INTRODUCTION

1. This document relates to the Fire Sprinklers in Residential Premises (Scotland) Bill introduced in the Scottish Parliament on 17 November 2003. It has been prepared by Michael Matheson, the member in charge of the Bill, with the assistance of the Parliament’s Non-Executive Bills Unit, in accordance with Rule 9.3.3A of the Parliament’s Standing Orders. The contents are entirely the responsibility of the Member and have not been endorsed by the Parliament. Explanatory Notes and other accompanying documents are published separately as SP Bill 13–EN.

BACKGROUND

2. The Scottish Executive’s *Fire Statistics Scotland, 2001* reported that 103 people lost their lives to fire. 88 of those deaths occurred in the home. Of those 103 people, 34 were aged over 60 years. In addition to fatal casualties there were 1,799 non-fatal casualties. The number of fires in Scotland increased by seven per cent in the year 2001 to 59,400 compared with 55,700 fires in 2000.

3. Scotland has a poor fire safety record in comparison to the other countries in the United Kingdom. According to Scottish Executive Fire Statistics, Scotland had 20 fatal casualties per million population in the year 2001. This was double the figures for England, Wales and Northern Ireland who had 10, 11, and 10 fatal casualties per million population respectively.

4. In terms of non-fatal casualties Scotland also has a higher rate than the rest of the UK. In 2001 there were 399 non-fatal casualties per million population in Scotland whereas in England, Wales and Northern Ireland there were 268, 322 and 250 non-fatal casualties respectively.

5. The current law relating to fire safety in homes stems from regulations made under the Building (Scotland) Act 1959 (c.24) which will be replaced by the Building (Scotland) Act 2003 (asp 8) (“the 2003 Act”) when it comes into force in 2005. The current regulations provide for the standards that all new buildings, and converted or altered buildings, must meet. The current regulations specify standards for structural fire protections, means of escape from fire and facilities for fighting fire. At present there is no requirement in legislation for the mandatory installation of fire sprinkler systems in residential premises.
6. Fire sprinkler systems are now coming to the fore and are perceived as one of the possible solutions in the fight to improve domestic fire safety. Fire sprinkler systems have been used for a number of years in the commercial sector, for example in shopping centres and offices.

7. The fire service believe that fire sprinkler systems will assist in preventing injury not only to the occupants of the property but also to the fire fighters who have to enter properties and rescue people, especially when the occupants are elderly or less mobile. In 2001, 70 fire service personnel were injured as a result of fire in Scotland and it is hoped that this Bill can reduce this number.

8. Residential fire sprinkler systems have been used elsewhere for more than two decades, but the UK has been slow to appreciate their contribution to fire safety and the saving of lives. Fire sprinkler systems are therefore a new weapon in efforts to reduce loss of life by fire in Scotland.

Use of fire sprinkler systems

9. Central Scotland Fire Brigade (“CSFB”) actively promotes the use of fire sprinkler systems. In the Firemaster’s Annual Report for 2001-02, CSFB reiterated its commitment to progressing the installation of fire sprinkler systems. It sees these systems as a means of reducing the loss of life and injuries resulting from fires in domestic properties. In partnership with Strathclyde Fire Brigade, CSFB has been involved in establishing a policy for other Scottish fire brigades on the use of fire sprinkler systems. The policy endorses the commitment of Scottish fire brigades to progress life safety using fire sprinkler systems through co-ordinated campaigns and publicity.

10. CSFB is working with Stirling Council to provide fire sprinkler systems in properties where people are at risk. They have recently fitted sprinklers in a development of one-bedroom bungalows. Other new properties in Stirling providing care in the community will also be fitted with fire sprinkler systems. The Council is also working with private landlords to provide fire sprinkler systems in houses in multiple occupation (“HMOs”).

