



Bushfire Threat Assessment

For Proposed Dwellings
Within Stage 39
At
Northlakes Estate

Prepared for
Northlakes Pty Ltd

Job Reference 24755 - October 2007



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<i>PROJECT: BUSHFIRE THREAT ASSESSMENT, STAGE 39 NORTH LAKES ESTATE.</i>	
<i>CLIENT:</i>	<i>NORTH LAKES ESTATE</i>
<i>OUR REF.</i>	<i>24755</i>
<i>DATE:</i>	<i>NOVEMBER 2007</i>
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1 INTRODUCTION

RPS - Harper Somers O'Sullivan (RPS - HSO) has been engaged by North Lakes Pty Ltd to undertake an assessment to determine the required level of construction from section 3 of Australian Standard 3959 – 1999 (AS3959) that applies to future dwelling within Stage 39 of the Northlakes Estate, hereafter referred to as the 'site'.

This report is suitable for submission with a Development Application for a dwelling under Section 79BA of the *Environmental Planning and Assessment Act 1979* (EP&A Act 1979) and provides information on measures that will enable the development to comply with 'Planning for Bushfire Protection' (NSW RFS, 2006) (hereafter referred to as 'PBP').

To determine the required levels of construction, this assessment adheres to the methodology and procedures outlined in Appendix 3 – 'Site Bush Fire Attack Assessment' in *Planning for Bushfire Protection* (RFS, 2006) (now referred to in this report as PBP 2006).

2 METHODOLOGY

To determine the required level of construction for future dwellings within the allotments the following steps were undertaken:

- Identification of all vegetation types within 140m of the site using Keith (2004).
- The distance of each vegetation type identified from the allotments.
- The effective slope for each vegetation type identified.
- Determination of the relevant (Forest) Fire Danger Index (FDI) for Lake Macquarie.
- Match the relevant FDI, appropriate vegetation, distance and effective slope to determine the applicable bushfire attack to the site.
- Determine the appropriate level of construction.

3 VEGETATION AND SLOPE ASSESSMENT

On the north boundary of the site residential development and Northlakes Drive occurs. A drainage line occurs to the north-west of the Stage 39 and vegetation contained within this drainage line has been classified as Open Forest as it has a width of greater than 20m. Residential development separates Stage 39 from this vegetation for a distance of greater than 46m.

To the west of the site Open Forest occurs upslope from Stage 39. Residential development such as allotments, cleared land and the nutrient control pond separate Stage 39 from this vegetation for a distance ranging from 45 – 65m.

To the south of Stage 39 Stage 40 occurs, vegetation within Stage 40 and for the required APZ's is proposed to be cleared in the near future. Once this vegetation has been cleared no bushfire hazards will occur in this direction.

4 DESIGN AND CONSTRUCTION STANDARDS

Using the information relating to vegetation, slope, FDI (100) and according to Table A3.3 PBP 2006, Table 1 and Figure 1 illustrates the required construction standards for future dwellings within Stage 39.







