

Sprinkler Saves UK Annual Review 2022/2023

Summary

The purpose of this report is to demonstrate the vital role sprinklers play in fire safety arrangements by highlighting real, tangible examples of where they have actuated and in doing so, saved life and protected property. The review also seeks to raise awareness of the importance of collating sprinkler saves from across the United Kingdom so societal awareness of the true value of sprinklers can be increased. A sprinkler save is categorised as where one or more sprinkler heads have activated and contained, controlled or in some cases, extinguished a building fire. The story around the incident provides powerful evidence of the ability of sprinklers to protect life, firefighters, and property from fire.

The review uses information collated from: -

- 57 fire incidents from the financial year ending March 2023, in which sprinklers were reported as activating and having an impact. The reported incidents span a wide range of building types and occupancies.
- Interrogating fire data sourced from the home office online Incident Recording System (IRS) for primary fires attended by Fire and Rescue Services (FRS) in which sprinklers were reported as activating and having an impact for 2021/222.

About The British Automatic Fire Sprinkler Association (BAFSA)

BAFSA is the UK's leading professional trade association for the fire sprinkler industry. Our primary objectives include providing authoritative information on the benefits of fire sprinkler systems and how fire sprinklers can play a significant role in saving life and property from the devastating effects of fire. To this end, BAFSA works closely with the Government, FRS, building control officers, insurers, architects, and town planners.

Our Vision

Fires are adverse events. They are destructive, with their knock-on effects including toxic and corrosive effects of smoke and the environmental effects of fire water from firefighting operations. The Sprinkler Saves UK website is hosted and coordinated by BAFSA, supported by the National Fire Chiefs Council (NFCC), National Fire Sprinkler Network (NFSN) and Business Sprinkler Alliance (BSA).

We want to enhance protection against fire through the increased acceptance and use of fire sprinklers. We do this by encouraging and promoting the installation of sprinklers and other forms of Automatic Fire Suppression Systems (AFSS) driving a culture change so that they are understood and accepted as the norm for the United Kingdom. One way to achieve this is by working with our FRS representatives and sprinkler industry colleagues to collate sprinkler activations. The details of the incidents provide further evidence of the reliability and effectiveness of sprinkler systems in containing, controlling, and extinguishing fires, protecting life and preventing fire damage. Promoting these activations via the Sprinkler Saves website, social media, and other communication channels.

There is clear evidence that fire sprinklers can be effective in the rapid suppression of fires, preventing flashover and can therefore play an important role in achieving a range of benefits for both individuals, firefighter safety and the community in general.

They also provide environmental benefits, reducing fire loss, damage to the environment, reducing carbon emissions and reducing the use of water from the resulting firefighting operations. It is anticipated, year on year, the number of reported sprinkler saves will increase due to:

- The increased use of automatic fire suppression in the built environment across the UK.
- In England, changes in regulatory guidance for the installation of sprinklers in high rise residential premises reducing the building height at which sprinklers are required to 11m.

- The rise of retrofitting projects in large scale residential properties, due to the focussed attention on fire safety in the aftermath of the tragic Grenfell Tower fire.
- We will stimulate growth in reporting through the:
 - Appointment of a designated sprinkler saves coordinator.
 - Increased communication of the reported sprinkler activations via multiple communication channels.
 - Publication of reports that will provide a detailed analysis of compound data on fire incidents in the UK where sprinklers are identified as present or activated.

Nick Coleshill coordinates the Sprinkler Saves website for BAFSA. Any questions or enquiries can be submitted to nick.coleshill@bafsa.org.uk

Review

This review is split into three sections:



Part A - Collation of monthly sprinkler case studies

A sprinkler save has been chosen for each calendar month for the 12-month period ending March 2023, focussing on a variety of buildings, occupancies and types of fires.

1. April 2022: Specialised Housing Kitchen Fire

- Occupancy: Specialised Housing
- Where: Hackney, England
- When: 21 April 2022
- Fire Rescue Service: London Fire Brigade (LFB)
- Time of call: 12:36
- Incident: Kitchen FireAutomatic fire suppression system (AFSS):
- Automatic fire suppression system (AFSS): Sprinklers

The National Fire Chiefs Council, "Fire Safety Specialised Housing Guide" identifies the challenge we face with an aging population and the demographic change in the sheltered housing population. An increased occurrence of mobility difficulties, reduced sensory capability and cognitive issues, all of which bring about greater risk from fire, both in terms of the likelihood and vulnerability of residents.

The benefits of installing fire sprinklers for this type of high-risk occupancy were clearly vindicated following a fire within a kitchen of a four-roomed flat on the second floor. Two sprinkler heads operated containing and controlling the fire prior to the arrival of the LFB with only minor fire damage reported within the flat. No injuries were reported.

Supporting the most recent UK research¹ for fires where the sprinkler operated within specialised housing on 36 occasions, accounting for.

- Sprinklers are 22% effective in controlling or containing the fire.
- Sprinklers are 68% effective in extinguished the fire.

