Determination in respect of the use of self-closing devices on bedroom doors in a care home (FLSP 4/6/4)

Following advice from the Chief Fire and Rescue Adviser, the Secretary of State has determined, under article 36 of the Regulatory Reform (Fire Safety) Order 2005 that, in this case, the use of self-closing devices on bedroom fire doors provides the most appropriate solution to remedy the failure to comply with article 14 (2) (b) of the Order.

This Determination is based entirely on the circumstances of the care home in question and the decisions have been taken after careful consideration of the particular circumstances relating to this case.

A copy of the advice of the Chief Fire and Rescue Adviser to the Secretary of State underpinning this determination is set out below.

Chief Fire and Rescue Adviser's advice on a request for Determination under article 36 of the Regulatory Reform (Fire Safety) Order 2005

Introduction

1. In accordance with article 36 of the Regulatory Reform (Fire Safety) Order 2005 (the Order) the enforcing Fire and Rescue Authority and the responsible person for the premises jointly applied to the Secretary of State for the determination of the disputed matters related to technical fire safety. The parties were not in agreement over the appropriate technical solution to satisfy the requirements of the Order.

2. On receipt of a valid determination request, the Secretary of State has asked me to provide independent professional advice, in my role as Chief Fire and Rescue Adviser to inform his determination of the case.

3. This determination relates to the requirement, under article 14(2) (b) of the Order, for the responsible person to safeguard the safety of relevant persons by making it possible, in the event of danger, for persons to evacuate the premises as quickly and safely as possible

Technical description

4. The premises is used as a nursing home, providing care for residents, some of whom have dementia. It was built in 2003, and provides 36 beds for residents, over a ground and first floor. The bedrooms are situated on both floors and are accessed on each floor by a corridor. Each floor is further divided into fire compartments with groups of bedrooms ranging from a minimum of three to a maximum of seven bedrooms. The corridors are divided by cross corridor fire resisting doors which are held open by electromagnetic devices linked to the fire alarm. On activation of the fire alarm the cross corridor fire resisting doors return to the closed position. Each bedroom is single occupancy.

5. The disagreement between the responsible person and the enforcing authority is whether self-closing devices need to be fitted to the bedroom doors to allow safe evacuation by safeguarding the means of escape, or whether a management solution can deliver an equivalent level of safety. The enforcing authority is of the opinion that self-closing devices fitted to the bedroom doors are required to provide a suitable and sufficient method of satisfying the requirement given in article 14 (2) (b) of the Order. This would allow any fire in a bedroom to be contained to the room of origin and therefore adequately safeguard the means of escape. The responsible person's view is that a management solution can be provided sufficient to comply with this article. This would involve staff responding to the fire alarm and closing the bedroom doors in the event of a fire alarm activation.

6. No other features in the premises relating to risks from fire in these premises have been considered in this advice.

The Responsible Person's case

7. The responsible person's case is that the means of escape can be effectively safeguarded by using staff to ensure that the fire doors fitted to bedrooms are closed at all material times. At night, the staff will ensure that all bedroom doors are closed. At other times these doors will be permitted to be open. In case of fire, staff will respond and close the bedroom doors before the fire can grow to a level which will impede the means of escape.

8. The responsible person cites the standards for the building that were used to inform the design in 2003, notably the Health Technical Memorandum (HTM) 84: *Fire Safety in Residential Care premises* (part of the Northern Ireland Fire Code) as appropriate guidance. This indicates that self-closers are not required on bedroom doors so as to allow staff to observe residents easily and address the concern that residents could be become isolated. The means of escape principles and design of the building were given approval from the relevant building control Approved Inspector in 2003.

9. The responsible person indicates that subsequent risk assessments have shown that bedroom doors are closed at night but during the day this is not always done. They accept that this is due to an insufficient and robust fire policy and management plan and insufficient fire training for their staff. Their proposed solution is to demonstrate that the corridor escape routes from the bedrooms will be deemed to be protected corridors because they will be protected by staff closing the fire doors in a fire situation. This will be achieved by improved management policies, emergency procedures and the training regimes that are being put into place to address the potentially negative aspects of not installing self-closing devices on bedroom doors.

