

**BIM4Housing's Expert's Recommendations on Mitigating Risk
to Fire Safety Signs, while Strengthening the Golden Thread**

(In their own words with edits)

Third Edition

September 2025

Written and compiled by: Richard Freer, Director BIM4Housing

Peter Thorns, Zumtobel Group

Jim Creak, Jalite Plc

And the experts listed in Appendix 4

Below are recommendations that we, as BIM4Housing, are putting forward as the findings of our subject matter experts. We do not claim these findings to be definitive, but we would hope that they would provide 'accountable' and 'responsible' persons with some of the detail they would require to ensure that risks are mitigated.

Format

The structure of this set of information is designed to be consumed in various ways by different stakeholder groups doing different things. Therefore, information mentioned in one section may be repeated in another, so they can be applied to a particular activity.

Also, we have sought to organize the information to make it more machine-readable so, although the lists could be reduced by combining similar items, this would make them less easily used in applications.

Despite the need to edit and contextualise, we have tried to retain the authentic voice of our experts throughout. This is especially so in the Appendices, where no colloquialism is left unturned.

Terms of use

This document is not intended as an end-result, but as a snapshot of a dynamic, on-going piece of work being developed by Subject Matter Experts who represent the different interest groups.

We hope it is helpful, but it should not be used in isolation, since, as we have learned from our collaboration, no one knows everything- and experts often disagree. It should therefore be used to supplement other sources of information, all of which should be validated by a responsible person applying it to a project.

Comments and additional contributions are welcome, and a panel of volunteer experts will review suggestions to assess/validate them and augment our recommendations as required.

This document can be viewed, downloaded, and commented upon at <https://bim4housing-blackbox.com/publications/>

INTRODUCTION

BIM4Housing Structure

We have six Working Groups of experts who understand the individual Stakeholder needs of Development, Design, Construction, Manufacturing, Operations, and the specialist Advisors who support the whole process. Each Working Group determines the problems they are experiencing that could be alleviated by better information, often from a different Stakeholder group and they collectively establish Workstreams to collaborate and share knowledge to come up with practical solutions.

They have established Workstreams for MMC, Data Standardisation, Sustainability and Fire Safety and the latter has, in turn, established Round Table workshops that bring together SMEs who really understand specific asset types.

(See Appendix 1 for Structure Diagram)

Fire Safety Methodology

In 2021 it was determined to take individual fire-critical assets and examine impacts and influences through their lifecycle. A series of online discussions were held, along with one-on-one calls and an email gathering of views and inputs. In 2022 this consultation culminated in a series of Roundtable discussions, each with a clear focus and targeted output. BIM4Housing's expert team was enhanced by guests from the GTI, along with other fire safety specialists throughout the process.

Phase 1 defined the over-arching questions that need to be answered, for each asset type, to deliver the BIM-plus solution necessary to the effective functioning of the Golden Thread in terms of Fire Safety.

The questions defined are:

- What risks does the asset mitigate?
- To what risks is the asset, itself, susceptible?
- What information is needed about an asset, to ensure it performs as required?
- What tasks/method statements/procedures are required to ensure the asset is installed, commissioned, inspected, and maintained properly?
- What level of competency/training needs to be in place?
- How should product changes be recorded?

Phase 2 sought to answer those questions, offering a set of recommendations to mitigate risk and to help to deliver The Golden Thread, through the effective management of required information.

Phase 3 saw the Recommendations published on the BIM4Housing Blackbox web site enabling further comment and input to enhance the document.

Phase 4 saw a second tranche of roundtables, which sought to update the Recommendations in the light of the Fire and Building Safety Acts and other industry changes. This Second Edition is the result.

Fire Safety Signs Methodology

The output from a Roundtable (17th September 2021) was collated and contextualized and combined with further subject matter expert input. Significant participant engagement was achieved prior to the event. The resulting report was then peer-reviewed.

Now, eighteen months on, we are reviewing the Recommendations in light of recent legislation and any change in industry practice.

What is a Fire Safety Sign?