2. May 2022 Academy school fire

- Occupancy: Educational
- Where: Elgin Scotland
- When: 16 May 2022
- Fire Rescue Service: Scottish Fire and Rescue Service (SFRS)
- Time of call: 09:07
- Incident: Toilet Fire
- AFSS: Sprinklers

SFRS were mobilised to a fire within a toilet cubicle on the first floor of a three-storey purpose-built academy. Upon entry to the toilet, firefighting crews established the fire had been extinguished by the activation of the commercial sprinkler system. No further firefighting media was required, with minimal fire and smoke damage reported.

The cause of the fire was recorded as a malicious act; the third reported school fire to Sprinkler Saves UK involving a malicious act within school/academy toilets in Scotland during a 4-month period. Reaffirming the importance that sprinkler coverage is required in areas vulnerable to intentional fire setting like toilet facilities. Since 2010, all new-built Scottish schools are required to have AFSS fitted, protecting both the occupants and the building in line with Scottish Building Standards for non-domestic buildings.

The benefits of implementing this statutory legislation were clearly demonstrated for the above-mentioned incidents. On each occasion the fire was contained to the compartment of origin.

This is not the case for England, current guidance, when first released in 2007, acknowledged the important role of sprinklers and stated that "all new schools should have fire sprinklers, installed except in a few low-risk schools".

Unfortunately, it is possible for designers and developers to circumvent the installation of sprinklers, by using other building design guidance. The outcome is new-built schools without fire sprinklers being installed.

"The outcome of this fire could have been so much different if this incident had been in England"

When you compare this to the three major school fires in Derbyshire, where fire sprinklers were not fitted, that were all severely damaged by fire in May/October 2020.

- Harrington Junior School fire, 28 May 2020
 St Mary's Catholic Voluntary Academy, in
- Darley Abbey, 3 October 2020Ravensdale Infant School, 5 October 2020



Image credit: Derbyshire Fire Rescue Service Ravensdale Infant School



Image credit: South Yorkshire Fire & Rescue Service (SYFRS)

A similar malicious fire was reported by SYFRS within a commercial shopping centre toilet cubicle in Sheffield which was successfully extinguished by the activation of the sprinkler system before the arrival of the FRS.

3. June 2022 Hotel fire

- Occupancy: Hotel
- Where: London, England
- When: June 11, 2022
- Fire Rescue Service: LFB
- Time of call: 18:37
- Incident: Basement Fire
- AFSS: Sprinklers

LFB were mobilised to a fire involving stacked towels (spontaneous combustion) within the basement corridor of a large hotel. On arrival it was established that the fire had been extinguished, containing the fire to the compartment of origin following the activation of two fire sprinkler heads.

The benefits of sprinklers for life safety are well documented but their impact on business continuity however is under reported. The hotel sustained minimal disruption following the fire, allowing the business to resume operations within an hour of the incident and reducing costs to the business by ensuring that in the event of a fire it is only a minor inconvenience.

The vulnerability of hotels to fires was very publicly demonstrated in England within a twoweek window in 2019. 18 July a Premier Inn in Bristol was effectively destroyed and on the 2 August the holiday inn at Willenhall suffered a similar fate, sprinklers were not fitted in either case.



Image credit: West Midland Ambulance Service

4. July 2022 Residential tall building fire

- Occupancy: Purpose built residential block of flats, 10 or more storeys
- Where: Watford, England
- When: 12 July 2022
- Fire Rescue Service: Hertfordshire Fire and Rescue Service.
- Time of call: 04:50
- Incident: Secondary fire
- AFSS: Sprinklers

The benefits in the rise of sprinkler retrofitting projects in residential tall buildings, due to the focussed attention on fire safety in the aftermath of the tragic Grenfell Tower fire, were clearly demonstrated following this incident.

1. Efficiency and effectiveness of sprinkler systems in the United Kingdom: An Analysis from fire service data (Optimal Economics 2017)



Image credit: Watford Observer

In 2019, Watford Community Housing invested £1.5 million upgrading various fire safety measures in two of their high-rise residential blocks, providing a further layer of safety from fire for its most vulnerable residents, which included the installation of fire sprinklers.

In the early hours an external fire developed on the ground floor of the building adjacent to a storage area. Due to the intensity of the fire, the fire spread vertically to the upper floors jumping into two flats directly above the seat of the fire due to the open windows. The residential sprinkler system within the apartments operated which contained the fire preventing further fire spread within the common areas. This incident justifies the approach taken by Watford Community Housing to retrofit sprinklers in their two high-rise residential buildings as part of a holistic approach to reducing the effects of fire.

In 2021/2022, purpose-built high rise residential blocks of flats of 10 or more storeys accounted for 69² fires within the UK where sprinklers were present and operated reinforcing that sprinkler systems are very effective when they operate within tall buildings.

- 52% Effective in controlling the fire.
- 39% Effective in extinguishing the fire.

