



Ministry of Housing,
Communities &
Local Government

Government Response: Sprinklers and Other Fire Safety Measures in New High-Rise Blocks of Flats



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May 2020

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Introduction

1. In July 2018 the Government committed to a full technical review of Approved Document B (fire safety), statutory guidance to Part B of Schedule 1 of the Building Regulations 2010. Part B sets out five functional requirements made to secure reasonable standards of health and safety for persons in and around the building.
2. To set the agenda and programme for the technical review in December 2018 the Government issued a Call for Evidence. As we plan for the long-term delivery of this review, we recognised that the responses to that Call for Evidence showed that there were issues that could be addressed more quickly. We committed to prioritise those issues affecting high-rise blocks of flats and take action where the case is clear.
3. On 5 September 2019 we launched a consultation titled “Sprinklers and Other Fire Safety Measures in New High-Rise Blocks of Flats” proposing a reduction in the height threshold at which Approved Document B recommends the installation of a residential sprinkler system in blocks of flats (currently 30 metres).
4. This consultation also sought views on changes to Approved Document B to include guidance on more consistent wayfinding signage in blocks of flats, along with provision of an evacuation alert system which would provide the fire and rescue services with an option to initiate a change in evacuation strategy via an alarm.
5. Following analysis of responses to the consultation, which closed on 28 November 2019, we are issuing an amendment to Approved Document B which will come into force in England on **26 November 2020**. For further information on which building work will be affected and when the changes take effect please see the amendment booklet available online¹.
6. The changes are that Approved Document B (fire safety) volumes 1 and 2019 edition are amended to include guidance that states:
 - Sprinkler systems in accordance with BS 9251 should be fitted throughout blocks of flats with a top storey more than **11m** above ground level;
 - Wayfinding signage for the fire and rescue service should be provided in blocks of flats with a top storey more than **11m** above ground level;
7. This is the first change in a planned full technical review of Approved Document B. On 2nd April we also published the plan for this review². The Government has heard the concerns raised following the Grenfell Tower tragedy and from the findings of phase 1 of the Grenfell Tower Public Inquiry and Dame Judith Hackitt’s Independent Review of the Building Regulations. In amending the guidance in Approved Document B, we are taking robust action to improve fire safety in high-rise blocks of flats to ensure residents are safe and can feel safe in their homes.

¹ <https://www.gov.uk/government/publications/fire-safety-approved-document-b>

² <https://www.gov.uk/government/consultations/technical-review-of-approved-document-b-of-the-building-regulations-a-call-for-evidence>

8. This document sets out the Government response to the consultation titled “Sprinklers and Other Fire Safety Measures in New High-Rise Blocks of Flats” including a summary of the views gathered through the consultation. The changes to Approved Document B as a result of this consultation, and other changes that will come from the full technical review, are a key part of the Government response to the Grenfell Tower tragedy in 2017.

The Consultation

9. The consultation ran for 12 weeks from 5 September 2019 until 28 November 2019. The consultation documents were available online at GOV.UK and responses could be returned by email or post to the Ministry of Housing, Communities and Local Government, or through an online survey.

10. There were 184 responses to the consultation, 56 of which were received from individuals and 105 from organisation representatives. 14 respondents declared as both individuals and organisations, with 9 respondents not declaring.

11. Respondents were asked to assign themselves to one of 13 broad organisational type categories. Several respondents selected more than one category. Figure 1 sets out the number of respondents in each category. Those selecting “other” included trade associations, fire engineers, and professional bodies.

12. None of the questions set out in the consultation received a 100% response rate. Each percentage given in this paper is a percentage of those who answered the particular question and where answers could be coded into “yes/no, agree/disagree” out of the possible 184 respondents for consistency, unless stated otherwise. Percentages have been rounded to the nearest whole number.