10. The responsible person notes that guidance in the Health Technical Memorandum 05-02: *Guidance to support functional provisions in healthcare premises*, states that bedroom doors for patient bedrooms do not require self-closers due to the potential for impeding escape during a fire emergency. Their view is that the bedrooms in this building have a sufficiently low fire load to ensure that that fire development will not be rapid and that staffing levels during the day will be similar to those in place in a hospital.

11. The responsible person recognises that the DCLG guidance recommends the use of self-closing devices on fire doors but notes that this is qualified by stating that the guidance should be followed *"except where otherwise demonstrated by your fire risk assessment."* This further states that responsible persons *"are not obliged to adopt any*

particular solution for escape routes in this section if you prefer to meet the relevant requirement in some other way. If you decide to adopt some other arrangement it will need to achieve at least an equivalent level of fire safety." The responsible person acknowledges that 'although the latest fire risk assessments may not have addressed this issue at sufficient length to satisfy the Fire and Rescue Service, the outcome of this determination will help form the basis for a new fire risk assessment that will particularly address this issue'.

12. The care home is fitted with a BS 5839 standard L1 addressable fire alarm, meaning all bedrooms are fitted with smoke detection. When the fire alarm activates, under the management procedures, a member of staff will attend the room in which the detector has actuated and make a decision as to whether it is necessary to evacuate that room and shut the fire door.

13. The responsible person has provided an analysis of the time it would take for smoke to spill from a fire in a bedroom into the corridor, in the form of a zone model. The model is intended to show that the rooms act as smoke reservoirs and do not allow a significant level of smoke to spill into the corridor during the time initial staff action is undertaken. The responsible person cites BS 9999:2008 - *Code of Practice for fire safety in design, management and use of buildings* to define the worst possible case scenario as being a medium growth rate fire. The responsible person argues that it is only necessary to assess the early stages of the fire as management intervention will mitigate the effects of fire at an early stage. It is stated that one minute is the longest time that it will take any member of staff to reach a bedroom.

14. The responsible person uses a zone model to demonstrate in the worst case scenario when smoke would spill from the bedroom into the corridor. This is at 23 seconds. At one minute the model shows that 3.38m³ of smoke will have entered the corridor at 30°C. With the shortest corridor it is claimed that this will give a clear layer height of 2.1m within the corridor.

15. An analysis of the length of time it will take for a member of staff will take to reach the furthest bedroom has been provided. The case submitted states that this shows that it will take a few seconds for the detector to respond to the fire, 15 seconds for the staff to respond to the activation and 42 seconds to reach the furthest bedroom.

16. The determination request includes the responsible person's proposed management regime as follows:

    - All bedrooms should have their doors closed when not required to be open.
    - Staff maintain their effectiveness by carrying out emergency procedures.
    - Twice yearly practice fire drills will be held for all staff.

- Enhanced day to day checks, incorporating continuous bedroom door checks, will be carried out.
- Annual personnel staff development including fire training will be provided by a competent trainer
- Staff training on fire will be provided on induction
- Future fire risk assessments should recognise this procedure, and review fire training records.
- Fire procedure notices should be prominently shown in the home.
- Fire loading should be restricted in bedrooms.

The enforcing authority's case

17. The view of the enforcing authority rests on the requirement of the Order to adequately protect all relevant persons. It is of the opinion that residents using the bedrooms are relevant persons, as defined in article 2 of the Order.

18. The enforcing authority is of the view that the provision of self-closing devices to all bedroom doors is required to protect the means of escape adequately. This can be achieved by fitting door closers conforming to EN 1154 or an equivalent standard, or by fitting swing free door closers conforming to EN 1155. The enforcing authority suggests that electro-magnetic hold open devices could be appropriate for these bedrooms. The enforcing authority's view is that self-closing devices are needed to keep the means of escape free form the smoke and heat, safeguarding the means of escape sufficiently to enable safe evacuation of the premises. This point was made by Fire and Rescue Authority in a consultation with the Building Control Approved Inspectors during consultation in 2003 when the premises was constructed.

