

Domestic fire sprinklers – e-bulletin

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This bulletin is aimed at all stakeholders with an interest in the design, installation and operation of domestic fire sprinklers. It is being jointly published by BAFSA and Water UK on behalf of the Water Liaison Group (WLG) - see Appendix 1.

Why we are talking about sprinklers now?

Although sprinklers have been used to protect lives and property from fire since the late 19th century, their use in residential and domestic properties is relatively new in the UK. However, their use is increasing in both new build and refurbishment of existing properties. In most cases these are individual properties, with the only major development being the Studley Green estate in Wiltshire, consisting of 212 homes.

For a number of years the sprinkler industry has been installing an increasing number of sprinkler systems in high and low rise residential premises. Some of these installations are in response to the requirements in Approved Document B of the Building Regulations. This requires the installation of fire sprinkler systems in high rise flats over 30m high and permits the relaxation of other fire safety requirements where sprinklers are fitted.

More recently sprinkler systems have been installed in both new build and refurbished high rise and low rise social housing, sheltered housing and care homes. Experience suggests that this trend will continue, with an increasing

number of public and private sector housing providers tendering and expressing interest in the use of sprinklers.

While the overall number of systems is increasing, the number is still relatively small in each water company area. While some water companies have explicit policies published on their websites, the majority do not and this can lead to a lack of clarity for both local water company staff and contractors.

Later this year the Welsh Government will introduce regulations to implement the Domestic Fire Safety (Wales) Measure 2011. The regulations will apply to these properties from April 2014 and to all new domestic properties from January 2016. The supply of water for these systems will require clear and explicit policies to assist both developers and the water industry. It is also likely that revision to Scottish Building Standards will see sprinklers required in a wider range of buildings.

How sprinklers save lives as well as property and minimise water use

Sprinklers are designed to operate at a preset temperature – in residential premises this is usually between 68^oC and 74^oC. The early application of water will suppress or extinguish a fire, ensuring that conditions in the room of origin remain tenable for any occupants. In addition to protecting life, early intervention minimises the growth and spread of fire. Insurers advise that the losses from fire in buildings protected with sprinklers are estimated to be one-tenth of those in unprotected buildings.

In buildings fully protected by sprinklers 99% of fires are controlled by sprinklers alone and 60% are controlled by spray from no more than 4 sprinklers.

The quantity of water discharged from a single sprinkler head varies from 35 to 100 litres of water per minute (depending on the design of the system). The discharge will normally begin between 10 and 30 seconds after the fire produces enough heat to operate the sprinkler head. Fire service attendance can range from a few minutes to up to 20 minutes in more rural areas, during which time the fire can have developed significantly. When fire crews get to work they are likely to pump between 1,000 and 3,000 litres per minute.

Issues for water companies and sprinkler contractors

The preferred water supply for the sprinkler industry is a direct supply from the mains. However, this may not be possible when taking into account the available pressure and flow and the ability of water companies to guarantee future performance. Where direct connection is not achievable then a pressure booster pump or tank and pump supply may be utilised.

Some water companies have expressed a preference or requirement for the water supply for sprinklers to be metered. The reasons given for this are to minimise loss through leakage and the potential theft of water. The pressure loss through a meter has been the subject of research within the industry.

While there are many successful connections, there have been a number of instances where problems have been experienced with reaching agreement on how/if a connection can be made. These problems tend to occur where the water company does not have an explicit policy and guidance documentation for the sprinkler contractor or local water company employee to refer to.

Equally, sprinkler contractors need to be aware that local companies have different policies and therefore they should ensure they establish what those local requirements are before commencing the design stage of a system.

The way ahead

The adoption of the Water UK Policy Position statement (Appendix 2) by the chief executives of individual water companies provides a strategic way forward for both the water and the sprinkler industries. The document indicates that Water UK supports the proposal to change the legislation to give water for fire sprinklers the same legal status as water taken from hydrants. WLG will continue to support the case for these changes to be implemented.

In the meantime WLG will seek to encourage individual water companies to develop explicit policies and guidance on the use of sprinklers within their company areas. Where such documents exist, they are seen as beneficial and effective for both the water company and the sprinkler contractors working in the area. The views of one such company, Anglian, are encapsulated below.

Anglian Water factsheet for sprinkler systems

Anglian Water witnessed an increase in applications for domestic sprinkler systems. Some of the increase was driven by local fire authorities promoting domestic sprinkler systems and adding planning conditions on planning applications for multi occupancy buildings (buildings converted to flats) and properties with restricted access for fire fighting appliances. Even though the CFOA / Water UK guidance for domestic sprinkler systems was in place, neither Anglian Water staff nor sprinkler installation companies seemed to be aware of the requirements and what each party needed.

With this in mind, and Anglian Water's acknowledgement of the importance of fire suppression systems in saving lives, we decided to compile a factsheet on water connections for domestic sprinkler systems which closely followed the existing CFOA / Water UK guidance. We also provided a dedicated area on our website about water connections for domestic sprinkler systems, to explain the difference between these and water connections purely for domestic usage. The dedicated area and the factsheet reduced the number of issues we were experiencing and relationships have been developed and improved between Anglian Water staff and sprinkler installation companies operating in our area.

Once these policies are in place, it is essential that they are communicated and understood by the local staff who will be responsible for receiving requests from sprinkler or building contractors. Ultimately WLG would like to see a nominated 'sprinkler contact' within each water company who could liaise where differences of opinion occur.

The development of explicit policies and guidance will provide clarity for sprinkler contractors. However, it is important that contractors realise that water companies' policies may differ and recognise any variations and limitations where they do occur.

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Appendix 1: Water Liaison Group

The group was established in 2002 to facilitate liaison between the water and sprinkler industries together with representatives from fire and rescue services. Their role is to provide a forum to discuss the provision of water for sprinkler systems and to develop guidance to support the installation of sprinklers while satisfying the requirements relating to water provision.

Since its inception WLG has sought to identify and encourage good practice for both the water and the sprinkler industries.

In 2004 the water industry, in conjunction with a number of stakeholders, produced a document providing guidelines for designers, installers and water companies on the supply of water to these systems¹. While the 2004 guidelines have been useful for the past eight years it is recognised that the document is in need of review and revision. Both directly and through its representative bodies, the water industry will continue to be involved in the working groups and committees established to ensure guidance is appropriate and up to date, that disputes are resolved and that good practice is shared.

1. [National guidance document on the provision of water for fire fighting \(3rd edition; Jan 2007\)](#)

Appendix 2: Water UK Policy Position

In October 2012 UK Water published a revised policy position paper which was agreed by the chief executives of member companies. In its introduction the document indicates that:

- Water UK supports the provision of a water supply for fire fighting and in particular to a well designed domestic fire sprinkler system.
- Water UK will engage with the interested parties to agree standards, good practice, guidelines and frameworks for the water supplier, the system designer and installer, the system user and the system maintainer.
- Water UK recognises the vital role that fire sprinkler systems have in controlling fires in commercial and domestic properties and the benefits that they have in terms of preventing loss of life and minimising property damage. In addition, a fire controlled by a sprinkler will generally have a much lower demand on the water network than one controlled by water taken from a fire hydrant, thus reducing the risk of quality or supply problems to other network users. Although the number of systems installed in domestic properties has been low, the scope for proliferation of domestic fire sprinklers is high. In Wales fire suppression sprinklers are now enshrined in legislation for all new properties.

See: [Water UK Policy Position: Water supply to domestic fire sprinkler systems](#)