Fire Safety Signs are all safety signs required to satisfy the requirements of legislation. Fire Safety Signing is the uniform siting, positioning, and illumination to ensure an effective communication arrangement to ensure safety within the building and its curtilage.

Fire Safety Signing is required as a function of the process of formal risk assessment which considers the risks associated with Fire and the actions that may be required by all building occupants. Key objective of Fire Safety Signing is to provide information, effective location, efficient identification, and sufficient education required by building occupants and visitors regarding all life safety arrangements provided for use in an incident.

FINDINGS

It was determined to look to 'codify' risks to enable teams to coalesce around tackling a problem, run scenarios to simulate what might happen and how collaboration can reduce the risk of them happening.

Clearly, it is not desirable for the 'Accountable Person' to be absolved of responsibility for not anticipating a risk, simply because it was not on this list of suggested risks- which should be considered a 'steer' not an absolute. However, without a list, it becomes impossible to define and deliver the information needed.

What are the component elements of a Fire Safety Sign?

- a) Mandatory Instruction
- b) Hazard Location and identification
- c) Prohibition instruction
- d) Escape Route identification and Location
- e) Fire Fighting equipment and alarm location
- f) Lifesaving appliance, emergency egress and panic security device identification
- g) Fire and rescue deployment information and flat location
- h) Low proximity flat and floor number identification
- i) Directional arrow/graphical symbols
- j) Supplementary text
- k) Photo luminescent material
- l) Fire Zone Plan
- m) Instruction
- n) Colour
- o) Shape and Size

Are there any dependencies on other systems?

- a) Illumination
- b) Tenant engagement
- c) Fire Strategy
- d) Formal Risk Assessment
- e) No Smoking/vaping policy
- f) Potential access strategy/[Emergency response plan](#)
- g) IT system
- h) Health and safety management system
- i) Fire Alarm Systems

Q1a. What risks does Fire Safety Signage mitigate?

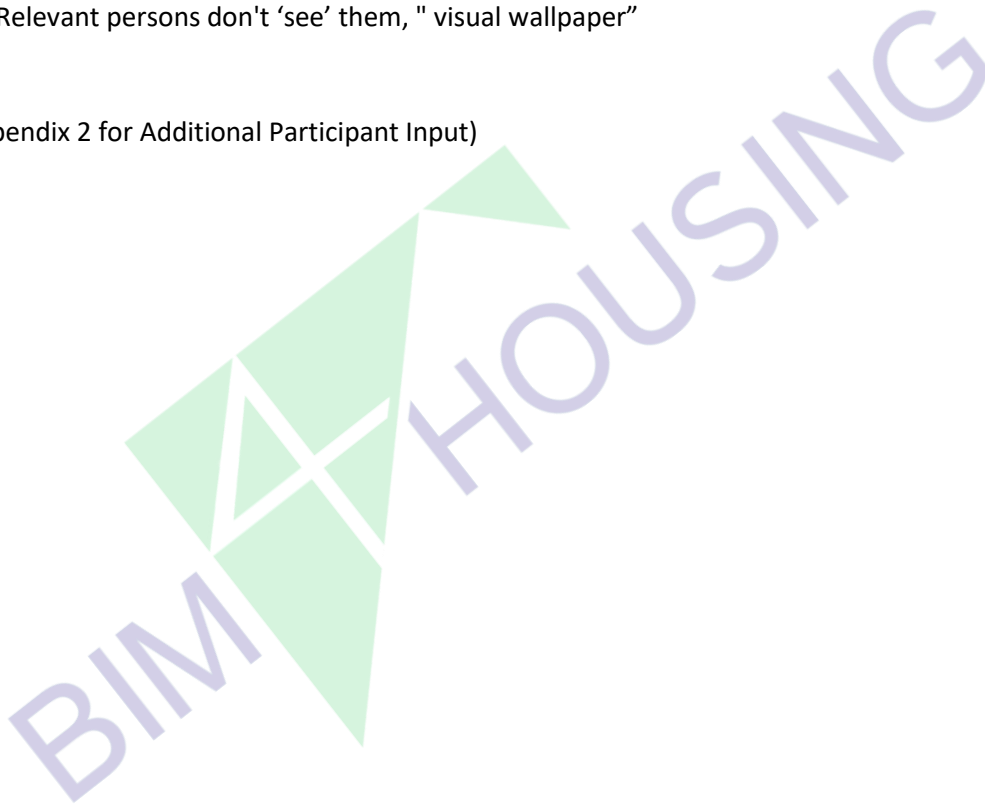
- a) Unfamiliarity of built environment
- b) Orientation
- c) Loss of time
- d) Slips, trips, and falls
- e) Activities that would increase risk
- f) Failure to locate safety refuges
- g) Failure to locate disability assistance call points
- h) Confusion

