# Bushfire External Water Spray Systems AS5414 Design Overview

**GENERAL**

Insofar as practicable bushfire water spray systems shall be arranged to discharge water over all points of vulnerability and possible ember ingress. These may include, but are not restricted to windows, eaves, roof ridges, roof valleys, re-entrant corners, underfloor spaces, doors (including garage doors), deck surfaces and at least 2 m of surrounding (perimeter) ground area

NOTE: In certain cases the building cladding may be vulnerable to ember attack.

**SPRAY NOZZLES**

Spray nozzles listed for fire protection service shall be of metal construction and shall not incorporate moving parts unless so listed. Nozzles with internal waterways of less than 10 mm diameter fluid path shall incorporate strainers. Unless otherwise protected against insect blockage, nozzles shall be fitted with blow-off caps or plugs, which shall detach at not more than 100 kPa and shall not impede the spray pattern of the nozzle.

NOTE: Spray nozzles incorporating moving parts or non-metal construction may be acceptable if the requirements of the listing can be met.

**DESIGN FLOW FROM SPRAY NOZZLES**

Bushfire water spray systems shall be fully hydraulically calculated so that the water application rate over those surfaces identified as requiring protection shall be not less than—

(a) 10 L/$m_2$ min on windows;
(b) 5 L/$m_2$ min on roofs, decks and other surfaces; and
(c) 1 L/$m_2$ min on perimeter ground surfaces.

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**DESIGN NOZZLE PRESSURE**

Unless nozzles are listed for bushfire water spray system service at lower flowing pressures, all systems shall have a minimum operating pressure of 160 kPa at the most hydraulically disadvantaged nozzle when the required number of spray nozzles is in operation.

**SPRAY NOZZLES IN SIMULTANEOUS OPERATION**

The number of spray nozzles in simultaneous operation depends upon the likely bushfire exposure. The most severe exposure may involve two or more sides of the building. All spray nozzles protecting the likely exposure shall be arranged for simultaneous operation (e.g., roof ridge, windows, doors and decks). Perimeter ground area spray nozzles, if installed, may or may not be arranged for inclusion in the simultaneous operation of the system. Spray nozzles may also be required on the lee side of the building and piping may be zoned for this purpose. Perimeter ground nozzles may be zoned for pre wetting.

**SPRAY NOZZLE SPACING AND LOCATION**

Spray nozzles shall be located to minimize the effect of wind and to cover windows, doors, decks, roof ridges and perimeter areas as appropriate. They shall be spaced in accordance with their listing and manufacturers' data sheets.

**PIPING**

External exposed piping shall be galvanized steel, copper or stainless steel complying with the requirements of AS 4118.2.1, as applicable to dry pipe systems. Concealed piping may be non-metallic and where used underground it shall be buried at least 300 mm. Piping shall comply with AS 5200. Piping may be zoned to permit conservation of water or to provide alternative water on the lee side of the protected building. Zoned connections for hose or 19 mm fire hose reels may be provided at strategic locations. A pressure gauge connection shall be provided in the vicinity of the most hydraulically disadvantaged water spray nozzle. Piping and pipe supports on roofs shall be