

RIBA Response to MHCLG consultation on sprinklers and other fire safety measures in new high-rise blocks of flats
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MHCLG consultation on sprinklers and other fire safety measures in new high-rise blocks of flats: <https://www.gov.uk/government/consultations/sprinklers-and-other-fire-safety-measures-in-new-high-rise-blocks-of-flats>

Introduction

The RIBA welcomes The MHCLG consultation on sprinklers and other fire safety measures in new high-rise blocks of flats and the need to update the Building Regulations, Approved Document B and British Standards relating to these fire safety measures.

The RIBA believes that sprinklers/automatic fire suppression systems are a highly effective means of life protection, and recommends:

- a regulatory requirement for sprinklers/automatic fire suppression systems in all new and converted buildings that include a ‘dwelling’ or a ‘room for residential purposes’ (regardless of height, as already required in Wales), and;
- a regulatory requirement for sprinklers/automatic fire suppression systems in all existing buildings that include a ‘flat’ or a ‘room for residential purposes’ as ‘consequential improvements’ where a building is subject to ‘material alterations’.
- that sprinklers should not be used as a means to compensate other key life safety measures or justify reducing minimum standards.

The RIBA recommends a requirement for centrally addressable fire alarm systems, (integrating detection and alert):

- in all new and converted buildings that include a ‘flat’ or a ‘room for residential purposes’ of any height, and;
- in all existing buildings that include a ‘flat’ or a ‘room for residential purposes’ of any height as ‘consequential improvements’ where a building is subject to ‘material alterations’.

The RIBA recommends a requirement for wayfinding signage for fire and rescue services;

- in all new and converted buildings that include a ‘flat’ or a ‘room for residential purposes’ of any height, and;
- in all existing buildings that include a ‘flat’ or a ‘room for residential purposes’ as ‘consequential improvements’ where a building is subject to ‘material alterations’

The RIBA recommend that these systems should be considered as part of a series of passive and active fire protection methods. The RIBA have developed design-based research drawing from relevant industry and fire and rescue authority expertise and recommend the following layers of fire safety brought together as baseline prescriptive regulations would enhance building and life safety. These include:

- Fire detection systems
- Centrally addressable fire alarm systems
- Evacuation management systems
- Sprinklers/automatic fire suppression systems
- Alternative means of escape
- Ventilated corridors
- Travel distances
- Protected refuge/firefighting lobbies
- Protected stairways
- Access and facilities for the fire service
- Dry risers
- Management (evacuation) plans
- Fire break floors
- Wayfinding signage

Trigger height options

Question 1

Do you agree or disagree that the height threshold for sprinkler provision in new blocks of flats should be reduced? [Agree/Disagree]

Yes. The RIBA recommends that the height threshold for sprinkler provision in new blocks of flats should be reduced from the current requirement of 30m (Approved Document B (fire safety) volume 1: Dwellings, 2019 edition, 7.4).

Question 1b

If you agree that the height threshold should be reduced, what should the new threshold be and what is the evidence for this particular threshold?

The RIBA believes that sprinklers/automatic fire suppression systems are a highly effective means of life protection, and recommends:

- A regulatory requirement for sprinklers/automatic fire suppression systems in all new and converted buildings that include a 'dwelling' or a 'room for residential purposes' (regardless of height, as already required in Wales), and;
- a regulatory requirement for sprinklers/automatic fire suppression systems in all existing buildings that include a 'flat' or a 'room for residential purposes' as 'consequential improvements' where a building is subject to 'material alterations'.

The RIBA recommends that sprinklers should not be used as a means to compensate other key life safety measures or justify reducing minimum standards. For example, the use of sprinklers in guidance permits travel distances to be extended. Regardless of a future requirement for sprinklers, maximum travel distances should be reviewed as part of the review (based on all people's capabilities).

The RIBA recommends that these requirements are included in an update to the Building Regulations, and recommends that The MHCLG review the application of 'consequential improvements' where a building is subject to 'material alterations' to ensure that the appropriate building work is subject to the these requirements.

Details of evidence provided

The London Assembly

In March 2018, The London Assembly Planning Committee published its review findings into whether sprinklers should be made mandatory in London's homes. The report, [Never again: Sprinklers as the next step towards safer homes](#), makes 8 recommendations including reducing the installation cost of automatic fire suppression systems (AFSS) and working towards making AFSS mandatory in every residential building in England.