5. August 2022: Commercial unit fire within a multi-occupancy entertainment centre

- Occupancy: Commercial Unit
- Where: Castleford, England
- When: 20 August 2022
- Fire Rescue Service: West Yorkshire Fire & Rescue Service (WYFRS)
- Time of call: 20:16
- Incident: Fire involving an electrical applianceAFSS: Sprinklers

WYFRS were mobilised to a fire within a commercial unit resulting in 200 people evacuating the premises following the activation of the premises fire alarm and sprinkler system. On arrival, firefighters identified that three sprinkler heads within a commercial unit had activated, extinguishing the fire involving an electrical portable appliance, minimising further

fire spread/damage. The benefits of installing sprinklers for business continuity were reinforced following this relatively small fire:

- The incident was prevented from accelerating into a major fire.
- The entertainment centre was briefly closed



Image credit: West Yorkshire Fire & Rescue Service

immediately following the incident.

- Other commercial units/activity sites were not affected, remained opened as usual following the fire.
- Only minor business disruption to the unit directly involved with the fire which re-opened for businesses within six days.
- Severe damage, loss of earnings and ongoing disruption to the business was avoided.

The outcome of this fire could have been so different if sprinklers had not been installed. A larger fire could lead to building unit being either completely or partially destroyed. The Association of British Insurers report that fire is one of the most expensive property insurance claims with £1.3 billion paid out to customers during 2018.

6. September 2022 Warehouse Fire

- Occupancy: Warehouse
- Where: Northamptonshire, England
- When: 20 September 2022
- Fire Rescue Service: Northamptonshire Fire & Rescue Service (NFRS)
- Time of call: 18:30
- Incident: Fire involving an electrical appliance
- AFSS: Sprinklers

On arrival, firefighters identified that the loading bay within a single storey warehouse distribution centre was heavily smoke logged. Breathing apparatus crews were committed to locate the seat of the fire where it was identified that an industrial cardboard baler had caught fire which had been successfully contained by the activation of one sprinkler head. The remaining hotspots were extinguished by operational crews using a jet.

The premises was handed back to the occupier in less than four hours. Allowing the business to be back up and running within a short period of time.

The contrast between two warehouse fires with and without a sprinkler system can be clearly identified from the following two incidents.

Warehouse fire, London



Image credit: LFB

21 September 2022 a fire involving a mixed-use premises warehouse in Hainault involving 20 fire appliances, 125 firefighters which took nearly 12 hours to contain, the building was extensively damaged by the fire, sprinklers were not fitted. **Warehouse fire, Leicestershire**

16 March 2022 a fire took hold in the premises storage racking system which was successfully contained/controlled by the activation of two sprinkler heads. This allowed the FRS to establish their operational tactical pan prior to committing crews to extinguish the fire using firefighting media.



Image credit: Lutterworth Fire Station

7. October 2022 LFB Match Funding, specialised housing fire

- Occupancy: Specialised Housing
- Where: London Borough Barking and Dagenham, (LBBD) England
- When: 16 October 2022
- Fire Rescue Service: LFB
- Time of call: 16:10
- Incident: Fire Involving Smoking Materials
- AFSS: Sprinklers

London Fire Brigade launched a competition in 2014 to incentivise housing providers to install sprinklers to support and promote the authority's sprinkler strategy. This competition promoted the use and adoption of residential sprinkler systems which was vindicated following the fire involving smoking materials at a London specialised housing scheme.

On arrival firefighters identified a fire on the second floor within a two-roomed flat that had been contained by the actuation of three sprinkler heads. Firefighters wearing breathing apparatus were committed, extinguishing the fire with one firefighting jet. The fire is believed to have been accidental, arising from the unsafe disposal of smoking materials.

^{2.} FOI Requests for Incident Recording System Data relating to primary fires attended by FRSs in which sprinklers were present for England, Scotland, and Wales for the financial year 2021/22

The decision taken by the LFB to launch the match funding sprinkler competition should be applauded, without this initiative the outcome of this incident could have been so much different.

Clearly demonstrated following the fire at the Newgrange care home, Hertfordshire was the scene of a major fire in 2017 which broke out in the early hours of the morning. The home was occupied by 35 residents and sprinklers were not fitted. The fire resulted in 33 elderly and immobile residents being rescued by firefighters. Sadly two residents died because of the fire.

Following the fire the coroner raised concerns that sprinkler systems are not mandatory in care homes. Hertfordshire Fire and Rescue Service recommended sprinklers be installed. The home was rebuilt – without fire sprinklers.

8. November 2022 Dwelling Fire

- Occupancy: Dwelling, house
- Where: Ebbw Vale, Wales
- When: 20 November 2022
- Fire Rescue Service: South Wales Fire Rescue Service (SWFRS)
- Time of call: 06:28
- Incident: Fire Involving Smoking Materials
- AFSS: Sprinklers

SWFRS were called to a domestic fire within the rear first floor bedroom of a newly built detached dwelling of two floors. On arrival firefighters established that the fire had been extinguished by the actuation of the domestic sprinkler system. From the time of the call to the stop message sent by the Officer in Charge of the incident was within 29 minutes, with no injuries reported.