19. The enforcing authority's case has been supported by reference to guidance, notably DCLG 's *Fire Safety Risk Assessment for Residential Care Premises* which states that all corridors that serve sleeping accommodation should be of 30 minutes fire-resisting standard and have fire doors fitted with self-closing devices, unless an equivalent level of safety can be achieved by other means. The enforcing authority also cites Approved Document B *(Fire safety) – Volume 2 - Buildings other than dwelling houses* (2006 Edition) (hereafter AD B) which requires the same level of protection but also recognises that if sprinklers are fitted, then bedroom doors self-closers can be omitted, noting that variations in the guidance maybe acceptable.

20. Previous fire risk assessments carried out at the premises have noted that the responsible person should consider the provision of 'swing free' devices on all bedroom doors. These are currently used on the fire doors to the living room areas of the home.

21. In using a range of differing guidance documents, the enforcing authority considers that the responsible person is not assessing the risk consistently. Its view is that each guidance document should be used as a whole and that isolated sections from differing documents should not be picked to suit a particular situation. It reasons that the risk prevention measures applied are commensurate with how the risk is assessed in that document. It notes that the requirements listed in HTM are referenced by the responsible person but that other requirements in the Health Technical Memorandum series are not complied with, for example the requirement to control ignitability of bed linen, the lack of 60 minute fire separation of the laundry room and the sighting of electrical hoists with the means of escape corridors.

22. The enforcing authority notes that the care home relies on a system of progressive horizontal evacuation, whereby residents are moved from the immediate area of risk to a fire separated compartment. The initial compartments consist of up to 7 bedrooms separated from other compartments. It notes that between 2000hrs and 0800 hrs there will be 3 staff on duty, which would mean that in case of fire, one member of staff would make the emergency telephone call and meet the attending Fire and Rescue Service appliance while the other two members of staff would evacuate the fire compartment immediately affected. The enforcing authority note that no detail has been provided on how this will be carried out in practice, particularly on what will happen to residents once evacuated from the area of immediate risk.

23. The enforcing authority note that records of previous fire drills show that it can take up to 15 minutes to evacuate the fire compartment and this was with five staff. From reviewing records the enforcing authority note that in 40 per cent of occasions procedures were not followed correctly. It notes that the management response detailed is no more than that which would be expected in a care home with door self-closers fitted. As such, it is of the opinion that the fact that the evacuation strategy relies on progressive horizontal evacuation is not a compensatory feature.

24. The enforcing authority consider that, although bedroom doors are to be closed at night, bedroom doors being open at other times pose a risk to other residents because of the potential for fire and smoke spread. The requirement to close bedroom doors in case of fire will conflict with their requirement to evacuate residents. Should a member of staff fail to close a bedroom door there will be smoke logging and fire spread into the means of escape that will make the escape route untenable and inhibit safe evacuation.

25. The enforcing authority do not agree with the responsible person’s view that each bedroom can be considered as a smoke reservoir as the bedrooms are of normal proportions and do not provide a sufficient capacity to act in this way. By analysing the zone model provided by the responsible person, it notes that the clear layer height is 1.9 m

when smoke is spilling into the corridor at between 20 seconds and 30 seconds from ignition. It also notes that using a clear layer height of 2.4 m is below the 2.5 m recommended in the guidance on smoke control contained in BRE 368*: Design Methodologies for Smoke and Heat Ventilation.*

26. The enforcing authority ran the same zone model using fast heat release rates and ultra fast heat release rates to assess what would happen should the fire grow at a faster that expected rate. These showed that the time exceed the clear layer heights happened before the one minute maximum intervention time predicted in the fire risk assessment.

The Chief Fire and Rescue Adviser's view

27. The central issue to be determined is the choice of appropriate protection to the escape route that is necessary to safeguard the safety of relevant persons, ensuring that they can escape quickly and easily.

28. The enforcing authority reference the guidance document published by the Department for Communities and Local Government on fire risk assessment in residential care premises. The approach adopted in this document represents a method of helping to secure safe evacuation routes. This document is part of a suite of technical risk assessment guidance documents published to satisfy the requirement of article 50 of the Order. These guides are targeted at the end user but enforcing authorities are expected to have due regard to them.

29. This guidance reflects general best practice and supports the use of self-closing devices on fire doors as detailed in Approved Document B, Fire Safety, volume 2. A fire door is intended to protect escape routes from the effects of fire so that occupants can escape safely. A fire door also helps provide protection to the remainder of the building limiting fire spread and so further protecting people at risk. Correctly specified and well-fitted doors will hold back fire and smoke preventing escape routes becoming unusable, as well as preventing the fire spreading from one area to another.

