

EAST AYRSHIRE COUNCIL

DEVELOPMENT SERVICES COMMITTEE: 10 MARCH 2004

PROPOSED FIRE SPRINKLERS IN RESIDENTIAL PREMISES (SCOTLAND) BILL

Report by Director of Development Services

1 PURPOSE OF REPORT

- 1.1** To inform the Committee on a consultation paper prepared by the Scottish Parliament's Committee on the Fire Sprinklers in Residential Premises (Scotland) Bill. The Scottish Parliament's Committee has agreed to call for evidence seeking views from all interested parties on the general principles of the Fire Sprinklers in Residential Premises (Scotland) Bill, which was introduced by Michael Matheson MSP as a Member's Bill on 17 November 2003. The Committee intends that evidence received will inform its consideration of the Bill at Stage 1.

2 BACKGROUND INFORMATION

- 2.1** At present there is no requirement in legislation for the mandatory installation of fire sprinkler systems in residential properties in Scotland under the Planning or Building (Scotland) Acts. For existing properties the owner of the property is responsible for fire safety and whether they choose to install fire sprinkler systems is a matter for them to decide. Regulations on the construction of new buildings and changes of use of existing buildings stem from the Building (Scotland) Act, which will be replaced by the provisions of the Building (Scotland) Act 2003 when it comes into force in 2005.
- 2.2** Section 3(1) of the 1959 Act confers upon the Scottish Ministers the power to make building standards regulations in relation to all aspects of building. The current regulations, the Building Standards (Scotland) Regulations 1990 as amended ("the 1990 Regulations"), specify standards for structural fire protection, means of escape from fire and facilities for fighting fire. However the 1990 Regulations only apply to new buildings and existing buildings when they are being converted. The requirements of the 1990 Regulations can be met by fitting smoke alarms to warn the occupants of fire. Figures from the Scottish Executive show that the number of deaths in Scotland's homes due to fire is double that of England, Wales and Northern Ireland which during 2001 resulted in 20 fatal casualties per million population.
- 2.3** Following the aftermath of the fire at Dalsalloch Social Services facility, Auchinleck in December 2001, the Chief Executive commissioned a Fire and Security Working Group to review the consequence of fires in Council properties and set down a strategy for reducing the numbers of fires within Council premises. One of the outcomes of this review was the inclusion of a

fire sprinkler system to be incorporated within all new public buildings and public buildings which were being significantly altered or refurbished. It was also highlighted that buildings which were designated as high risk and/or of significant value could have fire sprinkler systems retrofitted. Since these proposals were agreed at the Policy and Resources Committee on the 13 June 2002 various public building projects such as the proposed Galston Primary School, the Bellfield Bowling Pavilion, Kilmarnock have been designed with fire sprinklers as part of the fire safety strategy. Additionally, a small number of elderly residential properties at Afton Court, New Cumnock and Ross Court, Galston have been fitted with fire sprinklers under the Housing Capital Programme.

3 THE CONSULTATION PAPER

- 3.1** The main objective of the Bill is to amend the current law to provide for the installation of fire sprinkler systems in specified residential properties that are thought to be at particular risk from fire, namely Houses in Multiple Occupation (HMO's) and sheltered housing. (An HMO is a property which is the residence of more than two people who are not members of the same family and who do not own the house but do share facilities such as bathrooms, laundry or cooking facilities.)
- 3.2.** Certain types of property are not affected by the Bill. The Bill excludes HMO's from its provisions such as those owned by co-ownership bodies and care home services, and also student halls of residence, employee accommodation, women's refuges and hostels for homeless people. The Bill also excludes existing sheltered housing and domestic housing and affects only those properties, which are new or newly converted. However, under the new Building (Scotland) Act it would be possible for Scottish Ministers to consider extending the requirements for fire sprinklers to other types of house or residential facilities.
- 3.3.** Residential sprinklers have the potential to reduce fire death and property loss attributable to fire and the facts surrounding sprinklers are detailed in Appendix A. They do so without significantly jeopardising the affordability of the private housing and residential housing stock in this country. They can enhance the capacity of public officials to provide for the health and safety of all our citizens including those most at risk, such as the elderly, the very young and the disabled. At the same time, residential sprinklers can help to reduce expenditures for fire without diminishing the quality of the fire service and protection. This is vital in a time of limited public sector budgets.

4 CONCLUSION

- 4.1.** While the Bill aims to raise the fire safety standards in specific residential premises is to be welcomed in principle, it is considered that the Bill should be wider reaching and cover all new build residential facilities including homes for the disabled elderly etc. therefore introducing a higher standard towards life and property safety.

