Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Building and Energy

Roof-mounted evaporative coolers

From 8 April 2016, new roof-mounted evaporative coolers being installed on residential buildings that are located in a designated bush fire prone area must be fitted with non-combustible covers.

It is important to be aware of these requirements before purchasing this type of cooling unit for your home.

To find out if you live in a designated bush fire prone area, go to the Department of Fire and Emergency Services website at www.dfes.wa.gov.au, navigate to "Regulation and Compliance" and view the *Map of Bush Fire Prone Areas* or simply do an internet search for *'Map of Bush Fire Prone Areas'*.

Existing evaporative coolers

It isn't mandatory to upgrade an existing roof-mounted evaporative cooler that is in a designated bush fire prone area, however it is recommended you discuss retrofitting options for non-combustible covers with the retailer or manufacturer.

Risks with evaporative coolers

The Department of Fire and Emergency Services has identified that roof-mounted evaporative coolers can catch fire if burning embers enter through unprotected gaps and ignite the cooling pads. This can result in fire burning into the ceiling and spreading to the rest of the building.

Complying with the requirements

The installation of a roof-mounted evaporative cooler in a designated bush fire prone area is captured under the State's building laws and must therefore comply with the performance requirements of the Building Code of Australia (the Building Code). This generally requires compliance with Australian Standard AS 3959-2009-Construction of buildings in bushfire-prone areas.

If you are considering installing a roof-mounted evaporative cooler in a designated bush fire prone area you need to have your property assessed for its level of bush fire risk as this will determine the appropriate level of protection that your evaporative cooler will require.

Bush fire construction requirements have been in the Building Code since the 1990s but only apply in designated bush fire prone areas.

Assessing the level of bush fire risk

The Building Code recognises the assessment method of AS 3959-2009 as an acceptable way of assigning a Bushfire Attack Level (BAL) for the site. BALs are a measure of the intensity of the potential bush fire attack for a building and provide a basis for establishing appropriate bush fire construction requirements. There are six different BALs: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ (Flame zone).

Who determines the BAL?

The Fire Protection Association (FPA) Australia can provide guidance on accredited BAL Assessors and suitably qualified consultants offering services in Western Australia. Further information is available at www.fpaa.com.au.

The following table outlines the requirements for a roof-mounted evaporative cooler in accordance with the assessed BAL of your site.

Assessed BAL	Bush fire requirements for roof-mounted evaporative coolers
BAL-LOW **Low bush fire risk**	None.
BAL-12.5 – BAL-29 **Moderate to high bush fire risk**	Must be fitted with non- combustible butterfly closers as close as practicable to the roof level; or alternatively be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2mm, made of corrosion resistant steel, bronze or aluminium. Additionally the unit must be adequately sealed to the roof with non-combustible material to prevent gaps greater than 3mm.
BAL-40 and BAL-FZ **Very high to extreme bush fire risk**	Obtain a building permit from the permit authority to install a roof-mounted evaporative cooler. This is because the Building Code does not permit the installation of a roof- mounted evaporative cooler unless it has met certain test criteria or an alternative solution has been developed. **Please note:** you should discuss these requirements with a registered building surveying contractor or the relevant permit authority.

Acceptable covers

The type of cover that is acceptable depends on the material the body of the evaporative cooling unit is constructed from, typically either moulded plastic, which would be combustible, or metal which would be non-combustible.

Plastic units

If the plastic unit doesn't have a butterfly closer it must be fully encased in non-combustible covers, not just covering the air intake areas.

A butterfly closer is a type of valve fitted inside the unit which opens when the unit is running and closes when the unit's fan is turned off and helps to prevent any fire from an ignited evaporative cooler entering the roof.

Metal units

An evaporative cooler made of metal, and not otherwise fitted with a butterfly closer, must be fitted with non-combustible ember protection screens covering the air intake areas.

Where you are unsure if the roof-mounted evaporative cooler you are thinking of purchasing will comply with the requirements for your location, you should raise your concerns with the retailer.

If you do not wish to have your site assessed for a BAL, or obtain a building permit, you need to consider an alternative method for cooling your home that does not involve the installation of a roof-mounted evaporative cooler.