30. Self-closing devices are integral to the function of a fire door which is in normal everyday use. Self-closing devices have been developed to overcome the practice of leaving fire doors open. They also assist the fire door in holding back fire and smoke. The need to allow some fire doors to be held open in normal use and only close when there is a fire has led to the development of various hold open devices linked to fire detection systems. In the case of care homes, hold open devices have been developed to allow fire doors to be held open in everyday use and so reduce the institutional feel of the building and make it easier for staff and residents to move around and interact.

31. The enforcing authority notes the guidance recommends that the responsible person adopts this approach to provide reasonable protection to the means of escape as well as providing a less institutional and more user-friendly environment the residents of the home.

32. In this particular case, the responsible person has not demonstrated why this DCLG guidance is not appropriate or achievable. As such, it would be reasonable to assume that the appropriate guidance on self-closing fire doors should be followed. However, it is not a requirement that this particular guidance is followed, so long as the responsible person can show that acceptable risk reduction has been achieved by an alternative method.

33. The responsible person sites the fact that the building was approved for the purpose is of complying with the Building Regulations in 2003 without self-closing fire doors, and that this is sufficient justification for not requiring self closers to be fitted now. The Order requires that the responsible person applies the principle of prevention. This recognises the need to assess risk regularly and ensure, in the light of technological advances, the ongoing adequacy of the protective and preventative measures in appropriately mitigating risk. Given that the DCLG guidance on risk assessment in residential care premises was produced after the premises were built, it is reasonable to expect the responsible person to review the risks and adopt protection measures that are appropriate for the existing risk and not assume that the protection measures applied when the building was constructed are adequate now.

34. Once occupied, the Building Regulations consultation process does not preclude subsequent enforcement action under the Order. This premises was approved in 2003 by the relevant Building Control body. This approval cannot be relied upon to mean that the fire precaution measures installed at that time will remain appropriate over the lifetime of that building. Although the building was handed over to the responsible person with building control approval, it is for the responsible person to satisfy themselves that they have met the requirements of the Order. In all cases it would be recommended that where there may be a disagreement over the fire safety measures required in a particular building following the building regulation approval process, that the person responsible for carrying out the work passes such details, along with the general fire safety information for the building to the responsible person. This would then make the responsible person aware of the risks of potential action by an enforcing authority, subsequent to occupation.

35. It is acceptable to use an alternative assessment methodology to assess the risk and define what protective measures are required. The responsible person does this by reference to other guidance documents, for example British Standard 9999 and sections of the

Health Technical Memorandum series. When using various standards for assessing risk, care needs to be taken to use the standards appropriately. Standards are written to provide a comprehensive assessment of the risk and identify adequate protection measures for a defined risk. To take sections of differing standards and use them to form one assessment is an erroneous approach as individual sections in guidance documents rely on assumptions in other sections of that document which may differ from other guidance. The responsible person's case rests on such an approach. For example, the use of the HMT documents would require that the complete approach is adopted. This was not done, for example in lack of comparable control of fire loading and ignitability of bed linen in the care home risk assessment.

36. The responsible person uses a zone model to attempt to demonstrate that the level of smoke flow into the corridor with the fire door open is acceptable. However, the analysis provided does not give a significant degree of detail as to why this should be safe. The model demonstrates that smoke will contaminate the corridor to significant level at a very early stage in a fire yet no sensitivity analysis has been carried out. Any uncertainty, such as the possibility that staff may not carry out their allocated tasks as expected should be addressed by choosing suitably conservative assumptions and carrying out sensitivity analyses. For example if a member of staff takes 30 seconds longer to reach the scene of a fire, would the occupants of any other bedrooms in the compartment with open fire doors be affected by the fire? Would a member of staff be able to effectively close fire doors and evacuate residents in the compartment when faced with a larger fire?

37. The zone model also shows that the smoke will form a clear layer height at 2.1 m at 30°C. The ambient temperature is set a 20°C which would seem low. It is unlikely that this will form such a defined smoke layer. No smoke layer has a perfectly defined interface with the colder, clearer air below; there is always a small amount of cross mixing. With over 3^3m of smoke entering the corridor it is likely that there will be some mixing of smoke in the corridor and the effects of smoke will be experienced by a member of staff responding to a fire which is likely to affect their ability to close the bedroom door. A sensitivity analysis should check the robustness of the results and investigate the criticality of individual input parameters.

