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10 January 2012

NORTH LAKES PTY LTD

PO BOX 2214

DANGAR NSW 2309

**ATTENTION: JAMES GOODE
DEVELOPMENT MANAGER**

Dear James,

**RE: BUSHFIRE ATTACK LEVELS FOR FUTURE DWELLINGS WITHIN
STAGE 30 NORTHLAKES ESTATE**

The following has been prepared to assess the application of the Australian Standard AS3959-2009 'Construction of Buildings in Bushfire Prone Land' over land referred to as Stage 30 Northlakes Estate. This report has been prepared to provide guidance on how AS3959 assessment methodology can be applied to lots before the development application stage of single dwellings. This giving prospective purchasers of lots certainty of required Bushfire Attack Levels (BALs) for future dwellings within the lots.

BACKGROUND

The Australian Standard for assessing the bushfire attack level 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'.

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.



BAL ASSESSMENT

The determinations of the appropriate Bushfire Attack Levels (BAL) in accordance with AS3959-2009 are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the construction level is derived by using the following information:

- Relevant Fire Danger Index (FDI) of 100
- Flame temperature
- Slope
- Vegetation Classification; and
- Building location.

Assessment of the site and the surrounding land for a distance of 140m has been undertaken and the results are present in Table 1 below. This assessment has taken into account development of the site, and management of the required Asset Protection Zones (APZs).

Table 1 –Vegetation & Slope Assessment

| Direction from Site | Vegetation Classification | Effective Slope |
|---------------------|---|-----------------|
| North | Open Forest occurs greater than 45m away | Cross-slope |
| East | Open Forest occurs greater than 30m away | Upslope |
| South | Managed Land for future residential development | N/A |
| West | Open Forest occurs greater than 30 and 45m away | Cross-slope |

Following the BAL assessment methodology within PBP Appendix 3 and AS3959, a distance for which the range of BALs extends from the bushland interface is listed in Table 2 and Figure 1 – BAL Map below.



Table 2: Deemed to Satisfy Bushfire Attack Levels (BALs) for Future Dwellings within Stage 30A Northlakes Estate

| Direction | Vegetation Type | Average Slope of Land under Vegetation Type | Separation Distance from Vegetation Type | Bushfire Attack Level (BAL) | Construction Section |
|------------------|-----------------|---|--|-----------------------------|---|
| East of Lot 3025 | Open Forest | Upslope | 6-<19m | BAL-FZ | Performance Assessment needs to be undertaken for any proposed dwelling within 19m of the Open Forest |
| | | | 19 - <25m | BAL -40* | Sect 3 & 8 of AS3959 and Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 25-<35m | BAL -29* | Sect 3 & 7 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 35 - <48m | BAL-19* | Sect 3 & 6 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 48 - <100m | BAL-12.5 | Sect 3 & 5 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| East | Open Forest | Upslope | 25-<35m | BAL -29* | Sect 3 & 7 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 35 - <48m | BAL-19* | Sect 3 & 6 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 48 - <100m | BAL-12.5 | Sect 3 & 5 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| North and west | Open Forest | Cross-slope | 45 - <48m | BAL-19* | Sect 3 & 6 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 48 - <100m | BAL-12.5 | Sect 3 & 5 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| West | Open Forest | Cross-slope | 35 - <48m | BAL-19* | Sect 3 & 6 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |
| | | | 48 - <100m | BAL-12.5* | Sect 3 & 5 of AS3959 & Sect A3.7 of PBP Addendum Appendix 3 |

To Note: The construction requirements for the next lower BAL than that determined for the lot may be applied to an elevation of the building where the elevation is not exposed to the source of bushfire attack. An elevation is deemed to be not exposed to the source of bushfire



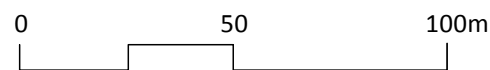
attack if all straight lines between that elevation and the source of bushfire attack are obstructed by another part of the building. However, this does not apply to BAL -12.5.



TITLE: BUSHFIRE ATTACK LEVELS

CLIENT Northlakes
SITE DETAILS Stage 30, Northlakes Estate
DATE 21 December 2011

| Legend | | | |
|--------|------------|--|----------|
| | Stage 30 | | APZ |
| | BAL - FZ | | BAL - 29 |
| | BAL - 40 | | BAL - 19 |
| | BAL - 12.5 | | |



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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, reducing the costs of construction and providing more flexibility in choice of external building materials.

CONCLUSION SUMMARY

This report provides an assessment of the Bushfire Attack Level (BAL) under Method 1 of AS3959-2009 Construction of Buildings in Bushfire Prone Areas for Stage 30 Northlakes Estate.

The BAL mapping provides prospective buyers of lots a guide to the expected construction standards under AS3959-2009 required for a dwelling.

Please do not hesitate to contact the undersigned if you have any questions.

Yours faithfully

Firebird ecoSultants Pty Ltd

Sarah Jones
B.Env.Sc., G.DIP.DBPA (Design for Bushfire Prone Areas)
Ecologist / Bushfire Planner



REFERENCES

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.