Table 1 - Recommended Construction Standards

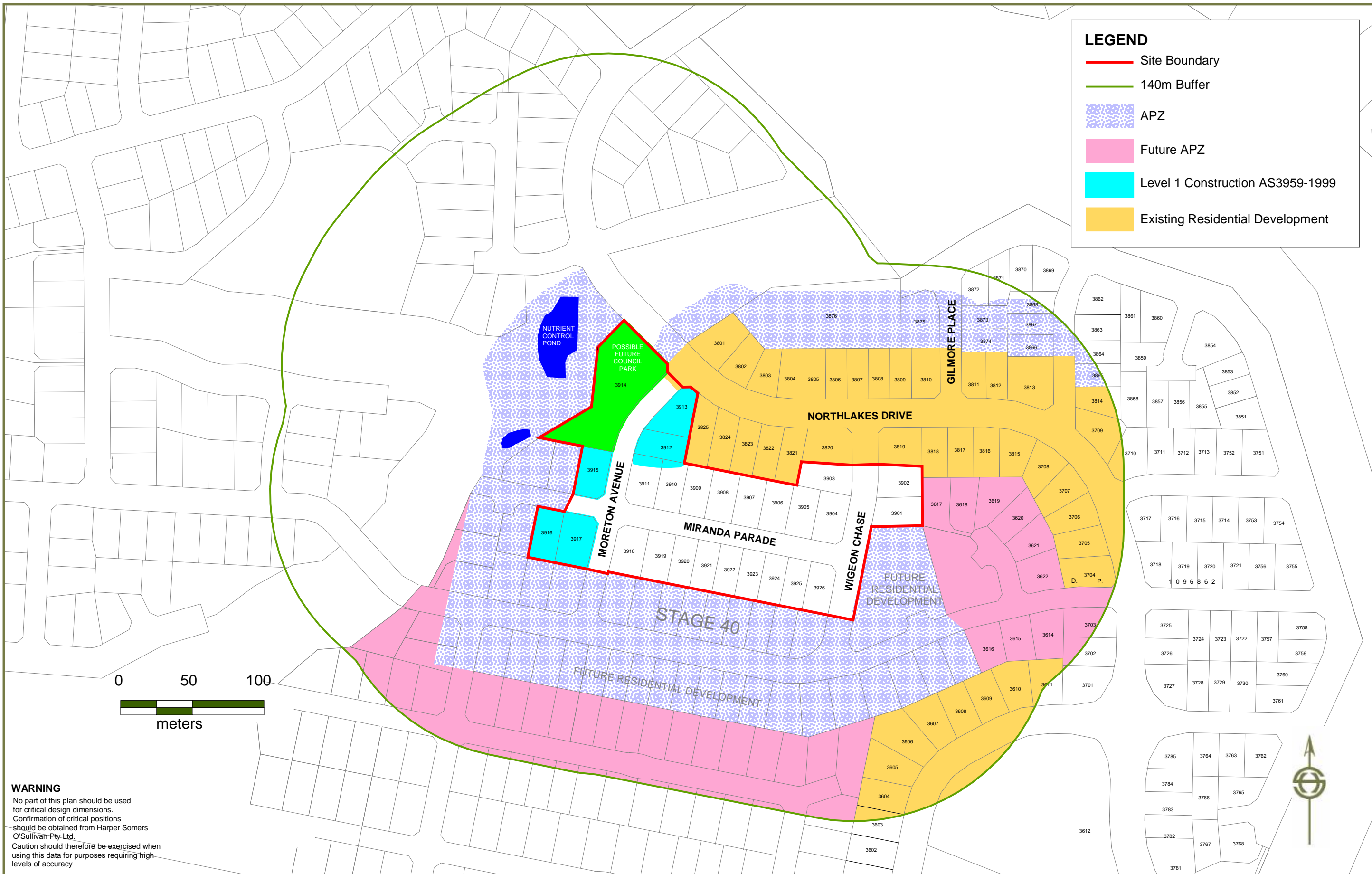
Lot Number	Vegetation Type / direction from site	Average Slope of Land (degrees) where vegetation occurs	Separation Distance of vegetation from proposed dwelling	Category of Bushfire Attack	Recommended Construction Standard
Lot 3910	Open Forest (to the north)	Cross-slope	40 – 100m	Medium	That part of the dwelling built within 100m from the Open Forest to the north will need to be built to a Level 1 AS3959 ; no construction level would apply to the remaining part of the dwelling.
Lot 3911	Open Forest (to the north)	Cross-slope	40 – 100m	Medium	That part of the dwelling built 100m from the Open Forest to the north will need to be built to a Level 1 AS3959 ; no construction level would apply to the remaining part of the dwelling.
Lot 3912	Open Forest (to the north)	Cross-slope	40 -100m	Medium	Level 1 AS3959-1999
Lot 3913	Open Forest (to the north)	Cross-slope	40 -100m	Medium	Level 1 AS3959-1999
Lot 3915	Open Forest (to the west)	Cross-slope	40 -100m	Medium	Level 1 AS3959-1999
Lot 3916	Open Forest (to the west)	Cross-slope	40 -100m	Medium	Level 1 AS3959-1999
Lot 3917	Open Forest (to the west)	Cross-slope	40 -100m	Medium	Level 1 AS3959-1999

Refer to Appendix A for a summary of the required building requirements for a Level 1 AS3959-1999

For all remaining lots within Stage 39 (not detailed in Table 1), no construction level will apply for dwellings within these allotments.