The outcome of this incident was made possible by the decision taken in October 2013, by the National Assembly for Wales passing new Building Regulations that require sprinklers to be installed in new and converted homes in Wales.

Unlike Wales, sprinklers are not mandatory for new and converted homes in England. In England, for life safety, new residential blocks over 11m are fitted with sprinklers to meet statutory guidance.

The benefits of installing sprinklers for domestic/residential premises can clearly be identified following this image taken from a similar bedroom fire involving smoking materials which was extinguished following the activation of one sidewall sprinkler head.



9. December 2022 City of London market Fire

- Occupancy: Market
- Where: City of London, England
- When: 14 December 2023
- Fire Rescue Service: LFB
- Time of call: 18:15
- Incident: Fire involving a refrigeration Unit
- AFSS: Sprinklers

The benefits of installing a commercial sprinkler system for business continuity was clearly demonstrated following this incident which took place during one of the busiest trading periods of the year. A fire involving an operational meat market resulting in the loss of three tonnes of meat within a refrigeration unit.

The fire was contained following the activation of the sprinkler system within the compartment of origin, no injuries were reported. The market reopened the same evening with only one shop unit closed due to the fire.

"Sprinklers are the only fire safety system that detects a fire, raises the alarm and suppresses a fire. They save lives and protect property and they are especially important where there are vulnerable residents who would find it difficult to escape, like those with mobility problems."

LFB spokesman

10. January 2023 Wrexham factory activation

- Occupancy: Factory
- Where: Wrexham, Wales
- When: 5 January 2023
- Time of call: 08:44
- Incident: Fire involving a rubber conveyor belt
 Eiro Poscuo Service: North Wales Fire & Poscu
- Fire Rescue Service: North Wales Fire & Rescue Service

This was the second reported fire within seven months, resulting in the activation of the premises sprinkler system. On arrival firefighters identified that seat of the fire involved the industrial granulator which had overheated due to friction involving the industrial rubber conveyor belt. Two sprinkler heads contained and controlled the fire.

A breathing apparatus team consisting of two wearers were committed to the seat of the fire, extinguishing it with one hose reel jet. Minor fire damage was reported to the floor of origin.

The sprinklers prevented a relatively minor fire from accelerating into a major one, limiting business disruption and preventing severe damage.

11. February 2023 Runcorn warehouse activation

- Occupancy: Warehouse
- Where: Runcorn, England
- When: 10 February 2023
- Time of call: 06:10
- Incident: Fire involving liquid petroleum gas (LPG) powered forklift truck
- Fire Rescue Service: Cheshire Fire & Rescue Service (CFRS)





Image credits: CFRS

On arrival CFRS, established that the seat of the fire was located on the ground floor within a single-storey warehouse involving the LPG powered forklift truck. The fire was contained by the activation of the sprinkler system with only one sprinkler head operating.

This incident clearly demonstrates the benefits of sprinklers for firefighter safety where gas cylinders are involved. The dangers of fires involving gas cylinders should not be underestimated.

A fire where a cylinder is confirmed to be involved has the potential to be devastating. When exposed to extreme heat gas cylinders are at a risk of failure and may rupture due to overpressure, increasing the risk to firefighters when tackling fires involving cylinders.

It is paramount that fires involving cylinders are immediately cooled with copious amounts of water, reducing the risk of rupture. In this case this was achieved by the activation of the sprinkler system. This allowed time for the Officer in Charge to implement their operational tactical plan, the remaining hot spots were extinguished using firefighting media.

12. March 2023 Farnborough waste recycling centre Activation

- Occupancy: Waste Recycling Centre
- Where: Farnborough England
- When: 9 March 2023
- Time of call: 00:32
- Incident: Fire involving household waste.
- Fire Rescue Service: Hampshire & Isle of Wight Fire & Rescue Service

This incident involved approximately 20 tonnes of household waste contained within a single storey warehouse 32m x 17 m. The fire had been contained/controlled by the actuation of the premises drencher sprinkler system.

Operational crews were committed wearing breathing apparatus using firefighting media to extinguish the fire with an onsite mechanical digger which was used to turn over the burning waste.



Image credit: Hampshire & Isle of wight Fire & Rescue Service

This demonstrates the green credentials of Automatic Fire Suppression Systems (AFSS) containing the fire before the arrival of the FRS.

On a regular basis, images from major waste fires across the country are published on social media and television news. These images focus on the scale of these incidents with the number of fire appliances and firefighters working to control the fire with the backdrop of a large smoke plumes. The incident is then soon forgotten... old news lost in the clouds.

However, do we consider the adverse consequences on our natural environment?

- Air contamination from the fire/smoke plume and the impact it will have on land and water courses.
- The impact of fire service firefighting activities, specifically the water run-off from firefighting hoses/jets containing toxic products.
- Other environmental discharges or released from burned material.

