

Sprinklers in the home

Produced by Tyne and Wear Fire and Rescue Service and partners



**Tyne and Wear Fire
and Rescue Service**
Creating the Safest Community



Foreword

Assistant Chief Fire Officer John Baines, BA (Hons) MIFireE
Tyne and Wear Fire and Rescue Service



Every day people die and are injured in fires in the UK. The estimated cost of fire to the economy runs into billions of pounds.

Behind this enormous economic loss lies an even more devastating story; the tragedy of the families who lose loved ones, whose homes and memories are damaged or destroyed beyond repair and of people forced to uproot to new homes, sometimes new communities.

Tyne and Wear Fire and Rescue Service (TWFRS) works to protect people, homes and businesses in the communities it serves by preventing fires and responding to emergencies. Through partnership, engagement, enforcement and education we have been able to significantly lower the number of fires in our communities, together with reducing resultant deaths and injuries year upon year. The result is that Tyne and Wear is one of the safest areas of the UK to live and work.

However, more can be done, especially for the most vulnerable people in our communities. Sprinklers offer the best protection to those who need it most; children, older and disabled people and those who have a drug or alcohol dependency. Age, infirmity, a disability or a dependency mean some people cannot escape their homes even if they have working smoke alarms to give them early warning. Sprinklers control a fire immediately when it breaks out, affording vulnerable people a greater level of protection.

In a building fitted with an appropriately designed and properly maintained sprinkler system, any death is extremely rare and there have never been multiple fire deaths in England and Wales. This guide is here to support you in considering domestic sprinklers to protect residents across your communities.

Sprinkler systems have advanced in terms of technology, suitability and cost effectiveness. The myths surrounding sprinklers have been dispelled. Bespoke designs to suit individual needs have driven down costs to such a point that systems often cost less than installing a central heating system, with minimal maintenance fees.

TWFRS actively promotes the installation of sprinklers and we would also like you to consider the benefits, as we work together to improve the lives of our communities and protect those most vulnerable in our society.

Please visit our website www.twfire.gov.uk to find out more.

We look forward to working with you in the future.

Contents

1.	Introduction	5
2.	Benefits of sprinkler systems in people's homes	6-9
	2.1 Cost of fire	6
	2.2 Consequences of fire, including deaths	6
	2.3 Benefits of sprinklers	7
3.	Installations	10-13
	3.1 Types of installations	10-11
	3.2 The legislation	12
	3.3 The myths	13
4.	Case studies	14-15
	4.1 High rise retrofit, Regent Court, Gateshead	14
	4.2 New build bungalows, Barr Close, North Tyneside	14
5.	Working in partnership	16
6.	Local Government Association	17
7.	Water company	18-19
8.	The industry	20
	8.1 British Automatic Fire Sprinkler Association (BAFSA)	20
	8.2 National Fire Sprinkler Network (NFSN)	20
9.	Conclusion	21
10.	References	22
11.	Acknowledgements	22



There are now clear arguments that sprinklers offer the best chance of preventing deaths should a fire occur.

Introduction

Sprinklers have been used to protect industrial and commercial property for more than a century.

But there is now a growing understanding of how they can protect lives in the home, especially those of society's most vulnerable people. There is increasing evidence that people who live in buildings with sprinklers enjoy a much higher level of protection from fire than those who lack this additional safety system.

Sprinklers work very simply. Domestic systems are a network of pipes that carry water from a source to the sprinkler head where it remains until the sprinkler head activates when a fire breaks out.

While fire detection systems such as smoke alarms are estimated to save between 80 and 100 lives each year, it is also clear that many people who do not survive are those whose age, disability or impairment prevent them from escaping. Sprinklers tackle fires when and where they break out, meaning people who cannot help themselves are properly protected even if they cannot escape.

In the case of social housing, residential care premises, homes in multiple occupation, hostels and similar properties there are now clear arguments that sprinklers offer the best chance of preventing deaths should a fire occur.

In 2012 TWFRS launched a Domestic Sprinkler Partnership as a key component of its Ultimate Protection Policy, which aims to provide the best prevention and protection measures, especially for those most vulnerable in its communities.

It was a response to a clear need to kick start a change in understanding and attitudes to the costs and benefits of sprinkler systems in the home. Many myths have grown up around sprinklers and one of the aims of the project was to support partners to change their perceptions and invest in better protection for their residents. To support this process, TWFRS has committed targeted funding and resources to assist partners in installing sprinklers to protect residents and property.

To start engagement with partners, the service hosted two seminars to encourage local authorities, social housing providers, private landlords and installers to install sprinklers during construction or refurbishment of housing stock.

Over
1240
properties are protected by
sprinklers in Tyne & Wear

Partners then visited Callow Mount in Sheffield where the UK's first full domestic sprinkler retrofit had recently been completed in a high rise block of flats.

This insight into the practicalities of installing sprinklers helped to overcome some of the myths which may have deterred housing providers from seriously considering investing in sprinkler systems to protect their residents.

Strong partnerships have been forged as a result of the ongoing dialogue and the approach has proved highly successful in driving up the number of domestic sprinkler installations in all five of Tyne and Wear's local authority areas.

Since launching the partnership, over 1,240 properties have had or are due to have sprinklers fitted. TWFRS funding is considered on a case by case basis, with partners committing significant resources to this joint work.

TWFRS maintains its commitment to the Domestic Sprinkler Partnership and continues to work with partners to secure more sprinkler installations to protect those most vulnerable in their homes.





2. Benefits of sprinkler systems in people's homes

2.1 Cost of fire

Fire costs the UK economy significantly in financial, social and environmental terms. The most recent government statistics state that the total annual cost of fire in England is an estimated £8.3 billion, equating to 0.91% of the gross value added of the whole economy.** Around £3.3 billion of this total consisted of the consequential costs arising from fires such as property damage, lost business, financial losses from injuries and deaths and expenditure by the police, criminal justice system and prison service.

The remainder of the £8.3 billion is made up of two types of costs:

- **Cost in anticipation:** This covers structural and passive fire protection in buildings, fire prevention measures, insurance administration and the resource and capital costs for training and fire safety.
- **Cost in response:** The expense of responding to reports of incidents as well as extinguishing and clearing up after a fire has occurred.

2.2 Consequences of fire, including deaths

The human cost of fire is considerable, with 322 people in Great Britain having lost their lives in fires in their homes between 2013 and 2014.*

Fires in the home account for 80% of all fire deaths and nearly half of all property fires in that period.**

Analysis of the causes showed that careless handling of fire or ignition sources, such as disposal of cigarettes, were the main reason for the incidents. Year on year, almost half of deaths from accidental fires in homes arose from fires which started in either the living or dining rooms.

* Fire Statistics: Great Britain April 2013 to March 2014. DCLG

** Economic Cost of Fire 2008. DCLG

2.3 Benefits of sprinklers

For occupiers

In the UK there have been no multiple deaths from fires in buildings fitted with working sprinklers.

A correctly fitted and maintained sprinkler system provides immediate and continuous protection. Its fast activation means suppression of the fire starts swiftly and prevents it from growing and spreading. This gives residents either time to escape their home altogether, move to a safer place in their home or await rescue by firefighters in a much safer environment.

Protecting property drastically reduces the risk of an occupier having to move out of their home, with all the financial and emotional costs that entails.

These benefits are important given that the chances of an adult experiencing a fire in their home in their lifetime are approximately 1 in 5*.

*www.firesafe.org.uk/residential-sprinklers

For owners

Installing a sprinkler system will significantly reduce risk to occupiers, minimise heat and smoke damage, and lower repair costs if a fire does break out. With a sprinkler system, only the head closest to the fire discharges water, so suppression of the fire starts almost immediately. This near instantaneous intervention halts the fire's development and, as a result, between 100 to 1,000 times less water is needed to extinguish the fire than if it were allowed to fully develop. Furthermore, the run-off water from sprinkler systems is minimal, which reduces the impact on the environment from extinguishing a fire.

Social housing providers should be encouraged to consider the retro-fitting of sprinklers in all existing high rise buildings in excess of 30 metres in height, particularly those identified by Fire and Rescue Services as having complex designs that make firefighting more hazardous and/or difficult.

Coroner's Rule 43 Letter, Shirley Towers, Hampshire, Shropshire and Wrekin Fire and Rescue Authority, 24 April 2013

“

The work only took a few days to complete. I've now got smoke alarms to give me early warning of fire and sprinklers in every room. These will contain a fire, if one occurs, until the fire and rescue service arrives.

”

Resident, Regent Court, Gateshead, Tyne and Wear

“

Your Homes Newcastle is committed to providing a safe environment for residents and this has led to sprinkler systems being installed in sheltered accommodation buildings and new build housing. Sprinkler systems make a significant contribution to the safety of residents and have the added benefit of protecting valuable assets in the event that a fire does occur.

”

Geoff Boyle, Property Service Manager
Your Homes Newcastle

Adults have a
1 in 5
chance of experiencing
a fire in their home.



For developers

Installing sprinklers can bring added benefits for developers in complying with building regulations. Requirements in Approved Document B regarding travel distances for escape may be extended and certain requirements around access for the fire service may be relaxed. Savings in construction and building costs by relaxation of elements of passive protection measures, and the freedom to allow open plan design in three storey dwellings and apartments, may also be considered.

As an example, it was possible to adopt a more suitable open plan layout for vulnerable residents in a recent development, because installing sprinklers unlocked greater design freedoms allowed under the building regulations. Disabled people living in the sheltered accommodation found it much easier to move around their homes as a result.

Regulations on the spacing requirement between buildings is halved if the new buildings are fitted with sprinklers, which has obvious benefits if space on a site is restricted.

“

Incorporating a fire sprinkler system into a communal living development dramatically increases the design opportunities. It reduces the need to compartment communal areas and facilities. It increases the flexibility to provide layouts that are more open plan with natural daylight. It also gives the opportunity to incorporate furnished meeting spaces in circulation areas, which often adds to the character, identity and community spirit of the building. The decision to include a fire sprinkler system can be a positive specification decision which has significant outcomes for the interaction and enjoyment of residents.

”

Darren Blake, Architect



Incorporating a fire sprinkler system dramatically increases the design opportunities.

For firefighters

As the immediate response of a sprinkler head means firefighting starts straight away, occupants have a greater chance of surviving and the environment is safer for firefighters undertaking search and rescue operations.

Firefighters attending an incident where sprinklers are in use are less likely to face a fully developed fire, which clearly reduces the risk to them.

A tragic example of the deadly consequences of fire in dwellings without sprinkler protection was a fire in Lakanal House, a 14 storey residential block in Camberwell, London. Six people died and more than 20 were injured.

In a separate incident, a fire in Harrow Court, Stevenage, tragically claimed the lives of two firefighters. Sprinklers had not been installed in the building. Following inquests into the deaths, Coroner Edward Thomas issued a Rule 43 Letter; Harrow Court, Stevenage, 2005, recommending 'safety features in respect of high rise buildings', 'personal protective equipment' and 'water supplies'. Although direct reference was not made to the provision of sprinklers, if they had been installed, the opportunity for the fire to be controlled at an early stage could have reduced the risk conditions which firefighters are exposed to.

“

Both occupiers and firefighters are most at risk during the development stages of a compartment fire. Flashover and backdraught pose a significant risk and account for high numbers of injuries and fatalities. Sprinklers fitted to compartments greatly reduce fire development.

”

Fire behaviour specialist, TWFRS

3. Installations

3.1 Types of installations

Automatic Water Suppression Systems (AWSS) include installations such as domestic sprinkler systems, domestic low flow misting systems, low cost domestic systems and portable misting systems.

Domestic sprinkler systems

Generally, wet systems are recommended for use within homes, in accordance with appropriate British Standards or approved guidance. Wet systems are widely regarded as the simplest, easiest to maintain and most cost effective systems available.

In their simplest form, domestic systems are a network of pipes (copper, steel or approved plastic CPVC (chlorinated polyvinyl chloride)) that carry water from a source to the sprinkler head, where it remains until the sprinkler head activates. The water source may be direct from the incoming water main (subject to

the approval of the water authority) or from a storage tank via a water pump or a combination of all three.

Whichever system is chosen to protect vulnerable persons, it can be fitted to a single home or multiple properties, either when they are being built or retrospectively. Linking the sprinkler system to a call centre enables fire and rescue services, the landlord or the owner to be alerted to a fire automatically. This feature can save vital time in getting firefighters to the incident.

During installation



Finished installation



Wet systems are the simplest, easiest to maintain and most cost effective systems available.

Costs

Costs vary according to whether the project is a new build or a retrofit and whether it encompasses all rooms or just the rooms where there is greatest risk of fire.

Installation in a new build property with only high risk rooms covered	Less than £1000
Installation in an average sized new build home with all rooms covered	Average cost £2000 *
Retro-fit installation with all rooms covered	Average cost £2,500
Additional tank and/or pump	£500 - £1000
Annual maintenance	£75 - £150

*TWFRS and its partners has secured costs as low as £1,100 per property for a BS compliant installation in a new build development.

Domestic low flow misting systems

The water mist system is a fire suppression system which uses very fine water spray to suppress or extinguish fires. They operate almost identically to sprinkler systems by removing the heat element from fire.

Systems can protect single or multiple rooms and the water supply is generally from pressurised cylinders or from a storage tank fitted with a pump. Cylinders can be stored in the room at risk, or in other locations such as a loft or storage cupboard. These are less common and costs for the provision and installation of misting systems vary between suppliers.

As with sprinkler systems, linking to a call centre enables fire and rescue services, the landlord or the owner to be alerted to a fire automatically. This feature can save vital time in getting firefighters to the incident.

British Standard BS 8485:2015 was introduced in 2015 for residential and domestic water mist systems and includes a code of practice for their design and installation.

Portable low pressure misting systems

TWFRS has purchased a number of portable misting systems which can be deployed at very short notice to provide almost immediate protection for people identified as being particularly vulnerable.

The units can be utilised to protect single rooms and spaces until a more permanent solution, such as a fixed protection system, can be installed or until other support measures can be put in place to reduce risk.

Each unit has a self-contained, 10 minute water supply and can be configured to operate via smoke and heat detection.

Due to their limited water supply it is essential that a monitored alarm is connected to a call centre so that the fire and rescue service, landlord or owner is contacted upon actuation of the system.

Low cost domestic systems

Low cost domestic systems generally rely upon local supply pressures to deliver water without the need for a pump. Without the pressure boost provided by a pump, the height that satisfactory water supplies can be delivered to is almost inevitably limited.

Generally, two storeys is the limit, provided the mains supply, pressure monitoring and future demands on the mains that may affect pressure are both known and thought to be sufficient.

Costs for systems in the home can be **less than £1,000** in a new build home if only the higher risk rooms are covered by sprinklers. This would cost more if a tank and pump are required.

Some sprinkler companies offer the addition of a water tank in place of a mains upgrade. These partial low cost systems generally work out to be cheaper than full systems but are unlikely to meet British Standards or DCLG draft standards. As there is currently no legislation in England requiring AWSS to be fitted, potential system owners may decide that the need for a cost effective system without BS standard may still meet their needs.



3.2 The legislation

In England, housing providers and developers face no legal requirement to fit sprinklers in domestic properties, except in new residential blocks more than 30 metres high. This requirement is to be found in approved documents accompanying the Building Regulations in England and Wales which make specific reference to the use of sprinklers.

There is no obligation on housing providers or developers to install sprinklers as a retrofit in existing high rise dwellings whatever the height, unless material changes are made to the building which require a Building Regulations submission. Such material changes require sprinkler installation under Approved Document B.

This approach differs from the proactive stance taken by the Welsh Assembly and Scottish Government. Both governments have passed legislation requiring sprinklers to be fitted in many types of new build domestic properties. In Scotland, from 1 May 2005, all new residential care homes, sheltered housing and residential accommodation above 18 metres high have had to be fitted with sprinklers.

The Welsh Assembly approved a Legislative Competence Order requiring the installation of sprinklers in a wide range of dwellings. This took effect in two stages. From April 2014 all new and refurbished residential care homes, homes in multiple occupation and hostels (as well as certain other types of premises) have had to be fitted with an approved fire suppression system. From 1 January 2016, all new and converted single family dwellings, including houses and flats, have also had to be protected with approved automatic fire suppression systems.

TWFRS, along with the Chief Fire Officers Association (CFOA), the British Automatic Fire Sprinkler Association (BAFSA) and other partners, is actively lobbying Parliament to encourage Government to make sprinklers a requirement in law in England.

In the absence of legislation for England, improving protection through sprinkler systems relies on housing providers, builders, architects, developers and other key partners to identify the need for sprinklers to protect vulnerable residents and communities from fire.

3.3 The myths

Misconceptions around the cost, effectiveness and functioning of sprinkler systems may well account for some of the reluctance on the part of some housing providers and developers to seriously consider their installation.

This good practice guide can set the record straight by busting some of the most common myths which surround what is a very cost-effective and efficient means of fire suppression.

Globally, more than
40 million
sprinklers are fitted
each year.



Myth: All sprinklers in a building go off when one is activated



Facts: Each sprinkler head only responds to heat in the area it is situated. If there is no fire in the vicinity of a sprinkler head it will not activate. This means there is no chain reaction if one of the heads goes off.



Myth: Sprinklers do more damage with water than the fire itself



Facts: A sprinkler uses relatively small amounts of water and will only activate in the area of the fire itself. Its immediate response prevents a fire from developing fully, meaning far less water is needed to extinguish it - approximately 100 to 1,000 times less. Sprinklers commonly used today deliver just 45 litres of water per minute and take about 10 minutes to extinguish the fire. The devastation and cost of a developed fire is many times greater.



Myth: Sprinklers regularly malfunction



Facts: Modern sprinklers are very reliable and very rarely activate accidentally. Tests conducted over the last decade reveal the chances of a sprinkler malfunctioning are about 16 million to one. The research includes all kinds of defects, including leakage, so the odds of an accidental activation are even lower.



Myth: Sprinkler systems are expensive



Facts: The cost of modern sprinkler systems has reduced dramatically. TWFRS and its partners have secured costs as low as £1,100 per property for a BS compliant installation in a new build development.



Myth: Sprinklers are not in wide use



Facts: Globally, more than 40 million sprinklers are fitted each year.



Myth: Sprinklers have a high failure rate



Facts: International research conducted over decades demonstrates a very low failure rate. A study conducted by the National Fire Protection Association (NFPA), a global not-for-profit safety body, examined 67,457 incidents. It showed that sprinkler systems failed to adequately control fires in only 2,554 cases, giving a failure rate of 3.8%. Many of these failures could have been prevented by planned inspections and regular maintenance.



Myth: Sprinkler heads are prone to damage



Facts: The design of modern sprinkler heads and their positioning in ceilings mean that it is highly unlikely that a sprinkler will be damaged accidentally.



Myth: Sprinkler heads are ugly and obtrusive



Facts: Modern sprinklers are almost unnoticeable, as their design means that the sprinkler head cannot be seen and only a small white disc is visible.

4. Case studies

4.1 High rise retrofit

Where: Regent Court, Gateshead

The challenge: Regent Court, a 10 storey residential building in the centre of Gateshead, Tyne and Wear, has 160 flats with two communal staircases and lifts accessing long enclosed corridors. Risk levels for the residents vary, with many vulnerable occupants living on the upper floors.

A survey demonstrated a range of fire protection issues within the building, prompting discussions between TWFRS and The Gateshead Housing Company (the ALMO).

The solution: Following an options appraisal, including a retrofit sprinkler installation or equipping corridors and flats with new fire protection features, The Gateshead Housing Company approved the sprinkler installation.

The benefits: The sprinkler retrofit was 38% more cost effective than the alternative passive fire protection solution. The retrofit unlocked savings because it met British Standard 9251:2005, allowing the ALMO to avoid replacing front doors to flats and to reduce the number of new communal fire doors.

4.2 New build bungalows

Where: Barr Close, North Tyneside

The challenge: To provide safe homes for vulnerable people as part of a new build programme by North Tyneside Council, Barr Close was the first of a number of schemes planned by the council to improve affordable housing for vulnerable residents.

The solution: TWFRS and North Tyneside Council jointly funded the installation of independent sprinkler systems in a number of two bedroom bungalows.

The benefits: The benefits to vulnerable residents at Barr Close were shown in January 2016 when a kitchen fire started in one of the bungalows. The nearest sprinkler head was activated and quickly suppressed the fire, minimising the damage so the occupants were able to continue living in their home while repairs were carried out.

Evidence clearly demonstrates the effectiveness of sprinklers in protecting occupants from fire, especially vulnerable people who cannot escape their homes. A fire death in a building with sprinklers is extremely rare where the sprinkler is appropriately designed, fully operational and maintained.

North Tyneside Council and TWFRS remain fully committed to campaigning for the installation of sprinklers in new build or existing homes, together with non-domestic premises.





A fire death in a building with sprinklers is extremely rare where the sprinkler is appropriately designed, fully operational and maintained.

5. Working in partnership

In 2013, Your Homes Newcastle (YHN) agreed a strategy for sprinkler installations with TWFRS. Central to the partnership was a joint funding arrangement, with TWFRS supporting new installations. In turn YHN and its partner, Leazes Homes, committed to considering sprinklers for all new builds and to retrofit sprinklers to selected properties in their portfolio.

In 2015, the partnership delivered an ambitious project to retrofit sprinklers in a considerable number of bungalows in Newcastle upon Tyne.

Lessons learned from the partnership include:

- Ensuring an adequately sized water main supply is configured during construction is beneficial, and will remove the need for tanks and pumps if sprinklers are installed at a later date.
- Asbestos surveys will be needed before many retrofit projects begin.
- Bespoke tanks may need to be manufactured for retrofit projects if there is insufficient loft space to accommodate standard models.
- Installing tanks may require work with structural engineers who may recommend joists are reinforced.
- Experiences of fire and rescue service officers are shared across all local authority areas, to ensure the best outcomes for the most vulnerable people.

A key consideration for projects of this type is to engage with vulnerable residents at the outset to improve their understanding of the protection sprinklers offer and how little disruption installations bring.

A resident who declined to have a sprinkler system installed in his home experienced a fire in his bungalow in early 2016. Activation of the sprinkler head would have resulted in less fire and smoke damage to the property and minimised the fire fighting actions required to extinguish the fire.





6. Local Government Association (LGA)

As far back as 2001, the Local Government Association Annual Assembly unanimously backed a motion to urge the Government to support wider use of fire sprinklers, to introduce their use into Building Regulations and to make them mandatory in housing of multiple occupation.

Since then, the LGA's Fire Executive has worked to promote sprinkler use in local authority housing, with a special focus on high risk housing as well as a wide range of commercial and educational premises.

Special focus on high risk housing, commercial and educational premises.



7. Water company

Regulator Ofwat sets standards covering the flow and pressure of water supplied by the water company which are specific to domestic properties. The company is required to provide water at a pressure of 10 metres head with a flow of nine litres per minute at the boundary of the property. There are no similar standards in relation to water used for firefighting.

Flows and pressures will vary throughout the day and seasonally, and supplies may be interrupted at any time for various reasons. The company will need to carry out planned and unplanned maintenance on its network and on rare occasions the network can be affected by third party activity. All of these factors mean that flow and pressures cannot always be guaranteed.

It is important that the designers of domestic sprinkler systems and private fire mains take these factors into consideration when designing a system that relies on direct mains flow, pressure and continuity of supply for their satisfactory operation.

As a result, in some instances, the water supply may be insufficient to enable installation of a system to achieve the current British Standard. However, there are sprinkler systems that, although they do not meet the British Standard, can be fitted and certified to achieve an appropriate level of protection. It is better for a resident to have some protection, even if the system does not guarantee 100% uninterrupted water supply, rather than no system and no protection.

The use of fire suppression systems and subsequent design freedoms for all systems are the responsibility of the system owner and their commissioned engineer. In all but portable systems TWFRS advise that the minimum flow rate, pressure and water storage capacity for the appropriate British Standard should be followed where possible.

Consultation and approval from the Water Company will always be required for sprinkler installations when it is necessary to connect to the water mains or when a larger diameter main is required to achieve the necessary sprinkler flow rates.

Designers of firefighting systems must also ensure that the system complies with the Water Supply (Water Fittings) Regulations 1999. These cover all fittings, including any pumps and boosters. The approved sprinkler contractor must also provide operation, maintenance and other such information to the landlord/partner agency on completion of installation.

It should be noted that although most areas will have adequate pressure available from the mains supply, the existing pipework is unlikely to be able to provide the necessary flow to comply with all requirements. It is difficult, therefore, to establish a standard installation because design and costs will vary depending on enabling works to provide adequate water pressure and flow.



It is better for a resident to have some protection, even if the system does not guarantee 100% uninterrupted water supply, rather than no system and no protection.

The Northumbrian Water policy for associated domestic sprinkler systems is available on the company website (www.nwl.co.uk).

The current policy statement relating to domestic household systems is as follows:

Individual households - domestic sprinkler systems

Northumbrian Water defines a domestic sprinkler as an individual sprinkler system designed to protect a single household. Domestic fire sprinkler systems can be fitted to new and existing residential properties.

It is their policy not to meter the supply pipe to domestic sprinklers.

Here are some examples of supply arrangements for household properties fitted with domestic sprinklers:

- a) A newly built house/flat - installation of a 32millimetre (mm) communication pipe to feed a 32mm unmetered connection to the sprinkler supply and a 25mm metered branch supply to the dwelling.
- b) An existing house or flat - installation of a 32mm communication pipe to feed a 32mm unmetered connection to the sprinkler supply. The household supply

will continue to be charged as it currently is. So once the sprinkler system is installed a previously unmetered property will have an unmetered sprinkler supply and will retain its unmetered supply to the dwelling. Where a property is currently metered, the dwelling will continue to be supplied on a metered basis whilst the sprinkler supply will be unmetered.

Northumbrian Water considers a 32mm connection to be adequate to feed most domestic sprinkler systems. Should a larger connection be required, this will be metered.

Commercial and multi-occupancy buildings – private fire mains and sprinkler systems (for example, sheltered housing complexes or apartment blocks)

Northumbrian Water defines private fire mains as mains that are laid within the boundary of a property that are to be used solely for the purpose of fighting fires. They normally connect to privately owned hydrants and to hose reels inside the building.

Supplies for sprinkler systems and private fire mains designed to serve commercial or multi occupancy domestic buildings (for example, sheltered housing complexes or apartment blocks) will be metered. It may install a single connection with a meter that is capable of measuring both the domestic flow and water used by the fire system. Alternatively, it may provide separate metered connections for the domestic supply and fire system supply.