The Building Regulations (Wales)

There is a regulatory requirement for automatic fire suppression systems to be installed in all new and converted residential dwellings (Houses and Flats) in Wales, including care homes, children's residential homes, boarding houses, halls of residences and hostels other than hostels intended for temporary accommodation for leisure purposes ([The Building \(Amendment\) \(Wales\) Regulations 2017 No. 1274 \(W. 296\), Regulation 37A](#)).

Review Panel on Building Standards (Fire Safety), Scotland

The [Report of the Review Panel on Building Standards \(Fire Safety\) in Scotland, June 2018](#), chaired by Dr Paul Stollard, reached a unanimous consensus for the requirement to install automatic fire suppression systems in Houses in Multiple Occupation (HMOs) used for “care” 24/7 and large HMOs (10 or more residents). It was agreed that this requirement ‘should be extended to flats...’

National Construction Code, Australia

A suite of amendments has been made to [The National Construction Code \(Volume One\)](#) which are to be adopted by States and Territories from 1 May 2019. This notes the provision of ‘fire sprinklers, for apartment buildings and other residential buildings’.

ABI Study: Post Grenfell Research on Residential Sprinkler Systems

The [Fire Protection Association](#) (FPA) produced a report ([ABI Study: Post Grenfell Research on Residential Sprinkler Systems](#)), commissioned by The [Association of British Insurers](#) (ABI), to promote the procurement philosophy set out in the Hackitt Review in respect of the provision of sprinkler systems for residential buildings.

The report outlined ‘fourteen potential research themes that it considered valid in addressing fire safety and resilience issues within the UK built environment’, with research aim 13 focussing on sprinkler provision: ‘The United Kingdom has one of the weakest policies in respect of Sprinkler provision in comparison to other European countries. Much like seat-belts and airbags are deemed essential for making cars safe, the provision of sprinkler systems is considered as essential component to ensuring safety in large buildings and some modern methods of construction – particularly in light timber frame buildings in the US where it is the dominant residential construction method’.

London Fire Brigade

The London Fire Brigade (LFB) commissioner, Dany Cotton, suggested new legislation stipulating the requirement for sprinklers could help avert disasters (such as Grenfell) and that “We [LFB] think they’re essential in every high-rise building” ([Independent, 11 February 2019](#)). The LFB Fire Safety Guidance Note (GN89), [Retrofitting Automatic Fire Suppression Systems in Residential Premises](#) (January 2018), notes that:

- ‘AFSS provide a high level of protection for vulnerable residents, especially for those likely to be affected with long term impairments which could potentially restrict their ability to respond in an emergency situation. AFSS provides protection against the potential damages caused by fire as well as aid the protection of residents. This is especially so where there is increased likelihood that the effects of age or deterioration on mobility sensory facilities and cognitive ability could impair their evacuation response’, and;
- ‘The [National Fire Chiefs Council](#) (NFCC) and the [National Fire Sprinkler Network](#) have worked together to investigate the ‘[Efficiency and Effectiveness of sprinkler systems](#)’. This report indicates that where installed, sprinkler systems operate on 94% of occasions, demonstrating very high reliability. Furthermore, it is evident that when they do operate, they extinguish or contain the fire on 99% of occasions which demonstrates that they are very effective. The research also found that in both converted and purpose built flats, sprinklers are 100% effective in controlling fires’

The LFB have called for:

- the retrofitting of sprinklers in all residential high-rise tower blocks, as part of an appropriate package of fire safety measures, and;
- sprinklers to be installed in all school new builds and major refurbishments.

LFB commissioner, Dany Cotton, noted that the cost of sprinklers when incorporated from the design stage are around 1% of the total build cost and the economic case for the retrofit of sprinklers can be justified, where the cost to retrofit a flat would be around £1,500 - £2,500, compared to the cost of refurbishing a one-bedroom flat after a fire, which is about £77,000 ([LFB News Update](#)).

