ARUP

Grenfell Tower Inquiry

Phase 2 Recommendations

Report of Dr Barbara Lane FREng FRSE CEng

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Specialist Field	: Fire Safety Engineering
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On behalf of	: Grenfell Tower Inquiry
On instructions of	: Cathy Kennedy, Solicitor, Grenfell Tower Inquiry
Subject Matter	: Phase 2 recommendations

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1. Introduction

1.1 Purpose of this report

1.1.1 This report is written in accordance with my instructions dated 3 February 2023 and contains my suggestions for possible recommendations based on my professional expertise (total fire safety in the built environment) and my work for the Inquiry to date.

1.1.2 I have particularly focused my recommendations within the framework of the detailed analysis I carried out for Phase 2 of the Grenfell Tower Inquiry and as presented in my following reports:

i. Phase 2 Module 1 report *The fire safety engineer – The adequacy of the advice provided by the fire safety engineer for the primary refurbishment: Exova (UK)* {BLARP20000017}

ii. Phase 2 Module 1 report *Regulation 38 Fire Safety information – Assessment of compliance of relevant works at Grenfell Tower* {BLARP20000021}

iii. Phase 2 Module 1 report *The Health and Safety File – The Construction (Design and Management) Regulations: The duty to provide a health and safety file - assessment of compliance for relevant fire safety works at Grenfell Tower* {BLARP20000016}

iv. Module 3 report *The management and maintenance of Grenfell Tower, Chapters 1 to 11* {BLARP20000023, BLARP20000024, BLARP20000029, BLARP20000030, BLARP20000031, BLARP20000034, BLARP20000033, BLARP20000027, BLARP20000028, BLARP20000032, BLARP20000040, BLARP20000042}

v. Module 7 report *The proprietary smoke ventilation system designed and commissioned by PSB UK* {BLARP20000043}

1.1.3 In Section 2 to 30 of my Module 3 report *The management and maintenance of Grenfell Tower – Chapter 11 Conclusions* {BLARP20000040}, I drew substantial conclusions from my Module 3 work, for the purposes of recommendations from the Grenfell Tower Inquiry. These still merit full consideration by the Inquiry panel in my professional opinion, having reviewed the legislative changes to date (as summarised in Section 3 below). I have not repeated those here but ask that these points are considered in full.

1.1.4 In my Module 7 report *The proprietary smoke ventilation system designed and commissioned by PSB UK* {BLARP20000043}, I presented my extensive analysis of the evidence and my responses to conflicting expert opinion regarding the circumstances of how the lobby smoke control system was designed, approved and then installed and maintained at Grenfell Tower.

1.1.5 The report as a result provides a useful illumination of the Built Environment industry prevailing conditions and culture in the years before the Grenfell Tower fire.

1.1.6 I have categorised the key issues that arose in Module 7 and ask the Inquiry panel to give them full consideration and to create resolution of them; as again they remain unresolved to date.

1.1.7 These fundamental issues are (a) creating fire safety solutions in existing buildings, without assessment of the original performance objectives, instead relying incorrectly and solely on the term "*non-worsening*" and in doing so failing to comply with Regulation 4(3) of The Building Regulations 2010; (b) focusing compliance activities through performance standards "*so far as was reasonably practical*" even if the resulting solutions fail to meet Regulation 8 of the Building Regulations 2010 "*securing reasonable standards of health and safety*" and/or fail to meet the requirements of Part B (fire safety) of Schedule 1; (c) the impact of product manufacturer led industry guidance, without rigorous independent checking, creating prevailing as-built conditions without proof of operation; (d) the consequences of designing (and also promoting the benefits of) any one fire safety system without full consideration of Part B (fire

safety) of Schedule 1 Building Regulations 2010; (e) the need for mandated and clearly defined operational scenarios to form the basis of design for evacuation and firefighting in the statutory guidance documents and so meet all relevant requirements; (f) the prevalent use of inadequate routes to compliance caused through the lack of clarity in Approved Document B (AD B); (g) the consequences of the failure to test and certify key life safety systems and their components both at bench scale and in realistic fire scenarios; (h) the need to recognise the interlinking of provisions, and thus provide protected shafts and protection to stairs that fully comply with the functional requirements B1, B3 and B5 of Schedule 1 – critical to the final performance standards of evacuation routes and firefighting routes in high rise residential buildings (HRRB) in the event of a fire.

