Determination on the suitability and sufficiency of a fire risk assessment in a hotel in respect of the adequacy of the existing bedroom fire doors

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 appropriate remedy to the agreed failure to comply with article 9 of the Fire Safety Order, is for the responsible person to prepare a new risk assessment for the premises in which the absence of intumescent strips and smoke seals on the existing bedroom fire doors is recorded and justified.

This Determination is based entirely on the circumstances of the hotel in question and the decision has 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 Fire Safety Order), the enforcing authority and the responsible person for the premises jointly applied to the Secretary of State for a determination of the disputed matters related to fire safety. The parties are not in agreement over the appropriate technical solution to satisfy the requirements of the Order.

2. This determination concerns the requirement under article 9 of the Fire Safety Order for the responsible person to make a suitable and sufficient assessment of the risks from fire to which relevant persons are exposed (article 9(1)) and to record the significant findings of this assessment, including the measures which have, or will be, taken by the responsible person to fulfil their statutory duties (article 9(6)).

3. Both parties agree that the current risk assessment is inadequate in respect of the responsible persons' failure to identify the absence of smoke seals and intumescent seals on the hotel bedroom doors protecting the means of escape corridors. They cannot, however, agree on the appropriate remedy for addressing this failure. The enforcing authority considers that the appropriate remedy to address the failure would be for the responsible person to complete a suitable and sufficient risk assessment, and specify, in an action plan, its timetable for upgrading the existing doors by fitting smoke seals and intumescent strips. The responsible person's view is that the appropriate remedy is to prepare a new risk assessment in which the absence of these measures is recorded and justified.

Technical Description

4. The premises is a hotel. Built in the 1980's, it contains 215 guest bedrooms, eight staff bedrooms and associated accommodation over a ground and three upper floors. All bedrooms open onto protected corridors, providing means of escape in two directions. 167 of the bedroom doors are not fitted with intumescent strips and smoke seals. These doors complied with the appropriate standard for fire doors at the time of its construction. The hotel has a fire alarm system which includes smoke detectors in each bedroom.

The enforcing authority's case

5. The enforcing authority is of the opinion that the lack of intumescent strips and smoke seals on the bedroom doors places employees and relevant persons at serious risk of death or injury in the event of a fire. As such, it wants the responsible person to commit to mitigating this risk through the provision of intumescent strips and smoke seals on the relevant bedrooms doors within a specified timeframe.

6. It considers that the absence of intumescent strips and smoke seals for these doors compromises significantly the integrity and tenability of the escape route corridors by allowing smoke produced by a fire in any bedroom to pass around the door edges into the corridor. It considers that by not addressing this issue, the responsible person is unable to demonstrate compliance with the Department for Communities and Local Government's fire safety risk assessment guidance which relates to hotels: *the Sleeping Accommodation Guide*. The enforcing authority considers that the premises have no compensatory fire precautions in place to reasonably allow for any relaxation from this recommended benchmark.

7. To support its case, the enforcing authority commissioned and submitted a detailed report into the hazards posed by the lack of provision of intumescent strips and smoke seals in the hotel which explores the development of a requirement for these measures. In early testing regimes, such as those detailed in British Standard 476 part 1, the impact of pressure differential was outside the scope of the fire test to which fire doors were subjected, and a rebate in the form of a 25m door stop was deemed sufficient to control smoke spread. As testing regimes evolved it became necessary for smoke seals and intumescent strips to be fitted. The currently accepted test methodology for new fire doors under the Building Regulations is detailed in *Approved Document B (ADB), volume 2 (Fire safety) Buildings other than dwelling houses*.

8. The enforcing authority's report notes that although the Approved Document sets performance criteria for smoke leakage, it does not reference an acceptable level of smoke into any particular escape route. The enforcing authority's report therefore refers to *BS ISO TR 5925; Part 2: 1997 Fire tests - Smoke control door and shutter assemblies* which concerns the practical aspects of testing smoke control doors and shutters and includes a mathematical descriptor for estimating smoke concentrations in corridors protected by fire doors. The enforcing authority uses this method to support its view that a typical corridor would become untenable within approximately 4 minutes of a fire breaking out within a bedroom and, should the door leak a higher rate, the corridor would become untenable in less than one minute.

