

FCRM BUSHFIRE RISK ASSESSMENT GUIDELINES

To be read in conjunction with the FCRM Bushfire Risk Assessment Policy

Section 1 Building Element Requirements

Elements assessed during Bushfire Risk Assessments will include but will not be limited to:

1. Sub-floor Space

There is a need to completely enclose sub-floor spaces where the clearance from the finished ground level to the underside of the lowest structural member is less than 600mm.

The material used to enclose this area is to be of a non-combustible nature and where penetration or openings occur (sub floor vents); they are to be protected by bronze wire mesh with a maximum aperture size of 2.0 mm.

2. Supporting Posts, Columns, Stumps, Piers and Poles

The requirements for supporting posts, columns, stumps, piers and poles shall be one, or a combination, of the following:

- Non-combustible.
- Fire retardant treated timber for a minimum of 400 mm above the finished ground level.
- Timber mounted on galvanized metal shoes with a clearance of not less than 75mm above the adjacent finished ground level or paving level.

The above requirements do not apply where the sub-floor space is totally enclosed.

3. External Walls

Where combustible cladding is to remain, any cladding within 400mm of the finished ground level shall be protected with a non-combustible material.

Where timber is to be used such timbers shall be either fire-retardant-treated or comply with the Building Commission Practice Note 2006-46 that specifies suitable timber species that may be used without any need for treatment (refer to Appendix 2 – Building Commission (Bushfire Safety – Suitability of Timber)).

Where cladding is to be partially replaced, such material shall be fire-retardant-treated prior to installation. If the building is to be reclad, such cladding is to comply with AS 3959 and be of a non-combustible or fire-retardant-treated material.

4. Windows

All open-able windows, including louvers shall be screened with corrosion-resistant bronze mesh with a maximum aperture size of 2.0 mm in such a way that the entire opening remains screened when the window is open.

All glazing in external walls is to be a minimum of 5 mm toughened glass including the outer skin of any double-glazed unit.

Where the windows are to be replaced and:

- Where timber is used, it shall be fire-retardant-treated timber except where protected by non-combustible shutters.
- Where leadlight windows are used, they shall be protected by shutters constructed of a non-combustible material or of toughened glass.

5. External Doors

External doors shall be fitted with:

- Weather strips or draught excluders to prevent the penetration or build-up of burning debris beneath the door; and
- Tight fitting door screens fitted with corrosion resistant, bronze mesh with a maximum aperture size of 2.0 mm.

Note: This requirement may not be functional in all applications and will be considered on a case by case basis.

Where leadlight glazing panels are incorporated in external doors or windows, they shall be protected by shutters constructed of a non-combustible material or of a toughened glass.

6. Roofs

General

The following general requirements shall apply to all types of roofing systems:

- Timber shakes or shingles shall not be used for the roof covering.
- The roof/wall junction shall be sealed with or by the use of the fascia's and eaves linings, or by sealing the gaps between the rafters with a suitable non-combustible material.
- Sarking shall have a flammability index of not more than 5 (refer to AS

1530.2).

Tiled Roofs

Tiled roofs shall be fully sarked and such sarking shall be located directly below the tiling battens and shall cover the entire roof area including the ridge.

Where roofing systems are fully sarked, effectively restricting or excluding airflow, it may be necessary to provide ventilation to prevent moisture.

Sheeted Roofs

The requirements for sheeted roofs are as follows:

- Only metal sheet shall be used.
- All gaps under the corrugations or ribs of the roofing material where it meets the fascia or wall line shall be sealed or protected by:
 - Fully sarking the roof; or
 - Providing corrosion resistant bronze mesh, with a maximum aperture size of 2.0 mm, profiled metal sheet, neoprene seal, compressed mineral wool or similar material.

Note:

6.1 It is generally recognised that where compressed mineral wool is used for sealing against bushfire attack or for other purposes, adequate ventilation should be provided to stop condensation on the mineral fibre causing corrosion in the roof sheeting or supporting structure.

6.2 Rib caps and ridge capping shall be sealed to restrict the entry of embers to the roofing space.

6.3 Where roofing systems are fully sarked, effectively restricting or excluding airflow, it may be necessary to provide ventilation to prevent moisture (condensation) from occurring in the roof space. If vents need to be provided to address moisture, they need to be sealed to protect against the entry of sparks and embers with corrosion resistant bronze mesh having a maximum aperture size of 2.0 mm.

