



**Fire and Emergency Services (FES) Commissioner's
Operational Requirement Guideline (ORG)**

Issued: April 2020

Authorised: Superintendent Built Environment Branch

ORG 5: Hydrants and hose length

1. Intent

A fire hydrant system should be installed in a building, or on site, to provide firefighters with a quickly available suitable water supply (quantity, flow and pressure).

2. Operational Requirement

The FES Commissioner requires the following:

- i. the number, location and protection requirements of hydrants as detailed in Australian Standard (AS) 2419.1 and the National Construction Code (NCC), must be installed as a minimum – at times more will be required,
- ii. all parts of the building should be reached by a firefighting hose connected 30m (maximum) from an internal hydrant or 60m (maximum) from an external hydrant. Where 2 or more internal hydrants are required to achieve coverage, the maximum distance between each internal hydrant should be 25m,
- iii. hydrants (internal and external) must be located with unimpeded firefighter access at all times,
- iv. hydrants must at all times deliver the minimum flow and pressure levels as required at time of installation,
- v. the minimum residual pressure required at all attack hydrants is to be not less than 700 kPa,
- vi. a 'wet' hydrant system is the DFES preferred hydrant system.

Consultation with the DFES Built Environment Branch is required for any deviations from the above or if clarification is required.

3. Reason

When firefighters cannot access a suitable water supply (quantity, flows and pressure) quickly from an appropriately located hydrant, firefighters are unable to defend all parts of the property and conduct safe firefighting operations. Firefighting operations will be restricted.

DFES uses 30m lengths of 38mm and 64mm diameter hose for firefighting. The hydrant numbers and locations required by DFES reflect these types of hose and the inherent loss of water flow and pressure from the hydrant to the firefighting branch. Increasing hose lengths from a hydrant (as is often proposed in fire engineered solutions submitted to DFES), increases the losses further. Poor pressure and/or flow will affect the firefighting branch's operational performance and restrict the range of firefighting techniques normally available for firefighters to safely move through a building to conduct search and rescue and to suppress the fire. Furthermore, a charged (with water) 30m length of 64mm hose is heavy, (weighing more than 110kg); is inflexible; and difficult to manoeuvre. When conducting internal firefighting, a charged hose will get stuck on doorways, corners and

any obstructions, therefore requiring advancing firefighters to stop and re-lay the hose or request another firefighting crew to assist. The longer the hose length, the greater the issue, with the resulting delays allowing a fire to grow in size and potentially expose trapped occupants to fatal conditions within the structure.

Finally, a wet riser hydrant system is preferred by DFES because it will have water in the system at all times and be less susceptible to hidden damage/vandalism; both of which may delay the time for a suitable water supply to be made available at the hydrant.

Appropriately placed hydrants prevent the uncontrolled spread of fire and allows firefighters to safely enter a building for search and rescue and to contain and extinguish a fire from both an internal or external position. Where delays allow a fire to grow beyond a first arriving crews' capacity to suppress, additional firefighting resources are required. These resources may not be immediately available, particularly in regional areas, resulting in a prolonged incident that increases the risk to building occupants, the surrounding properties and the community.

4. Risk Management

DFES defines risk as: *'The threat that an event or activity adversely affects our ability to achieve business and operational objectives or the failure to exploit opportunities to maximise stakeholder value.'*

In the event of a building fire, there is an *extreme* risk that the provision of a poorly designed, installed or maintained hydrant system will:

- i. allow unnecessary spread of fire through additional fire compartments of a building,
- ii. present limitations on the ability of firefighters to access the location of the fire or trapped occupants,
- iii. inhibit the ability of occupants to access escape routes,
- iv. cause injury and death to occupants and/or firefighters,
- v. increase damage to environment and heritage values.

The FES Commissioner's Operational Requirements are designed to help manage the risk.

5. Resources

Additional DFES hydrant information for building owners, authorities having jurisdiction and fire safety practitioners is available in DFES technical notes and operational requirement documents:

<https://www.dfes.wa.gov.au/regulationandcompliance/buildingplanassessment/pages/publications.aspx>

6. References

AS 2419.1 (2005) Fire hydrant installations system design, installation and commissioning, Standards Australia, Strathfield, NSW, Australia.

DFES Enterprise Risk Management Procedure (2018) Version1, Enterprise Risk.

National Construction Code Series (as amended) Volume One Building Code of Australia 'Class 2 to 9 Buildings', Australian Building Codes Board, ACT, Australia.

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