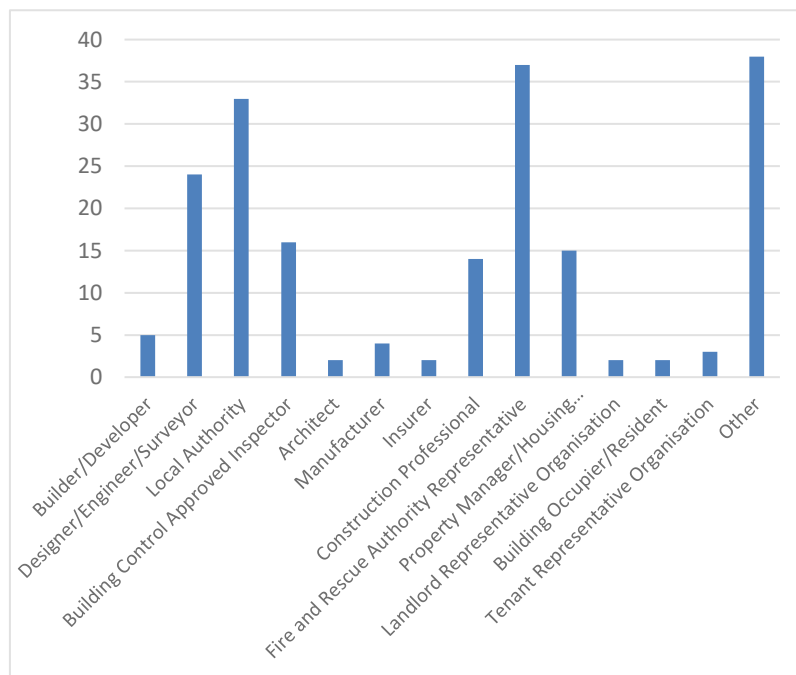


Figure 1. Number of respondents by type.

Sprinkler provision in new high-rise blocks of flats

Question 1 – Do you agree that the height threshold for sprinkler provision in new blocks of flats should be reduced?

- 97% of respondents said “Agree”
- 3% of respondents said “Disagree”

Question 1b – If you agree that the height threshold should be reduced, what should the new threshold be and what is the evidence base for this?

13. Of the 171 responses to this question, 59% suggested a threshold lower than 18 metres with many of these responses in favour of an 11m height threshold (40% of all responses to question 1b recommended an 11m threshold or similar, e.g. 3-4 storeys). Only 25% of responses recommended an 18m threshold. Just 2% of responses recommended a height threshold above 18m and 14% of responses did not give a clear recommendation.
14. Those in favour of 11m noted that the expected limit of external firefighting capacity is around 11m, but that several facilities to assist internal firefighting in Approved Document B are currently set to an 18m height threshold. Several respondents also mentioned that an 11m threshold would align with incoming guidance in Scotland on residential sprinklers. It was noted that several developers are already including sprinklers in blocks of flats with storeys below 30m.
15. Several respondents proposed removing the height threshold entirely or setting a threshold that would apply to any multi-storey residential building. Others were of the view that a height threshold was not the best approach, and sprinklers should be installed based on building risk. In particular, there was a view that sprinkler provision should be expanded to building types such as student accommodation and housing for vulnerable persons such as residential care homes. We have heard this view and intend to consider possible further amendments to the guidance for other building types including those designed for housing vulnerable residents. This will be considered as part of the technical review of ADB looking at specialised housing and care homes.
16. Those in favour of an 18m height threshold noted this was in alignment with other fire safety measures for blocks of flats in Approved Document B such as the provision of firefighting shafts, and requirements in the Building Regulations 2010 (as amended) that restricts the use of combustible materials in and on the external walls of certain buildings, including attachments. We are currently consulting on proposed changes to the Building Regulations 2010 (as amended) on the use of combustible materials in and on the external walls of certain buildings, including a proposal to reduce the height threshold in Regulation 7(4) to 11m.

17. Several respondents noted that whatever the height threshold they would encourage harmonisation of guidance across the United Kingdom.

18. There was a clear view that sprinklers provide life safety benefits, although respondents also noted that the costs can be significant for developers and that proper maintenance, including getting access to individual flats, can be challenging.

Question 2 – Do you agree or disagree that these systems should be designed in accordance with the relevant guidance in BS 9251?

- 89% of respondents said “Agree”
- 11% of respondents said “Disagree”

Question 2b – If you disagree, what specifications and performance should be required?

19. Most respondents agreed that BS 9251 would be an appropriate reference. Several respondents suggested that there may be certain situations where more stringent requirements could be appropriate. It was also noted that sprinkler power and water supplies should be provided with enhanced protection or back up provisions, which are also recommended by BS 9251 in some situations along with other additional performance, reliability and resilience measures.

20. Respondents also referred to BS EN 16925, BS EN 12845, the National Fire Protection Association Standard 13 R as possible alternatives but there was no clear recommendation.

21. Several respondents noted that they would like to see the inclusion of water misting systems in the guidance in Approved Document B as an alternative for sprinkler systems.

Question 3 – Do you agree or disagree that there should be a transition period of six months?

22. 48% of respondents agreed that there should be a transition period of 6 months.

Question 3b – If you disagree, how long should the transition period be?

23. Of those who disagreed there was no clear consensus on an alternative transition period. Responses ranged from suggestions of no transition period, 2 months, 12 months, to 2 years.

24. Many respondents raised concerns around the capacity of the sprinkler industry to provide systems and qualified installers, although it was noted that a significant section of industry is already installing sprinklers in blocks of flats below 30m. There was a concern that a transition period that was too short could increase the risk of poor-quality design and installation.

25. Several respondents noted that increasing the length of the transition period would increase the number of building projects that could be submitted or started prior to the change in guidance, reducing the impact of the change on fire safety in new buildings. Several respondents recommended that the change should be made as soon as possible.

Wayfinding signage for fire and rescue services

Question 4 – Do you agree or disagree that there should be a more consistent approach to wayfinding signage for fire and rescue services in Approved Document B?

- 97% of respondents said “Agree”
- 3% of respondents said “Disagree”

Question 5 – Are there any existing standards or guidance which should be introduced to the guidance provided in Approved Document B? Please specify

26. A number of different standards were suggested by respondents, including:

- BS 5499 – Safety Signs. Code of Practice for Escape Route Signing
- BS 5266-2– Emergency Lighting. Code of Practice for Electrical Low Mounted Way Guidance Systems for Emergency Use.
- BS 5266-6 – Emergency Lighting. Code of Practice for Non-Electrical Low Mounted Way Guidance Systems for Emergency Use. Photoluminescent.
- BS 9999 – Fire Safety in the Design, Management, and Use of Buildings. Code of Practice.
- BS 9991 – Fire Safety in the Design, Management, and Use of Residential Buildings. Code of Practice.
- BS ISO 16069 – Graphical Symbols. Safety Signs. Safety Way Guidance Systems.
- BS ISO 17398 – Safety Colours and Safety Signs
- Health and Safety (Safety Signs and Signals) Regulations 1996
- Building Standards Technical Handbook 2019: Domestic

27. Several respondents suggested that a new standard should be developed.

Question 5b – Does this guidance need to be supplemented or amended for inclusion within Approved Document B? if yes, please specify how

28. Respondents noted that guidance should be provided on the height, form (including size/dimensions, font, and format), and placement of the signage.

29. Some respondents noted that signage could need to be tailored dependent upon the complexity and layout of a building.

Question 6 – What views exist on the benefits of each signage option set out above?

30. It was noted that vinyl lettering was likely the most cost-effective option but could be easily removed by vandalism and might not be as visible as other options in low light or smoky conditions. It was also observed that vinyl lettering could be reliant on other lighting to be visible and could provide a source of combustible material in an otherwise “fire-sterile” stairway.

31. Photoluminescent lettering was generally thought to come at a reasonable cost and be effective, although it was noted these are reliant on getting enough light from other sources to luminesce when required. It was also noted by several respondents that emergency lighting is generally provided in stairwells, which may reduce the need for powered illuminated signage. It was noted that photoluminescent materials could be used further to highlight escape routes.

32. Emergency powered lighting luminaries were generally viewed as disproportionately expensive to both install but also maintain. However, several respondents were of the view that these systems would be the most visible.