This incident identifies that active fire protection systems, specifically AFSS should be seen as part of a holistic approach minimising fire damage as part of a greener approach from the fire sector which is often overlooked.

Reporting fire sprinkler activations

The importance of reporting a sprinkler save should not be underestimated. BAFSA wants to enhance protection against fire through the increased acceptance and use of fire sprinklers by encouraging the wider acceptance and installation of fire sprinklers. BAFSA sees this driving a culture change so that fire sprinklers are understood and accepted as the norm in the United Kingdom

The promotion of reported sprinkler activations depends on the goodwill and resources of individual FRS, the majority of which do not have a nominated fire officer responsible for the promotion of AFSS to forward this information to Sprinkler Saves UK.

Likewise, the quality of the IRS data captured is dependent on the fire officer who inputs the data and their training, experience of AFSS and information to complete reporting. Not all fire officers might be able to identify the difference between a sprinkler or water mist system or have the data on the number of sprinkler head activations before leaving the scene for example.

BAFSA has established a working relationship with representatives of individual FRS and sprinkler industry colleagues to share details of sprinkler activations. These events would be recorded within the IRS incident data and forwarded to the Sprinkler Saves coordinator. The outcome of this is Sprinkler Saves UK raising awareness of the benefits to fire safety from sprinklers with details of hundreds of sprinklers saves; publicised with images, details of the event and the impact of sprinklers.

Reporting a sprinkler save will make a difference, if you hear of a save, report it. To submit a sprinkler save, use the designated sprinkler activation report form available to download from www.sprinklersaves.co.uk. All completed sprinkler saves should be forwarded to nick.coleshill@bafsa.org.uk.

Part B - Interrogating information, data captured, submitted from 57 reported fires where fire sprinklers were reported as present having an impact for 2022/23

For presentation, the data is analysed for the financial year ending March 2023. Of the 57 incidents where sprinklers were recorded as being present and operated.



Residential/domestic premises accounted for 30 activations

Non-residential premises accounted for 27 activations

On average.

- 4.75 incidents reported per month.
- 1.10 incidents reported per week.

The distribution of these fires is shown in figure 1, detailing the number of fire sprinkler saves reported and where fire sprinkler systems actuated by building type and FRS.

It is interesting to compare this data captured from fire incidents used by the national governments across Great Britain for the period to 2018/19 to 2021/22. 859 incidents were reported in which fire sprinklers were recorded as present and had operated.

On average, just below 215 incidents each year. This would indicate the sprinkler saves in this report represent around 26.5% of the fire incidents where sprinklers are recorded.



Figure 1- Number of fires reported with sprinkler systems activating by building type, Fire and Rescue Service



Figure 2- Number of fires where sprinkler systems operated by individual building type.

Figures collated for 2022/23, show the reporting of sprinkler activations have remained relatively static with like-to-like activations compared to 2021/22 with 57 activations an increase of four.

Of the 57 incidents reported for 2022/23, purpose-built block of flats dominated the figures in which sprinklers were reported as actuated, with 21 incidents. Again, it is interesting to compare these to IRS data across Great Britain for the period 2018/19 to 2021/22 for incidents where sprinkler operation is reported. The leading occupancy is once again purpose-built blocks of flats (33% of all incidents), but it is not dominant being closely followed by industrial/factory premises (30% of all incidents). Network (NFSN) and supported by BAFSA in the publication, "Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: An Analysis from Fire Service Data".

Across all premises types:

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

The finding of this review reinforces the above-mentioned findings that fire sprinklers have been proven to have a good track record in reducing the impact of fire.



Figure 3 The effectiveness of the sprinkler system containing, controlling, or extinguishing the fire.

- What the data is unable to confirm is why 4 incidents were recorded as unknown, further investigation of the IRS data would be required.
- The accuracy of the data cannot be confirmed until the release of official government fire data of fires attended by FRS for the period of April 2022 to March 2023.

The most recent UK research was commissioned by The National Fire Chiefs Council (NFCC), National Fire Sprinkler





Part C – IRS fire data, focusing on fires where fire sprinklers were reported as having an impact for the financial year 2021/22

The Sprinkler Saves Annual Review 2021/22 reported 53 sprinkler activations analysing, interrogating three key areas:

- The number of fires reported within sprinkler systems activating by building type and FRS.
- Number of fires where sprinkler systems operated by individual building type.
- Impact of sprinkler systems by purpose group.

What cannot be defined by this data is the actual number of sprinkler activations captured by the attending FRS. This requires additional data to examine trends across Great Britain. This was obtained via a freedom of information request to the respective teams collating incident data for England, Scotland and Wales. Data was obtained for the financial year 2021/22. It was identified 260 incidents were captured consisting of.



143 Residential/domestic sprinklers actuations



117 Non-residential sprinkler actuations

A difference of 203 sprinkler activations when compared to the Sprinkler Saves UK Annual Review 2021/2022 review. The challenge of capturing sprinkler fire actuations is dependent on the goodwill and resources of FRS.