6.4 Consideration should be given to roof penetrations such as vent pipes, flues and exhaust fans which are subject to damage by snow and ice sliding down the roof. If possible, all flues and vents should be located either at the ridge line or on the end wall of a building. Vent pipes may also be located on the side walls of a building in alpine areas where they are permitted to terminate under the eaves.

6.5 For flues and vents which must penetrate the roof other than at the ridgeline,

adequate snow splitters must be placed uphill of the flue or vent to allow snow shedding around the fitting.

7. Eaves

All eaves shall be enclosed and the fascia or the gaps between the rafters sealed.

Section 2 Suitability of Timber

Bushfire safety – suitability of timber

Practice Notes: Issued June 2006

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1. Summary

The suitability of timber products for external use in bushfire-prone areas depends on their ability to withstand fire conditions. Research and testing has determined the suitability of different high-density timbers. Some of these high-density timbers may be used as an alternative to fire-retardant treated timbers.

2. Background

Councils determine bushfire-prone areas under regulation 804 of the Building Regulations 2006 (the Regulations). All Class 1, 2 or 3 buildings to be constructed in a bushfire-prone area are subject to the building control provisions relating to bushfires. Construction requirements for medium (Level 1 construction) and high (Level 2 construction) categories of bushfire attack were referenced under AS 3959-1999 in the Building Code of Australia (BCA) in January 2000. Additional construction requirements were added for extreme bushfire attack (Level 3 construction) in Amendment No 1 to AS 3959, which was referenced in the BCA in January 2001.

3. Suitability of timber

In certain cases, e.g. for external cladding, AS 3959 does not allow the use of exposed timber on sites which fall into the medium, high or extreme categories of bushfire attack, unless the timber is suitably fire-retardant. The test criteria for determining the suitability of fire-retardant treated timber in bushfire attack was changed in an amendment to AS 3959 (BCA July 2001) from ignitability under AS 1530.3 to ignition and heat release rate under AS/NZS 3837. Currently there are no readily available fire-retardant-treated timber products that satisfy the requirements for fire-retardant-treated timber under AS 3959.

Research

The National Timber Development Council sponsored testing of a number of timber species by Victoria University (VU). The aim of the testing was to determine which timber species met the requirements for fire-retardant-treated timber under AS 3959 without any

fire-retardant treatment. Only species having a seasoned density of at least 800 kg/m³ were tested. Warrington Fire Research (Aust) Pty Ltd (WFRA) reviewed the test results and their report is available on the Internet through the Forrest and Wood Products Research and Development Corporation website at www.timber.org.au.

Deemed-to-Satisfy timbers

The following timbers were found to satisfy the requirements without any fire-retardant treatment, provided they have a thickness greater than 18 mm:

- Blackbutt
- Kwila (Merbau)
- Red Ironbark
- River Red Gum
- Silver-top Ash
- Spotted Gum
- Turpentine

Testing and Alternative Solutions

The test criterion for fire-retardant-treated timber currently involves measuring the heat release rate after ignition. The WFRA report proposes a new criterion which would take into account the design fire front duration and the time to ignition. Under the proposal, any materials that do not ignite in the first 10 minutes of the test, when exposed to an irradiance level of 25kW/m², would comply.

The Commission and the Country Fire Authority (CFA) support the proposed 10-minute test period set out in the WFRA report. The new criterion however, does not take direct flame contact into account and therefore should not be used to determine the suitability of timber for use in an extreme bushfire attack area.

The following timbers meet this criterion without any fire-retardant treatment, provided they have a thickness of greater than 18 mm. They may be considered to be acceptable as part of an Alternative Solution that meets Performance Requirements Clause GP5.1 (BCA Volume 1) or Clause P2.3.4 (BCA Volume 2):

- Balau
- Forest Red Gum
- Jarrah
- Tallowood
- Yellow Stringybark

Other untested timbers that have a density of at least 800 kg/m³ may be considered under the Performance Requirement but would require additional evidence to support their use

as set out under Clause A2.2 of Volume 1 of the BCA Clause 1.2.2 of Volume 2 of the BCA.