Details of evidence provided

- Building Regulations 2010 No 2214, Regulation 2 (1) – Defined terms
<http://www.legislation.gov.uk/ukxi/2010/2214/regulation/2/made>
- London Assembly, Never again: Sprinklers as the next step towards safer homes
https://www.london.gov.uk/sites/default/files/final_afss_report.pdf
- The Building (Amendment) (Wales) Regulations 2017 No. 1274 (W. 296), Regulation 37A
https://www.legislation.gov.uk/wsi/2017/1274/pdfs/wsi_20171274_mi.pdf
- Report of the Review Panel on Building Standards (Fire Safety) in Scotland, June 2018
<https://www.gov.scot/binaries/content/documents/govscot/publications/report/2018/06/report-review-panel-building-standards-fire-safety-scotland/documents/00537771-pdf/00537771-pdf/govscot%3Adocument>
- National Construction Code, Australia
<https://www.abcb.gov.au/Connect/Articles/2019/01/14/What-to-Expect-in-NCC-2019>,
and;
<https://ncc.abcb.gov.au/ncc-online/NCC>
- ABI Study: Post Grenfell Research on Residential Sprinkler Systems
<https://www.abi.org.uk/globalassets/files/subject/public/fire/abi-post-grenfell-residential-sprinkler-study-oct-2018.pdf>
- Housing developers 'consistently ignoring' sprinkler safety advice, says London Fire service (11.02.19)
<https://www.independent.co.uk/news/uk/home-news/housing-fire-safety-sprinklers-grenfell-tower-london-fire-brigade-dany-cotton-a8773776.html>
- LFB Fire Safety Guidance Note (GN89), Retrofitting Automatic Fire Suppression Systems in Residential Premises (January 2018)
https://www.london-fire.gov.uk/media/2319/gn_89_lf_format.pdf
- Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: An Analysis from Fire service Data
https://docs.wixstatic.com/ugd/f44fe5_6953a66099984107b6c44a52c1ad0973.pdf

- LFB Update: 'Fire Chief urges action on sprinklers as Grenfell Inquiry opens' <https://www.london-fire.gov.uk/news/2017-news/fire-chief-urges-action-on-sprinklers-as-grenfell-inquiry-opens/>

Design for sprinkler provision

Question 2

Do you agree or disagree that these systems should be designed in accordance with the relevant guidance in BS 9251? [Agree/Disagree]

The RIBA recommends that the scope and design for sprinklers/automatic fire suppression systems for domestic and residential occupancies (BS 9251:2014) should be reviewed alongside other related guidance documents simultaneously. The following additional documents also demonstrate several routes to compliance, and allows the use of sprinklers as a compensatory feature, including flexibility in the design of the sprinkler system itself:

- Approved Document B (fire safety) volume 1: Dwellings, 2019 edition
- Approved Document B (fire safety) volume 2: Buildings other than dwellings, 2019 edition
- BS EN 12845:2015 (Fixed firefighting systems. Automatic sprinkler systems. Design, installation and maintenance)
- BS EN 16925:2018 (Fixed firefighting systems. Automatic residential sprinkler systems. Design, installation and maintenance)
- BS 9991:2015 (Fire safety in the design, management and use of residential buildings – Code of practice)
- BS 9999:2017 (Fire safety in the design, management and use of buildings. Code of practice)

The RIBA recommends that sprinklers should not be used as a means to compensate other key life safety measures or justify reducing minimum standards, and these standards should be updated accordingly.

Question 2b

If you disagree, what specifications and performance should be required?

The RIBA recommends that sprinklers should not be used as means to compensate other key life safety measures or justify reducing minimum standards (See RIBA Response to Question 1b). BS 9251:2014 makes this distinction; '*The provision of a sprinkler system does not negate the need for other fire precautions or practical measures, which can include structural fire resistance, escape routes, fire detectors and good fire safety management practices*' (Introduction, p1), yet BS 9251:2014, BS EN 16925:2018 and BS EN 12845:2015 allows the use of sprinklers to compensate for, or overcome, circumstances where a building is unable to achieve compliance with the Building Regulations.

The RIBA recommends that Approved Document B (Volume 1 and 2), BS 9991:2015 and BS 9999:2017, which proposes routes to compliance with the integration of sprinklers as a compensatory measure (for example, to increase travel distances, sizes of compartments or unprotected areas), should not be permitted.

Approved Document Volume 2 further exploits the use of sprinklers to degrade fire safety standards, for example, in residential care homes. The integration of sprinklers in residential care homes permits the omission of self closing devices to bedroom doorsets and applying a management function to manually close bedroom doors during sleeping hours, increasing the

number of beds per bedroom and increasing the capacity of beds in protected areas of more than 10. The RIBA recommends that such permitted dispensations are removed, as sprinklers should be considered a baseline level of fire safety protection, and part of a set of layers of fire safety (See RIBA Response to Question 1b and 7b).

