



# 0001c Design Checklist - Bushfire Protection

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# 00 Design principles

## 0.01 Main considerations

It is a requirement to undertake the [00 PLANNING AND DESIGN/ 0001R - DESIGN REFERENCE](#) and [GLOSSARY OF TERMS](#) information into all aspects of design, detailing and delivery when developing the content here within. Clear demonstration of adherence to these requirements is part of the services and will be called upon at key points in the project and during at the discretion of the Department of Education (DoE).

### General

GUIDE NOTE: Refer to [0001c DESIGN CHECKLIST - BUILDING REGULATIONS](#) for additional DoE requirements requiring co-ordination with this checklist.

NSW Building regulations requires that school buildings near potential bush fire areas (or on Bushfire Prone land) are to be designed to safeguard occupants from the effects of a bush fire.

Section 100B (6) of the Rural Fire Act 1997 states that a school is considered a Special Fire Protection Purpose and therefore requires increased level of safety from bush fires.

Development applications on bush fire prone land must be accompanied by a Bush Fire Assessment Report demonstrating compliance with the aim and objectives of Planning for Bush Fire Protection and the specific objectives and performance criteria for the land use proposed.

Local Authorities and the Rural Fire Service can provide advice on the design of buildings in bush fire prone areas.

Designated bushfire prone area means land that:

- Has been designated under legislation; or
- Has been identified under an environmental planning instrument, development control plan or in the course of processing and determining a development application.

## 0.02 Bushfire Protection Building Strategies

The Building Code of Australia and AS3959 “Construction of buildings in bushfire-prone areas” sets out the requirements for buildings which are within close proximity to a defined

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bush fire zone. The requirements are based on the assessed construction category within the standard.

In general terms the design of the buildings should allow for the following:

## Floors

Prevent embers reaching under the building:

- Use concrete slab-on-ground
- Where unable to build flat on ground, use non-flammable floors and supports
- Fully seal the perimeter of the space between the floor and ground

## Roofs

Simple form, non-combustible roofs are easiest to protect, clean and avoid creating pockets where debris and embers may collect. To stop spark penetration:

- Roofing must resist dislodgement by the winds that can accompany fires
- Sheet steel roofing is preferred, but gaps must be protected
- Tiled roofs where approved, must be fully sarked and adequately fixed
- Minimise valleys, skylights and roof penetrations where embers may lodge, for facilities in medium to high-risk zones
- Eliminate gutters or protect them with metal gutter guards

## Walls

Exterior walls are most affected by heat from the fire (radiant energy) and by direct flame. External walls should be one or a combination of the following:

- Brick, concrete or block
- A framed wall incorporating sarking with a flammability index  $\leq 5$ , behind the non-combustible external cladding and/or fire-resistant insulation material

## Windows

They are one of the weakest parts of a building when exposed to fire.

- Screen all openable window sashes, including louvres with corrosion-resistant steel mesh of the maximum aperture size noted in the code
- Minimise windows facing likely direction of a fire

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## Doors

To prevent embers from entering through doorways and under doors, they are to be fitted with:

- Weather draught seals to full perimeter of doors
- Corrosion-resistant steel mesh of the maximum aperture size noted in the code

## Vents, Eaves and Soffits

- Protect vents and weepholes with spark guards made of corrosion-resistant steel or bronze mesh having a maximum aperture size as noted in the code
- Enclose eaves with non-combustible material and seal the fascia
- Locate screened vents in the fascia rather than the soffit lining

## 0.03 Site Planning Strategies

An Asset Protection Zone should be established and maintained around school buildings, to provide protection to the students.

The establishment of an Asset Protection Zone will also minimise the Bushfire Attack Level category and Construction Level required by the relevant standards, and to satisfy DA approval legislation with regards to a Site Bushfire Attack Assessment.

## Asset Protection Zones

In a designated bushfire prone area, establish an asset protection zone (APZ) on the hazard side of the development, within the boundaries of the site.

Provide a perimeter fire trail useable by fire fighting vehicles under all weather conditions and linking to the street network.

Ensure an accessible water supply for fighting fires.

An APZ is to be maintained in accordance with Rural Fire Service Recommendations.

## 0.04 Bushfire Protection Landscaping Strategies

Keep the amount of fuel (leaves, twigs, logs, dead grass) in the vicinity of buildings to a minimum.

Ensure trees are located away from buildings to avoid branches overhanging and leaves collecting on roofs.

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Do not plant shrubs against buildings.

The crowns of trees planted on the hazard side of the development should not be contiguous.

Plant fire resistant trees and shrubs on the hazard side of the development to reduce the potential impact of wind, fire intensity, radiant heat, and rate of spread as well as intercepting burning embers.

Avoid combustible fencing materials.

Provide irrigation and garden sprinklers to water areas near the buildings (subject to water authority approval).

## Fire Resistant Plants

Given the right conditions, all plants will burn, but some are more flammable. Plants that have some degree of fire resistance, have the following characteristics:

- Broad fleshy leaves with low volatile oil or resin content. Plants with fine hard leaves and/or a high volatile oil or resin content are more flammable.
- Dense foliage and smooth bark. Plants with an open airy crown and with many fine terminal branches are more flammable.
- Minimise dry material build up (ie plants that grow without accumulating large amounts of combustible dead branches, needles, leaves or bark). Rough or ribbon-barked trees can carry flames into the canopy.
- Salt retention ability. Plants that naturally accumulate salt in their foliage better resist burning as salt retards burning even when the foliage is dry.
- Trees and shrubs that can survive the intense heat and wind of fires and re shoot from the blackened trunks or branches after rain moistens the soil.

Refer to [Planning for Bushfire Protection](#) (NSW Rural Fire Service + Planning NSW)