BAL-29 Construction checklist

Date:

Site address:

Job description:

Bushfire risk assessment reference:

Council Consent or DA Reference:

The following specification list has been provided and certified as in accordance with the DA consent, the requirements of Planning for Bushfire Protection 2006 and AS3959, 2009. The specification list, in accordance with the recommendations of the bushfire risk assessment, has been varied to comply with the requirements of Section A3.7 of the NSW Rural Fire Service Addendum to Appendix 3 of Planning for Bushfire Protection 2006.

Bushfire-resisting timber species (Appendix H of AS3959, 2009)

Where the Australian Standard requires bushfire resisting timber the following list of species is appropriate:
Ash, silvertop- Eucalyptus sieberi
Black-butt - Eucalyptus pilularis
Gum, red, river – Eucalyptus camaldulensis
Gum, spotted - Corymbia maculate, Corymbia henryi, Corymbia citriodora
Ironbark, red - Eucalyptus sideroxylon
Kwila (Merbau) - Intsia bijuga
Turpentine - Syncarpia glomulifera

Deemed to Satisfy Provisions of AS3959, 2009	Conforms to DTS	Alternate solution
SARKING Any sarking used for BAL-12.5, BAL-19, BAL-29 or BAL-40 shall be: a) Non-combustible; or b) Breather-type sarking complying with AS/NZS 4200.1 and with a flammability index of not more than 5 (see AS1530.2) and sarked on the outside of the frame; or c) An insulation material conforming to the appropriate Australian Standard for that material.		
7.1 GENERAL A building assessed in Section 2 as being BAL-29 shall comply with Section 3 and Clauses 7.2 to 7.8. NOTE: There are a number of Standards that specify requirements for construction; however, where this Standard does not provide construction requirements for a particular element, the other Standards apply. Any element of construction or system that satisfies the test criteria of AS 1530.8.1 may be used in lieu of the applicable requirements contained in Clauses 7.2 to 7.8 (see Clause 3.8). NOTE: BAL-29 is primarily concerned with protection from ember attack and radiant heat greater than 19kW/m2 up to and including 29 kW/m2.		
7.2 SUBFLOOR SUPPORTS This Standard does not provide construction requirements for subfloor supports where the subfloor space is enclosed with— a) a wall that complies with Clause 7.4, except that sarking is not required where specified in Clause 7.4.1; or b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel, bronze or aluminium; or c) a combination of Items (a) and (b) above.		

Where the subfloor space is unenclosed, the support posts, columns, stumps, piers and poles shall be— (i) of non-combustible material; or (ii) of bushfire-resisting timber; or (iii) a combination of Items (i) and (ii) above. NOTE: This requirement applies to the principal building only and not to verandas, decks, steps, ramps and landings (see Clause 7.7).		
7.3 FLOORS **7.3.1 Concrete slabs on ground** This Standard does not provide construction requirements for concrete slabs on ground.		
7.3.2 Elevated floors **7.3.2.1 Enclosed subfloor space** This Standard does not provide construction requirements for elevated floors, including bearers, joists and flooring, where the subfloor space is enclosed with— **a)** a wall that complies with Clause 7.4, except that sarking is not required where specified in Clause 7.4.1 (c); or b) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion resistant steel, bronze or aluminium; or c) a combination of Items (a) and (b) above. **7.3.2.2 Unenclosed subfloor space** Where the subfloor space is unenclosed, the bearers, joists and flooring, less than 400mm above finished ground level, shall be one of the following: a. Materials that comply with the following: (i) Bearers and joists shall be— A. non-combustible; or B. bushfire-resisting timber; or C. a combination of Items (A) and (B) above (ii) Flooring shall be— A. non-combustible; or B. bushfire-resisting timber; or C. timber (other than bushfire-resisting timber), particleboard or plywood flooring where the underside is lined with sarking-type material or mineral wool insulation; or D. a combination of any of Items (A), (B) or (C) above or b. A system complying with AS 1530.8.1 This Standard does not provide construction requirements for elements of elevated floors, including bearers, joists and flooring, if the underside of the element is 400 mm or more above finished ground level."		
7.4 EXTERNAL WALLS **7.4.1 Walls** The exposed components of an external walls shall be: (a) Non-combustible material. NOTE: Examples include, but are not limited to, the following (with a minimum of 90 mm in thickness): • Full masonry or masonry veneer walls with an outer leaf of clay, concrete, calcium silicate or natural stone. • Precast or in situ walls of concrete or aerated concrete. • Earth wall including mud brick.		