- i) Language barriers
- j) Barriers to smooth evacuation

Q1b. To what risks are Fire Safety Signs susceptible?

- a) Smoke logging
- b) Incorrect application
- c) Incorrect design
- d) Vandalism
- e) Poor maintenance
- f) Bad installation
- g) Power failure
- h) Misunderstanding of icon definition
- i) Not updating (manual process) when something changes strategically within the building
- j) Lack of lighting
- k) Relevant persons don't 'see' them, "visual wallpaper"

(See Appendix 2 for Additional Participant Input)



Q2. What information is needed about Fire safety Signs to ensure they perform as required?

It is important to understand how the information will be used and how the context will vary what information is required. Initially, this was the subject of quite a lot of debate – largely driven by a worry about ‘information overload’. However, with a truly cross disciplinary team of SMEs, it was possible to drill down to understand the detail of why a role would need certain information.

The aim was to collect all the information all stakeholders need against all products and leave it to each role to configure their software applications to see only the information they need for that individual task.

- a) Fire Strategy and Risk Assessment
- b) Location (inc x,y,z)
- c) Manufacturer
- d) Model number
- e) Installer
- f) Size/Dimensions
- g) Purpose and Wording (Changes in the building require a new design)
- h) Graphical Symbol
- i) Unique Identifier
- j) Durability Characteristics and Performance
- k) When it was last viewed to be functional
- l) Will it operate as required? (E.g., battery charge indicators of external emergency luminaires to light externally illuminated signs)
- m) That full duration testing has been undertaken each year
- n) Battery replacement intervals
- o) Logging of any maintenance performed.
- p) Contrasting Colours
- q) Specific font
- r) Signage Strategy specific to the building
- s) Height from ground
- t) We should hold all component details for all signs
- u) [O&M manual](#)

Q3. What tasks are required to ensure Fire Safety Signage is installed, commissioned, inspected, and maintained properly?

It should be a given that any work on fire safety critical assets should always be undertaken by competent people, probably 3rd party accredited. However, that person must be supported with any information that they might need to reduce the risk of an important step being missed and to provide an auditable record of what tasks were completed. This is common practice in M&E maintenance, where the industry has developed a significant library of standard procedures and tasks lists, along with roles/competency required.

An air-conditioning unit is maintained by a qualified air conditioning engineer, but the engineer is also issued with a check list for them to record what was done.

A similar industry-wide check list for installation, commissioning, handover, maintenance and recycling could be agreed.

- a) An audit of current provisions and actions from this by a competent person

Maintenance

Example of Industry-standard maintenance instructions – extract from BESA's SFG20.

	Code	Task	Action
✓	21665.00.T1	Non-illuminated fire exit signage	1. Carry out an inspection of all non-illuminated fire exit signage to check that it is correct and in place. 2. Check that all safety signs and notices are legible. 3. Escape route signs should be cleaned and visually inspected at regular intervals, and action should be taken to remedy any defects.
✓	21665.00.T2	Illuminated (maintained) fire exit signage	1. Every maintained fire exit light should be visually inspected for correct operation and to ensure the lamp is lit. 2. Ensure that any fault found is logged and the appropriate action(s) taken.

Q4. What level of competency/training needs to be in place?

Industry training courses are critical, but they must be complemented by additional knowledge-transfer from people with many years real experience.

Individual manufacturers have product-specific training which complements the more general training. Such training resources need to be provided in all cases where a product is used – both for new build but also as part of the long-term H&S/O&M information, ideally held as machine-readable data in the Asset information model to ensure maintenance teams have easy access to critical information.

