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FIRE PROTECTION
HIGH RISK BUSHFIRE AREAS
EXTERNAL SPRINKLERS

What is it?

In order to protect a dwelling within an area identified as a 'high risk bushfire' area from the impact of wildfires, an External Water Spray System (EWSS) is recommended. In the case of the Nullaki Estate, an EWSS is a mandatory requirement.

Diagram 1 – Example of roof spray system

The aim of any EWSS should be the intention to protect the building upon which it is installed for the duration of the systems water against ignition of the building by sparks, embers and brands.

Due to the lack of knowledge and practical application EWSS within Western Australia (and indeed many other states in Australia), the Fire Protection Association (FPA) of Australia has prepared a document titled 'External Water Spray Systems to Aid Building Protection from Bushfires'. The following guidelines have been prepared in accordance with that document and other available Western Australian literature.

You should note that EWSS and low fuel zones are not the only methods of defending your home from bush fires. Please contact a member of the Development Services Team on 9841 9383 if you would like additional information on other forms of defence.

Specifications of Best Practice – External Water Spray System (EWSS)

Various systems for private residences are in use within high risk bushfire areas in Victoria and New South Wales. Their introduction stemmed from the devastating impacts of the Ash Wednesday Fires in 1983 around Mount Macedon.

The FPA has recommended a dual fire suppression system, which involves a roof sprinkler system and an underground water main with butterfly sprinklers located around the house at an interval of 10 metres from the perimeter of the dwelling. To further enhance fire suppression the location of 180 degree impact sprinklers on the outer periphery of your low fuel zone (20 to 30 metres from the dwelling) is recommended in order to wet down surrounding vegetation.

The following specifications should be considered for an EWSS:

Pipes and Fittings

- Copper pipes should be used.
- Polyethylene pipe buried below ground between 300mm and 450mm can be used.
- Risers to feed butterfly heads and hose reel points should be galvanized steel or capped.
- Plastic tubing should not be used, especially from the pump due to the high probability of melting during a bushfire.

Heads and Sprayers

Roof System

- Misting nozzles (of brass construction) with spray patterns ranging from 180 to 360 degrees.
- The nozzles should be directed down onto the surface of the roof rather than emitting a fine spray away from the surface as they may be ineffective in high winds accompanying bushfires.
- Orifices for heads range from 2mm to 4mm dependent on coverage areas.
- Areas of coverage for such nozzles range up to 3 metres at head pressures between 140 and 200kpa with a water discharge rate between 3.6 and 10 litres per minute.

Butterfly Heads / Impact Sprinklers

- Are to be of brass construction.
- Discharge of 5 litres per minute over a 10m radius.
- Sprinklers to spray to the same height as the house.
- 180 degree impact sprinklers directed at surrounding vegetation.

Diagram 2: Butterfly heads on inner ring

Diagram 3: Impact Sprinkler outer ring

Water Source

- In order to provide an effective suppressant that can withstand a fire for over an hour, a water source of between 16000 and 30000 litres is required for fire fighting purposes depending on the coverage and size of the dwelling.
- It is recommended that the system is able to operate for a period of between 1.5 and 2 hours with all sprinklers working at the same time.

Pumps

- A manual pump system is preferred.
- A diesel or petrol pump is preferred as electric pumps using the mains supply may not be operational in event of fire.
- The pump needs to be protected from smoke, heat and water from sprinklers and therefore a steel cover misting heads should be installed.
- Pumps should be operated by centrifugal and be placed on a concrete pad not less than 100mm thick.

Diagram 4 – Excessive Use of Plastic Tubing

Does This Meet Council's Requirements / Recommendations?

The above criteria is the system recommended by the FPA. The FPA does recognise however that impact sprinklers may not be required in certain circumstances. Whilst they are useful in heavily wooded areas, the additional cost in terms of water storage and implementation, dictates that this additional feature should be a choice that needs to be made by the owner of the dwelling.

Application Requirements

When applying for a Building Licence the following information is required to be lodged to satisfy Council's requirements for an external water spray system:

- Address and location of premises.
- North point of compass.
- Key to any symbols used.
- Location, size, construction and use of ancillary buildings.
- Construction of walls and roof.
- Location and size of all door window, vent, etc openings.
- Sprayer head types and performance levels.
- Water supply details including location capacity and pump rating.
- Location of any ancillary hose points.
- Location of any valves including drain valves
- Location, type and nominal sizes of pipes and fittings including underground pipework
- The number of sprayers used and their location
- Summary of hydraulic calculations of the entire pipework system including references and design points
- Name and address of both designer and installer
- Duration of operation times to take account of water supply and flow rates so that the following operation times can be achieved:
  (a) Misting of house based system with inner concentric ring of butterfly heads (1½ hours).
  (b) Misting of house based system with inner and outer concentric rings (2 hours).

Building Protection Zone

In addition to the EWSS it is essential that owners of heavily vegetated properties comply with Council's "Building Protection Zone" requirements which is set at a minimum low fuel buffer area of 20m around the perimeter of the dwelling (although if slope is greater than 10 degrees a 35m low fuel zone should be applied).

A Building Protection Zone (BPZ) is the area immediately around the building where vegetation is managed. The BPZ aims to:

- Reduce radiant heat on the building through the reduction of fire intensity, to a level where the building is unlikely to be ignited during the passage of wildfire;
- Eliminate direct flame contact on the building from the unmodified vegetation; and
- Reduce ember attack on the building by reducing the amount of potential fire sources.

Simplistically this requires the removal of dried grass, leaves, bark, twigs and highly combustible vegetation which may sustain a fire and the use of garden lawns, paths, driveways, pools, watered vegetable gardens, which have little or no fuel loadings.

Before undertaking any clearing, please contact a member of Council's Planning Team.

More Information….

Should you have any questions or require any further information, please contact a member of Development Services Team by either phoning on 9841 9383, by email planning@albany.wa.gov.au or in person at the City Offices.

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