- 4.2 Should the Scottish Ministers consider the inclusion of the fire sprinkler proposals within the Building Standards the type of class of residential building should be increased to include all institutional and other residential facilities whereby there is a distinct risk from fire when people are sleeping within the premise. These facilities include residential accommodation for disabled, children, elderly, etc as fire will not make any distinction between occupant's types as proposed under the Bill.

5 FINANCIAL IMPLICATIONS

- 5.1 There are no financial implications for the Council as a direct result of the consultation exercise.

6 LEGAL/AUTHORITY IMPLICATIONS

- 6.1 There are no legal/authority implications for the Council at this stage as a result of the consultation exercise.

7 PERSONNEL IMPLICATIONS

- 7.1 There are no personnel implications for the Council as a result of the consultation exercise.

8 RECOMMENDATIONS

- 8.1 It is recommended that the Committee: -
- (a) note the contents of the report; and
 - (b) authorise the Director of Development Services to submit a report to the Scottish Executive on the Council's views as contained in Section 4.0.

Stephen Chorley
Director of Development Services
26 February 2004 (DMcD/SA)
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LIST OF BACKGROUND PAPERS

1. Fire Sprinklers in Residential Premises (Scotland) Bill.
2. Fire Sprinklers in Residential Premises (Scotland) Bill: - Policy Memorandum.

Anyone wishing to inspect the above papers please contact David McDowall on (01563) 576749.

Implementation Officer: Alan Neish

APPENDIX A

1. THE FACTS RELATING TO RESIDENTIAL SPRINKLER SYSTEMS

- 1.1. 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. 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.
- 1.2. 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. 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.
- 1.3. Residential sprinklers represent a different approach and technology to fire safety. They add fire suppression to the early warning of smoke detectors. First, a heat sensitive element – called the fusible link, detects the heat from the fire source. Secondly, the sprinkler releases water on the fire, extinguishing the fires or confining the fire until the Fire Service arrives. It is the ability of sprinkler systems to control or extinguish fires in their early stages that makes them such a critical tool in fire protection strategy.
- 1.4. Each sprinkler head responds independently, so that when heat is detected and the sprinkler goes off - which is referred to as “activation” – it puts water only on the affected area and not throughout the rest of the house or building. In roughly 90% of all documented sprinkler activations in residencies, one sprinkler has been sufficient to control a fire.

2. THE APPEAL OF SPRINKLER SYSTEMS.

- 2.1. The cost of sprinklers is significant compared to smoke detector costs but the appeal of sprinklers is also significantly increased for several basic reasons. Sprinklers offer a package of protection that is far broader than what can be achieved by other interventions. With sprinklers, the building owners are protecting not only lives, but also the property, the furnishings, and all the intangibles of residential security and peace of mind. Sprinklers achieve these benefits with proven automatic technology.
- 2.2. Like other state of the art automatic restraint systems (e.g., car airbags), they do not rely on changed human behaviour to prevent accidents and loss. The vast majority of all residential fires today are estimated to have behavioural causes like careless smoking, unattended cooking, or children playing with

fire. While we cannot design adults to never smoke carelessly or all children to not hide in the closet after they have accidentally set a fire, we can design sprinkler systems to control the results of this behaviour. Sprinklers offer opportunities for more effective use of fire and emergency service resources.

- 2.3. Sprinkler systems do not necessarily reduce the number of calls for fire-fighters, but they do reduce the severity of the fire, thereby reducing danger to fire-fighters and complexity of response, and because sprinklers could diminish the requirements of fire suppression, they also make it possible for the fire service to allocate more resources to other areas within the service.

3. SPRINKLER EXPERIENCE

- 3.1 We have to look to the United States of America (USA) for test studies and results for residential sprinkler applications, some major conclusions can be met by looking at these test results.

4.0 RESIDENTIAL SPRINKLERS SAVED LIVES.

- 4.1 The evidence on this point is overwhelming. There has not been a single residential fire fatality in a residence with a sprinkler system in either Napa, California or Cobb County, Georgia since the inception of those programs. There has not been a single fatality in Prince George County, Maryland in a building with a sprinkler system; Scottsdale, Arizona credits sprinkler systems with saving up to 52 lives since the test case started in 1985.
- 4.2 A 1984 report by the Bureau of Standards/National Institute of Standards and Technology (USA) estimated that the effect of adding fire sprinklers when smoke detectors are already present could reduce the number of fire fatalities by 63%.

