

AON SPRINKLER CERTIFICATION



Aon New Zealand

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Aon Sprinkler Certification Technical Note		
Note Number: TN19-40	Issue: 1	Date: 18 September 2019
Subject	External Transformer Fire Protection	
Notice: Aon Sprinkler Certification Technical Notes provide guidance notes which may be used in certification of sprinkler installations by Aon New Zealand. If sprinkler installations are being certified by any other Sprinkler System Certifier, these Technical Notes may not apply.		

Aon recently met with an Electricity Network Provider to discuss the fire protection systems that were retrofitted around a number of their distribution transformers within third party sites.



NZS4541:2013 requires that the potential for a fire from an external fire load be prevented from spreading into a sprinkler protected building. There are a number of ways to achieve this:

- 1) Separation by construction, including a fire rated or resistive external wall.
- 2) Separation by distance. This depends on a number of factors, such as:
 - Classification of the external walls
 - Specifically for oil filled distribution transformer, the type of insulation mediums being use by the transformer (normal mineral oil or high flash point insulating liquid etc.).
- 3) Drenching of unrated walls.
- 4) Water spray protection (using high velocity nozzles) on the transformer.

The Network Provider has made a number of observations if the sprinkler designer's preference is to consider protecting the transformer using a high velocity water spray system (which is not considered a desirable solution by the Network Provider):

- The Network Provider must be consulted before any work is undertaken around its assets and written permission obtained.
- The full range of options should be considered first, e.g. fire rated/resistive wall design, re-positioning of the transformer, or replace the oil in the transformer with a low fire rating type.
- As the fire risk is one of burning oil, provisions must be considered to contain the oil and the firefighting water mixture, to limit the spread around the site and into waterways. As the discharge volume from the water spray system

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can significantly exceed the potential oil leak volume, the containment system may not be practically sized or designed.

- Nozzles should not be aimed at electrical cabinets. The cabinets do not contain oil.
- Provisions need to be made to allow the transformer to be accessed and replaced without impediment. This could include the need to install monitored isolation valves, to allow the cage to be removed during an emergency night-time replacement.
- If pipework is installed too close to the transformer, under an electrical fault, potential electrical voltage may be imposed onto the pipework and go beyond the transformer.

There is no universally correct answer, albeit, in probability, the most reliable mitigation would be provided by options 1) to 2).

A handwritten signature in black ink, appearing to read "Chris Mak".

Chris Mak
MANAGER – AON FIRE PROTECTION