Question 6b – What is the preferred option set out above for wayfinding signage? Vinyl lettering, Photoluminescent lettering, emergency powered lighting luminaries, other (please specify)

- 9% of respondents answered “Vinyl lettering”
- 35% of respondents answered “Photoluminescent lettering”
- 19% of respondents answered “Emergency powered lighting luminaries”
- 37% of respondents answered “Other”

33. Nearly all those respondents who answered “Other” discussed a combination of options as the preferable approach.

34. There was a view that more research was required to properly assess the relative benefits of each option, and that a risk-based or trigger threshold (height) approach could be used to require different options depending on the individual building design.

Evacuation alert systems for fire and rescue services

Question 7 – Should Approved Document B include a requirement for an emergency evacuation system, which could support fire and rescue services operational response by alerting residents if they need to escape? (Yes/No)

- 92% of respondents answered “Yes”

- 8% of respondents answered “No”

Question 7b – What views exist on the benefits and risks of such an approach?

35. Several respondents noted that an evacuation alert system being in place would provide both clarity and reassurance to residents. Conversely, others noted that it would be important to ensure a proper understanding of the purpose of such a system, and that drills could be required.
36. It was noted that these systems benefit from using already existing components from other systems although they do still present an additional cost to developers. Several respondents noted that maintenance costs could be significant, and similarly to sprinkler systems, there could be issues with accessing individual flats.
37. Respondents highlighted the benefit of providing additional flexibility to the Fire and Rescue service in giving a specific facility to change to an alternative evacuation strategy. However, other respondents noted that this would always be a difficult decision for incident commanders, who may not have access to complete information, and that an alert does not guarantee evacuation. As such, firefighters may still need to “door knock” to alert residents to the change in strategy. It was highlighted by multiple respondents that additional training and operational guidance would be required for firefighters to ensure systems could be used safely and at the right time.
38. Several respondents noted that these systems could be at risk of vandalism and accidental or intended activation at inappropriate times, including during a fire incident. Other respondents pointed out that maintenance of these systems would be critical to ensure they did not fail when needed.
39. Several respondents highlighted that the effectiveness of such an alert system for disabled residents, or those with poor mobility/hearing, could be limited and a system should be provided as part of a package of measures to ensure the safety of residents during a change in evacuation strategy, such as sufficient number of refuges, two-way communications, and smoke control measures.
40. For a single stair high-rise building it was noted that the use of such an alert, which sees residents evacuate into a stairway at multiple levels, could disrupt firefighting efforts by increasing footfall in the stairwell and increasing smoke movement into the stair and corridors. However, others noted that these systems should and would only be used during a major incident when there has been significant fire spread beyond the compartment of fire origin, necessitating an evacuation that would take place with or without an alert system.
41. There was a clear view that an evacuation alert system should only be necessary if other design measures have failed and that if a building was designed, built, managed and maintained appropriately the use of such a system would not be required. Further to this, several respondents pointed out that the provision of an evacuation alert system in Approved Document B should not be accompanied by a reduction in other design and safety measures as a result of any perceived increase in safety provided by such a system being in place.

Question 8 – If this requirement was introduced to Approved Document B, above what height threshold should this system be required?

42. Respondents proposed thresholds ranging from 0-50m, with many respondents in favour of 18m or 11m. There was a view that the threshold should be consistent with other measures or based on a broader evaluation of building risk, for example that a building with vulnerable residents could have a lower height threshold, or that a building fitted with a sprinkler system could have a higher threshold than one without.
43. It was noted that in buildings above 11m, or around 3-4 storeys, it could be more difficult for firefighters to evacuate residents (as well as relying on internal firefighting due to the height limit of modern ladders) and to alert residents of a need to evacuate. However, it was noted that in some situations there would be minimal benefit due to a small number of flats/occupants, simple layout, and limited evacuation travel distance.
44. Those supporting a threshold of 18m noted that this threshold is also used for other firefighting provisions such as dry risers and firefighting shafts. Further, that the risks of misuse of such a system should limit their use to high-rise buildings.