1.1.8 Therefore, in this Recommendations Report I shift my focus to three inter-related issues, that in my opinion contributed to the Grenfell Tower fire and the consequences of that fire:

i. A piecemeal approach to fire safety;

ii. The treatment of vulnerable persons in building fire safety; and

iii. The lack of a regulated fire safety profession.

1.1.9 I have relied on the extensive experience of my colleagues at Arup regarding the Inquiry's request that the "*recommendations take account, so far as reasonably practicable, of the regulatory landscape at the time the report is published, including any relevant statutory or industry guidance, standards, practices or processes and any reforms introduced following the Grenfell Tower fire*" and I have been assisted in this by my colleagues Dr Graeme Flint, Judith Schulz, Eoin O'Loughlin, Daniel Thomson and Farah Binte Mohd Faudzi.

1.1.10 My focus in this Recommendations Report is to propose selected critical shifts required to move away from the current status quo and towards an equitable fire safety system. How we produce new fire safe buildings is important, but how we tackle the systemic safety issues in the existing building portfolio in England also needs to be addressed. This will have to take place over time and will require pragmatic, cost effective solutions.

1.1.11 I have identified significant parameters that are in my opinion either *preventing* systemic change to be realised or continue to be *a risk to* systemic change being realised, despite the huge efforts by Government to reform the regulatory system since the Grenfell fire. I have been assisted in this by Dr Susan Lamont and Gill Kernick.

1.1.12 I have chosen four themes, where I consider there is striking evidence of a need for change - as emerged in the work of the Grenfell Tower Inquiry and based on my own experience. The themes I explore are:

i. Creating change in complex systems;

ii. Fire safety culture: Elements and Maturity;

iii. Vulnerabilities and disruptions challenging the regulatory system;

iv. The need for oversight.

1.1.13 The abject failure of the Built Environment industry (by which I mean anyone providing any form of fire safety advice and works) to recognise the system as one meriting accountability from all and as a system predicated on a commitment from all to consistently produce fire safe buildings, remains the primary focus for change.

1.1.14 It is now very clear having observed the myriad of changes that have been triggered substantially by Government and notably less so from the Built Environment industry, that any recommendations intended to cause change, cannot be seen in isolation from the broader social, technological, economic, environmental, and political (STEEP) context.

1.1.15 I have raised concerns about new guidance or regulation in this report only where it clearly causes the problematic status quo to prevail. I have not produced for the Inquiry my opinion on the full spectrum of regulatory change since 2017 and whether or not true risk reduction is being produced in existing and new higher risk buildings as a result of these changes. The extent of legislative change is extensive and deeply complex – but notably positive in its attempt to bring substantial change for good.

1.1.16 However, it falls into a complex system with an immature safety culture and there remains a concerning information vacuum - there is a deep need for detailed prescriptive mandatory guidance to enable all stakeholders from a range of disciplines and trades to easily understand what is required and to ensure all can consistently deliver fire safe works to create fire safe buildings.

1.1.17 It remains the case that there has been and continues to be since the Grenfell fire, a consistent set of decisions, recommendations, and most of all omissions, that together ensure vulnerable people remain exposed to higher levels of risk, particularly in existing high-rise residential buildings (HRRBs). I give examples of this here and provide recommendations to move toward an equitable approach to fire safety.

1.1.18 The ongoing vulnerabilities and disruptions challenging the regulatory system are well described by others, as are the long-term trends impacting housing in England (and beyond). The occupancy profile in social housing particularly will become more, not less, vulnerable; this means issues of life safety risk in the event of fire being borne unequally will get worse without targeted intervention. These broader (mega) trends and systemic vulnerabilities are the context within which, in my opinion, any Grenfell Tower Inquiry recommendations should be made and any further reforms delivered by Government.