11. In 1998 in Studley Green, England the West Wiltshire Residential Sprinkler Association was formed. This group consisted of representatives from local authorities, the fire service and tenants. In Studley Green 212 new houses were built to replace a demolished part of the estate. After discussion with prospective tenants, and demonstration of a sprinkler system in action, it was decided in January 1999 that fire sprinkler systems be fitted in the new homes.

12. Fire sprinkler systems are being increasingly used in Europe. In shopping centres, in Finland, France, Germany and Spain, other fire safety rules may be relaxed if sprinklers are fitted. In Italy, under a ministerial decree issued in 1994, sprinklers have to be fitted in hotels if they have more than 1,000 beds. Under Polish law any building higher than 55 metres must have a sprinkler. Norwegian regulations provide for fire sprinkler systems in hospitals and care institutions consisting of more than one storey in a wooden building or other building that entails a major fire risk.
13. In the United States a number of towns and cities now require fire sprinkler systems to be fitted in new residential properties. On 14 June 1985 the City of Scottsdale, Arizona passed a comprehensive ordinance that every multi-family residential structure and all single family residences built after 1st January 1986 must be able to accommodate a fire sprinkler system. In the following 15 years 41,400 single-family homes were fitted with fire sprinkler systems. In those 15 years there were 49 fires in those homes with no deaths. There were however over the same period 13 deaths in homes without sprinklers. The cost of fire has also decreased for properties with fire sprinkler systems. The average fire loss for properties without a sprinkler is $45,019 compared to the average loss in a property with a sprinkler of $2,166.

14. In 1973 Vancouver City established a task force of fire department officials and building officials to investigate fire problems in the city and to recommend simple upgrading solutions. Among other measures they recommended that fire sprinkler systems were installed in rooming houses and hotels which housed some of the city’s most vulnerable people. This measure was then extended to include hospitals and nursing homes for elderly people and has been subsequently extended to include many more categories of residential property and all new property. The number of fire deaths has dramatically reduced. In 1973 there were nine deaths per 100,000 and this fell to less than one death per 100,000 in the 1990s. In 1998 it was estimated that approximately 25.7% of the housing stock in the city was fitted with a sprinkler system, equating to some 39,700 homes.

POLICY OBJECTIVES OF THE BILL

15. The objective of the Bill is to amend the current law to provide for the installation of fire sprinkler systems in specified residential properties, namely HMOs and sheltered housing. The occupants of these properties are at particular risk from fire.

16. An HMO is a house which is the principal residence of more than two people who are not members of the same family and who do not own the house. The essence of an HMO is that the occupants of the house share facilities for example bathrooms, laundry or cooking facilities, and do not inhabit a totally separate dwelling. The Bill utilises similar definitions to those contained in the Civic Government (Scotland) Act 1982 (Licensing of Houses in Multiple Occupation) Order 2000 (SSI 2000/177) (“the 2000 Order”). The 2000 Order provides that knowingly giving permission for the occupation of a house as an HMO is an activity for which a licence is required under the terms of the Civic Government (Scotland) Act 1982 (c.45). The licensing system established by the 2000 Order is separate from the provisions of this Bill.

17. The Bill creates a new offence of knowingly permitting multiple occupation of a house when a fire sprinkler system is not provided.

18. Not all HMOs owners are required to provide a fire sprinkler system under the provisions of the Bill. The Bill expressly excludes certain HMOs from its provisions, for example HMOs owned by co-ownership bodies and care home services. Mostly these exclusions mirror the exclusions that can be found in the 2000 Order, however the Bill also excludes student halls of residence, employee accommodation, women’s refuges and hostels for homeless people. This Bill is seen as a starting point from which it is hoped requirements for fire sprinkler systems will be extended to these types of property in the future.
19. Sheltered housing is housing that, because of certain features or design, is suitable for occupation by people who are elderly, disabled, infirm or in some other way vulnerable.

