Position Statement

Automatic Water Suppression Systems

NFCC wants to see a greater inclusion of Automatic Water Suppression Systems (AWSS) in the built environment in the UK.
As part of an appropriate package of fire safety measures, sprinklers will save lives, protect property, reduce the impact of fire on the environment and support UK PLC by reducing the interruption to business. Increased adoption of AWSS will also assist search and rescue operations and reduce the risk to firefighters, by restricting the development of a fire.

More widespread use of AWSS will be beneficial in nearly all buildings but in particular, NFCC want to see an increase in use of sprinklers in housing for vulnerable persons, care facilities, high rise accommodation, large volume warehousing, factories, car parks and waste and recycling facilities.

This will be achieved by working with partners to demonstrate the benefits, provide the evidence and advise politicians, developers, designers and the public of the benefits of AWSS. There is already clear evidence of these benefits shown in published national and international research.

NB. AWSS includes sprinkler systems, water misting systems, fog systems and such variants that automatically apply water to a developing fire with a view to either extinguish or control the fire.

Position Statement

Sprinklers are the most effective way to ensure that fires are suppressed or even extinguished before the fire service can arrive. They save lives and reduce injuries, protect firefighters who attend incidents and reduce the amount of damage to both property and the environment from fire.

In the last 12 months, the National Fire Chiefs Council (NFCC) and the National Fire Sprinkler Network (NFSN) have worked together to investigate the effectiveness and reliability of sprinkler systems. The evidence produced indicates that sprinkler systems operate on 94% of occasions demonstrating very high reliability. Furthermore, it is evident that when they do operate they extinguish or contain the fire on 99% of occasions and are thus very effective. The research also found that in both converted and purpose built flats that sprinklers are 100% effective in controlling fires.

NFCC recognise that sprinklers are an effective part of an overall fire safety solution and can be used efficiently to improve fire safety in a range of new and existing buildings. NFCC support the concept of risk assessed retro fitting of sprinklers in existing buildings and would also welcome the prioritisation of a review of the Building Regulations (Approved Document B) to ensure fire safety requirements keep pace with new building developments. NFCC supports the mandatory installation of sprinkler systems in certain types of higher risk buildings such as nursing homes, and single staircase high rise buildings as two examples.

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NFCC supported by NFSN are focused on developing understanding and acceptance to promote the wider use of sprinklers. Together we will continue the efforts in the coming months to:

- Educate the public and building owners to dispel the myths and understand the benefits of sprinklers.
- Provide clear guidance on their consideration and implementation as part of a fire safety strategy.
- Provide clear guidance within the service on their ongoing maintenance and operational considerations.

Current Position (February 2018)

In regard to the review of Approved Document B (ADB):

- NFCC support the urgent review of ADB and recommend that the thresholds that set the requirements for sprinkler systems should be refreshed to mirror the Scottish standards for new buildings. In addition NFCC recommend specific additional requirements in respect of existing high rise residential buildings are incorporated into the new ADB.
- NFCC recommend premises designed for the care of vulnerable persons such as care homes, supported living, houses in multiple occupation, etc, and should be fitted with a suitable sprinkler system.

In regard to high rise buildings:

- NFCC recommend that the review of ADB specifies that sprinklers are a requirement in all **new** high rise residential structures above 18m (or as defined in any revised Approved Document B). Student accommodation should be included in this category of building.
- In respect of **existing** high rise residential buildings, NFCC recommend that where high rise residential buildings currently exceed 30m there should be a requirement to retro fit sprinklers when these buildings are scheduled to be refurbished. Furthermore, NFCC recommend that sprinklers should be retro fitted where high rise residential buildings over 30 metres are served by a single staircase.
- NFCC will support fire and rescue services who are receiving enquiries from, and providing support to local authorities and Housing / Residents Associations, which are committing to install sprinklers in their high-rise stock.