Installation

- b) Those involved in the design and installation should be able to demonstrate training /qualifications relevant to the systems they design/install and be members of a recognised organisation with accreditation through the likes of UKAS
- c) Competency of individual installers demonstrated through certification with a suitable 3rd party accreditation provider. This should include the provision of the manufacturer's fitting instructions
- d) Specification of which third party accreditations are acceptable should be required
- e) Ongoing demonstrable CPD of installer (not simply the company they work for)
- f) Installer should have manufacturer-led product-specific installation training, in addition to any formal UKAS accreditation
- g) Manufacturers should offer installation training, either in their own right, or sub-contracted out to a specialist to provide that service
- h) Code of practice should include training materials

Maintenance

- a) Manufacturer-specific installation, commissioning, inspection, maintenance/repair, replacement, and recycling requirements should be retained to inform future maintainers of the manufacturers' recommendations
- b) Mandatory awareness training should be in place for all people working on site and carrying out maintenance in buildings
- c) Training for the operational team should be required on Standards (BS, CEN etc) plus to give a basic understanding of how to read drawings, commissioning certs and O&M's
- d) BSI Flex 8670 focuses on the competence of individuals and expects that organisations use this core criteria as part of their management of competency (planning, monitoring, reviewing etc.). This also enables the capture of the skills, knowledge, experience, and behaviours necessary to the undertaking of a defined role, function, activity, or task

(See Appendix 3 for Additional Participant Input)

Q5. How are the changes from one product to another recorded?

Robust Change Management requires an information baseline against which the different states – current, proposed, final and ongoing change – can be measured and reported.

The baseline information should contain the required performance in a machine-readable/actionable form and the Change Management process should enable that to be compared with:

- a) the actual performance of the designed solution (probably generic)*
- b) the performance of the chosen product against the generic*
- c) the performance of an alternative (value engineered?) product*
- d) the record of what was actually used/installed.*