20. Following commencement the Bill will make it a requirement under the 2003 Act that fire sprinkler systems are installed when building new sheltered housing or converting an existing property to sheltered housing. The Bill provides that where a person makes an application for a warrant to construct a sheltered housing complex or convert a building to a sheltered housing complex, the local authority is only able to grant that warrant if each house in the complex is fitted with a fire sprinkler system. The Bill does this by making the requirement to provide a fire sprinkler system a requirement of the building regulations.

21. Only new or newly converted sheltered houses have to have fire sprinkler systems installed under the provisions of the Bill. The Bill does not require the fitting of fire sprinkler systems into existing sheltered houses.

22. The Bill provides for its extension by order made by the Scottish Ministers to other categories of house or residential premises.

**IMPLEMENTATION**

23. Only owners, or agents acting for those owners, who give permission for properties to be HMOs after the Bill comes into force will be subject to the provisions of the Bill. Owners or agents who prior to the Bill coming into force have already given permission to a specific set of occupants to occupy their property as an HMO will not be required to install a fire sprinkler system until the occupants of the HMO change. A change in occupation is deemed by the Bill to be a change in permission. If the property is sold, or the agent for the property changes, and the occupants do not change following that sale then the fire sprinkler system requirement will not apply. The requirement only applies when there are changes to the occupants of the property. However if a property is empty when it is sold then the new owner must install a fire sprinkler system prior to giving permission for the property to be in multiple occupation.

24. The Bill does not impact on any sheltered housing construction project until after the date that it comes into force. This is consistent with previous amendments to building legislation. Only warrants to build or convert a property to sheltered housing granted after the Bill comes into force will require fire sprinkler systems.

25. The Bill provides for its main provisions to commence 12 months after Royal Assent. This period allows those affected to prepare for and install the necessary fire sprinkler systems.

**CONSULTATION**

26. The Member prepared a consultation paper *Residential Sprinklers: A Bill for Scotland’s Parliament*, sponsored by the Chief and Assistant Chief Fire Officers Association, which was consulted on between September and December 2001.

27. The consultation sought views on:
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- the residential properties that should be a priority for fire sprinkler installation and over what timescale;
- the effect that installation of fire sprinklers would have on housing stock and the construction industry;
- how the financial implications could be addressed;
- how the proposals could be enforced; and
- the potential concerns over the installation of fire sprinklers.

The responses

28. The consultation was sent to over 100 organisations. 39 replies were received including 11 from local authorities and housing providers and ten from the fire service.

29. The responses were generally supportive. Some concerns were raised as to how the Bill would work in practice, these are set out and addressed at paragraphs 36 to 49.

30. Among those consulted were ten insurance companies, three insurance industry representative organisations, ten house builders and two building industry representative organisations. It is regrettable that none responded.

31. The responses that were received identified a number of properties that could potentially benefit from the installation of fire sprinkler systems: HMOs, sheltered housing, nursing homes, supported accommodation, hostels, prisons and student halls. The overwhelming theme of the responses was a need for fire sprinkler systems in accommodation where the occupants are vulnerable, not in control of the accommodation and less able to fend for themselves.

32. On timescale for implementation of the Bill a varied response was received. For new residential homes eight respondents said that the Bill should commence immediately and a further six respondents said that provisions for properties whose use has changed should also take effect immediately. For existing properties the views were far more widespread with periods ranging from three years to 25 years.

33. 51% (20) of the respondents said that people would feel safer in the property if fire sprinkler systems were fitted and that in the long term fire sprinkler systems would make housing stock more desirable. A need for more education was highlighted as well as increased publicity demonstrating fire sprinkler systems and their potential. This would assist people accepting sprinklers in the same way that smoke alarms are now considered as essential in any home.