9. The initial report provided for the enforcing authority was carried out without a site visit. Following a site visit and discussion with the responsible person a supplementary report was produced identifying that the hotel had a fire certificate issued under the Fire Precautions Act 1971. Under this regime, there was no requirement for fire protection measures to be upgraded should technical standards advance and improve protection measures.

10. The supplementary report notes that the risk assessment form used by the responsible person appears to be based on a building built in compliance with Approved Document B. Using this risk assessment form, any doors not of the standard recommended by Approved Document B would be regarded as non-compliant for the purposes of compliance with the Fire Safety Order and the variation should be justified and recorded.

11. The report questions the assertion made by the responsible person that the risk to life from fire is low. The author cites *Integrated Risk Management Planning Guidance Note 4: A risk assessment based approach to managing a fire safety inspection programme*, issued by the Department which sets out the relative risk from fire in different types of premises and concludes that, although statistically the risk of death and injury from fire in a hotel is low, it cannot be concluded that the risk in any particular hotel is low. As such, every hotel should have an adequate level of fire protection.

12. The report suggests that it would be appropriate for the responsible person to use the approach adopted in *PD 7974-6:2004: The application of fire safety engineering principles to fire safety design of buildings Part 6: Human factors: Life safety strategies Occupant evacuation, behaviour and condition (Sub-system 6)*. This highlights the difficulties of evacuating hotels in which the occupants may be asleep and disinclined to leave the building, and indicates that in these premises a high degree of fire protection is likely to be required to restrict fire and smoke spread. The report also notes that *PD 7974-6 2006* states that: 'In many situations, evacuation can be counterproductive, since occupants are likely to be relatively safe in their rooms.' In this situation, the report indicates that the lack of intumescent strips and smoke seals would endanger any guests trapped in their bedrooms to such an extent than an action plan needs to be in place to establish a timeframe for their replacement.

The Responsible Persons' case

13. The responsible person considers, on the basis of their risk assessment, that sufficient protection to allow occupants to make an escape in the event of a fire is in place and that it would be disproportionate to provide the bedroom doors opening into the escape corridors with intumescent strips and smoke seals. Those fire doors which directly protect the stairways are fitted with intumescent strips and smoke seals.

14. The current fire risk assessment defines the criteria used to assess whether the bedroom doors provide suitable protection for people who may have to escape from fire in a bedroom and notes that some of the existing bedroom doors are of an older specification which at the time of installation did not require intumescent strips and smoke seals. These criteria, which have been used to assess all the fire doors in the hotel, include the location of the door, its general condition, the type of fire detection in the room, potential ignition sources and the adequacy of the door closing device. The responsible person has used this assessment to conclude that they are in an acceptable condition to provide adequate protection to the escape corridors.

15. The responsible person takes the view that with the introduction of fire safety legislation, particularly the Fire Precautions Act, fire deaths in hotels have reduced and are at and extremely low level – on average, less than 1 death per year has occurred in a hotel since 2002. This reduction was achieved before intumescent strips and smoke seals became a requirement of fire doors. Research carried out by the Fire Research Establishment[1] into the efficacy of fire alarm systems demonstrates the effectiveness of fire detectors in hotel bedrooms in identifying a fire before corridors become compromised by smoke seepage and that the significant factor in ensuring the tenability of escape routes is that the bedroom doors are closed. The report notes that where heat detectors, as part of a common fire alarm system, are fitted in each bedroom, they 'always operated well before any smoke was visible in the corridor and provided at least 9 minutes for escape'. The report indicates that the fire resistance of the door played little part in the ability of people to escape.

16. The responsible person is of the opinion that, as the hotel had received a fire certificate under the Fire Precautions Act with these bedroom doors, it should be regarded that these doors are likely to continue to provide adequate protection to the means of escape. It considers that, as many hotels will have had fire doors without intumescent strips and smoke seals under this regime, the lack of these measures are not a significant factor in reducing risk. The responsible person also notes that fire statistics show that the majority of fires in hotels are confined to the room of origin. Therefore the current standard of protection, a combination of fire detection and fire doors, and not necessarily the fitting of intumescent strips and smoke seals, is reducing fire spread and allowing evacuation with only very low risk to the occupants.