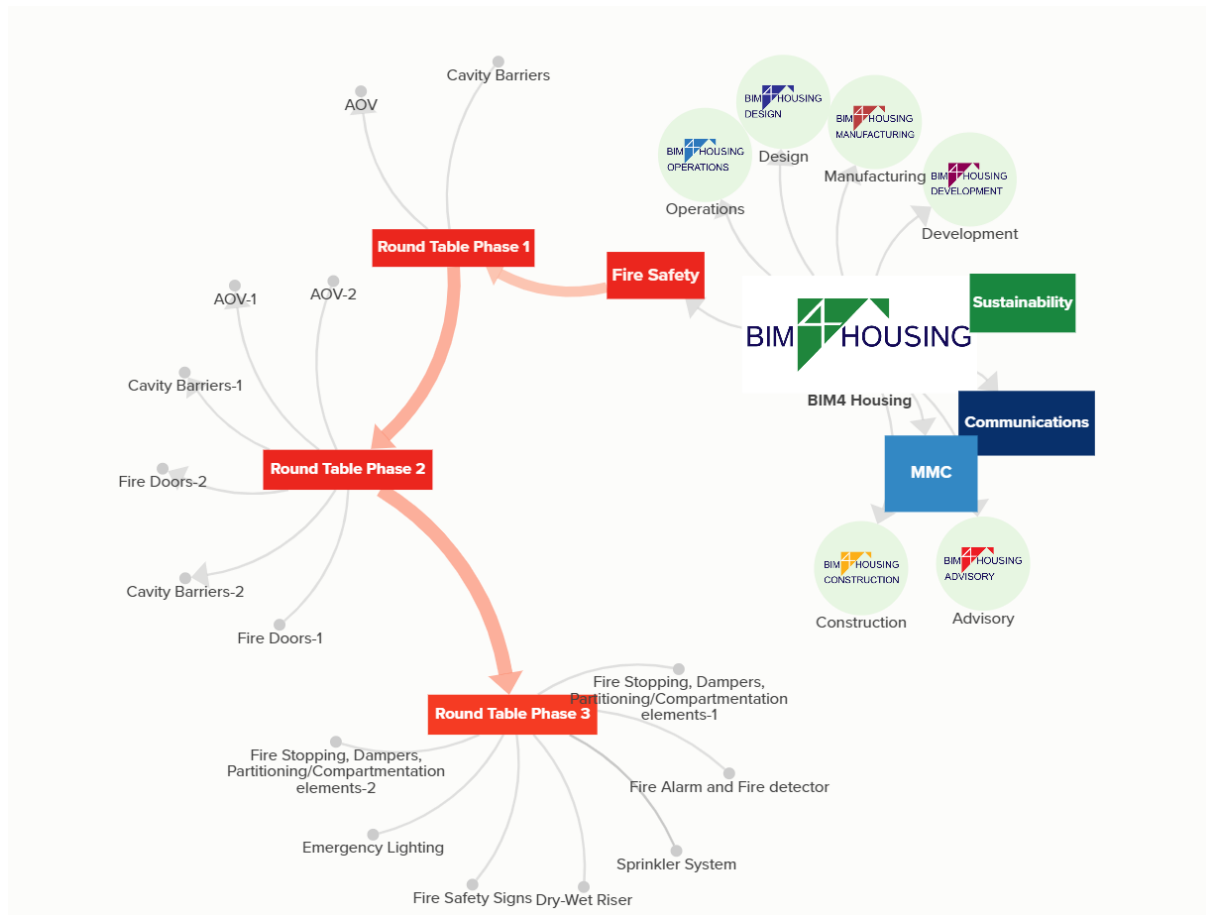
Requirements and Suggestions

- a) A schedule of safety critical elements for the building, to include products specified
- b) Baseline against which to compare proposed alternative products (Some designers have expressed reluctance to propose (not specify) a specific manufactured product that will satisfy their design due to liability, procurement rules and fees)
- c) This schedule would be “Locked” at a specific design stage, after which changes to products specified should not occur except for exceptional reasons
- d) A formal change management system is required to ensure that any unavoidable changes are validated by a ‘responsible’ person e.g., original designer and/or fire engineer
- e) There is a well-established change management process in construction called Technical Submissions in which requested changes from the specifications/recommendations, that were created by the designers (and selected manufacturers), need to be formally reviewed and approved. Design-and-Build procurement has affected that process and it should be re-established in a way that the performance of a proposed product, and its constituent components, is easily compared with the proposed alternative and, if agreed, it is recorded as a Technical Deviation
- f) To ensure compliance with the current fire strategy for the building
- g) Validation of changes would include verifying that the new product met all the requirements for the application with no detriment to the overall design, the details of which should be recorded (Changes in the product may be made between design and procurement, procurement and installation, handover, and ongoing maintenance)
- h) More onus needs to be on the client, [with support from design team](#), during the collation of Information Requirements and the updating of design models into ‘as installed’ content suitable for Asset/Facilities Management
- i) Full Disclosure of the product is needed at handover so that after Work Stage 7, if a manufacturer goes out of business or products change the record is there in perpetuity
- j) Asset database must be kept up to date with core data for new installs. Installation documents should be held in a centralised digital location. Once BIM/COBie level data is manageable within the asset management system then this will be used as the main source of data