(b) Timber logs of a species with a density of 680 kg/m3 or greater at a 12 percent moisture content; of a minimum nominal overall thickness of 90 mm and a minimum thickness of 70 mm (see Clause 3.11); and gauge planed. (c) Cladding that is fixed externally to a timber-framed or a steel-framed wall and is— (i) fibre-cement a minimum of 6 mm in thickness; or (ii) steel sheet; or (iii) bushfire-resisting timber; or (iv) a combination of any of Items (i), (ii), (iii) above. Or (d) a combination of any of Items (a), (b) or (c) above.		
7.4.2 Joints All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-jointed to prevent gaps greater than 3 mm.		
7.4.3 Vents and weepholes Vents and weepholes in external walls shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium, except where they are less than 3 mm (see Clause 3.6).		
7.5 EXTERNAL GLAZED ELEMENTS AND ASSEMBLIES AND EXTERNAL DOORS **7.5.1 Bushfire shutters** Where fitted, bushfire shutters shall comply with Clause 3.7 and be made from— a) non-combustible material; or b) bushfire-resisting timber; or c) a combination of Items (a) or (b) above.		
7.5.1A Screens for windows and doors Where fitted, screens for windows and doors shall have a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. Gaps between the perimeter of the screen assembly and the building element to which it is fitted shall not exceed 3 mm. The frame supporting the mesh or perforated sheet shall be made from— a) metal; or b) bushfire-resisting timber		
7.5.2 Windows Window assemblies shall comply with one of the following: a) They shall be completely protected by a bushfire shutter that complies with Clause 7.5.1. Or		

b) They shall comply with the following: (i) Window frames and window joinery, shall be made from one of the following: (A) Bushfire-resisting timber. or (B) Metal. or (C) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the frame and the sash shall satisfy the design load, performance and structural strength of the member. (ii) Externally fitted hardware that supports the sash in its functions of opening and closing, shall be metal. (iii) Glazing shall be toughened glass minimum 5mm. (iv) Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings, having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the window frame (see Figure D3, Appendix D of AS3959-2009), that portion shall be screened externally with a screen that complies with Clause 7.5.1A. (v) The openable portions of windows shall be screened internally or externally with screens that comply with Clause 7.5.1A.		
7.5.3 Doors—Side-hung external doors (including French doors, panel fold and bi-fold doors) Side-hung external doors, including French doors, panel fold and bi-fold doors, shall comply with one of the following: a) Doors and door frames shall be protected by a bushfire shutter that complies with Clause 7.5.1. or b) Doors and door frames shall be completely protected externally by screens that comply with Clause 7.5.1A. or c) They shall comply with the following: (i) Doors shall be— (A) non-combustible; or (B) a solid timber door, having a minimum thickness of 35 mm for the first 400 mm above the threshold; or (C) a door, including a hollow core door, protected externally by a screen that complies with Clause 7.5.1A; or (D) a fully framed glazed door, where the framing is made from non-combustible materials or from bushfire-resisting timber. (i) Externally fitted hardware that supports the panel in it functions of opening and closing shall be metal.		

(ii) Where doors incorporate glazing, the glazing shall be toughened glass minimum 6mm. (iii) Where glazing is less than 400 mm from the ground or less than 400 mm above decks, carport roofs, awnings and similar elements or fittings having an angle less than 18 degrees to the horizontal and extending more than 110 mm in width from the door (see Figure D3, Appendix D, AS3959-2009), that portion shall be screened externally with a screen that complies with Clause 7.5.1A. (iv) Door frames shall be made from; (a) Bushfire-resisting timber; or (b) Metal; or (c) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the door assembly shall satisfy the design load, performance and structural strength of the member. (v) Doors shall be tight-fitting to the door frame and to an abutting door, if applicable. (vi) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.		
7.5.4 Doors—Sliding doors Sliding doors shall comply with one of the following: a) They shall be completely protected by a bushfire shutter that complies with Clause 7.5.1., or b) They shall be completely protected externally by screens that comply with Clause 7.5.1A., or c) They shall comply with the following: (i) Both the door frame supporting the sliding door and the frame surrounding any glazing shall be made from the following; (A) Bushfire-resisting timber; or (B) Metal: or (C) Metal-reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel, or corrosion-resistant steel and the door assembly shall satisfy the design load, performance and structural strength of the member. (ii) Externally fitted hardware that supports the panel in it functions of opening and closing shall be metal. (iii) Where doors incorporate glazing, the glazing shall be toughened glass minimum 6mm. (iv) Sliding doors shall be tight-fitting in the frames.		
7.5.5 Doors—Vehicle access doors (garage doors) The following apply to vehicle access doors: (a) The lower portion of a vehicle access door that is within 400 mm of the ground when the door is closed (see Figure D4, Appendix D) shall be made from— (i) non-combustible material; or (ii) bushfire-resisting timber;		