Likewise, the quality of the IRS data captured is dependent on the fire officer who inputs the data and their training, experience of AFSS and information to complete reporting. Not all fire officers are able to identify the difference between a sprinkler or water mist system or have the data on the number of sprinkler head activations before leaving the scene.

A balcony fire at West Hampstead, London on 3 July 2018 involved the actuation of multiple sprinkler heads but the completed IRS data recorded the number of heads having operated as zero. London Fire Brigade conducted a case study of this incident to raise awareness in the residential sector of the benefits of AFSS in a multi-fire residential tall building and identified that in 19 minutes from time of call, five apartments were exposed to fire and 12 sprinkler heads activated. The benefit of this decision has been reenforced for one residential block, within the space of a 10-month period, 10 refuse store/ chute fires were reported which were either contained, controlled or extinguished by the premises sprinkler system.

BAFSA realises that fire incident data provides powerful evidence of the benefits of fire sprinklers. Publishing a series of reports analysing IRS data on fires in sprinklered buildings from 2018-2022. One report focuses on purpose-built blocks of flats identifying where sprinklers were reported as being present, activated.

It was identified that refuse store fires accounted for the highest number of sprinkler activations outside the flats with 123 fires. What cannot be defined, by the data, is whether the installation of sprinklers within buildings is limited to these refuse stores alone or extended to the occupied flat areas.

The Government publication, "Purposebuilt block of flats guide" provides guidance, advice to reduce the risk of fire in refuse and chute rooms including that further protection can be provided by a sprinkler system. This is clear evidence that this is being applied.



Figure 5 Number of fires where sprinkler systems operated by building type.

Of the 260 incidents reported, industrial

Britain for fire sprinklers in industrial premises. There is guidance for fire sprinklers

in single storey warehouse buildings of 14,000 m² in Scotland, 20,000m² in England

and Wales

premises accounted for the highest number (70) of sprinkler activations. This is surprising as there is no regulatory guidance in Great



Figure 4 - Reported sprinkler system activations by fire and rescue service, building type.

It is no surprise that LFB dominate the figures within figure 4 with a total of 46 activations but what is surprising is that the figures show that West Midland Fire & Rescue Service dominate the number of residential sprinkler activations with 34.

This could be due to the decision taken by Birmingham City Council to install sprinklers in all their communal bin areas of their residential tall building property portfolio in addition to their three-year programme to retro-fit sprinklers in all their high-rise blocks of flats in 2017. This is closely followed by purpose-built block of flats (10+) flats/maisonettes with 69 incidents, which is unsurprising. Post the Grenfell Tower fire, regulatory and sector changes relating to fire safety have occurred. One such change has been the increased installations of fire sprinklers across the country with housing providers, local authorities and developers voluntarily committing to install fire sprinklers in purpose-built block of flats on a new and retrofit basis.

The London Borough of Croydon were the first council to retrospectively fit fire sprinklers in their 26 high-rise residential blocks over 10 storeys with support and guidance from the London Fire Brigade, completed 2018/2019. The benefits of this project were clearly identified following two separate flat fires in the same residential block in the space of two months in 2021. Both were controlled by the installed fire sprinklers. What the data is unable to confirm is the rationale behind why a small majority of sprinkler fires were identified as not containing/controlling the fire or recorded as unknown. Further interrogation of the IRS data fields would be required to explore this anomally.



Figure 5 The effectiveness of the sprinkler system in containing the fire across all dwelling type.

Note: A preliminary examination of the instances where sprinklers are reported to have operated and did not control the fire was completed. 5 of the 7 indicated that the sprinklers were not in the room of origin of the fire.



Figure 6 The impact of sprinkler fires in non-residential fires by purpose groups.

Note: A preliminary examination of the instances where sprinklers are reported to have operated and did not control the fire was completed. 2 of the 9 indicated the sprinklers were not in the room of origin of the fire.

Further Reading/Resources

Incident Data Report Focus on Sprinklers

BAFSA realises that fire incident data provides powerful evidence of the benefits of fire sprinklers and has published a series of reports analysing IRS data on fires in sprinklered buildings from 2018-2022. The aim of these analyses is to identify trends and gain insight on the use of sprinklers within Great Britain to help effect a change so that sprinklers are the norm, not the exception.

The reports focus on a range of building types including purpose-built block of flats, educational buildings where fire sprinklers were recorded as being present and operated having an impact. The fire data around the incidents provides powerful evidence as to the ability of fire sprinklers and other forms of AFSS in protecting our communities from fire.

Fire sprinklers play a significant role as part of an appropriate package of fire safety measures reducing the impact of fire on people, property, and the environment.

- Sprinkler Saves UK Annual Review 2021/22
- Fire Sprinklers Greater London Review 2018/21

The two publications focus on incidents where sprinklers were recorded as being present and operated and having an impact providing powerful evidence as to their ability of fire sprinklers and other forms of AFSS in protecting our communities from fire.