1.1.19 I use the terms high-rise residential buildings (HRRBs) and higher risk buildings (HRBs) and they are not interchangeable as they refer to specific definitions of buildings under the Fire Safety (England) Regulations 2022 and the Building Safety Act 2022 (BSA 2022) respectively. For the purposes of this report, I am describing high-rise residential buildings in general, and therefore primarily refer to HRRBs. Where I am specifically discussing the requirements of the BSA 2022 I use the correct term of HRB.

1.2 Scope – the need to include existing residential buildings

1.2.1 Quantum of existing flats in England

1.2.2 The existing building stock of flats in England is significant. In 2021, the Office for National Statistics reported on census data that there were 23.4 million households in England and that 22.2% (5.2 million) of these were flats, maisonettes or apartments (ONS, 2023)[1]:

1.2.3 However, not all flats are located in HRRBs. The Department for Levelling Up, Housing & Communities (DLUHC) (DLUHC, 2023a) in their *Building Safety programme Monthly Data Release, England: 30 September 2023*[2], report the following estimates of HRRBs (social and private residential including student accommodation but not hotels) in England:

[1] Office for National Statistics (2023) Housing, England and Wales: Census 2021 https://www.ons.gov.uk/peoplepopulationandcommunity/housing/bulletins/housingenglandandwales/census2021#:~:text=Download%20the%20data&text=In%202021%2C%2021.7%25%20(5.4,(4.9%20million)%20in%202011. Accessed 04/11/2023

[2] Department for Levelling Up, Housing & Communities (2023a) Building Safety programme Monthly Data Release, England: 30 September 2023 https://assets.publishing.service.gov.uk/media/652fddef92895c000ddcb9bb/Building_Safety_Data_Release_September_2023.pdf Accessed 29/10/2023.

The total number of high-rise residential multi-occupied buildings of 18 metres or more in height, or at least seven storeys (whichever is reached first) in England is estimated as of April 2020 to be 12,500.

Of which 6,500 (52%) are private sector buildings (private residential buildings and student accommodation) and 6,000 (48%) are social sector buildings.

Over 95% of the buildings, approximately 12,000, were identified as flat dwellings, with the remaining proportioned across houses in multiple occupation, residential education and sheltered accommodation.

We have identified 1,500 (12%) buildings at least seven storeys and under 18 metres, 7,000 (56%) buildings between 18 metres to 29 metres and the remaining 4,000 (32%) buildings greater than and equal to 30 metres.

The majority of high-rise residential buildings have been identified in London (7,500, or 61%) and the South East (10%). The remaining buildings are distributed across the rest of England, with the highest proportions in the North West (7%) and West Midlands (6%).

1.2.4 The same statistics show that the largest increase for any type of accommodation was for households in a flat, maisonette or apartment. In 2021, 21.7% (5.4 million) of households in England and Wales (data for England only is not given) were in a flat, maisonette or apartment, up from 21.0% (4.9 million) in 2011.

1.2.5 The data on tenure (whether a household rents or owns accommodation) is not organised by dwelling type but for all dwelling types:

- 20.3% (5.0 million) rented their accommodation privately, up from 16.7% (3.9 million) in 2011
- 17.1% (4.2 million) were in the social rented sector, for example through a local council or housing association; this is a smaller proportion than in 2011 (17.6%, 4.1 million)
- The remainder owned their accommodation outright or owned with a mortgage/shared ownership arrangement.

1.2.6 Therefore, local councils combined with housing associations are the largest landlords in England.

1.2.7 Statistics published by the regulator of the social housing sector in England on 25th October 2022 (RSH, 2022)[3] show that the sector owns 4.4 million homes across England; it would be worth the Inquiry confirming the total number of flats as part of its research on recommendations, as this goes to the scale of the existing building equity issue and why it requires attention.

1.2.8 If fire safety equity is to be realised, coupled with the drive to extend the lifespan of existing buildings to meet decarbonisation targets, there will need to be upgrade and retrofit works to existing blocks of flats.

1.2.9 My recommendations therefore incorporate existing buildings, not just future works.

1.3 Structure of this report

1.3.1 This Recommendations Report is structured as follows:

Section 2 - Glossary of defined terms and acronyms

[3] Regulator of Social Housing (2022) Social housing sector stock and rents statistics for 2021/22 show small net increase in social homes https://www.gov.uk/government/news/social-housing-sector-stock-and-rents-statistics-for-202122-show-small-net-increase-in-social-homes Accessed 5/11/2023.