or (iii) fibre-cement sheet, a minimum of 6 mm in thickness; Or (iv) a combination of any of Items (i), (ii) or (iii) above. (b) Panel lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3 mm. (c) Roller doors shall have guide tracks with a maximum gap no greater than 3 mm and shall be fitted with a nylon brush that is in contact with the door (see Figure D4, Appendix D AS3059-2009). (d) Vehicle access doors shall not include ventilation slots		
7.6 ROOFS (INCLUDING VERANDA AND ATTACHED CARPORT ROOFS, PENETRATIONS, EAVES, FASCIAS, GABLES, GUTTERS AND DOWNPIPES) **7.6.1 General** The following apply to all types of roofs and roofing systems: a) Roof tiles, roof sheets and roof-covering accessories shall be non-combustible. b) The roof/wall junction shall be sealed, to prevent openings greater than 3 mm, either by the use of fascia and eaves linings or by sealing between the top of the wall and the underside of the roof and between the rafters at the line of the wall. c) Roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. d) A pipe or conduit that penetrates the roof covering shall be non-combustible.		
7.6.2 Tiled roofs Tiled roofs shall be fully sarked. The sarking shall— a) have a flammability index of not more than 5, when tested to AS 1530.2; b) be located on top of the roof framing, except that roof battens may be fixed above the sarking; c) cover the entire roof area including the ridge; and d) extend into gutters and valleys.		
7.6.3 Sheet roofs Sheet roofs shall— a) be fully sarked in accordance with Clause 7.6.2, except that foil-backed insulation blankets may be installed over the battens; or b) have any gaps greater than 3 mm under corrugations or ribs of sheet roofing and between roof components sealed at the fascia or wall line and at valleys, hips and ridges by— (i) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or (ii) mineral wool; or (iii) other non-combustible material; or (iv) a combination of any of Items (i), (ii) or (iii) above.		

7.6.4 Veranda, carport and awning roofs The following apply to veranda, carport and awning roofs: a) A veranda, carport or awning roof forming part of the main roof space [see Figure D1(a), Appendix D] shall meet all the requirements for the main roof, as specified in Clauses 7.6.1, 7.6.2, 7.6.3, 7.6.5 and 7.6.6. b) A veranda, carport or awning roof separated from the main roof space by an external wall [see Figures D1(b) and D1(c), Appendix D, AS3959-2009] complying with Clause 7.4 shall have a non-combustible roof covering and the support structure shall be: (i) Of non-combustible material: or (ii) Bushfire-resisting timber; or (iii) Timber rafters lines on the underside with fibre-cement sheeting a minimum of 6mm in thickness, or with material complying with AS1530.8.1; or (iv) A combination of any items (i), (ii) or (iii) above.		
7.6.5 Roof penetrations The following apply to roof penetrations: (a) Roof penetrations, including roof lights, roof ventilators, roof-mounted evaporative cooling units, aerials, vent pipes and supports for solar collectors shall be adequately sealed at the roof to prevent gaps greater than 3 mm. The material used to seal the penetration shall be non-combustible. (b) Openings in vented roof lights, roof ventilators or vent pipes shall be fitted with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. The requirements of item (b) does not apply to the exhaust flues of heating or cooking devices with closed combustion chambers. In the case of gas appliance flues, ember guards shall not be fitted. NOTE: Gasfitters are required to provide a metal flue pipe above the roof and terminate with a certified gas flue cowl complying with AS 4566. Advice may be obtained from State gas technical regulators. (c) All overhead glazing shall be Grade A safety glass complying with AS 1288. (d) Glazed elements in roof lights and skylights may be of polymer, provided a Grade A safety glass diffuser, complying with AS 1288, is installed under the glazing. Where glazing is an insulating glazing unit (IGU), Grade A toughened safety glass of minimum 4 mm in thickness shall be used in the outer pane of the IGU. (e) Flashing elements of tubular skylights shall be non-combustible. However, they may be of alternative, provided the integrity of the roof covering is maintained by an under-flashing made of non-combustible material.		