8. The industry

8.1 British Automatic Fire Sprinkler Association (BAFSA)

It is important to understand the role that key partners play in relation to promoting the benefits of sprinklers in domestic premises. BAFSA's primary objectives include providing authoritative information on the benefits of sprinkler systems and how sprinklers can play a significant role in saving life and property from the devastating effects of fire.*

* Source BAFSA Sprinkler Yearbook 2015/16

8.2 The National Fire Sprinkler Network (NFSN)

NFSN works in partnership with the fire community to promote awareness of the value of sprinklers for life safety, protection of property and the environment and for creating sustainable businesses and communities.

The key strength of the network is its membership, which is primarily, though not exclusively, formed from fire and rescue services from across the UK. Through regular meetings and networking, the NFSN has been highly successful in collating, sharing and disseminating pertinent information which is used to promote the wider use of water based fire suppression systems. It also actively lobbies for the effectiveness of such systems to be more widely appreciated both at local and national levels.



9. Conclusion

Sprinklers save lives.

Installing them in new properties and as retrofits is a cost effective way to protect vulnerable people from fire and to minimise damage to their homes.

They work simply and tackle fires immediately, creating a greater chance for occupants to survive and delivering a safer environment for firefighters conducting search and rescue operations.

Despite the myths that have grown up about domestic sprinklers, the case for more installations is becoming clearer.

Partnerships between fire and rescue services, social housing providers, builders, architects, developers and local authorities can deliver significant improvements in protection for vulnerable people and the properties they live in.

The case studies featured in this document demonstrate what can be achieved when there is commitment to working together on behalf of communities.

TWFRS maintains its commitment to the Domestic Sprinkler Project launched in 2012 and hopes its journey and experiences will assist organisations considering sprinkler installations to progress their plans.

Further information on the benefits of sprinkler systems, along with a copy of this document, can be found on our website at www.twfire.gov.uk/sprinklers

Sprinkler systems work simply and tackle fires immediately, creating a greater chance for occupants to survive.



10. References

Fire Statistics: Great Britain April 2013 to March 2014

Department for Communities and Local Government

Economic Cost of Fire 2008

Department for Communities and Local Government

Fire Safety Advice Centre

www.firesafe.org.uk/residential-sprinklers

Business Case for Sprinklers

The Chief Fire Officers Association, 2013

Coroner's Rule 43 Letter

Shirley Towers, Hampshire, Shropshire and Wrekin Fire and Rescue Authority, 24 April 2013

Coroner's Rule 43 Letter

Harrow Court, Stevenage, 2005

Automatic fire sprinklers, a toolkit for local authorities

Local Government Association 2004



11. Acknowledgements

TWFRS would like to acknowledge the contributions and support of the following:

- British Automatic Fire Sprinkler Association
- Chief Fire Officers Association
- Gateshead Council
- Gentoo
- Jersey Fire and Rescue sprinkler demonstration DVD: *Why install sprinklers?*
- Leazes Homes
- Local Government Association
- National Fire Sprinkler Network
- Newcastle City Council
- North Tyneside Council
- North Tyneside Homes
- Northumbrian Water
- South Tyneside Council
- South Tyneside Homes
- South Tyneside Homes Venture Trust
- Sunderland City Council
- The Gateshead Housing Company
- Tyne and Wear Fire and Rescue Authority
- Your Homes Newcastle





**Tyne and Wear Fire
and Rescue Service**
Creating the Safest Community

Produced by Tyne and Wear Fire and Rescue Service and partners

Tyne and Wear Fire and Rescue Service
Service Headquarters, Nissan Way,
Barmston Mere, Washington,
Sunderland, Tyne and Wear,
SR5 3QY

+44 (0) 191 444 1500
twfire.gov.uk

 **twfrs**

 **tyne_wear_frs**

 **twfrs**

 **twfrs**

 **tyne-&-wear-fire-&-rescue**

Sprinklers in the home

Produced by Tyne and Wear Fire and Rescue Service and partners



**Tyne and Wear Fire
and Rescue Service**
Creating the Safest Community