The first three sections deal with the current status quo incorporating the most up to date regulatory reforms and updated guidance and their effects on fire safety:

Section 3 - Fire safety is an intrinsic component of a complex system – the built environment

Section 4 - Treatment of vulnerable persons in building fire safety

Section 5 - The need for a regulated fire safety profession

I then explain creating change in complex systems and four key themes formulating a change framework. I then present my Recommendations within that framework, each recommendation presented within one of six key shifts to create an equitable fire safety system:

Section 6 - A change framework to create an equitable fire safety system

Section 7 - Recommendations to create an equitable and effective fire safety system

2. Glossary of defined terms and acronyms

2.1 Defined terms

2.1.1 *Accountable person* (Building Safety Act, Part 4, Section 72):

72 Meaning of "accountable person"

In this Part an "accountable person" for a higher-risk building is—

(a) a person who holds a legal estate in possession in any part of the common parts (subject to subsection (2)), or

(b) a person who does not hold a legal estate in any part of the building but who is under a relevant repairing obligation in relation to any part of the common parts.

2.1.2 *"all reasonable steps"* as defined by Health and Safety Executive (2023a) guidance published 19 September 2023 for *Assessing safety risks in high-rise residential buildings: a detailed guide*[4]*:*

All reasonable steps should be taken to prevent and mitigate building safety risks. What is reasonable depends on the individual circumstances of the building. You should consider:

- *measures already in place and how effectively they control building safety risks*
- *what other measures could be taken and whether they are reasonable*

Certain factors will influence whether measures are reasonable. For example, whether they may create additional risks or are disproportionately expensive.

2.1.3 *Complex systems* as defined by the Government Office for Science (2023): [5]

Complex systems behave in a way that is greater than the sum of their parts – you can't understand the system just by looking at individual elements, it needs to be studied as a whole. Likewise in complex systems there are underlying patterns – feedback loops – which mean that it becomes difficult to relate cause to effect and actions to consequences.

2.1.4 *Dutyholders* include client, principal designer, principal contractor, designer and contractor with duties as set out in Building Regulations 2010 Part 2A *Dutyholders and Competence* (bold by me):

Chapter 1 Client

Suitable arrangements to ensure compliance with requirements etc

11A.—(1) A client must make suitable arrangements for planning, managing and monitoring a project (including allocation of sufficient time and other resources) so as to ***ensure compliance with all relevant requirements.***

…

Arrangements as to information: higher-risk building work

11B.—(1) A client must make suitable arrangements to ensure information is provided to the designers and contractors working on a project which includes any higher-risk building work to

[4] Health and Safety Executive (2023a) Assessing safety risks in high-rise residential buildings: a detailed guide https://www.gov.uk/government/publications/building-safety-guides-for-accountable-persons/assessing-safety-risks-in-high-rise-residential-buildings-a-detailed-guide Accessed 2/11/2023

[5] Government Office for Science (2023) Introduction to systems thinking for civil servants https://www.gov.uk/government/publications/systems-thinking-for-civil-servants/introduction#why-is-systems-thinking-important-for-civil-servants Accessed 04/11/2023.

*make them aware that **the project includes higher-risk building work and the nature of the higher-risk building work.***

…

Chapter 2 Appointment of principal designer and principal contractor.

Principal designer and principal contractor.

11D.—(1) Where there is more than one contractor, or it is reasonably foreseeable that more than one contractor will be working on a project, the client must appoint in writing—

*(a)a **designer with control** over the design work as the principal designer for the purposes of these Regulations, and*

*(b)a **contractor with control** over the building work as the principal contractor for the purposes of these Regulations.*

(2) A client is treated as complying with the requirement in paragraph (1) if, instead of appointing a person for the purposes of these Regulations, they certify, in writing, that the person who is the CDM principal designer, or, as the case may be, the CDM principal contractor, is treated as appointed as the principal designer or, as the case may be, the principal contractor, for the purposes of these Regulations.

(3) The appointments under this regulation must be made—

(a)in relation to a project which includes higher-risk building work for which an application for building control approval must be submitted to the regulator, before that application is submitted;

(b)in relation to any other project, before the construction phase begins.