The RIBA recommend that consideration is given to the guidance provided for sprinkler alarm devices (BS 9251:2014, Section 5.13, p18 - p20), to ensure that the system interfaces with any new proposed fire alarm system. The RIBA recommends a requirement centrally addressable fire alarm system (integrating detection and alert) to support fire and rescue services operation response by alerting residents if they need to evacuate (See RIBA Response to Question 7 for further detail).

Details of evidence provided

- Approved Document B (fire safety) volume 1: Dwellings, 2019 edition
<https://www.gov.uk/government/publications/fire-safety-approved-document-b>
- Approved Document B (fire safety) volume 2: Buildings other than dwellings, 2019 edition
<https://www.gov.uk/government/publications/fire-safety-approved-document-b>
- BS 9251:2014, Fire sprinkler systems for domestic and residential occupancies – Code of practice
<https://shop.bsigroup.com/ProductDetail?pid=00000000030280482>
- BS EN 16925:2018 (Fixed firefighting systems. Automatic residential sprinkler systems. Design, installation and maintenance)
<https://shop.bsigroup.com/ProductDetail/?pid=00000000030310796>
- BS EN 12845:2015 (Fixed firefighting systems. Automatic sprinkler systems. Design, installation and maintenance)
<https://shop.bsigroup.com/ProductDetail?pid=00000000030280482>
- BS 9991:2015 (Fire safety in the design, management and use of residential buildings – Code of practice)
<https://shop.bsigroup.com/ProductDetail?pid=00000000030351309>
- BS 9999:2017 (Fire safety in the design, management and use of buildings. Code of practice)
<https://shop.bsigroup.com/ProductDetail?pid=00000000030357099>

Transitional provisions

<p>Question 3 Do you agree or disagree that there should be a transitional period of six months? [Agree/Disagree]</p>
<p>No. The RIBA recommends that the transitional period should not be 6 months.</p>
<p>Question 3b If you disagree, how long should the transition period be?</p>
<p>The RIBA recommends that the transitional period should be 2 months. This timescale was also applied to the transitional arrangements for the restriction on combustible materials which become part of an external wall, or specified attachment, of a relevant building.</p> <p>The RIBA recommends that the requirement for sprinklers during this transitional period should not apply in any case where a building notice or an initial notice has been given to, or full plans deposited with, a local authority before the day this requirement comes into force and either the building work to which it relates;</p> <p>(a) has started before that day; or (b) is started within the period of two months beginning on that day.</p> <p>The terms “building notice”, “initial notice” and “full plans” have the meanings given in the Building Regulations 2010.</p> <p>Details of evidence provided</p> <ul style="list-style-type: none"> • The Building (Amendment) Regulations 2018 No. 1230 http://www.legislation.gov.uk/ukxi/2018/1230/pdfs/ukxi_20181230_en.pdf

Wayfinding signage for fire and rescue services

<p>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? [Agree/Disagree]</p>
<p>Yes. The RIBA recommends that there should be a consistent approach to wayfinding signage to assist fire fighters and other rescue teams to evacuate occupied areas during emergency situations included in Approved Document B.</p> <p>The RIBA recommend a requirement for wayfinding signage for fire and rescue services;</p> <ul style="list-style-type: none"> • in all new and converted buildings that include a ‘flat’ or a ‘room for residential purposes’ of any height, and; • in all existing buildings that include a ‘flat’ or a ‘room for residential purposes’ as ‘consequential improvements’ where a building is subject to ‘material alterations’ <p>The RIBA recommends that The MHCLG and The Home Office consider the requirement for wayfinding signage for fire and rescue services in all existing blocks of flats of any height, applied through the Fire Safety Order.</p>

Wayfinding signage for fire and rescue services

The RIBA recommends that signage should be required externally at the building entrance, to assist fire and rescue services in identifying, for example, an individual block within a development or access to specific parts of one building or different stair cores.