LEGEND

-  Site Boundary
-  140m Buffer
-  APZ
-  Future APZ
-  Level 1 Construction AS3959-1999
-  Existing Residential Development



WARNING
 No part of this plan should be used for critical design dimensions. Confirmation of critical positions should be obtained from Harper Somers O'Sullivan Pty Ltd. Caution should therefore be exercised when using this data for purposes requiring high levels of accuracy

TITLE: FIGURE 1
 CONSTRUCTION LEVELS
 NORTHLAKES ESTATE
 STAGE 39

CLIENT:
 NORTHLAKES PTY LTD



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SCALE: 1: 2500 at A3 Size
DRAWN: L STEEL
APPROVED: S JONES
DATUM: Longitude / Latitude (NAD 83)
DATE: 9/11/2007
LAYOUT REF: 24755 - Northlakes\Drafting\24755.ConstLevelB-A3.071107.wor
CONTOUR INTERVAL: N/A
JOB REF: 24755

PLANNING SURVEYING ECOLOGY

5 WATER SUPPLY

The site is connected to reticulated water supply therefore water supply is adequate.

6 INGRESS / EGRESS AND PROPERTY ACCESS ROADS

Ingress and egress routes for residents and fire fighting crews to the proposed allotments are available from Northlakes Drive, Wigeon Chase, Miranda Avenue and Moreton Avenue. These are all public roads and therefore access is considered to be suitable for fire-fighting purposes and for the evacuation of residents.

7 LANDSCAPING AND MAINTENANCE

In terms of landscaping and maintenance within the site, it is recommended that the following occur:

- Shrubs or ground covers not to be in contact with the dwelling.
- Fire retardant plants or plants of low flammability be used. Characteristics of these plants include high salt resistance and moisture content/low volatile oil content with the lowest branches being raised from the ground (such plants are commercially available).
- The owners are aware of the importance of an ongoing maintenance regime for bushfire protection.
- The remainder of the site should be managed as an Inner Protection Area (IPA).

8 REFERENCES

Department of Bush Fire Services (undated). *Bush Fire Readiness Checklist*.

NSW Fire Brigades (1988). *Hazard Reduction for the Protection of Buildings in Bushland Areas*. New South Wales Fire Brigades.

NSW Rural Fire Service (2004). *Guidelines for Single Dwelling Development Applications – Single Dwellings*. June 2004, NSW Government.

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NSW Rural Fire Service (2004). *Development Control Note 001 – Use of Fire Retardant Timber*. NSW Government.

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APPENDIX A: BUILDING REQUIREMENTS

Appendix 4

BUILDING REQUIREMENTS FOR BUSH FIRE PROTECTION

(Incorporating key components of AS3959 Construction of Buildings in Bushfire-prone Areas)

	LEVEL 1 CONSTRUCTION	LEVEL 2 CONSTRUCTION	LEVEL 3 CONSTRUCTION	FLAME ZONE <i>Note: Reference to additional site requirement will be necessary for this category. For example; water supply, access, shielded egress</i>
Flooring systems	<ul style="list-style-type: none"> Concrete slab on ground Enclosed suspended floors - no requirements Open subfloors; <p>Bearer greater than 600mm above ground – no requirements</p> <p>Bearer less than 600mm above ground require either the floor frame to be protected by non-combustible sheets or timber floor frame to be fire retardant</p>	As for level 1	As for level 2 except that for open subfloors timber floor framing is required to be fire retardant	All floors are to be fully enclosed with a non-combustible material
Supporting posts, columns, stumps, piers and poles	<ul style="list-style-type: none"> Non-combustible Fire retardant treated timber treated up to 400mm above finished ground level Timber mounted on galvanised metal shoes that provide a clearance of 75mm above finished ground or paving 	As for level 1	As for level 2 except that timber in unenclosed floor spaces shall be fire retardant-treated to full height	<p>All floors are to be fully enclosed with non-combustible material</p> <p>All other posts on attached or adjacent structures shall be non-combustible</p>
External Walls	<p>Must have an external leaf with either one or a combination of;</p> <ul style="list-style-type: none"> Masonry, concrete, pise, rammed earth or stabilised earth A frame wall that incorporates either a sarking or insulation material immediately behind the cladding A wall of timber logs gauge planed and the space between the logs sealed to prevent burning debris and to allow for building movement <p>Combustible leaf or cladding must be greater than 400mm above finished ground</p>	As for level 1 except that; <ul style="list-style-type: none"> PVC cladding is not permitted External timber wall cladding shall be of fire retardant-treated timber 	As for level 2	<ul style="list-style-type: none"> External walls shall not include any combustible material Additional radiant heat protection such as non-combustible fencing or shielding and or a drenching water system