Test criteria

AS 3959-2009 provides another compliance option, where any element of construction or system of an evaporative cooler that satisfies the test criteria of Australian Standard AS 1530.8.1 (BAL-12.5 to BAL-40) or AS 1530.8.2 (BAL-FZ) may be used in lieu, essentially overriding the prescriptive requirements of AS 3959 – such tests are normally instigated by the manufacturer and are carried out in National Association of Testing Authorities Australia registered laboratories.

Who is responsible for compliance?

For sites assessed as BAL-12.5 to BAL-29, where the installation is not part of a building permit, the home owner (registered proprietor) is responsible for ensuring the evaporative cooler complies with the Building Code as outlined in "Complying with the requirements" above. In high risk areas (BAL-40 and BAL-FZ) where a building permit would generally be required and in other areas if the installation is part of a building permit, the person named as "builder" on the building permit is responsible for ensuring compliance. There are substantial penalties for installing evaporative coolers in designated bush fire prone areas that do not comply.

Also, the Australian Consumer Law may allocate liability to builders, suppliers, installers, and manufacturers in some circumstances, including where the cooler or its installation is not fit for its usual purpose or a purpose made known by a consumer.

In 2011 the government wrote to manufacturers about the risks associated with roof-mounted evaporative coolers in bush fire prone areas and in 2015 further informed them that the proposed designation of bush fire prone areas will trigger a requirement for roof-mounted evaporative coolers to meet the minimum requirements of AS 3959.

Electrical appliance safety standard

Furthermore, manufacturers should ensure that the construction of an evaporative cooler that is intended to be installed in a designated bushfire prone area complies with Australian Standard AS/NZS 60335.2.98:2005 that deals with household and similar electrical appliance safety. This Standard requires fixed evaporative coolers to be tested under the conditions of AS 1530.8.1 (that deals with tests on elements of construction for buildings exposed to simulated bushfire attack—radiant heat and small flaming sources) and if ignition of an evaporative cooler has not occurred, it is deemed that the evaporative cooler is able to be used in BAL-12.5 to BAL-29 sites without a fire damper. Furthermore, if a fire damper is required as is proposed it must be tested and installed in accordance with AS/NZS 60335.2.98:2005.

What types of buildings need to comply?

The requirements apply to new installations of roof-mounted evaporative coolers on the following new or existing classes of residential buildings (as classified under the Building Code) that are located in a designated bush fire prone area. If you are unsure of your building's classification, contact the relevant permit authority (local government).

Class	General description
Class 1a	A single dwelling such as a house or one of a group of two or more attached dwellings, including a row house, town house, terrace house or villa unit.
Class 1b	Small scale boarding house, a guest house, hostel (in which not more than 12 persons would ordinarily be resident; or four or more single dwellings located on one allotment and used for short term holiday accommodation.
Class 2	A building containing two or more sole-occupancy units each being a separate dwelling (apartments, flats etc.).
Class 3	A residential building (other than a Class 1 or Class 2 building) for a number of persons, such as a large scale boarding house; guest house; hostel; a residential part of a hotel; motel; school; accommodation for the aged, children or people with disabilities.
Or an associated Class 10a building or deck that is or is proposed to be, located less than 6 metres from any of the above classes of buildings. (A Class 10a is a non-habitable building such as a private garage, carport or shed).	

Other classes of buildings, whilst not captured by the Building Code provisions for roof-mounted evaporative coolers in bush fire prone areas, are also subject to similar risk of ignition and building owners, designers and property managers may wish to consider taking mitigating actions against that risk which could include compliance with AS 3959.

Further information

Find an accredited BAL assessor	www.fpaa.com.au Navigate to "Accreditation and Licensing", "Bushfire Planning and Design".
Verify registration status of a building surveying contractor	www.commerce.wa.gov.au/building-and-energy/building-and-energy-licence-search
Building for better protection in bush fire areas – A homeowner's guide	www.commerce.wa.gov.au/publications/building-better-protection-bushfire-areas or contact Building and Energy on 1300 489 099 or email be.info@dmirs.wa.gov.au
Map of Bush Fire Prone Areas	www.dfes.wa.gov.au Navigate to "Regulation and Compliance", or simply do an internet search for "Map of Bush Fire Prone Areas".
View a copy of AS 3959-2009 – Construction of buildings in bushfire-prone areas	Your local government or local library should have a hard copy of AS 3959-2009 that you can view, or you can purchase a copy at www.saiglobal.com
View the State's building laws: Building Regulations 2012 and *Building Act 2011*	www.legislation.wa.gov.au

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