34. The cost of installing fire sprinkler systems was a major concern, especially in existing properties. Landlords in the social rental sector were particularly concerned, not only about the cost, but of the practical problem of installing sprinklers into existing properties. Grant assistance through the Housing (Scotland) Act 2001 (asp 10) and other fire safety trade-offs were mentioned as possible ways to address the cost issue. 12 respondents were clear that the Bill should not make fire sprinkler systems mandatory for every residential property.
35. The respondents did not see enforcement and penalties as a concern. Generally they thought that existing methods could be utilised. 22 respondents said that the measures could be policed through the building control system. Other suggestions were utilising existing licensing and registration schemes.

Sprinklers fact and fiction

36. Among the responses to the consultation certain concerns over fire sprinkler systems were raised:

Legionnaire’s disease

37. Legionnaire’s disease is an acute, respiratory infection caused by the bacterium legionella. These bacteria typically live in water and can reproduce in high numbers in stagnant warm water such as can be found in certain plumbing systems, hot water tanks, cooling towers and air conditioning systems. There was concern that the introduction of fire sprinkler systems would lead to an increase in Legionnaire’s disease.

38. The Loss Prevention Council (“LPC”) issued a technical briefing note in May 1999 stating it was unlikely that the conditions found in fire fighting systems would support the growth of legionella. The LPC is an organisation that provides technical services, including research, standard setting, product testing, certification and training, and is owned by the Association of British Insurers and Lloyds of London. They went on to state that the risk of catching legionellosis from a properly installed and maintained fire fighting system was negligible, giving simple examples of control measures that could be adopted. These include incorporating the fire fighting system into existing legionella monitoring systems on site and annual inspections of the water tanks to monitor deposit build up.

Current British Standards

39. Concerns were raised by respondents that there was no British Standard for residential fire sprinkler systems. At present the British Standard for residential fire sprinkler systems is DD 251:2000 which is a draft for development. It provides recommendations for the design, installation, components, water supplies, commissioning and maintenance of fire sprinkler systems specifically for residential properties. It is undergoing final consultation and is expected to become a full British Standard in 2004, before this Bill comes into force.

40. The Bill specifies that any fire sprinkler system fitted under the provisions of the Bill must meet the British Standard in force, or, if none exist, the European Standard. Standards for construction products in the European Union are being harmonised through the Construction Products Directive (89/106/EEC). The current European Standard is BS EN 12845:2003.

Installation and maintenance: qualifications

41. Concerns were raised about the type of people that would install and maintain fire sprinkler systems and whether they would have adequate training and qualifications. There are accreditation schemes for the installation and maintenance of residential fire sprinkler systems. According to the LPC’s Loss Prevention Standard 1048 there are several acceptable standards for the installation of sprinklers both in commercial and domestic settings. For example DD
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251:2000, LPC technical bulletins and the American National Fire Protection Association guidelines. Once a contractor has completed the necessary training they will be added to a list of approved fire and security products and services held by the LPC Board.

42. The FIRAS is an independent accreditation scheme for the installers/applicators of passive fire protection products, i.e. those built into the fabric of the building. This scheme has recently been reviewed and updated and the Fire Sprinkler Association (“FSA”) recommends that all their members undertake this certification scheme. (The FSA has recently taken over the promotion of residential fire sprinkler systems from the Residential Sprinkler Association (“RSA”).) From January only the names of certificated installers, whether that is through the FIRAS or the LPC, will be listed on the FSA website as registered installers. The British Automatic Sprinkler Association (“BASA”) also has a list of certified installers on its website.

Maintenance

43. The RSA estimate that the annual cost of maintenance for a fire sprinkler system would be on average £35. This check involves ensuring the water supply is sufficient, that the alarm system works and that the sprinkler heads have not been obstructed. It takes no longer than 30 minutes. If there were many systems in the same vicinity the costs would be likely to decrease. In the Studley Green project mentioned above in paragraph 11, gas boiler service engineers have been trained to conduct the maintenance.