The RIBA recommends a requirement of emergency services information panels to provide a visual perspective to firefighters entering the building, which would be A3 size (typically) and fitted no higher than 1200mm from the floor level. The RIBA recommends that signage should include ground and typical floor plans with floor number information, location of facilities for the fire service, building block and stair core identification and flat unit numbers. These should be installed either in the entrance lobby or within a control room on the ground floor storey. The RIBA recommend that these panels should be installed on each floor level in the building within the stairwell and the lobby adjacent the stair, each relating to its floor, providing vital information for emergency services.

Evidence on wayfinding signage requirements for fire and rescue services

The requirement for signage in high rise buildings was raised in both Coroner's Rule 43 letters (Lakanal House: March 2013 and Shirley Towers: April 2013). The Coroners made the following recommendations:

The Coroner, K St J Wiseman (Shirley Towers)

It is recommended that there should be an obligation to:

- *ensure that signage indicating flat numbers are placed at a low level to increase visibility in smoke conditions*
- *provide signage to indicate floor levels both in stairwells and lift lobbies in high rise premises, to assist the emergency services;*

The Coroner, Francis Kirkham (Lakanal House)

It is recommended that signage (in common parts of high-rise residential buildings):

- *provide information to those in the emergency services which would assist them to understand a building's layout and enable them quickly to find a particular flat or maisonette once inside the building.*

Wayfinding signage for residents

The RIBA recommends that The MHCLG consider additional wayfinding requirements to assist residents and visitors in the event of a fire, as evacuees will have a reliance on signage to guide them to a place of safety outside the building. The RIBA recommends that guidance should extend beyond the requirement for exit signs to doorways providing access to a means of escape (Approved Document B), and consider implementing the recommendations set out in the evidence below.

Evidence on wayfinding signage requirements for residents

The requirement for resident signage in high rise buildings was raised in both Coroner's Rule 43 letters (Lakanal House: March 2013 and Shirley Towers: April 2013), who made the following recommendations:

The Coroner, K St J Wiseman (Shirley Towers)

- *ensure that signage indicating emergency exits in high rise premises are placed at a low level to increase visibility in smoke conditions.*

The Coroner, Francis Kirkham (Lakanal House)

It is recommended that signage (in common parts of high-rise residential buildings):

- *in common areas explain whether residents should normally remain in their flats or maisonettes or whether they should evacuate the building, in which case evacuation procedures should be explained*
- *provide clear information to residents to enable them to find escape routes*
- *use pictograms to assist those for whom English is not their first language*

The RIBA support these recommendations and acknowledge that the requirement to provide additional information beyond that as recommended for wayfinding signage for the fire and rescue services is a minor addition, and these should be considered to provide a comprehensive strategy for both emergency services and residents.

The RIBA support the NFCC guidance for signage to be installed at a lower height (1200mm from Finished Floor Level) for both emergency services and residents, as outlined by the NFCC safety way guidance systems guidance for buildings. It is understood that in a fire, smoke collects on the ceiling forming a reservoir of smoke that light cannot penetrate, and when the smoke plane is halfway down the wall, high level signs become covered and are no longer visible, creating difficulties for the fire and rescue service and people escaping (NFCC safety way guidance systems guidance for buildings)

The RIBA would like to draw attention to the CIBSE Fire Guide E (Fire Safety Engineering), which explains the advantages offered by continuous luminous wayfinding systems and directional markers, which can be powered or photoluminescent, as a potential supplementary option to photoluminescent signage.

Details of evidence provided

- Francis Kirkham CBE, Coroner's Rule 43 Letter, Lakanal House, March 2013
<http://moderngov.southwark.gov.uk/documents/s37765/Appendix%201%20Coroners%20Rule%2043%20Letter.pdf>
- K St J Wiseman, Coroner's Rule 43 Letter, Shirley Towers, Hampshire, April 2013
<https://www.shropshirefire.gov.uk/sites/default/files/11-coroners-rule-43-letter.pdf>
- GVE2019 CIBSE Guide E: Fire Safety Engineering
<https://www.cibse.org/knowledge/knowledge-items/detail?id=a0q0O00000GiPUSQA3>
- NFCC Safety Way Guidance Systems Guidance for Buildings, May 2018

Question 5

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

The RIBA recommends that there should be an appropriate level of information included in Approved Document B that provides guidance on wayfinding signage, both internally and externally for buildings that include a 'flat' or a 'room for residential purposes' of any height (See RIBA Response to Question 4).