<p>Windows <i>Note: A vertical dormer window or clerestory is regarded as a normal window, not a rooflight</i></p>	<p>Openable windows shall be screened with mesh max. aperture 1.8mm that remains in place while the window is open;</p> <ul style="list-style-type: none"> • Aluminium • Bronze • Corrosion resistant steel 	<p>As for level 1 except that aluminium shall not be used</p> <p>In addition, timber shall be fire retardant-treated timber except where protected by non-combustible shutters. Leadlight windows are to be protected by shutters</p>	<p>As for level 2 except that where windows are not protected by non-combustible shutters they shall be glazed with toughened glass</p>	<p>As for level 3 except that non-combustible shutters or windows constructed to withstand 40kw/m² radiant heat exposure for 3 minutes shall be provided on the elevation exposed directly to the hazardous vegetation</p>
<p>External Doors</p>	<p>External doors shall be fitted with;</p> <ul style="list-style-type: none"> • Draught excluders; and • Tight fitting door screens fitted with; <ul style="list-style-type: none"> - Aluminium - Bronze - Corrosion resistant steel 	<p>As for level 1 except that aluminium shall not be used</p> <p>If leadlight glazing panels are incorporated in the doors, they shall be protected by shutters constructed of a non-combustible material or of toughened glass</p>	<p>As for level 2 except that;</p> <ul style="list-style-type: none"> • Timber doors shall be fire retardant treated timber or covered in a non-combustible covering <p>OR protected with non-combustible shutters</p> <p>OR shall be solid core having a thickness of not less than 35mm</p> <ul style="list-style-type: none"> • Sliding glass doors may be treated as for windows • If glazing panels are incorporated they shall be of toughened glass 	<p>As for level 3 except that non-combustible shutters or glazing constructed to withstand 40kw/m² radiant heat exposure for 3 minutes shall be provided on the elevation exposed directly to the hazardous vegetation</p>

LEVEL 1 CONSTRUCTION		LEVEL 2 CONSTRUCTION	LEVEL 3 CONSTRUCTION	FLAME ZONE Note: Reference to additional site requirement will be necessary for this category. For example; water supply, access, shielded egress
Vents and Weepholes	Vents and weepholes shall be protected with spark guards made from 1.8mm mesh that is either; <ul style="list-style-type: none"> • Aluminium • Bronze • Corrosion resistant steel 	As for level 1 except that aluminium shall not be used	As for level 1 except that aluminium shall not be used	As for level 3
Roofs	Sheeted roofs –Only metal or fibre-cement sheet shall be used. Gaps to be sealed or protected by; <ul style="list-style-type: none"> • Fully sarking the roof with sarking with a flammability index of not more than 5 or • Providing corrosion resistant steel or bronze mesh, profiled metal sheet, neoprene seal, compressed mineral wool or similar material • Rib caps and ridge caps shall be sealed using methods outlined in the AS3959 • Tiled roofs shall be provided with sarking • Shingles and shakes shall not be used • All roofing shall be non-combustible 	As for level 1 construction except that all roof sheeting shall be non-combustible and sarked	As for level 2 construction except that fibre-reinforced cement or aluminium shall not be used.	As for level 3
Roof lights Note: A vertical dormer window or clerestory window is regarded as a normal window, not a rooflight	All penetrations of the roof space for the installation of roof lights and associated shafts shall be sealed with a non-combustible sleeve or lining Thermoplastic sheet in a metal frame may be used for a roof light, but in a diffuser installed at ceiling level shall be wired or toughened glass in a metal frame. Vented rooflights shall be provided with corrosion resistant steel or bronze mesh.	As for level 1 except that rooflight glazing shall be of wired glass Thermoplastic or toughened glazing shall not be used	As for level 2	As for level 2 except that glazing shall be required to withstand 40kw/m ² radiant heat exposure for 3 minutes