Water supply

44. The installation of a fire sprinkler system necessitates a reliable and adequate water supply. It is suggested by some respondents that this may be difficult to achieve in some areas where there is poor water pressure. However the Fire Brigade Union in their consultation response stated that any problem with water supply is not insurmountable. They state that even in remote areas where private water supplies are used, fire sprinkler systems should provide little cause for concern. Private water supplies have wells and pumps which the Fire Brigade Union indicate are regularly used with fire sprinkler systems.

45. In the report of the British Standards Advisory Council Fire sub-committee, Issues in the use of residential sprinklers in Scotland, water supply is not seen as a major issue. It states that, “pressures provided in the water mains generally exceed 1.5 bar and pose no particular problems for the effective operation of a system.”

Frost damage

46. It was another concern of respondents that fire sprinkler systems may be damaged by frost if properties were left unoccupied or unheated for a period of time during the colder months. In general the same piping is used in central heating systems so the same frost precautions must be taken. If this still poses a problem the CSFB note in their consultation response that flexi-tubing rather than traditional piping could be used.

Operational facts

47. A common misconception is that all sprinkler heads activate when a fire starts in the property. In reality a sprinkler is activated by heat and will only activate when a seal melts, or a
glass bulb bursts, when a set temperature is reached. Only the sprinkler nearest the fire will operate. A good example of this was a recent chip pan fire in South Ayrshire when only the sprinkler in the kitchen was activated.

48. The BASA advised that fire sprinkler systems can last between 30 and 40 years, that false activation of fire sprinkler systems is virtually unheard of and that leakage is a very small problem. This view is supported by the RSA who also say that leakage is rare. As mentioned above the pipes used for fire sprinkler systems are the same type as used in central heating systems about which concerns of leaking do not generally exist. The sprinkler industry states that one sprinkler in every 16 million will have some sort of manufacturing defect, including leakage.

49. An additional concern expressed about fire sprinkler systems is that they will flood properties when activated. The opposite is in fact true as in reality sprinklers only use a fraction of the water compared to fire service hoses. As the sprinkler activates almost immediately it has a much smaller fire to contain. On average a sprinkler will use between 1/25th and 1/100th of the water used by each fire service hose.

ALTERNATIVE APPROACHES

50. The member could have chosen to further promote the use of smoke detectors. However, of the 88 deaths in homes in Scotland in 2001, 58 homes (65 per cent) were either not fitted with a smoke detector or the smoke detector did not operate. Of the 1,799 non-fatal casualties in fire, in 1,123 of those incidents (62 per cent) a smoke detector was either not fitted or did not operate. This demonstrates that even after years of promotion smoke detectors have done little to reduce the death rates from fire in Scotland. In addition smoke detectors do nothing to stop the spread of the fire and protect the occupants of the property and the fire fighters.

51. The Bill could have sought to make fire sprinkler systems mandatory in all properties. The member in charge agrees with consultees that this would be unrealistic and very costly. The member in charge thus resolved to require fire sprinkler systems in the properties of people who are at most risk from fire as identified utilising statistical evidence, which is supported by the responses to consultation.

52. The responses highlighted the need for fire sprinkler systems in a variety of properties for example care homes, schools, hospitals and prisons. The provisions of this Bill only deal with properties used as houses. Order making powers are provided in the Bill to allow the Scottish Ministers to extend the provisions to other categories of house or residential property.

53. Nursing homes were also highlighted in the consultation as a place where residents were vulnerable. Following the Regulation of Care (Scotland) Act 2001 (asp 8) with its provisions for the regulation of nursing homes it was decided to omit them in order to allow owners of nursing homes to fulfil their duties under the new Act. The Regulation of Care Act also provides for national care standards to be prepared and published by the Scottish Ministers including care standards for older people. These might cover, for example, the quality of the accommodation and safety requirements. Nursing homes are a good example of a property that the HMO provisions of the Bill could be extended to in the future.
54. The longer-term priority for the installation of fire sprinkler systems is expected to follow from a risk assessment, carried out by local authorities in conjunction with fire authorities and organisations who represent the vulnerable in society, to identify those most at risk. Scottish Ministers could then use their order making powers to extend the requirement to types of property most at risk.