- k) BIM, CAFM, Asset and Housing management systems must inform the change management process
- l) H&S files for each building (cradle to grave) must be supplied, recorded, and be updated with notification of changes and the implications
- m) Warranty information of the existing and the proposed products should be provided to allow proper consideration to be made on the selection of an alternative or replacement. If a product has a shorter life than another, this information should be available to inform selection. Given some of the products will be in locations that are difficult to locate, the longevity of a product could have safety implications
- n) Compliance systems should be informed with the information from the AIM
- o) Asset tagging (barcode) systems and processes should be considered as forming part of the change management process
- p) Procurement should be included in the process, recording what was purchased and feeding that into the managed process to locate where they were installed, or which products they are replacing
- q) Specification or design brief for the business (performance and or product) should be recorded in a machine-readable format to enable validation against the Golden Thread
- r) Record the compatibility and compliance of any ancillaries and confirm they comply with the test data? (Ironmongery, door access control systems, vision panels, vents)
- s) Any adjustment, repair, addition to / removal of product, ironmongery or fittings must be recorded and should only be undertaken by a licensed / accredited contractor (this includes and modification to an existing asset)
- t) The asset information needs to enable comparison, but the original performance spec of the Fire Safety signs and the related information such as Fire Strategy and Cause and Effect should form part of that Technical Deviation process. The FMs must be able to update the Asset Information Model with machine-readable data of the newly installed product
- u) Recording who has worked on/replaced the component and their entitlement/competence to do so
- v) Evidence that the component's performance in relation to the part it plays in the system has been considered and is warranted
- w) Manufacturers must provide a component list (e.g., ironmongery on a door) so if anything breaks, a direct replacement can be used
- x) Removal of certain products/materials must be undertaken by people who are on an approved list, certified by an accreditation body and should require advance notice to all certification holders, with signoff to ensure traceability

APPENDIX 1

BIM4Housing Structure



APPENDIX 2

Additional Participant Input Question 1

- Publicly_displayed_notice
 - Building_Assessment_Certificate_Notice
 - Evacuation_strategy_notice
 - Principle_Accountable_Person_details
 - PAP_address
 - PAP_email_address
 - PAP_name
 - PAP_phone_number
 - Smoking policy

https://products.ihserc.com/tmp_stamp/82533856/PFVASGAAAAAAAAAAAA.pdf?sess=82533856&prod=CIS1

Wayfinding signage for the fire service

15.13 To assist the fire service to identify each floor in a block of flats with a top storey more than 11m.

above ground level (see Diagram D6), floor identification signs and flat indicator signs should be provided.

15.14 The floor identification signs should meet all of the following conditions.

- a. The signs should be located on every landing of a protected stairway and every protected corridor/lobby (or open access balcony) into which a firefighting lift opens.
- b. The text should be in sans serif typeface with a letter height of at least 50mm. The height of the numeral that designates the floor number should be at least 75mm.
- c. The signs should be visible from the top step of a firefighting stair and, where possible, from inside a firefighting lift when the lift car doors open.
- d. The signs should be mounted between 1.7m and 2m above floor level and, as far as practicable, all the signs should be mounted at the same height.
- e. The text should be on a contrasting background, easily legible and readable in low level lighting conditions or when illuminated with a torch.

Wayfinding for firefighters. This is the specification we asked for from the printers - The signs should be located on every landing of a protected stairway and every protected corridor/lobby (or open access balcony) into which a firefighting lift opens. b. The text should be in sans serif typeface with a letter height of at least 50mm. The height of the numeral that designates the floor number should be at least 75mm. c. The signs should be visible from the top step of a firefighting stair and, where possible, from inside a firefighting lift when the lift car doors open. d. The signs should be mounted

between 1.7m and 2m above floor level and, as far as practicable, all the signs should be mounted at the same height. e. The text should be on a contrasting background, easily legible and readable in low level lighting conditions or when illuminated with a torch. ONLINE VERSION ONLINE VERSION 106 Approved Document B Volume 1, 2019 edition Building Regulations 2010 B5 15.15 The wording used on each floor identification sign should take the form Floor X, with X designating the number of the storey, as intended for reference by residents. The floor number designations should meet all of the following conditions. a. The floor closest to the mean ground level (see Diagram D4) should be designated as either Floor 0 or Ground Floor. b. Each floor above the ground floor should be numbered sequentially beginning with Floor 1. c. A lower ground floor should be designated as either Floor –1 or Lower Ground Floor. d. Each floor below the ground floor should be numbered sequentially beginning with Floor –1 or Basement 1. 15.16 All floor identification signs should be supplemented by flat indicator signs, which provide information relating to the flats accessed on each storey. The flat indicator signs should meet all of the following conditions. a. The signs should be sited immediately below the floor identification signs, such that the top edge of the sign is no more than 50mm below the bottom edge of the floor identification sign. b. The wording should take the form Flats X–Y, with the lowest flat number first. c. The text should be in sans serif typeface with a letter height of at least half that of the floor indicator sign. d. The wording should be supplemented by arrows when flats are in more than one direction. e. The text and arrows should be on a contrasting background, easily legible and readable in low level lighting conditions or when illuminated with a torch. NOTE: In the case of multi-storey flats with two or more entrances, the flat number should only be indicated on the normal access storey.

