied to an 88B instrument. The APZ will incorporate a 24m IPA (inner protection area) and a 15m OPA (outer protection area).

Ongoing Maintenance of Asset Protection Zone

The APZ shall be maintained on a regular basis as follows:

- On a regular basis the ground layer /understorey should be slashed.
- Remove ground fuel at the end of each season to reduce fuel loads as necessary.



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
BCA	Building Code of Australia
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BFPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
BFSA	Bush Fire Safety Authority
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FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
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CONTENTS

1	INTRODUCTION	1
1.1	Background	1
1.2	What is An Asset Protection Zone?	2
2	FUEL MANAGEMENT AREA	3
2.1	Inner Protection Area	3
2.2	Outer Protection Area	3
3	ON-GOING MAINTENANCE OF THE APZ	5
3.1	Frequency of Works	5
3.2	Management Measures	5
4	REFERENCES	6

FIGURES

Figure 2-1	APZ Map	4
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I INTRODUCTION

I.1 Background

This Fuel Management Plan (FMP) has been undertaken in relation to management of vegetation as a Asset Protection Zones (refer to section 1-2 for description of an APZ) on the adjoining land to the east of stage 2 at Billy's Estate, Teralba. The APZs will be managed by McCloys Teralba for a period of 12 months, after which time the management of the APZs will be the responsibility of the land owners and tied to an 88B instrument. The APZ will incorporate a 24m IPA (inner protection area) and a 15m OPA (outer protection area).

This FMP details the following:

- Details on ongoing maintenance of on-site vegetation within the APZ.



I.2 What is An Asset Protection Zone?

An Asset Protection Zone (APZ) is a fuel reduced area surrounding a built asset or structure. This can include any residential building or major building such as farm and machinery sheds, or industrial, commercial or heritage buildings.

An APZ provides:

- a buffer zone between a bushfire hazard and an asset;
- an area of reduced bushfire fuel that allows suppression of fire;
- an area from which back burning may be conducted; and
- an area which allows emergency services access and provides a relatively safe area for fire fighters and home owners to defend their property.

Potential bushfire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy.



2 Fuel Management Area

This FMP relates to the vegetation within the 39m APZ on land both within stage 2 and adjoining land to the east of the lots. The purpose of this FMP is to outline maintenance requirements for the management required for bushfire protection for this vegetation.

The APZ as detailed on Figure 2-1 APZ Map will be established by McCloy Development and managed as an APZ for a minimum of 12 months. After this time the management of this 39m APZ will be the responsibility of Lot 201 – 2015. This area will require maintenance via slashing for small shrubs and groundcovers.

2.1 Inner Protection Area

IPA's generally consist of limited vegetation in the form of clumped shrubs or gardens and low level bushes. Large trees are generally not permitted within 3-5m of any dwelling due to the risk of overhang branches extending the bushfire onto the dwelling. It does not imply however the wholesale removal of all or every tree. Trees can be spaced well apart (>5m between crowns) and remain within the IPA.

Fire managers measure fuel load in tonnes per hectare. A safe load is between 0-4 t/ha. This amounts to approximately 8 mm (mean depth) of fuel (such as litter & leaves) on the ground.

In this instance a 29m IPA will be implemented.

2.2 Outer Protection Area

This area is fuel reduced and usually assumes all trees will remain but with a modified shrub / grass layer. The modification takes the form of reducing the presence of shrubs and grasses. An effective Outer Protection Area would have a shrub density in the order of 25-50 % of the normal density.

A safe load in this zone is usually between 4 - 8 t/ha. This amounts to between 8-12mm ('mean' depth) of fuel (such as litter & leaves) on the ground.

In this instance an OPA of 10m will be installed.



Figure 2-1 APZ Map

Legend

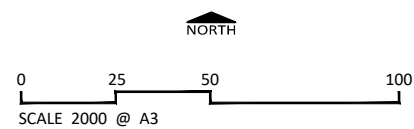
- Stage 2
- APZ
- 5m APZ
- 26m APZ
- Coastal Foothills Spotted Gum Ironbark Forest
- Eucalyptus punctata (Hollow-bearing Tree)
- Rocky area/Rocky outcrop



FIGURE 3-1: DISTRIBUTION OF VEGETATION & HOLLOW-BEARING TREES

Ref No 2023 Stg 2 APZ B

CLIENT McCloys Pty Ltd
 SITE DETAILS Stage 2 Pitt Street Teralba
 DATE 31 August 2018



Firebird ecoSultants Pty Ltd
 ABN - 16 105 985 993
 Level 1, 146 Hunter Street, Newcastle NSW 2300
 P O Box 354 Newcastle NSW 2300



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3 ON-GOING MAINTENANCE OF THE APZ

3.1 Frequency of Works

The Frequency of works is detailed in Table 3-1 and Table 3-2. These prescriptions are designed as being the minimum and it does not intend to inhibit the of the lots from taking a day to day management approach to fuel maintenance.

Table 3-1 – Typical Frequency of Maintenance Works

Time (Fire Seasons)	Elevated Fuels	Surface Fuels
August	YES	YES
November		YES
February		YES

Table 3-2 Frequency of Works following above average growth periods

Time (Fire Seasons)	Elevated Fuels	Surface Fuels
August	YES	YES
November		YES
January	YES	YES
March		YES

Note: *Elevated fuels: e.g. Shrubs, sapling & tree limbs to 3.0m in height*
Surface Fuels: e.g. Grasses, leaves, twigs & branches to 0.150 m in height.

3.2 Management Measures

The APZ as detailed on Figure 2-1 shall be maintained as detailed above.

Fuels can be controlled by:

- a) Slashing of the ground layers. Grass needs to be kept short and, where possible, green.
- b) Removal or pruning of trees, shrubs and understorey.



4 REFERENCES

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