Currently, there is limited guidance in BS 9991:2015, that recommends 'signage numerically indicating the floor level should be provided within the fire-fighting stair'. There is however no prescribed format (size and design) for the signage to be provided. Elements from 'the NFCC safety way guidance systems guidance for buildings' could be included in Approved Document B.

<p>Details of evidence provided</p> <ul style="list-style-type: none"> • BS 9991:2015 Fire safety in the design, management and use of residential buildings. Code of practice. https://shop.bsigroup.com/ProductDetail?pid=00000000030351309 • NFCC Safety Way Guidance Systems Guidance for Buildings, May 2018
<p>Question 5b Does this guidance need to be supplemented or amended for inclusion in Approved Document B? If yes, please specify how.</p>
<p>Yes. The RIBA recommends that guidance is provided in Approved Document B, to include signage type and locations. The technical details and performance requirements can be supplemented in current British Standards guidance, including legibility requirements (font type, size, colour, light reflectance value, materials) and content. This would enable specifiers to choose the correct type and finish from a set of performance requirements, whilst meeting the overarching requirement to provide a consistent signage type and placement in the early stages of the design.</p>

Consultation stage assessment of impact

<p>Question 6 What views exist on the benefits of each signage option set out above? <i>(Vinyl lettering, Photoluminescent lettering, Emergency powered lighting luminaires)</i></p>
<p>The RIBA support the assessment by the NFCC that photoluminescent lettering would assist fire and rescue services. This this type of lettering would be visible where smoke may be present (where emergency escape lighting can lose its efficiency) and assist evacuees whom may be visually impaired, as it does not produce disability glare unlike some electrical systems (for example, LED floor lighting).</p> <p>The RIBA recognise that the only benefit of vinyl lettering over the other signage options is that it is the cheapest option, yet such signage (vinyl) would not provide the necessary benefits to firefighter wayfinding and safety as it may not be seen well in smoke filled environments. Given this observation, the RIBA do not recommend the use of vinyl lettering.</p>
<p>Question 6b What is the preferred option set out above for wayfinding signage? Vinyl lettering, photoluminescent lettering, emergency powered lighting luminaires, other (please specify).</p>
<p>The RIBA recommends that photoluminescent lettering is the most appropriate signage option to be installed, providing immediate benefits to firefighter safety with relatively small costs and a much simpler installation over emergency powered lighting luminaires.</p> <p>The RIBA appreciate that photoluminescent lettering relies on several factors to ensure that it performs as expected when required. This includes, within the design stage of a new building, that primary lighting positions and illuminance levels are selected sufficiently to ensure that the signage is exposed to the correct excitation illumination in order to function in dark surroundings, as well as an ongoing building safety management process to ensure this is maintained. The RIBA recommend that additional guidance is provided alongside the requirements for the positioning of photoluminescent signage to ensure that it can operate effectively at all times.</p>

Evacuation alert systems

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 evacuate? [Yes/No]

Yes. The RIBA recommends a requirement for centrally addressable fire alarm systems (integrating detection and alert):

- in all new and converted buildings that include a 'flat' or a 'room for residential purposes' of any height, and;
- in all existing buildings that include a 'flat' or a 'room for residential purposes' as 'consequential improvements' where a building is subject to 'material alterations'

A centrally addressable fire alarm system, with a fire alarm control panel (located on the ground floor of the building in a protected space or room), will provide the fire and rescue service with vital information of the location of a triggered detector(s), and in turn informs the process and strategy used by the fire and rescue service in determining the most appropriate managed evacuation procedure (for example, phased evacuation or simultaneous evacuation).

Alerting the fire service

The RIBA recommends that the MHCLG consider a requirement for the use of automated or managed notification of the fire service when a fire is detected. The process and management of alarm monitoring and alarm filtering protocols can reduce the number of false alarms the fire and rescue services receives, and may improve fire and rescues response times, as there is no reliance on an individual reporting a fire.

The RIBA recommends that the provision of an interface between the centrally addressable fire alarm system and the use of social alarm systems are considered as part of the review, to ensure that the fire and rescues services are aware of those individuals that require external assistance in the event of a fire, and can be considered in the strategy of any evacuation process by the fire and rescue service.

Question 7b

For each response, what views exist on the benefits and risks of such an approach?

The RIBA recognises that the means of warning and escape requirements in Approved Document B are currently based on the stay put policy, with no alternative provision for when fire spreads and evacuation is required. There are no appropriate provisions for the early warning of fire when fire spreads and the stay put policy must be abandoned and phased or simultaneous evacuation is required. This is exacerbated by current design guidance, which allows extended travel distances based on other design provisions, such as subdividing intermediate corridors (further compounded with no means of passive or mechanical ventilation), the installation of sprinklers and insufficient refuges.

The RIBA recommends that the requirement for centrally addressable fire alarm systems, (with the capability to alert residents), provides sufficient control for an automated evacuation process or the fire and rescue service to override a buildings current strategy, such as the stay put policy, when deemed necessary to begin a phased or simultaneous evacuation procedure.

Alternative means of escape

The RIBA recommends that residential buildings should be designed so that it is safe to stay put and safe to evacuate in the event of a fire should occupants wish or need to. To achieve residential buildings in which it is safe to stay put and which are safe to evacuate in the event of a fire, the RIBA recommends a requirement is included in Approved Document B for at least two stairways in all new multiple occupancy residential buildings, offering alternative means of escape, where the top floor is more than 11m above ground level or the top floor is more than three storeys above the ground level storey (as required for commercial buildings). This will meet the regulatory requirement (B1) of providing occupants with an 'appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times' including when the fire service is using a stairway to fight a fire.

Stairway and firefighting operations

A single stairway in a building where there is a major fire has to fulfil two very important and separate functions:

- Provide a safe smoke free route out of the building for the occupants
- Provide a safe route from the bridgehead for firefighters to extinguish the fire and effect search and rescue

If there is only one stair these functions are inevitably in conflict.

In firefighting terms, the 'Bridgehead' is a safe position inside the building from which to carry out fire-fighting operations, usually two clear floors below the lowest affected floor. Once the firefighters tasked with extinguishing the fire connect their branch hoses to the charged dry riser at the bridgehead, they then run their hoses up to the fire floor. This means the stairs can become smoke logged as well as impeded with hoses.

RIBA Layers of Fire Safety

The RIBA recommend that these systems should be considered as part of a series of passive and active fire protection methods. The RIBA have developed design-based research drawing from relevant industry and fire and rescue authority expertise and recommend the following layers of fire safety brought together as baseline prescriptive regulations would enhance building and life safety. These include:

- Fire detection systems
- Centrally addressable fire alarm systems
- Evacuation management systems
- Sprinklers/automatic fire suppression systems
- Alternative means of escape
- Ventilated corridors
- Travel distances
- Protected refuge/firefighting lobbies
- Protected stairways
- Access and facilities for the fire service
- Dry risers
- Management (evacuation) plans
- Fire break floors
- Wayfinding signage

Question 8

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

The RIBA recommends a requirement for centrally addressable fire alarm systems (integrating detection and alert):

- in all new and converted buildings that include a 'flat' or a 'room for residential purposes' of any height, and;
- in all existing buildings that include a 'flat' or a 'room for residential purposes' as 'consequential improvements' where a building is subject to 'material alterations'

Question 8b

For each response, please provide evidence to support your answer.

Details of evidence provided to Question 7

- **The Building Regulations 2010 No. 2214 and Approved Document B (Intention)**

The RIBA recommendations outlining a requirement for an emergency evacuation system and centrally addressable fire alarm systems address Part B1 of the Building Regulations and its associated Approved Document B 'Intention', which states that:

Requirement B1: Means of warning and escape

'The building shall be designed and constructed so that there are appropriate provisions for the early warning of fire, and appropriate means of escape in case of fire from the building to a place of safety outside the building capable of being safely and effectively used at all material times' (Approved Document B Volume 1, 2019 edition).

Approved Document B - Intention

In the Secretary of State's view, requirement B1 is met by achieving all of the following [extracted intention].

a. There are sufficient means for giving early warning of fire to people in the building.

- BS 8629:2019 Code of practice for the design, installation, commissioning and maintenance of evacuation alert systems for use by fire and rescue services in buildings containing flats

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Assessment of Impacts

Question 9

Please provide any additional evidence on costs, risks and benefits which should be considered in an assessment of impacts in the following areas.