5. RESIDENTIAL SPRINKLERS REDUCE PROPERTY LOSS

- 5.1 Again the evidence is dramatic – Cobb County, Georgia and Napa, California reported minimal or no damage for all of their sprinkler activation's, against potential losses extending into the millions. Naturally in the USA, average property loss in homes with sprinklers is 38% lower than homes without sprinklers. Where communities have a great deal of experience with residential fire sprinkler, the property loss reduction can be much higher. In Scottsdale, fire loss hit a ten-year low in 1992, despite nearly 30% population growth in the city in the previous decade.

6. RESIDENTIAL SPRINKLERS COSTS CAN BE SUBSTANTIALLY REDUCED AND OFFSET

- 6.1 Builders are understandably reluctant to add to the cost of new construction, especially in a tough economy and at a time when there is already concern that large number of UK residents are priced out of the new housing market. Research is underway more so within the USA, to advance technology,

reduce the cost and identify ways to overcome barriers to widespread use. There is increasing evidence that innovations like combining the sprinkler system with the in-home plumbing system shall make a massive difference in the insulation costs. There are a number of areas in which their cost of installation in residential situations can be directly mitigated.

6.2 **BUILDING TRADE OFFS –**

The requirements for increased specification of fire doors and fire retardant materials can be reduced. Also the length and number of escape routes can be reduced and provision for access by fire engines lessened allowing higher housing densities to be employed (subject to Fire Authority and Local Government approval).

6.3 **ARSON –**

Arson now allows for about one fifth of all dwelling fires and this proportion has increased steadily over the past decade or more. Although fire sprinklers cannot prevent arson as such they will minimise the damage caused.

6.4 **VANDALISM –**

Vandalism is a growing problem and is manifested both in terms of direct damage done as well as potential damage when safety is made inoperative.

6.5 **INSURANCE –**

Although there is no general policy, insurance companies will give discounts for sprinklered properties, which are typically around 15% of the Building & Contents premium.

7. **LESS OBVIOUS BENEFITS FOR USING SPRINKLER SYSTEMS.**

There are other less obvious benefits for fire sprinklers, which are usually only appreciated after a fire: -

7.1 **LOSS OF INCOME AND COST OF RE-HOUSING –**

A direct result of this is that landlords and mortgage companies do not experience a reduction in income and there are no costs of re-housing. Where property is demolished and the landlord will be without income for many months at a time of major expenditure.

7.2 **NATIONAL HEALTH SERVICE –**

By reducing injuries to both victims and fire fighters the cost to the national health will be considerably reduced. In 1997 18,600 people required an average of 4 days inpatient treatment and considerable convalescence afterwards, which leads us to;-

7.3 **SOCIAL SERVICES –**

Fire injuries are probably the most difficult to treat and result in the longest time of work – if indeed a return is possible. Although external burns are the most obvious injuries it is lung damage from hot smoke and fumes which is

often the most incapacitating injury and which may well prevent a return to work ever being possible.

8. REMOVING THE MYTHS SURROUNDING FIRE SPRINKLERS

8.1 HOW DO SPRINKLERS OPERATE? –

Fire sprinklers are individually heat-activated and connected to a network of water pipes. When the heat from a fire raises the sprinkler to its operating temperature (usually 68°C or 155°F) only that sprinkler activated delivering water directly to the source of the heat.

8.2 WHY ARE SPRINKLERS SO EFFECTIVE? –

All fires start small and, if detected and tackled early enough, can be controlled with very little water. Residential sprinklers are a special type of fire sprinkler, which respond very quickly and are completely automatic in operation. They can therefore tackle the fire at a very early stage, even if you are not at home, releasing water directly over the surface of the fire and sounding an alarm.

8.3 HOW RELIABLE ARE SPRINKLERS? -

Records from Australia and New Zealand (where all fires must be reported) between 1886 and 1986 show that sprinklers controlled 99.7% of all fires where they were fitted.

8.4 DO SPRINKLERS GO OFF ACCIDENTALLY? –

Records in service show that sprinklers are very dependable. The chance of a defective head is less than 1 in 16,000,000. The chance of an accidental discharge is considerably less.

8.5 WHAT ABOUT WATER DAMAGE? –

Typically a sprinkler discharges 10gallon/min. A fireman's hose on the other hand discharges 200+gal/min. In general a sprinkler system will use between 1/100th and 1/1000th of the water use by the Fire Brigade. This results in minor superficial damage as opposed to whole scale refurbishment or reconstruction.