



BUSHFIRE ATTACK LEVEL

FOR

FUTURE DWELLINGS

AT

STAGE 34 NORTHLAKES ESTATE



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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) in accordance with AS3959-2009 Construction of Buildings in Bushfire Prone Areas for Stage 34 within the NorthLakes Estate.

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) and will meet complying development under the Code SEPP.



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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 North Lakes Pty Ltd to undertake a Bushfire Attack Level (BAL) report for Stage 34 within the Northlakes Estate 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 in Bushfire Prone Land’ and Appendix 3 of Planning for Bushfire Protection 2006 (PBP, 2006). 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 34 Northlakes Estate
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.

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

The following assessment has been undertaken in accordance with the requirements of PBP (RFS, 2006) and AS3959-2009. A site inspection was undertaken on the 10 April 2013.

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 3-1 for Vegetation and Slope Assessment.

Table 3-1: Vegetation & Slope Assessment

Direction from Site	Vegetation Classification	Effective Slope
North	Future development and land managed as an APZ until development occurs followed by Open Forest.	Upslope
East	N/A – Future development and land managed as an APZ until development occurs.	N/A
South	N/A - Future development and land managed as an APZ until development occurs	N/A
West	Future development and land managed as an APZ until development occurs followed by Open Forest.	Crosslope



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 either using Table 2.4.2 of AS3959-2009. The temporary APZs and permanent APZs have been used in this assessment.

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 & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
Lot 3401	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3402	N/A – no vegetation	N/A – no vegetation	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat



Lot Number	Vegetation Type & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
	occurs within 100m	occurs within 100m			and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3403	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3404	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3405	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There



Lot Number	Vegetation Type & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3406	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3407	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3408	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do



Lot Number	Vegetation Type & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					basic property preparation
Lot 3409	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3410	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3411	Open Forest to the north	Upslope	60- 100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			>100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do



Lot Number	Vegetation Type & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					basic property preparation
Lot 3412	Open Forest to the north	Upslope	60-100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 3413	Open Forest to the north	Upslope	60-100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 3414	Open Forest to the north	Upslope	60-100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 3415	Open Forest to the north	Upslope	60-100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 3416	Open Forest	Upslope	>60– 100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			>100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3417	Open Forest to the north	Upslope	60-100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of

Lot Number	Vegetation Type & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					PBP Addendum Appendix 3
Lot 3418	Open Forest to the north	Upslope	60-100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 3419	Open Forest to the north	Upslope	60-100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 3420	Open Forest to the south-west	Downslope 0 – 5 and cross-slope	➤ 57-100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			➤ 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3421	Open Forest to the south-west	Downslope 0 – 5 and cross-slope	>57 – 100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			➤ 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to



Lot Number	Vegetation Type & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					warrant specific construction requirements, but residents should still do basic property preparation
Lot 3422	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3423	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3424	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	> 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation



Lot Number	Vegetation Type & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
					preparation
Lot 3425	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3426	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW	BAL-LOW: Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements, but residents should still do basic property preparation
Lot 3427	Open Forest to the south-west	Downslope 0 – 5 and cross-slope	>57 – 100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
Lot 3428	Open Forest	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW
3429	Open Forest	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW
3430	Open Forest	N/A – no vegetation occurs within	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW



Lot Number	Vegetation Type & Direction from future dwellings	Average Slope of Land (degrees)	Separation Distance from Identified Vegetation	Bushfire Attack Level (BAL)	Construction Section
		100m			
3431	Open Forest	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW
3432	Open Forest	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW
3433	Open Forest	N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m	BAL-LOW
3434	Open Forest to the south-west	Downslope 0 – 5 and cross-slope	>57 – 100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m
3435	Open Forest to the south-west	Downslope 0 – 5 and cross-slope	>57 – 100m	BAL – 12.5	Sect 3 & 5 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3
			N/A – no vegetation occurs within 100m	N/A – no vegetation occurs within 100m	➤ 100m
3436	Open Forest to the south-west	Downslope 0 – 5 and cross-slope	>57 – 100m	BAL – 12.5	Open Forest to the south-west



Figure 4-1: BAL Map



5 CONCLUSION

This report provides an assessment of the Bushfire Attack Levels (BAL) in accordance with AS3959-2009 Construction of Buildings in Bushfire Prone Areas for Stage 34 within the Northlakes Estate.

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) and will meet complying development under the Code SEPP provided the other development standards as detailed within the Code SEPP are met.



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APPENDIX A SALE PLAN