(f) Where roof lights are installed in roofs having a pitch of less than 18 degrees to the horizontal, the glazing shall be protected with ember guards made from a mesh or perforated sheet with a maximum aperture of 2mm, made of corrosion resistant steel, bronze or aluminium. (g) Evaporative cooling units shall be fitted with non-combustible butterfly closers as close as practicable to the roof level, or the unit shall be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. (h) External single plane glazed elements of roof lights and skylights, where the pitch of the glazed element is 18 degrees or less to the horizontal, shall be protected with ember guards made from a mesh or perforated sheet with a maximum aperture of 2mm, made of corrosion resistant steel, bronze or aluminium.		
7.6.6 Eaves linings, fascias and gables The following apply to eaves linings, fascias and gables: (a) Joints in eave linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds (b) Gables shall comply with Clause 7.4. (c) Fascias and bargeboards shall; (i) Where timber is used, be made from bushfire resisting timber; or (ii) Where made from metal, be fixed at 450mm centres; or (iii) Be a combination of Items (i) and (ii) above. (d) Eave linings shall be: (i) Fibre cement sheet, a minimum 4.5mm in thickness; or (ii) Bushfire resisting timber; or (iii) A combination of items (i) and (ii) above. (e) Eaves penetrations shall be protected the same as for roof penetrations, as specified in Clause 7.6.5. (f) Eaves ventilation openings greater than 3 mm shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.		
7.6.7 Gutters and downpipes This Standard does not provide construction specific material requirements for downpipes. If installed, gutter and valley leaf guards shall be non-combustible. With the exception of box gutters, gutters shall be metal or PVC-U Box gutters shall be non-combustible and flashed at the junction with the roof with non-combustible material.		

7.7 VERANDAS, DECKS, STEPS, RAMPS AND LANDINGS **7.7.1 General** Decking may be spaced. There is no requirement to enclose the subfloor spaces of verandas, decks, steps, ramps or landings. **7.7.2 Enclosed subfloor spaces of verandas, decks, steps, ramps and landings** 7.7.2.1 Materials to enclose a subfloor space The subfloor spaces of verandas, decks, steps, ramps and landings are considered to be 'enclosed' when — a) the material used to enclose the subfloor space complies with Clause 7.4, except that sarking is not required where specified in Clause 7.4.1 (c) and b) all openings greater than 3 mm are screened with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. **7.7.2.2 Supports** This Standard does not provide construction requirements for support posts, columns, stumps, stringers, piers and poles. **7.7.2.3 Framing** This Standard does not provide construction requirements for the framing of verandas, decks, ramps or landings (i.e., bearers and joists). **7.7.2.4 Decking, stair treads and the trafficable surfaces of ramps and landings** Decking, stair treads and the trafficable surfaces of ramps and landings shall be— a) of non-combustible material; or b) of bushfire-resisting timber; or c) a combination of Items (a) and (b) above. **7.7.3 Unenclosed subfloor spaces of verandas, decks, steps, ramps and landings** **7.7.3.1 Supports** Support posts, columns, stumps, stringers, piers and poles shall be— a) of non-combustible material; or b) of bushfire-resisting timber (see Appendix F); or c) a combination of Items (a) and (b) above. **7.7.3.2 Framing** Framing of verandas, decks, ramps or landings (i.e., bearers and joists) shall be— a) of non-combustible material; or b) of bushfire-resisting timber (see Appendix F); or c) a combination of Items (a) and (b) above. **7.7.3.3 Decking, stair treads and the trafficable surfaces of ramps and landings** Decking, stair treads and the trafficable surfaces of ramps and landings shall be— a) of non-combustible material; or b) of bushfire-resisting timber (see Appendix F); or c) a combination of Items (a) and (b) above.		

7.7.4 Balustrades, handrails or other barriers Those parts of the handrails and balustrades less than 125 mm from any glazing or any combustible wall shall be— a) of non-combustible material; or b) bushfire-resisting timber (see Appendix F); or c) a combination of Items (i) and (ii) above. Those parts of the handrails and balustrades that are 125 mm or more *from the building have no requirements."*		
7.8 WATER AND GAS SUPPLY PIPES Above-ground, exposed water and gas supply pipes shall be metal.		

I, …… of …… sincerely declare that all new construction is in accordance with relevant specifications of AS3959-2009 and Addendum to Appendix 3 of *Planning for Bushfire Protection 2006* as stated above.

Signed: