ATTACHMENT 5.5

AS 3959 – 2009 Summary (BAL 12.5)

Summary of AS 3959 – 2009
Construction of Buildings in Bushfire Prone Areas
BAL – 12.5

This is a summary of the Australian Standard 3959 – 2009 Construction of Buildings (as defined in the Building Code of Australia) in Bushfire Prone Areas, which provides some detail for developments proposed in those zones at risk from bushfire. This summary is intended as a guide only, and should not be solely relied upon; a full version is available from Standards Australia.

Attached Structures
Where any part of a garage, carport, veranda or similar roofed structure is attached to, or shares a common roof space with a building required to comply with this Standard, the entire garage, carport, veranda or similar roofed structure shall comply with the construction requirements of this Standard, as applicable to the subject building.

Alternatively, the structure shall be separated from the subject building by a wall that extends to the underside of a non-combustible roof covering and that complies with one of the alternative requirements as outlined in Section 3.2.1 of the Standard.

Garages and Carports below the Subject Building
Where a garage or carport is below a building required to comply with this Standard, it shall comply with the construction requirements of this Standard, as applicable to the subject building.

Alternatively, any construction separating the garage or carport (including walls and flooring systems) from the remainder of the building shall comply with one of the alternative requirements as outlined in Section 3.2.2 of the Standard.

Adjacent Structures
Where any garage, carport or similar roofed structure is not attached to a building required to comply with the Standard, the entire garage, carport or similar roofed structure on the subject allotment shall comply with the construction requirements of the Standard.

Alternatively, the adjacent structure shall be separated from the subject building by one of the following:

a) A distance of not less than 6 metres from the building required to comply with the Standard, or
b) A wall that extends to the underside of a non-combustible roof covering and has an FRL of not less than 60/60/60 for loadbearing walls and -/60/60 for non-loadbearing walls when tested from the attached structure side. Any openings in the wall shall be protected in accordance with the following:
    i) Doorways – by FRL -/60/30 self closing fire doors
    ii) Windows – by FRL -/60/- fire windows permanently fixed in the closed position

iii) Other openings – by construction with an FRL not less than -/60/-
Note: Control and construction joints, subfloor vents, weepholes and penetrations for pipes and conduits need not comply with the above [Item (iii)].

c) A wall that extends to the underside of a non-combustible roof covering and is of masonry, earth wall or masonry-veneer construction with the masonry leaf not less than 90mm in thickness. Any openings in the wall shall be protected in accordance with the following:
   i) Doorways – by FRL -/60/30 self closing fire doors
   iv) Windows – by FRL -/60/- fire windows permanently fixed in the closed position
   v) Other openings – by construction with an FRL not less than -/60/-
   Note: Control and construction joints, subfloor vents, weepholes and penetrations for pipes and conduits need not comply with the above [Item (iii)].

Summaries of construction requirements specific to Bushfire Attack Level – 12.5 have been included below according to the various aspects of the building, as they apply to the subject property. If another standard of construction is to be used, AS 3959 – 2009 should be consulted for the change in requirements.

BAL – 12.5

Any element of construction or system that satisfies the test criteria of AS 1530.8.1 may be used is lieu of the applicable requirements contained in Section 5.

BAL – 12.5 is primarily concerned with protection from ember attack and radiant heat up to and including 12.5kW/m² where the site is less than 100 metres from the source of bushfire attack.

Flooring
The standard does not provide construction standards for concrete slabs on the ground or elevated floors, including bearers, joists and flooring.

External Walls
Where part of an external wall surface that is less than 400mm from the ground or less than 400mm above decks, carport roofs, awnings and similar elements, shall be of:

a) non-combustible material, or
b) fibre-cement external cladding, a minimum of 6mm in thickness, or
c) bushfire resisting timber, or
d) a timber species as specified in the Standard, or
e) a combination of any of the above.

There are no requirements for external wall surfaces 400mm or more from the ground or 400mm or more above decks, carport roofs, awnings and similar elements.

Joints
All joints in the external surface material of walls shall be covered, sealed, overlapped, backed or butt-joined to prevent gaps greater than 3mm.

Alternatively, sarking-type material may be applied over the outer face of the frame prior to fixing any external cladding.

Vents and Weepholes
Vents and weepholes in external walls that are greater than 3mm and not located in the external wall of a subfloor space shall be screened with a mesh with a maximum aperture of 2mm, and made of corrosion-resistant steel, bronze or aluminium.

External Glazed Elements

Windows
Window assemblies shall comply with one of the following:

a) They shall be completely protected by a bushfire shutter that complies with Clause 5.5.1 of AS 3959, or

b) They shall be completely protected externally by screens with a mesh made of corrosion-resistant steel, bronze or aluminium, with a maximum aperture of 2mm, or

c) They shall comply with the following:
   i) for window assemblies less than 400mm from the ground or less than 400mm above decks, carport roofs, awnings and similar elements, window frames and joinery shall be made from one of the following:
      a) bushfire resisting timber, or
      b) a timber species listed in Paragraph E2, Appendix E of the Standard, or
      c) metal, or
      d) metal reinforced PVC-U
   ii) Externally fitted hardware shall be metal
   iii) Where glazing is less than 400mm from the ground or less than 400mm above decks, carport roofs, awnings and similar elements, glazing shall be Grade A safety glass minimum 4mm, or glass blocks with no restriction on glazing methods.
   iv) Where glazing is other than that specified in Item (iii), annealed glass may be used.
   v) The openable portions of windows shall be screened with mesh made of corrosion-resistant steel, bronze or aluminium, with a maximum aperture of 2mm.