…

2.1.5 And (bold by me):

Chapter 4 Duties of dutyholders

Duties of dutyholders

General duty

*11J.—(1) Any person carrying out any building work must ensure the work carried out by them (and by any workers under their control) is planned, managed and monitored so as to be **in compliance with all relevant requirements.***

*(2) Any person carrying out any design work must take all reasonable steps to ensure the design work carried out by them (and by any workers under their control) is planned, managed and monitored so that the design is such that if the building work to which the design relates were built in accordance with that design the building work would be **in compliance with all relevant requirements.***

*(3) Any person carrying out any building work must cooperate with the client, designers and contractors (including the principal designer and principal contractor, if any) to the extent necessary to ensure that the work is **in compliance with all relevant requirements.***

*(4) Any person carrying out any design work must cooperate with the client, designers and contractors (including the principal designer and principal contractor, if any) to the extent necessary to ensure that the design is such that if the building work to which the design relates were built in accordance with that design the building work would **be in compliance with all relevant requirements.***

…

2.1.6 *Equality* means each individual or group of people is given the same resources/opportunities regardless of outcome; as distinct from *Equity* which requires the recognition that every person has different circumstances and thus there is a subsequent need to allocate the exact resources/opportunities needed to reach an equal outcome.

2.1.7 *Fire safety measures* the provision of measures, during construction or in a partially or fully complete building, that can prevent, control or mitigate the effects of fire. These can be active or passive in form, and for precautionary or protective purposes or a combination of both.

2.1.8 Form *EWS1: External Wall Fire Review* is the Royal Institution of Chartered Surveyors External Wall System form with a set way for a building owner to confirm to valuers and lenders that an external wall system (EWS) or attachments, such as a balcony, on buildings containing flats, has been assessed by a suitable expert for likelihood of proportionate remediation to address fire safety risk.

2.1.9 *Higher risk building (HRB)* **during design and construction**, as defined under the Building Safety Act 2022, Part 3, Section 31 (bold by me):

31 Higher-risk buildings etc

In the Building Act 1984 after section 120C (inserted by Schedule 5) insert—

Higher-risk buildings etc

120D Meaning of "higher-risk building": England

(1) This section applies for the purposes of this Act as it applies in relation to England.

(2) "Higher-risk building" means a building in England that—

(a) is at least 18 metres in height or has at least 7 storeys, and

(b) is of a description specified in regulations made by the Secretary of State.

(3) The Secretary of State may by regulations make provision supplementing this section.

(4) The regulations may in particular—

(a) define "building" or "storey" for the purposes of this section;

(b) make provision about how the height of a building is to be determined for those purposes;

(c) provide that "higher-risk building" does not include a building of a specified description.

(5) Regulations made by virtue of subsection (4)(a) may in particular define "building" so as to provide that it includes—

(a) any other structure or erection of any kind (whether temporary or permanent);

(b) any vehicle, vessel or other movable object of any kind, in such circumstances as may be specified.

(6) The Secretary of State may by regulations amend this section (other than subsection (1) or (3) or this subsection).

(7) For the meaning of "higher-risk building work" see section 91ZA.

2.1.10 Where the Higher Risk Buildings (Descriptions and Supplementary Provisions) Regulation 2023, No. 275, Regulation 2 define the specified descriptions as follows (bold by me):

Specified descriptions of building under section 120D of the Building Act 1984

2. The following descriptions of building are specified for the purposes of section 120D(2)(b) of the 1984 Act—

(a) a building which contains at least two residential units;

(b) a care home;

***(c) a hospital**.*

2.1.11 *Higher risk building (HRB)* **during occupation**, as defined by the Building Safety Act, Part 4, Section 65 is

65 Meaning of "higher-risk building" etc

(1) In this Part "higher-risk building" means a building in England that—

(a) is at least 18 metres in height or has at least 7 storeys, and

(b) contains at least 2 residential units.