All three publications are available to download from the BAFSA website, www.bafsa.org/bafsa-publications

SPRINKLER SAVES: ANNUAL REVIEW 22/23

Appendix A, Sprinkler Saves reported for the financial year ending March 2023

No.	Date of incident	Location	FRS	Premises type	Occupancy	Location of fire	Main source of ignition	Sprinkler system	Impact of sprinkler system	Number of heads actuated
1.	02/04/2022	London	London Fire Brigade	Residential	Student accommodation	Kitchen	Cooking	Wet Pipe	Contained	5
2.	09/04/2022	Newport	South Wales Fire Rescue Service	Residential	Residential block of flats	Refuse Store	Malicious	Wet Pipe	Unknown	2
3.	20/04/2022	Newport	South Wales Fire Rescue Service	Residential	Residential block of flats	Refuse Store	Unknown	Wet Pipe	Extinguished	Unknown
4.	21/04/2022	Hackney	London Fire Brigade	Residential	Specialised Housing	Kitchen	Electrical	Wet Pipe	Contained	2
5.	22/04/2022	Newport	South Wales Fire Rescue Service	Industrial	Industrial Processing	Process Room	Electrical	Wet Pipe	Contained	1
6.	24/04/2022	London	London Fire Brigade	Residential	Residential block of flats	Bedroom	Unknown	Wet Pipe	Contained	1
7.	25/04/2022	Elgin	Scottish Fire & Rescue	Residential	School	Toilet Cubicle	Malicious	Wet Pipe	Contained	1
8.	01/05/2022	London	London Fire Brigade	Residential	Residential block of flats	Balcony	Smoking	Wet Pipe	Contained	1
9.	04/05/2022	Birmingham	West Midlands, Fire Rescue Service	Residential	Residential block of flats	Refuse Chute	Unknown	Wet Pipe	Contained	Unknown
10.	05/05/2022	Carlisle	Cumbia Fire Rescue Service	Industrial	Factory	Factory floor	Mechanical defect	Wet Pipe	Contained	1
11.	16/05/2022	Elgin	Scottish Fire & Rescue Service	Commercial	School	Toilet	Malicious	Wet Pipe	Extinguished	Unknown
12.	22/05/2022	Glossop	Derbyshire Fire & Rescue Service	Commercial	School	Room	Oxygen cylinder	Wet Pipe	Contained	2
13.	24/05/2022	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Kitchen	Cooking	Wet Pipe	Contained	Unknown
14.	26/05/2022	St Helens	Merseyside Fire & Rescue Service	Commercial	Supermarket	Front of house	Electrical	Wet Pipe	Extinguished	Unknown
15.	28/05/2022	Westcliffe- On-Sea	Essex Fire & Rescue Service	Residential	Hostel	Kitchen	Cooking	Wet Pipe	Contained	Unknown
16.	01/06/2022	Bridgenorth	Shropshire Fire & Rescue Service	Commercial	Recycling Plant	Plant floor	Unknown	Wet Pipe	Contained	Unknown
17.	08/06/2022	Elgin	Scottish Fire & Rescue Service	Other Resi- dential	Extra Care	Ground floor	Unknown	Wet Pipe	Extinguished	1
18.	11/06/2022	London	London Fire Brigade	Commercial	Hotel	Basement Com- mon Ways	Spontaneous combustion	Wet Pipe	Contained	2
19.	18/06/2022	Glossop	Derbyshire Fire & Rescue Service	Commercial	School	Assembly room	Unknown	Wet Pipe	Extinguished	2
20.	03/07/2022	London	London Fire Brigade	Residential	Residential block of flats	External Balcony	Careless Disposal	Wet Pipe	Contained	5
21.	06/07/2022	Bristol	Avon Fire Rescue Service	Industrial	Recycling Plant	Ground floor	Lithium Battery	Wet Pipe	Contained	Unknown
22.	12/07/2022	Watford	Hertfordshire Fire & Rescue Service	Residential	Residential block of flats	Room	Careless Disposal	Wet Pipe	Contained	2
23.	13/07/2022	Wrexham	North Wales Fire Rescue service	Industrial	Warehouse	Plant floor	Mechanical	Wet Pipe	Contained	6
24.	16/07/2022	Milton Keynes	Buckinghamshire Fire & Rescue Service	Commercial	Warehouse	Loading bay	Vehicle	Wet Pipe	Contained	Unknown
25.	26/07/2022	Widnes	Cheshire Fire & Rescue Service	Residential	Warehouse	Loading bay	Vehicle	Wet Pipe	Contained	3
26.	12/08/2022	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Refuse/chute bin store	Malicious	Wet Pipe	unknown	Unknown
27.	13/08/2022	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Refuse/chute bin store	Malicious	Wet Pipe	unknown	Unknown
28.	14/08/2022	Fareham	Hampshire & Isle of Wight Fire & Rescue Service	Industrial	Recycling Centre	Conveyor Belt	Unknown	Wet Pipe	Contained	2
29.	17/07/2022	Coventry	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Storage Cupboard	Electrical	Wet Pipe	Contained	1
30.	20/08/2022	Castleford	West Yorkshire Fire & Rescue Service	Commercial	Entertainment Centre	Reception Area	Electrical	Wet Pipe	Contained	3
31.	21/08/2022	London	London Fire Brigade	Residential	Residential block of flats	Kitchen	Cooking	Wet Pipe	Extinguished	1