17. The responsible person considers that the cost of fitting intumescent strips and smoke seals on these doors would be disproportionate when set against the level of risk reduction it would achieve and the range of measures already in place to safeguard the means of escape for relevant persons. It references the following to support its case:

[1] *The siting of smoke detectors in corridors* BK Ghosh - Fire Research Establishment 1986

- The theoretical basis of the enforcing authority's assessment of a fire test which assumes a set of conditions, including an overpressure of 25PA, as detailed in Approved Document B, which could exist in a fully developed fire. All fires take time to develop, and during the development period, overpressure is unlikely to be at this level.

- The British Standards Institution's confirmation that the mathematical formula in *BS ISO TR 5925; Part 2: 1997 Fire tests - Smoke control door and shutter assemblies*, contains a significant error and cannot be relied on as the basis for a realistic assessment of corridor tenability.

- Its assessment of the anticipated smoke flow around the existing bedroom doors in the hotel, based on recognised fire engineering calculations, which develops a timeline of fire growth to flashover, considers the levels of overpressure and impact on smoke spread and accumulation in the corridor, and concludes that it would take at least 13 minutes for the corridor to become untenable.

- The Fire Research Establishment's research into the effectiveness of fire alarms in hotel corridors demonstrated that, where heat detectors were fitted in hotel bedrooms, corridors were tenable escape routes for at least 17 minutes without bedroom doors (in a similar configuration to a hotel) being fitted with intumescent strips and smoke seals. Even with domestic doors, the corridor was likely to be available as an escape route for at least 9 minutes.

- Each bedroom is fitted with smoke detection which is likely to provide an earlier alert to a fire than a heat detector. The provision of smoke detectors in the bedrooms represents a higher level of protection than recommended in the Department's fire safety risk assessment guidance for sleeping accommodation.

- Evidence from the records of previous fire evacuation exercises demonstrate that a full evacuation of the hotel is achieved consistently in around 7 minutes.

- The Lead Authority Partnership arrangement in place with another fire and rescue authority, which agreed the risk assessment approach without reference to the absence of intumescent strips and smoke seals on the bedroom doors.

18. The responsible person disagrees with the view put forward by the enforcing authority that the inclusion of intumescent strips and smoke seals will help protect any persons who become trapped in their bedrooms. The responsible person maintains that the fire strategy and the risk assessment are based on accepted practice that, in the event of a fire, the hotel is fully evacuated as quickly as possible.

The Chief Fire and Rescue Adviser's View

19. In this case the question under consideration is whether it is necessary for the responsible person to specify, in an action plan, its timetable for upgrading the existing doors by fitting smoke seals and intumescent strips. The responsible person's view is that the appropriate remedy is to prepare a new risk assessment in which the absence of these measures is recorded and justified. The fact that the premises were covered previously by a fire certificate under the 1971 Fire Precautions Act is not a material consideration.

20. The enforcing authority's approach has been to assess the adequacy of the means of escape against the recommendations contained within the Department's guidance for sleeping accommodation while affording due consideration to the responsible person's fire risk assessment. The guidance recommends the provision of intumescent strips and smoke seals on bedroom doors. The enforcing authority takes the view that it is unacceptable to relax these benchmark standards unless additional compensatory measures are implemented. The enforcing authority's opinion is that no compensatory measures are in place and that this needs to be addressed in an action plan.

21. The responsible person's risk assessment specifically considers the tenability of the corridors using an established fire engineering methodology. This concludes that, with the existing bedroom doors, the corridors are likely to remain tenable for at least twice the evacuation time that the hotel has recorded as a typical evacuation time. In addition, each bedroom is provided with smoke detection, which represents a higher level of protection than that recommended in the Department's fire safety risk assessment guidance for sleeping accommodation. The bedroom corridors provide access to two escape routes.