In regard to car parks:

- Evidence derived from global research and research conducted by the Building Research Establishment (BRE), which demonstrates the effectiveness of sprinklers controlling fires in car parks shows that the incidence of fatalities and injuries is zero and the property loss is around 95% lower than that of an uncontrolled fire. NFCC's position in relation to car parks is as follows:
- NFCC recommend that consideration is given to installing sprinklers in open sided car parks to protect property, including the fabric of the building. While there have been few incidences of fatalities in car parks there have been recorded fatalities to firefighters due to structural collapse abroad.
- NFCC strongly recommends that enclosed car parks should be fitted with sprinklers, as is common in Europe and also recommended by NFPA 88 in the USA.
- NFCC strongly recommends that basement car parks, and in particular those with associated accommodation above, are fitted with sprinklers. This is a common requirement in Europe and recommended by NFPA 88 in the USA. Research undertaken by the BRE in 2010 also support this approach.

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- NFCC strongly recommends that automated car parks are protected by sprinkler systems due to the extra density of fire loading created by stacking cars in carousel or racking systems. Increasingly this is being recommended globally and is also required by NFPA 88.
- NFCC calls for more research into fires and car parks and the design of car parks. NFCC believe the current design does not take into consideration the fire loading of modern vehicles, electric vehicles, LPG vehicle and also the risk of running fuel fires from plastic fuel tanks.

In regard to other building types:

- NFCC recommend that sprinklers continue to be fitted in new **schools** unless the risk is deemed exceptionally low in line with the original intention of BB100. To drive consistency NFCC recommend a standard approach is adopted to conducting the risk assessment; with the loophole closed whereby an alternative is sought to avoid installing sprinklers when a risk assessment deems them other than low risk.
- NFCC recommend the review of ADB includes lowering the threshold for the requirement to fit sprinklers in large structures such as **warehousing** to 4,000 square metres. *(*NFCC are supporting research to assess the ability of firefighters to safely perform rescues from large structures such as warehouses. Based on the early results of this research suggests 4000M^2)
- NFCC recommend that sprinklers are provided in **new residential care premises and specialised housing.**
- NFCC recommend that sprinklers are provided in facilities providing **waste management and recycling**. There is growing evidence that sprinklers are highly effective in controlling fires in these establishments. Uncontrolled fires in waste and recycling facilities are often prolonged, extremely resource intensive for fire and rescue services and partner authorities. They are also commonly disruptive to local communities and to travel infrastructure.

Background Information

In particular NFCC will work with the following key partners to deliver the objective.
National Fire Sprinkler Network (NFSN).
British Automatic Fire Sprinkler Association (BAFSA).
Business Sprinkler Alliance (BSA)
All Party Parliamentary Fire Safety and Rescue Group (APPFSRG).
European Fire Sprinkler Network (EFSN)

These stakeholders are very closely aligned with our current objectives and much of this alignment is achieved through the NFSN. The list is not extensive and there are other stakeholders such as the Fire Brigades Union, International Fire Sprinkler Association and the Association of British Insurers.

There is much research available on the effectiveness of sprinklers nationally and internationally. The most recent UK research was commissioned by NFCC and NFSN. Below are some of the key UK based, independent research into the benefits of sprinklers.

Efficiency and Effectiveness of Sprinklers in the United Kingdom.

- Sprinklers are 94% efficient in their ability to operate.
- Sprinklers are 99% effective in extinguishing or controlling a fire.

Sheffield Low Rise Sprinkler Retrofit.

- Sheffield City council identified a serious fire risk potential in a specific type of property in their property portfolio with a decision taken to install a suppression system in 540 individual ranch style properties sited in four locations.
- A successful activation protected a vulnerable resident.

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Safer High Rise Living: Callow Mount Retrofit.

- A project funded and directed by the British Automatic Fire Sprinkler Association (BAFSA) for the Sprinkler Coordination Group (SCG) with the main objective of seeing if it was practical to fit a sprinkler system without relocating residents in a high rise block.
- 13 storey tower block, which had been achieved at a lower cost than had previously been thought to be the case, and with modest disruption to residents.
- Average cost per flat was £1,150. (at 2012 prices) An analysis of retrofitting work in high rise residential blocks completed from 2012-2017 by the Residential Sprinkler Association confirms that costs per flat average between £1500 and £2500.