Wayfinding signage for firefighters is described in ADB vol 1 15.14 and required since January 23rd, 2023, as a consequence of the Fire Safety England Regulations, additional signage for wayfinding is only required for residential buildings with a top storey floor over 11m or more in height.

Distinction between signage for firefighters and signage for evacuees is vital because the risks and hazards would be different, and perhaps other aspects.

- Signage

- Access signs
- Assembly point signs
- Break glass signs
- Danger signs
- Door signs
 - Automatic fire door keep clear signs
 - Caution door is alarmed signs
 - Emergency door release signs
 - Emergency hammer signs
 - Fire doors keep locked signs
 - Fire protection door keep closed at all times signs
 - Keep shut signs
 - Pull to open signs
 - Push bar to open signs
 - Turn to open signs
- Ear protection signs
- Emergency information signs
- Emergency phone signs
- Emergency stop signs
- Emergency vehicular access signs
- Escape route signs
- Fire Exit signs
- Fire action signs
- Fire alarm call point signs
- Fire alarm panel signs
- Fire alarm signs
- Fire equipment signs
 - Fire blanket signs
 - Fire extinguisher signs
 - CO2 extinguisher signs
 - Dry powder extinguisher signs
 - Foam extinguisher signs
 - Water extinguisher signs
 - Wet chemical extinguisher signs
 - Gerda box key signs
 - Gerda box signs
- Fire installation signs
 - Dry riser signs
 - Fire hose reel signs
 - Sprinkler control valve signs
- Fire Marshall signs
- Fire safety guidance signs
- Guard dog signs
- Hard hat signs

- Headroom hazard signs
- High voltage signs
- Hydrant signs
- Lift signs
 - Firefighter lift signs
 - In the event of fire do not use lift signs
- No smoking signs
- PPE area signs
- Parking signs
 - Emergency vehicle no parking signs
 - Emergency vehicle parking signs
- Publicly displayed notice
 - Building Assessment Certificate Notice
 - Evacuation strategy notice
 - Principle Accountable Person details
 - PAP address
 - PAP email address
 - PAP name
 - PAP phone number
 - Smoking policy
- Roof ladder signs
- Roof signs
- Stair signs
 - In case of fire use stairs signs
- Store signs
- Trip hazard signs
- Wall signs
- Warning and prohibition signs
 - Flammable gas signs
 - Flammable liquid signs
 - Flammable materials signs
 - Hazardous materials signs
 - Hazardous process signs
- Wayfinding signs
- Floor/level signs

APPENDIX 3

Additional Participant Input Question 4

BS 1635:1990 applies to Graphical Symbols and Abbreviations. This includes Fire Safety signs.

<https://www.firesafe.org.uk/graphical-symbols-and-abbreviations-for-fire-protection-drawings-2/>

<https://www.ifsecglobal.com/fire/which-fire-escape-signs-quick-guide-to-bs-en-iso-7010/>

<https://landingpage.bsigroup.com/LandingPage/Series?UPI=BS%205499>



APPENDIX 4

Participants

Alin Mărgărit

Ana Matic

Scott Brownrigg

Andy Cunningham

lite-life.com

Bex Gibson

Livewest

Chris Watts

Wavelength Fire Safety

Colin Crapper

Oxford City Council

David Linsley

Gateshead Council

David Litherland

Halspan

George Stevenson

ActivePlan

Gerrald Cassell

Hackney Council

Gordon Rolfe

Platinum Property Management

Jack White

Clarion

Jeremy Malet

Shellen

Jim Creak

Jalite Plc

Joanna Harris

Sodexo

John K Field

Imperial College London

Josephine Bakulyowa

PRP

Paul Bray

Plymouth Community Homes

Peter Thorns

Zumtobel Group

Simon Collery

Camden

Will Franks

NCC Group