22. The responsible person's view is that the statistical risk of death from fire in hotels is low and, therefore, the risk in this particular hotel is also low. Taking account of the other prevention and protection measures in place in the building, the responsible person considers there is no evidence to suggest that the margin of risk reduction from upgrading the existing bedroom fire doors would be justified. Care must be taken when considering statistical data. Clearly such data provides a useful context for assessing fire risk, but it is rarely sufficient on its own when assessing the risk in a specific premises or when considering the benefits of a specific protective measure.

23. The intention of the guidance issued by the Secretary of State under article 50 of the Fire Safety Order is to both define what fire protection measures are likely to be acceptable and explain the concept of risk assessment which can show how alternative protection measures can be used.

24. The guidance should be applied flexibly and the level of fire protection should be proportionate to the risk posed to the safety of the people on the premises. Although the Department's guidance for sleeping accommodation references Approved Document B, there is no requirement under the Fire Safety Order for a responsible person to comply with provisions relating to new buildings and alterations under the Building Regulations.

25. However, article 10 of the Order requires that preventive and protective measures should be implemented on the basis of the principles of prevention set out in Part 3 of Schedule 1 to the Order which includes "adapting to technical progress". As such, where protective measures, that were not available when the building was built, subsequently become available then consideration should be given to adopting such measures where it is proportionate to do so.

26. The provision of smoke seals on fire resisting doors does provide increased protection from the spread of smoke in the early stages of a fire and the provision of intumescent seals have been shown to improve the fire resistance of doors, hence their inclusion in modern fire door design. What needs to be considered in this case is whether it would be proportionate to upgrade the existing doors within a defined timescale or to wait until the doors are replaced when they come to the end of their useful life. This is a judgement that should be based an assessment of the risk from fire, the nature of the existing doors and any other preventative or protective measures in place.

27. Both parties have included estimates of the costs of installing intumescent strips and smoke seals to the bedroom doors. These are basic estimates, neither of which reflects the impact of any improvement works on the business of the hotel. It is reasonable to assume that carrying out these works is not a trivial matter.

28. The responsible person has evaluated the residual risk presented by the lack of intumescent strips and smoke seals and concluded that the bedroom fire doors which lack intumescent strips and smoke seals adequately safeguard the safety of relevant persons.

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

- The enforcing authority has not demonstrated in this case that the responsible person has failed to comply with the requirements of the Order by not fitting intumescent strips and smoke seals to the hotel bedrooms. It has not demonstrated that the level of risk associated with the lack of intumescent strips and smoke seals places relevant persons at significantly increased risk.

- The responsible person has used the Department's guidance documents appropriately by identifying where the hotel's fire protection provision differs from that shown in the guidance document and providing a suitable explanation which demonstrates that the lack of intumescent strips and smoke seals does not place relevant persons at risk.

Conclusion

30. Article 9 of the Order requires that the responsible person must make a suitable and sufficient assessment of the risks to which relevant persons are exposed for the purpose of identifying the general fire precautions that person needs to take to comply with the requirements and prohibitions imposed on the responsible person by or under the Fire Safety Order. Article 9 (6) and (7) requires the responsible person to record certain prescribed information including the significant findings of the risk assessment. This includes details of what further measures have or will be taken by the responsible person under the Order.

31. Having reviewed the material provided, I consider that, as far as can be ascertained from the submissions, the measures currently in place and the assessment of their effectiveness, are sufficient to adequately protect occupants in the event of a fire and ensure that they are able to evacuate the premises as quickly and as safety as possible. There is no evidence to suggest that the margin of risk reduction that would be afforded by the installation of intumescent strips and smoke seals on the bedroom doors leading on to the escape corridors would be justified given the potential expense involved.

32. As a result, I can see no justification at present for the responsible person to commit, in an action plan, to the installation of intumescent strips and smoke seals on the existing bedroom doors. However, I consider that consideration should be given to specifying replacements that meet the recognised standard at that time as and when the doors are replaced.

33. To remedy the agreed failure to comply with article 9 of the Fire Safety Order, the responsible person should therefore prepare a new risk assessment for the premises in which the absence of intumescent strips and seals on the existing bedroom doors is recorded and justified.

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