Ventilators	All components must be non-combustible and shall be protected against the entry of sparks and embers with corrosion resistant steel or bronze mesh.	As for level 1	As for level 2	As for level 3 except that roof ventilators shall not be permitted on the plane of the roof nearest to the unmanaged vegetation
Roof mounted evaporative cooling units	Roof mounted evaporative cooling units shall only be used if openings to the cooling unit are encased in corrosion resistant steel or bronze mesh	As for level 1 except that the case of the evaporative cooler shall be of non-combustible material	As for level 2	As for level 3 except that roof mounted evaporative cooling units shall not be permitted on the plane of the roof nearest to hazardous vegetation
Eaves	Eaves shall be enclosed and the fascias or the gaps between the rafters shall be sealed	As for level 1 except that all timber eaves lining and joining strips shall be of fire-retardant treated timber	As for level 2 except that aluminium shall not be used	As for level 3 except that all materials shall be non-combustible
Fascias	No requirements	Fascias are to be either non-combustible or fire-retardant treated timber	As for level 2 except that no fibre-reinforced cement or aluminium sheet shall be used.	As for level 3 except that all materials shall be non-combustible
Gutters and Downpipes	Any materials or devices used to stop leaves collecting in the gutters shall have a flammability index of not greater than 5 when tested in accordance with AS1530.2	As for level 1	As for level 2	As for level 3
Service Pipes (Water and Gas)	All exposed piping, for water and gas supplies, shall be of metal. Pipes of other materials shall be buried to a depth of at least 300mm below finished ground level	As for level 1	As for level 2	As for level 3

LEVEL 1 CONSTRUCTION		LEVEL 2 CONSTRUCTION	LEVEL 3 CONSTRUCTION	FLAME ZONE <i>Note: Reference to additional site requirement will be necessary for this category. For example: water supply, access, shielded egress</i>
Verandas and Decks	<p>No timbers shall be allowed to directly connect with the remainder of the dwelling</p> <p>Slab SUSPENDED SLAB; supported by posts, columns, stumps, piers and poles that are protected by-</p> <ul style="list-style-type: none"> • Non-combustible material • Fire retardant treated timber treated up to 400mm above finished ground level • Timber mounted on galvanised metal shoes that provide a clearance of 75mm above finished ground or paving • OR Enclosed against the entry of embers. The enclosure shall be non-combustible within 400mm of the finished ground level <p>SHEET OR TONGUE AND GROOVE FLOOR; is acceptable where bearer is greater than 600mm above ground (see protection for supports above)</p> <p>A sheet or tongue and groove floor that is less than 600mm above finished ground at any point shall be enclosed. This enclosure shall be non-combustible where it is within 400mm of the finished ground level.</p> <p>SPACED DECKING; shall have a clearance of at least 5mm between adjacent timbers. The external perimeter of the decking shall not be enclosed nor shall access to the space beneath the decking be impeded. (see protection for supports above)</p>	<p>As for level 1, except that if spaced decking is used, it shall be non-combustible or fire-retardant-treated timber</p> <p>As for level 1, except that if spaced decking is used it shall be non-combustible or fire-retardant-treated timber:</p>	<p>As for level 2 except that all materials shall be non-combustible or where timber is used, it shall be fire-retardant-treated including any balustrades</p> <p>As for level 2 except that all materials shall be non-combustible or where timber is used, it shall be fire-retardant-treated including any balustrades</p>	<p>As for level 3 except all materials shall be non-combustible including treads risers, balustrade and any other attachments on the side of the dwelling exposed to the unmanaged vegetation</p> <p>As for level 3 except all materials shall be non-combustible including treads risers, balustrade and any other attachments on the side of the dwelling exposed to the unmanaged vegetation</p>

source: Infill Development in Bush Fire Prone Areas, Blue Mountains City Council