38. The zone model analysis relies on an assumed worst-case scenario with no justification. For this approach to be acceptable it would be expected that full fire engineering analysis should be carried out, for example utilising a full analysis where the time available for safe egress assessed against the required safe escape time detailed in British Standard 7974:2001 - *Application of fire safety engineering principles to the design of buildings.* However, once good practice has been determined, such as the use of self-closing devices on doors, it would be reasonable for the responsible person to adopt this. It is doubtful that any further assessment using smoke control calculations

would be necessary or likely to show that good practice is not appropriate.

39. The responsible person proposes that a management solution is introduced to mitigate the effects of not providing self-closing devices on the bedroom doors. The Order requires that the management of fire safety in the premises is appropriate to the risk. Within a care home environment it would be expected to find a high standard of staff training and fire safety management. In order to demonstrate that an improved level of fire safety management will reduce the risk, it will be reasonable to expect that the risk assessment should demonstrate what this means in practice. The responsible person fails to show in detail how the proposed management solution would provide a level of protection to mitigate the increased risk incurred by not fitting self-closing devices to bedroom fire doors designed to protect the escape routes.

40. Self-closing devices on fire doors are provided because people will leave doors open during normal use of the building. Within care homes this is likely to be the case to achieve the desired effect of providing ease of movement throughout the building and a congenial atmosphere. Self-closing devices remove the need for people to have to shut the door when evacuating a room on fire. They also ensure that fire doors in rooms not immediately affected by the fire are shut and so provide a barrier to further fire spread.

41. The proposed management solution does not show why it is more likely that fire doors will be closed in the event of a fire than previous experience has found historically. The proposed management plan does not appear to offer anything other than the standard of management for a care home that would be expected to be found in a care home where self-closing devices are fitted to bedroom doors. The management plan does not give details of the emergency plan and the actions that the staff are expected to carry out in the event of fire, the expected minimum numbers required to safeguard residents and ensure their safety.

42. The responsible person has not shown that the risk in this care home is significantly different from that envisaged in the guidance on fire safety in care homes. The responsible person does not provide a convincing argument to show that the management approach will deliver a significant degree of confidence that a fire will be contained by the action of manually closing bedroom doors when a fire occurs. As such, the responsible person has not demonstrated that the measures in place meet the requirements of what is necessary in this case and that staff and residents can evacuate the premises as quickly and safely as possible.

43. The enforcing authority has based its assessment on the application of current guidance and best practice which would appear to be both

proportionate and appropriate for these premises. The responsible person has not shown how compliance with the Order will be delivered with any certainty about the proposed management arrangements designed to reduce the risk.

Conclusion

44. Article 14(2)(b) of The Regulatory Reform (Fire Safety) Order 2005 places a requirement upon the responsible person to demonstrate that, in the event of danger, it must be possible for persons to evacuate the premises as quickly and as safely as possible

45. I have given careful consideration to the particular circumstances of this case and the arguments of both parties and conclude that:

- The responsible person has not demonstrated in this case that the risk can be controlled by management intervention.
- The argument used to justify a management solution uses parts of guidance from various sources which lacks the consistency required to produce a satisfactory assessment of the risk.
- The case offers no sensitivity analysis.
- It is stated that the fitting of self-closing devices on bedroom doors, without either the swing free or hold open devices recommended by the enforcing authority would be of no advantage as they would be wedged open during the day, negating their utility. This ignores the fact that swing free or hold open devices are designed to mitigate this against this risk.

46. The responsible person should have recognised there is established good practice designed to provide adequate protection in this situation: the use of self-closing devices on the bedroom fire doors. This is proportionate and its use is likely to enable persons to evacuate the premises as quickly and safely as possible. It is therefore my view that the requirement to fit appropriate self-closing devices to the bedroom fire doors is necessary to safeguard the safety of relevant persons and is the appropriate technical solution for remedying the established failure to comply with article 14(2)(b) of the Order. I am advising the Secretary of State accordingly.

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