55. The proposed implementation timescale was also dictated from the responses to consultation. Only a short delay in commencement is required as the Bill only affects new and converted sheltered housing and the giving of new permissions for HMOs. The Bill also respects the views of consultee respondents that no retrospective measures be included.

56. There are a number of possible methods by which legislation requiring fire sprinkler systems could be introduced into properties where people are at risk from fire. The main alternative would have been to amend the regulations and orders that currently govern buildings and HMO licensing. However Members of the Scottish Parliament have no powers to introduce amendments to statutory instruments.

57. The provision to extend the powers of the Bill to other categories of property could also have been achieved by specifying set commencement dates. It was felt prudent to give the power to extend the categories to the Scottish Ministers in order that a phased approach can be taken initially while focussing on the most vulnerable groups. As acceptance of fire sprinkler systems grows then others are likely to voluntarily install them, eventually the hope is that installation becomes automatic in all properties.

NEXT STEPS FOR SPRINKLERS

58. This Bill is seen very much as a first step. Smoke alarms took over ten years to become accepted and fire sprinkler systems may have to endure a similar wait. The Bill provides a starting point allowing the momentum for the installation of fire sprinkler systems to begin. Fire sprinkler systems will not replace other types of fire prevention and detection but it is expected that over time they will become part of the machinery to combat fire.

59. The fire service will use the momentum created by the Bill to further promote the use of fire sprinkler systems. It is desirable that local authorities work with their local fire authorities to identify people who are vulnerable to the risks of fire and press for the installation of fire sprinkler systems in their properties. This process has already begun in some parts of Scotland. The overall aim of this Bill is to increase fire safety and commence the process of reducing Scotland’s unacceptably high death and injury rate from domestic fires.

EFFECTS ON EQUAL OPPORTUNITIES, HUMAN RIGHTS, ISLAND COMMUNITIES, LOCAL GOVERNMENT, SUSTAINABLE DEVELOPMENT ETC.

60. The Bill does not affect human rights, island communities or sustainable development.

61. The Bill will improve safety for certain vulnerable groups of society and as such has a positive equal opportunities impact, particularly in relation to sheltered housing, which by definition has certain features or is designed to be suitable for occupation by people who are
elderly, infirm or disabled. Each of these groups will benefit from the increased safety fire sprinkler systems provide and also the additional time to escape from burning buildings.

62. In relation to HMOs there is anecdotal evidence that some occupants are from disadvantaged groups for example the infirm and people with mental health issues. As is the case for sheltered housing, the increased safety and additional time to escape from fires provided by fire sprinkler systems will have a positive equal opportunities impact.

63. Local government will be affected in two ways. As landlords responsible for the construction of sheltered housing they will be required to install residential sprinkler systems in their properties that come under the provisions in the Bill. A full breakdown of the costs associated with the installation of fire sprinkler systems by local authorities can be found in the Financial Memorandum. However the number of sheltered housing complexes currently being built or converted by local authorities is decreasing and in the year 2001-02 local authorities built no new sheltered housing complexes.

64. The second effect on local authorities is through enforcement requirements. Local authorities will be responsible for monitoring and enforcing the change to the building control system required by the amendments to the 2003 Act. The Bill imposes new criteria for the granting of building warrants which will be administered by local authority staff. Building legislation is amended on average every two years through amendments to the building regulations so the provisions contained in this Bill will not amount to any greater burden for local authorities than arises from other changes in building standards.

65. In addition to enforcing the changes to building regulations local authorities as licensing authorities will be involved in seeking the identity of owners of properties where it is thought that an HMO offence is being committed. It is likely however that this will be done as part of other duties and therefore the extra burden is expected to be minimal.
FIRE SPRINKLERS IN RESIDENTIAL PREMISES (SCOTLAND) BILL

POLICY MEMORANDUM

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