Government Response

Sprinklers

45. The evidence demonstrating the benefits to life safety and in reducing the degree of damage by installing sprinklers in blocks of flats is clear and there was strong support in the consultation responses to reduce the height threshold for sprinklers in blocks of flats in Approved Document B, with many respondents supportive of a height threshold of around 11m. This threshold is used in the Approved Document to set other fire safety provisions.
46. In estimating the impact of potential policy options following the consultation, our analysis estimates that up to 50% of new blocks of flats with a top storey of between 11m and 30m are already including some form of sprinkler system. This trend was also noted by several consultation responses. During the Call for Evidence regarding the technical review of Approved Document B and this consultation, we have heard from respondents that the expected limit of external fire fighting capacity is around 11m, strengthening the case for some additional fire safety provisions beginning at this threshold.
47. We have considered the strength of support in the consultation responses for lowering the height threshold below the proposed 18m, the expected benefits in reducing the frequency of significant fires and injuries or fatalities associated with fires, and the current trend of including sprinklers in new blocks of flats below 30m. As such, we are amending Approved Document B to reduce the height threshold from 30m to residential blocks of flats with a top storey more than 11m above ground level.
48. Approved Document B will continue to require that sprinklers in blocks of flats are designed and installed in accordance with the recommendations of BS 9251 and include

additional measures to improve system reliability where appropriate. For buildings out of scope of BS 9251, Approved Document B will continue to refer to BS EN 12845. Consultation respondents gave no clear recommendation for an alternative approach and the majority were content with the provisions in BS 9251 which already provides guidance for additional performance measures to ensure installed systems function as a life safety system.

49. We have heard concerns and opinions on further expanding sprinkler provision to other building types, namely those housing vulnerable residents. We will be considering further amendments to Approved Document B including the provisions within care homes.

Wayfinding Signage

50. There was strong support in the consultation responses for the inclusion of guidance on more consistent wayfinding signage in blocks of flats. However, there was not a clear view on the most appropriate and effective type.

51. We are amending Approved Document B to include guidance on wayfinding signage for the Fire and Rescue services in blocks of flats with a top storey more than 11m above ground level. This includes guidance on floor and flat identification signs. We do not believe there would be significant benefit to including this signage in buildings below 11m as this could often be a building of less than 3 storeys.

52. Guidance will be provided in the amended Approved Document B on the location, typeface, letter and numeral dimensions, and visibility requirements. The guidance is not limited to a particular signage technology as set out in the consultation but should be easily legible and readable in low level lighting or when illuminated with a torch. This provides designers the flexibility to use different systems while ensuring that they meet the functional requirement and provide the expected benefits to firefighters.

Evacuation Alert Systems

53. There was also strong support in the consultation responses for the inclusion of guidance on an evacuation alert system for high-rise blocks of flats, although many respondents also raised concerns about the use of this new technology.

54. Prior to making any change in the technical guidance in Approved Document B we want to be sure that these systems can be used safely and effectively, and that there are clear guidelines about their use available to the Fire and Rescue services who will use them. As such, we will be working with the National Fire Chiefs Council to begin testing these alarm systems and to develop the required operational guidance for Fire and Rescue services with a view to including guidance in Approved Document B in a further update depending on the outcome of this testing.

Implementation

55. Approved Documents are statutory guidance that set out what, in ordinary circumstances, would normally be accepted as reasonable provision for compliance with the relevant requirements. Although there is no statutory obligation to adopt any solutions proposed in an Approved Document, designers must demonstrate a similar level of safety to that provided in the Approved Document.
56. There was no clear view from respondents on an appropriate transition period. We consider that the sooner these changes can be made, the sooner we would expect to realise the benefits to life safety in the relevant buildings. A 6-month transition period to allow for industry to adapt to ensure adequate sprinkler systems can be installed to the appropriate standard.
57. The change in guidance will come into force on **26 November 2020** and will apply to any buildings undertaking building works unless the building works have started on site or an initial notice, building notice or full plans has been deposited by 26 November 2020 and work has started on site by **29 January 2021**.