Side Hung External Doors
Side hung external doors shall comply with one of the following:

a) They shall be protected by a bushfire shutter that complies with Clause 5.5.1 of AS 3959, or

b) They shall be completely protected externally by screens with a mesh made of corrosion-resistant steel, bronze or aluminium, with a maximum aperture of 2mm, 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 35mm for the first 400mm above the threshold, or
      c) a door, including a hollow core door, with a non-combustible kickplate on the outside for the first 400mm above the threshold, or
      d) a fully framed glazed door, where the framing is made from materials required for bushfire shutters (Clause 5.5.1), or from a timber species specified in Appendix E, paragraph E2 of the Standard.
   ii) Where doors incorporate glazing, the glazing shall comply with the glazing requirements for windows.
   iii) Doors shall be tight fitting to the door frame and to an abutting door, if applicable.
   iv) Where any part of the door assembly less than 400mm from the ground or less than 400mm above decks, carport roofs, awnings and similar elements, that part of the door assembly shall be made from one of the following:
      a) bushfire resisting timber, or
      b) a timber species listed in Paragraph E2, Appendix E of the Standard, or
      c) metal, or
      d) metal reinforced PVC-U. The reinforcing members shall be made from aluminium, stainless steel or corrosion resistant steel.
   v) Weather strips, draught excluders or draught seals shall be installed at the base of side hung external doors.

Sliding Doors
Sliding doors shall comply with one of the following:

a) They shall be protected by a bushfire shutter that complies with Clause 5.5.1 of AS 3959, or
b) They shall be completely protected externally by screens with a mesh made of corrosion-resistant steel, bronze or aluminium, with a maximum aperture of 2mm, or
c) They shall comply with the following:
   i) Any glazing incorporated in sliding doors shall be Grade A safety glass complying with AS 1288.
   ii) There is no requirement to screen the openable part of the sliding door. However, if screened, screens shall be a mesh or perforated sheet made of corrosion resistant steel, bronze or aluminium.
   iii) Sliding doors shall be tight fitting in the frames.

Roofs (Including Veranda and attached Carport Roofs)

General
Roof tiles, roof sheets and roof covering accessories shall be non-combustible
The wall/roof junction shall be sealed, to prevent openings greater than 3mm, 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.
Roof ventilation openings, such and gable roof vents, shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2mm, made of corrosion resistant steel, bronze, or aluminium.

Sheet Roofs
Sheet roofs shall:

a) be fully sarked. The sarking shall -
   i) have a flammability index or not more than 5;
   ii) be located directly below the roof battens (foil backed insulation blankets may be installed over the battens);
   iii) cover the entire roof area including the ridge, and
   iv) be installed so that there are no gaps that would allow the entry of embers where the sarking meets the fascias, gutters, valleys and the like, or
b) have any gaps greater than 3mm, 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 2mm, made of corrosion resistant steel, bronze, or aluminium, or
   ii) mineral wool, or
   iii) other non-combustible material, or
   iv) a combination of the above

Veranda, carport and awning roofs that form part of the main roof space shall meet all the requirements for the main roof.

Roof penetrations including roof lights, roof ventilators, roof mounted evaporative cooling units, aerials, vent pipes and supports for solar connectors shall be adequately sealed at the roof to prevent gaps greater than 3mm. The material used to seal the penetration shall be non-combustible.

Vent pipes made from pvc are permitted.

Eaves linings, Fascias and Gables
Gables shall comply with the requirements for external walls

Eaves penetrations shall be protected the same as for roof penetrations as outlined above.

Eaves ventilation openings greater than 3mm shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2mm, made of corrosion resistant steel, bronze, or aluminium.

Joints in eaves linings, fascias and gables may be sealed with plastic joining strips of timber storm moulds.

The Standard does not provide construction requirements for fascias, bargeboards and eaves linings for BAL 12.5.

Gutters and Downpipes
The Standard does not provide material requirements for gutters (with the exception of box gutters) and downpipes for BAL 12.5. If installed, gutter and valley leaf guards shall be non combustible.

Box gutters shall be non combustible and flashed at the junction with the roof with non-combustible material.

Vehicle Access Doors (Garage Doors)
The lower portion of a vehicle access door that is within 400mm of the ground when the door is closed shall be made from:

a) non-combustible material, or
b) bushfire resisting timber, or
c) fibre-cement sheet, a minimum 6mm in thickness, or
a timber species listed in Paragraph E2, Appendix E of the Standard, or
d) a combination of the above

Panel lift, tilt doors or side hung doors shall be fitted with suitable weather strips, draught excluders, draught seals of guide tracks, as appropriate to the door type, with a maximum gap no greater than 3mm.

Roller doors shall have guide tracks with a maximum gap no greater than 3mm and shall be fitted with a nylon brush that is in contact with the door.

Vehicle access doors shall not include ventilation slots.