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No.	Date of incident	Location	FRS	Premises type	Occupancy	Location of fire	Main source of ignition	Sprinkler system	Impact of sprinkler system	Number of heads ac <u>tuated</u>
32.	26/08/2022	Doncaster	South Yorkshire Fire & Rescue Service	Residential	Residential block of flats	Kitchen	Cooking	Wet Pipe	Contained	1
33.	27/08/2022	London	London Fire Brigade	Residential	Residential block of flats	Living Room	Careless disposal	Wet Pipe	Contained	1
34.	20 /09/2022	Kettering	Northampton- shire Fire & Rescue Service	Industrial	Warehouse	Loading bay	Unknown	Wet Pipe	unknown	Unknown
35.	24/09/2022	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Refuse/chute bin store	Malicious	Wet Pipe	unknown	Unknown
36.	27/09/2022	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Room	Unknown	Wet Pipe	Extinguished	Unknown
37.	16/10/2022	London	London Fire Brigade	Residential	Specialised Housing	Living Room	Careless disposal	Wet Pipe	Contained	3
38.	26/10/2022	Alfreton	Derbyshire Fire & Rescue Service	Industrial	Warehouse	Room	Mechanical	Wet Pipe	Extinguished	1
39.	26/10/2022	London	London Fire Brigade	Industrial	Recycling Centre	Ground floor	Unknown	Wet Pipe	Unknown	Unknown
40.	03/11/2022	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Kitchen	Unknown	Wet Pipe	Extinguished	1
41.	10/11/2023	Glossop	Derbyshire Fire & Rescue Service	Domestic	House	Bedroom	Smoking materials	Wet Pipe	Extinguished	Unknown
42.	20/11/2022	Ebbw Vale	South Wales Fire & Rescue Service	Domestic	House	Bedroom	Careless disposal	Wet Pipe	Extinguished	1
43.	25/11/2022	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Refuse/chute bin store	Malicious	Wet Pipe	Extinguished	1
44.	14/12/2022	London	London Fire Brigade	Commercial	Market	Refrigeration store	Electrical	Wet Pipe	Extinguished	Unknown
45.	17/12/2022	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Refuse/chute bin store	Malicious	Wet Pipe	Unknown	Unknown
46.	24/12/2022	Manchester	Greater Man- chester Fire & Rescue Service	Residential	Residential block of flats	Bedroom	Unknown	Wet Pipe	Contained	2
47.	02/02/2023	Birmingham	West Midlands Fire & Rescue Service	Residential	Residential block of flats	Refuse/chute bin store	Malicious	Wet Pipe	Extinguished	Unknown
48.	05/01/2023	Wrexham	North Wales Fire Rescue Service	Industrial	Factory	Room	Mechanical	Wet Pipe	Contained	2
49.	11/01/2023	London	London Fire Brigade	Residential	Student accommodation	Bedroom	Careless disposal	Wet Pipe	Extinguished	1
50.	23/01/2023	Bolton	Greater Man- chester Fire & Rescue Service	Commercial	Restaurant	Ground floor	Malicious	Wet Pipe	Extinguished	2
51.	01/02/2023	London	London Fire Brigade	Residential	Residential block of flats	Hallway	Unknown	Wet Pipe	Extinguished	2
52.	10/02/2023	Runcorn	Cheshire Fire & Rescue Service	Commercial	Warehouse	Ground floor	Unknown	Wet Pipe	Extinguished	1
53.	28/02/2023	lpswich	Suffolk Fire Rescue Service	Commercial	Shopping centre	Kitchen	Electrical	Wet Pipe	Extinguished	2
54.	02/03/2023	Leicester	Leicestershire Fire & Rescue Service	Commercial	Shopping centre	Storeroom	Electrical	Wet Pipe	Contained	1
55.	03/03/2023	Sheffield	South Yorkshire Fire & rescue service	Commercial	Shopping centre	Toilet cubicle	Malicious	Wet Pipe	Extinguished	1
56.	09/03/2023	Farnborough	Hampshire & Isle of wight Fire &Rescue Service	Industrial	Waste Recycling Centre	Ground floor	Unknown	Dry Pipe	Contained	unknown
57.	14/03/2023	Cleveland	Cleveland Fire Brigade	Industrial	Factory	Ground floor	Electrical	Wet Pipe	Contained	1

The accuracy of the data cannot be confirmed until the release of official government fire data of fires attended by FRS for the period of April 2022 to March 2023.

