



BUSHFIRE ATTACK LEVEL

FOR FUTURE DWELLINGS

AT STAGE II

BILLY'S LOOKOUT

TERALBA

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| | |
|------------------------------------|---|
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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 11 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 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 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).



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 |



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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 11 at Billy's Lookout, Teralba 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.

I.1 Site Particulars

| | |
|-----------------------------|--------------------------------------|
| Locality: | Stage 11 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 | Vegetation classified as remnant vegetation due to its restricted width in accordance with PBP 2006. This vegetation occurs greater than 25 m away from the site. | Downslope >0-5 degrees |
| East | Vegetation classified as open forest occurs greater than 90 m away from the site | Downslope >0-5 degrees |
| South | Vegetation classified as open forest occurs greater than 90 m away from the site | Downslope >0-5 degrees |
| West | Residential development & vacant lots | N/A |



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 1101 | Remnant vegetation to the north | Downslope >0-5 degrees | 20-<29m | BAL-19 | Sect 3 & 7 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1102 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<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 1103 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1104 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1105 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1106 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1107 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1108 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<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 1109 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1110 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1111 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1112 | Remnant vegetation to the north | Downslope >0-5 degrees | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1113 | Remnant vegetation to | Downslope >0-5 | 20-<29m | BAL-19 | Sect 3 & 7 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 |
|------------|---|---------------------------------|--|-----------------------------|---|
| | the north | degrees | | | A3.7 of PBP Addendum Appendix 3 |
| | | | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1114 | Remnant vegetation to the north | Downslope >0-5 degrees | 20-<29m | BAL-19 | Sect 3 & 7 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1115 | Remnant vegetation to the north | Downslope >0-5 degrees | 20-<29m | BAL-19 | Sect 3 & 7 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<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 1116 | Remnant vegetation to the north | Downslope >0-5 degrees | 20-<29m | BAL-19 | Sect 3 & 7 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| Lot 1117 | Remnant vegetation to the north | Downslope >0-5 degrees | 20-<29m | BAL-19 | Sect 3 & 7 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 29-<100m | BAL-12.5 | Sect 3 & 6 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | Open forest vegetation to the south & east | Downslope >0-5 degrees | 57-<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.

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.

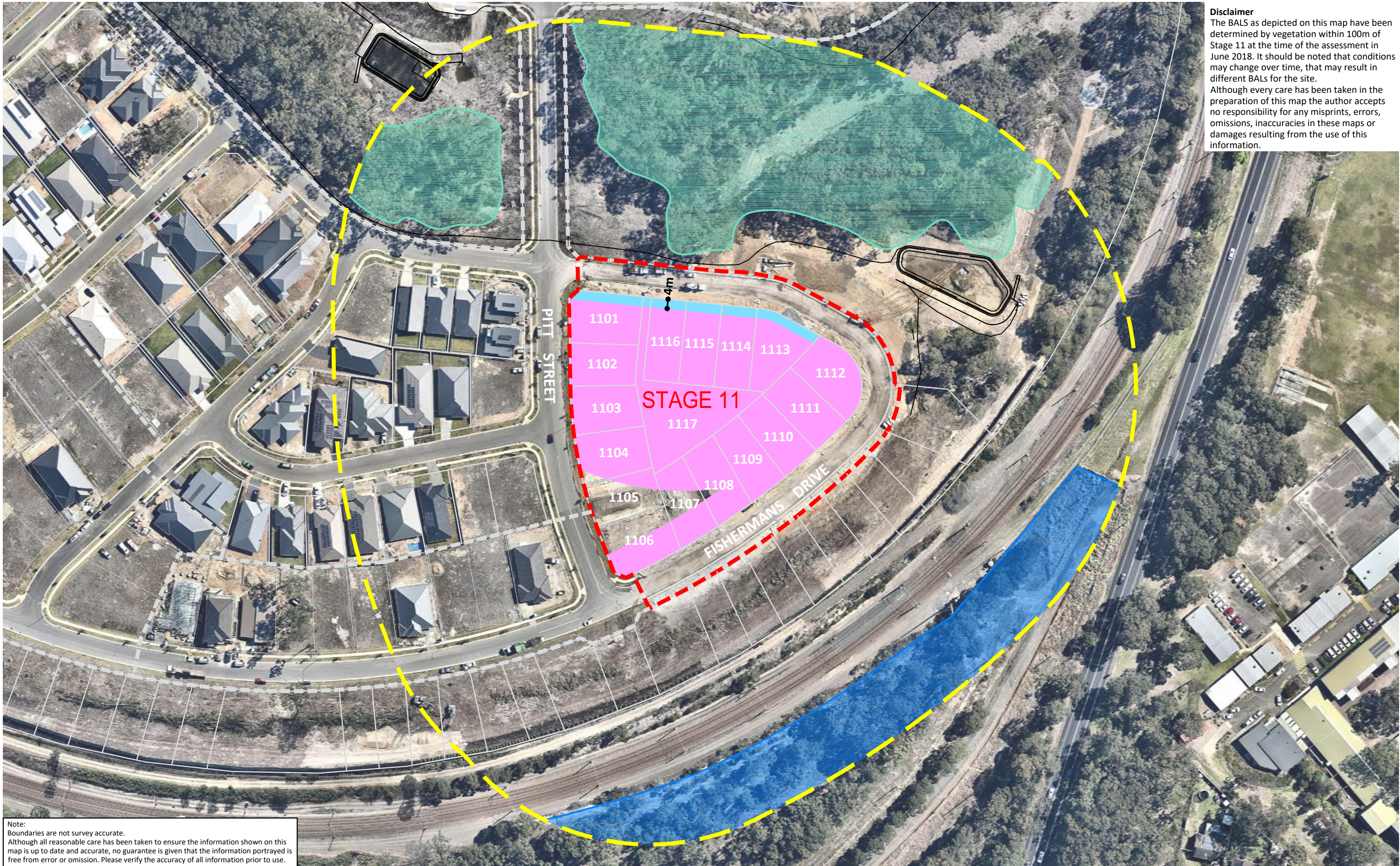


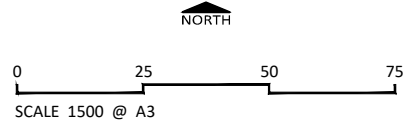
FIGURE 4-1: BUSHFIRE ATTACK LEVELS MAP

CLIENT
SITE DETAILS
DATE

McCloy Pty Ltd
Stage 11 Teralba
22 June 2018

Legend

- Stage 11
- 100m Buffer
- Remnant Vegetation
- Open Forest
- BAL 19
- BAL 12.5



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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 11 at Billy's Lookout, Teralba.

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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Disclaimer:

The BALs as depicted within this report and mapping have been determined by vegetation within 100m of Stage 11 at the time of the assessment October 2018. 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.

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APPENDIX A SALE PLAN