

STUDLEY GREEN – Ten years on

Julian Parsons reviews the success of the residential sprinkler project at Studley Green and considers the future of such systems in social housing

IT HAS been 10 years since the start of the pioneering residential sprinkler project at Studley Green in Wiltshire, England. This was the first – and is still the biggest – large-scale installation of residential sprinklers for social housing in Europe.

The project involved fitting sprinklers in a range of homes, from bungalows to six-bedroom houses, on the Studley Green estate in Trowbridge. The sprinkler-protected homes formed one part of a £10m plan to redevelop the pre-cast reinforced concrete properties on the estate.

As a result of the project, Studley Green is now a very different place to live, and residential sprinklers have played a significant part in this success. Recognising the achievement, the housing estate was last year named the winner of the National Housing Federation's *Best Neighbourhood Design Award: The Liveability Test*, which is awarded, ten years on, to homes that housing associations have built.

The project required a large number of stakeholders who shared a vision of a community provided with the best possible protection from fire.

Initially, the housing association, Selwood Housing, working with West Wiltshire District Council, decided on a phased

programme of construction, where the existing social housing stock, which was aging badly, would be replaced by 212 units of new sustainable housing.

The idea of installing residential sprinklers came from Wiltshire's then chief fire officer, John Craig, who learnt of the redevelopment from a local news programme and saw an opportunity. A campaigner for residential sprinklers since seeing their value in the USA in the 1980s, Mr Craig contacted the district council and became involved in discussions.

Sprinkler partnership

Although both the council and housing association expressed initial concerns over the potential financing of sprinklers, there was an atmosphere of open-mindedness in the early meetings. There was also an extra caveat: if residents did not want sprinklers, then they would not be fitted.

A demonstration of the effectiveness of sprinklers took place in October 1998, with all stakeholders – including the local tenants' and residents' association – attending. This underlined the performance of sprinklers and helped dispel many reservations. Following the demonstration, it was agreed that a partnership should be created to drive forward the inclusion of sprinklers at Studley Green.



In the two successful activations to date, sprinklers prevented fire spread in a kitchen and extinguished a small fire involving a sofa



The partnership included founding members – Selwood Housing, the district council, the tenants' and residents' association, and the Residential Sprinkler Association (RSA) – with construction firm McAlpine, Wessex Water, and residential sprinkler equipment providers and installers also brought on board.

Key to the early success of the partnership was agreement on funding. An initial costing was arrived at, and also agreed was the partners' scale of contribution to the project.

The cost was to be split between the housing association, the district council and the RSA. In particular, the RSA agreed to find funding for a significant amount of the cost, and installers would make similar pledges to ensure the project's success.

Work on the project subsequently began, but early costs changed quickly because 19 retrospective sprinkler fits and eight partial retrofits were required to properties that were already under construction. Also, there were unseen costs in some units where extra rows of brickwork had to be introduced to raise the building height, to allow the sprinklers to be installed under compartment floors.

The project was not without its problems, and certainly some of the participants felt they were taking a leap of faith. But it says much for the success of the partnership that additional costs were minimised, thanks to the attitudes and open-mindedness of all concerned.

In the end, the project was delivered for around £300,000 and officially opened, with television coverage, in June 1999. However, this total does not demonstrate the full cost, as much work and materials were provided in goodwill in an effort to make the Studley Green project a reality.

Successful activations

To date, there have been two successful activations of sprinkler systems on the estate. On both occasions, significant damage was avoided and, on one occasion, it is very likely that two lives were saved.

The first successful activation took place in a four-bedroom house in June 2004. In this incident, a fire in an adjacent shed spread into the kitchen of a home through the back door, which was constructed mainly of UPVC. The sprinkler head in the kitchen activated and prevented the fire from spreading into the property.

This was a severe fire that would have caused significant damage to the home if sprinklers had not been present. It is without doubt that the fire would have badly damaged the ground floor of the property and, in all likelihood, the first floor too. The fire occurred on a Saturday afternoon. After the replacement of the door and some clearing-up work, the family were back living in the house on the following Monday.

The second successful sprinkler stop occurred in February 2008 in the ground-floor flat of a two-storey building comprising four self-contained purpose-built flats.

The first call was received by the fire service at about 2am from a neighbour who had heard the sprinkler system activate. The neighbour managed to awaken the flat's occupants by banging on their front door, and they subsequently escaped. On the arrival of the first fire crew, it became apparent that there had been a small fire in the lounge, started by a lit cigarette accidentally left on the sofa. This fire had actuated the sprinkler head in the lounge, which had extinguished the fire.