Environmental Impact of the effectiveness of Sprinklers in Warehousing Fires

- Report demonstrating clearly that whole-life benefits outweigh the costs and that there are environmental benefits for including sprinklers in warehousing.
- Research informs us that from warehouse fires alone, businesses lose over £230m annually, in addition to nearly 1,000 jobs. The Association of British Insurers (ABI) have called to make sprinklers compulsory in warehouses in the UK.
- The International Fire Protection Magazine website provides further information, including a link to the Business Sprinkler Alliance website where two publications can be found on the environmental impact and cost benefit analysis for fire sprinklers in warehouse buildings.

Cost Benefit Analysis of Sprinklers: BRE Report

- Sprinklers are cost beneficial in the following premises:
  - Bedsits of six units or more;
  - Most purpose built blocks of flats;
  - All Care Homes.

The Impact of Automatic Sprinklers on Building Design

- The Association of British Insurers (ABI) raise awareness in the industry on the beneficial impact of incorporating automatic sprinklers into building design. This independent report, provides those involved in the design and construction industry with useful and helpful information on the design implications of automatic sprinklers and outlines how sprinklers add value to building design.
- Unlike most other reference sources it focuses on the commercial and design impacts of automatic sprinklers rather than fire safety. The introduction of Sprinklers provides many benefits including life safety, business protection and sustainability. By looking at different building types/design options, this report identifies the capital and lifestyle costs, design benefits and flexibility, as well as the potential to reduce the construction programme.
- It also supports the view that sprinklers should be considered early on in the design process, dispelling the myths about cost and design freedoms.
- The full report can be accessed here : The Impact of Automatic Sprinklers on Building Design

In general there is very little conflicting evidence globally. Most research identifies the cost benefits of sprinklers in a wide range of accommodation.

We will continue to work with our partners to dispel the myths that have grown around sprinklers due to consistent misrepresentation in the global media especially the way sprinklers are portrayed in feature films, advertisements and television programmes.

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Current legislation in the UK

There are differing situations within the United Kingdom.

England

In England there is no specific legislation requiring sprinklers since the repeal of local acts. The requirements for sprinklers are contained within the guidance of volumes 1 and 2 of Approved Document B to the Building Regulations. These requirements apply differently based on building use, sizes and heights. There are some relaxations allowed in the requirements for means of escape, compartmentation, fire resistance and fire service access from a voluntary inclusion of sprinklers. The inclusion of sprinklers can therefore assist building designers in creating spaces that are more open and useable than would otherwise be acceptable without sprinklers.

In respect of schools there is a ministerial expectation that all new and refurbished schools are fitted with sprinklers, unless they are demonstrated to be low risk through the completion of a specified risk assessment tool. The NFCC have concerns that this expectation is not being met in the majority of new build schools.

Wales

In Wales all new residential premises including Care Premises (plus schools funded by the Welsh Government) must be fitted with sprinklers.

Scotland

In Scotland there is a requirement to fit all new Enclosed Shopping Centres, Residential Care Buildings, High Rise Domestic Buildings above 18m, Sheltered Housing Complexes, School Buildings and some warehouses with sprinklers and recognition of the benefits of sprinklers in Technical Standards.

Scotland have also taken a position of requiring sprinklers in new high rise structures above 18 metres, whereas in England the threshold is 30 metres.

Approach Elsewhere

One of the most notable cases globally is Scottsdale in Arizona where sprinklers have been required in new buildings for over 30 years. This has resulted in dramatic reductions in fire losses in terms of both life and property. The impacts have been well documented.

There is a varied picture in relation to fitting sprinklers globally.

New Zealand has a much simpler standard for residential sprinklers which has resulted in a wider fitting of sprinklers in dwellings.

Most developed countries now require sprinklers in some form in high rise developments. Subject of much interest, and as a result of high rise fires involving cladding, is the increasing move to fit balconies with sprinkler systems.

Case Studies

Efficiency and Effectiveness of Sprinklers in the United Kingdom. This report contains a number of case studies.

Studley Green Experience: Ten years on. This report details the success on the UK's first large scale fitting of sprinklers in social housing.

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Summary of UK Sprinkler Incidents 2016.

Residential Flat Fire. Bedfordshire

School saved by sprinkler System. Hertfordshire.

London: Teddington School Sprinkler Save

Portable Misting Systems save three lives. Derbyshire

There are numerous short case studies on successful sprinkler activations on the NFSN website

Document End

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