- a) Sprinkler provision in new high-rise blocks of flats
- b) Wayfinding signage for fire and rescue services
- c) Evacuation alert systems

The RIBA recommendations for the following fire safety measures can be incorporated into the design stage of relevant schemes easily or installed in a scheme as part of 'consequential improvements' where a building is subject to 'material alterations'. The measures that the RIBA have recommended have a high impact on life safety in relation to their cost.

The RIBA recommends that height thresholds should not dictate the application of these fire safety measures. This is evidenced by the numerous recent fires in buildings below 18m. The RIBA believe that it is paramount that new, converted and refurbished buildings at any height make these necessary adjustments to ensure life safety of residents, visitors and the fire and rescue services.

Sprinkler provision in new high-rise blocks of flats

The RIBA recommendation for the regulatory requirement for sprinklers/automatic fire suppression systems is supported by the low cost of installation per flat (sprinklers consultation paper - impact study) and the value of the system to life safety as identified by numerous reports and statements (See RIBA Response to Question 1b).

Wayfinding signage for fire and rescue services

The RIBA recommends a consistent approach to wayfinding signage to assist fire fighters and other rescue teams to evacuate occupied areas during emergency situations (See RIBA Response to Question 4). The RIBA recommends that the application of photo luminescent signage would provide effective means of visible lettering where smoke may be present, including assisting evacuees whom may be visually impaired. This option is of low cost and would also be appropriate for the application in new, existing and converted buildings (See RIBA Response to Question 6) where there would not be requirement for a backup power supply to emergency powered lighting luminaires if this option was chosen (for signage, not for lighting areas when the power fails) when installing into existing buildings.

The RIBA believe that the benefit of applying a requirement for relatively low cost wayfinding signage for the fire and rescue services should also be extended to include signage for residents and visitors, as in the event of a fire, evacuees will have a reliance on signage to guide them to a place of safety outside the building (See RIBA Response to Question 4). The importance of signage for residents and fire and rescue services has been raised in both Coroner's Rule 43 letters (Lakanal House: March 2013 and Shirley Towers: April 2013).

Evacuation alert systems

The RIBA recommend a requirement for centrally addressable fire alarm systems (integrating detection and alert), rather than a standalone alert system as outlined in the consultation.

A combined system would provide the fire and rescue service with vital information as to the location of triggered detector(s), and include an interface to any social alarm systems, emergency voice communications systems (located in refuge areas) and additional alarm devices (for individuals that are deaf or hard of hearing), which can inform the strategy of evacuation, such as individuals that require external assistance in the event of a fire (See RIBA Response to Question 7 and 7b).

The RIBA understand that the difference in cost for installing a centrally addressable fire alarm system (integrating detection and alert) and a standalone alert system is negligible.

Question 10

Are you aware of any particular equalities impacts for these proposals? How could any adverse impact be reduced and are there any ways we could better advance equality of opportunity or foster good relations between people who share a protected characteristic and those who do not? Please provide evidence to support your response.

Alert systems in care homes

The RIBA acknowledge that that Approved Document B provides guidance on appropriate means of warning and escape strategies for care homes, where means of warning and escape will be carefully managed by the building manager and fire service. The RIBA recommends that centrally addressable fire alarms are necessary in these buildings, however the alert sounder should be directed to staff, building management and the fire and rescue services, rather than residents, to enable safe evacuation.

Inclusive alert systems

The RIBA recommend that centrally addressable fire alarm systems should be capable of facilitating the connection of additional devices for people who are deaf or hard of hearing, such as visual alarm devices (often described as flashing beacons) and/or vibrating devices, which can, for example, be placed under pillows or mattresses.

Where a social alarm system might be required or 'present within the flat for other purposes, such as summoning the fire and rescue service in the event of a fire in an individual's flat or the arrangement for assistance in the event of falls...' (BS 8629:2019 – Draft), there is benefit in the provision of an interface between the centrally addressable fire alarm system and the social alarm system. This can ensure that the fire and rescue service can be alerted to the need to provide assistance to an individual(s) prior to any decision to initiate a phased or simultaneous evacuation procedure.

The RIBA recognise the benefit of informing the fire and rescue services of the need to provide assistance to individuals, and the RIBA recommends that emergency voice communications systems (located in refuge areas) are also linked to the buildings centrally addressable fire alarm system, to inform them of any individuals located in a refuge(s) that require assistance, prior to any decision to operate the evacuation system.