The fire service used positive pressure ventilation fans to remove the remaining smoke from the property. The carpet in the living room was wet underfoot and some electrical equipment was damaged by water. However, there was no need for any real salvage operation, due to the lack of significant amounts of water.

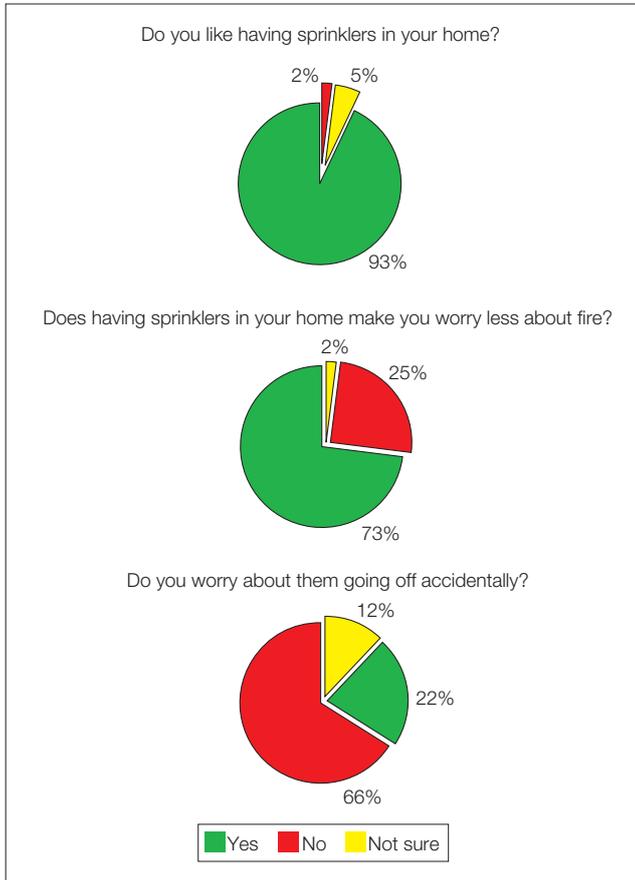
The occupants had been asleep in the bedroom next to the living room. The hard-wired smoke detection system had been disabled by the occupants sometime previously. With no early warning, the sprinkler system almost certainly saved the sleeping occupants from serious injury and quite probably saved their lives, as they had no knowledge of the developing fire in the adjacent living room.

Survey of residents

One of the big questions about residential sprinklers is whether people are prepared to live with sprinklers in their homes. This question prompted a survey of the residents at Studley Green.

Some 204 survey forms were sent out and 61 (30%) replies were received (see Figure 1). Responses showed an overwhelming acceptance of sprinklers. Some 95% of respondents said they would want sprinklers in their next home and that it should be law that new homes are fitted with sprinklers.

Figure 1: Some findings from the residents' survey



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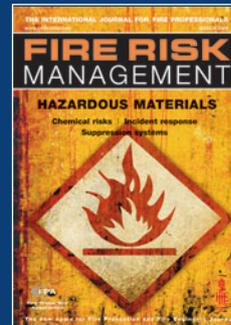
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It was interesting to find out whether having sprinklers in the home made residents less careful about fire. In fact, 37% of responding residents said they were less careful. However, there were some comments that people were more conscious of fire because they did not want the sprinklers to activate – some 22% said they were concerned that the sprinklers might go off accidentally and cause damage. These responses were from people who had lived there for an average of five years. This illustrates that the fire industry still has much work to do to educate the public that it is only the sprinkler heads in the area of a fire which activate, rather than all heads, and that water damage from sprinklers is usually minimal.

There is a great deal of public misconception about sprinklers, much of which comes through misrepresentation of sprinkler systems in television and films where they are shown to go off all at once or for spurious reasons. The experience of living with sprinklers at Studley Green over the last ten years has demonstrated that such myths have no substantial basis. There has not been a single accidental activation; nor have there been any deliberate activations through vandalism or malicious use. The systems have proved to be totally reliable.

Other concerns raised in the survey were that some heads became loose in their ceiling mountings, resulting in them protruding from the ceiling, and also problems with buzzing transformers supplying the alarm panel.

Long-term servicing

Fire Sprinkler Systems of Melksham has had the contract for the last six years to service the residential sprinklers on the estate. Owner Alan Price, who was also involved in the later construction phases of the project, feels that some mistakes were made in the initial installations that would not be made now.

However, it is perhaps understandable that errors were made, because the draft for development DD 251: *Sprinkler systems for residential and domestic occupancies. Code of practice* – a relatively new and unfamiliar standard at the time – was being used. Also, some of the system components had to be fabricated from scratch. Mr Price has now agreed a two-year plan with Selwood Housing to start rectifying some of the problems with the systems.

One of the main complaints from residents over the years has been the buzzing of transformers, which form part of the alarm panel. The original panels were fed by 12V transformers, and this created a noise nuisance. Some of these transformers have been replaced over time, while the remaining problem units will be replaced by 24V transformers and new alarm panels.

Another reported problem has been concealed sprinkler heads protruding from the ceiling. On investigation, it has been discovered that this was a problem with initial installation due to insufficient pipe mounting brackets. While the pipes were fixed according to the DD 251 code of practice, they were not always fixed closely enough on either side of the point where the head is dropped through the ceiling, or on bends.

Consequently, over time, vibration has caused the heads to protrude from their concealed location.

Also, the valve groups were located under the sinks in an array of pipes and valves – very different from current practice. Much has now been learnt about security of the sprinkler isolation valve, as there have been occasions where the sprinkler valve has been mistaken for the main cold water valve and turned off. This is being addressed as part of the rectification plan, which will involve replacing isolation valves and improving the pipe work arrangements.

Not all the systems on the estate were fitted with internal sounders. Where this is the case, sounders will be provided as part of the programme of works. This has proved to be a worthwhile step from lessons learned in the successful sprinkler activation in the flat in February 2008, where the occupants were vulnerable due to smoke detectors being deactivated. This is also something to be borne in mind where current systems are being installed and the existing smoke detection system is being accepted as the means of warning.

Housing association view

Selwood Housing owns and manages the Studley Green estate, and many of its staff who were involved at the outset of the project still work there today. The housing association is rightfully proud of its achievements, and can clearly see the benefits of installing sprinklers. However, it is difficult for it to incorporate sprinklers in more developments because of economic pressures, which act as barriers to the wholesale provision of sprinklers in social housing.

Housing associations are regulated not-for-profit, private companies that provide new affordable homes. The rents charged are set by the Housing Corporation (the government agency that funds new homes and regulates housing associations in England) to reflect local earnings and affordability. Typical rents are half to two-thirds of private-sector rents.

When homes are built to let at affordable rents, there is often a funding gap between the cost of land, building the home, and managing and maintaining it, and the income from the rent. Housing associations bid competitively to the Housing Corporation for grants to develop new affordable homes, or they bid to developers.

The inclusion of residential sprinklers, while welcome, adds to the build and future maintenance cost of a development. Because it is not a mandatory standard to be achieved, any housing association including sprinklers will be at a disadvantage to any other association that chooses not to include sprinklers. As its costs will be higher, it is also unlikely to get the funding to build homes in the first place.

However, there are potential opportunities for the provision of sprinklers in social housing:

- sprinklers could be included in future versions of the Housing Corporation's Design and Quality Standards

(which set out its requirements and recommendations for all new homes that receive social housing grants). This would create a level playing field for housing associations, by removing the economic disadvantage against a housing association which wishes to make the fitting of sprinklers a policy

- the Housing Corporation could offer additional grants for sprinklers
- the Housing Corporation does offer innovation grants where it can be shown that sprinklers offer significant benefits for safer and stronger communities

It has to be remembered, though, that the Housing Corporation is under pressure to deliver the Government's ambitious building programme for social housing on a finite budget. This is further tempered by the current global economic climate.

From the perspective of a registered social landlord/housing association involved with sprinklers, such as Selwood Housing, the economic disincentives need to be removed by amending the Housing Corporation's Design and Quality Standards, or making a change in the law. However, it is difficult to get such changes without the supporting evidence. There is a vicious circle here that needs to be broken.

Future progress

Studley Green continues to be a beacon of what sprinklers can achieve when installed in social housing. The residents on the estate have sent a clear message that people can live with sprinklers and that they add a new aspect to their quality of life. In addition, the long-term cost-benefits make a strong business case for the inclusion of sprinklers in future projects. With the Government's ambitious building programme for social housing in England under way, Communities and Local Government's Fire and Resilience Department is understood to be actively exploring the options.

However, the immediate future of residential sprinklers in social housing is uncertain. There are economic obstacles to the wholesale provision of these life-saving systems. Through working in partnership, we can explore how the benefits of sprinklers can be introduced into design codes and how funding can be secured. The environmental benefits of sprinklers could also be a powerful tool in demonstrating how they can contribute to safer and stronger communities.

It would be a shame and a wasted opportunity if, in another ten years' time, Studley Green was still the largest community of social housing to be protected by sprinklers ■

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