2.1.12 The definition of *Higher risk building (HRB)* is supplemented by the specific exclusions set out in Regulations 7 and 8 of the Higher Risk Buildings (Descriptions and Supplementary Provisions) Regulation 2023, No. 275, as follows (explanatory notes by me):

Exclusions from the definition of "higher-risk building" [Note: for the purposes of the Building Act 1984]

7.—(1) For the purposes of section 120D of the 1984 Act a "higher-risk building" does not include a building of a description specified in paragraph (2).

(2) The following descriptions of building are specified for the purposes of paragraph (1)—

(a) a building that comprises entirely of—

(i) a secure residential institution;

(ii) a hotel;

(iii) military barracks;

(b) a building that contains living accommodation provided by the Ministry of Defence (either alone or in combination with other accommodation);

(c) a building that contains living accommodation (either alone or in combination with other accommodation) for—

(i) His Majesty's forces;

(ii) any visiting force or an international headquarters or defence organisation designated for the purposes of the International Headquarters and Defence Organisations Act 1964(1).

Exclusions from the definition of "higher-risk building" [Note: for the purposes of the Building Safety Act 2022]

8.—(1) For the purposes of section 65 of the 2022 Act a "higher-risk building" does not include a building of a description specified in paragraph (2).

(2) The following descriptions of building are specified for the purposes of paragraph (1)—

(a) a building that comprises entirely of—

(i) a care home;

(ii) a hospital;

(iii) a secure residential institution;

(iv) a hotel;

(v) military barracks;

(b) a building that contains living accommodation provided by the Ministry of Defence (either alone or in combination with other accommodation);

(c) a building that contains living accommodation (either alone or in combination with other accommodation) for—

(i) His Majesty's forces;

(ii) any visiting force or an international headquarters or defence organisation designated for the purposes of the International Headquarters and Defence Organisations Act 1964.

2.1.13 *Principal accountable person* as defined in Building Safety Act, Part 4, Section 73:

73 Meaning of "principal accountable person"

(1) In this Part the "principal accountable person" for a higher-risk building is—

(a) in relation to a building with one accountable person, that person;

(b) in relation to a building with more than one accountable person, the accountable person who—

(i) holds a legal estate in possession in the relevant parts of the structure and exterior of the building, or

(ii) is within section 72(1)(b) because of a relevant repairing obligation (within the meaning of that section) in relation to the relevant parts of the structure and exterior of the building.

(2) For the purposes of this section—

(a) the reference to "the relevant parts of the structure and exterior" of a building is to its structure and exterior except so far as included in a demise of a single dwelling or of premises to be occupied for the purposes of a business;

(b) the reference to "possession" does not include the receipt of rents and profits or the right to receive the same.

(3) Subsection (1)(b) is subject to section 75(2) (powers of tribunal where more than one accountable person is within subsection (1)(b)).

2.1.14 *Responsibility Matrix* as defined by the RIBA Plan of Work 2020, Overview:

A matrix determining who is responsible for the different tasks to be undertaken at each stage. It can set out which project team member should lead on each task and who should provide support. It can be broken down by Building System and will be closely aligned to the Information Requirements. This document sets out the extent of any performance specified design. The Responsibility Matrix is created at a strategic level at Stage 1 and fine tuned in response to the Architectural Concept at the end of Stage 2 in order to ensure that there are no design responsibility ambiguities or omissions at Stages 3 and 4.

2.1.15 *Responsible person* is defined in the Regulatory Reform (Fire Safety) Order 2005 (RR(FS)O), Section 3:

3. In this Order "responsible person" means—

(a) in relation to a workplace, the employer, if the workplace is to any extent under his control;

(b) in relation to any premises not falling within paragraph (a)—

(i) the person who has control of the premises (as occupier or otherwise) in connection with the carrying on by him of a trade, business or other undertaking (for profit or not); or

(ii) the owner, where the person in control of the premises does not have control in connection with the carrying on by that person of a trade, business or other undertaking.

2.1.16 *System* as defined by the Government Office for Science (2023):

A system is a set of elements or parts interconnected in such a way that they produce their own pattern of behaviour over time.

2.1.17 *Systems change* as defined by Kania J., Kramer M. and Senge P. (2018) in their report *The Water of Systems Change*[6]:

"shifting the conditions that are holding the problem in place."

2.1.18 *Systems thinking* defined by the Government Office for Science (2023):

Systems thinking is a framework for seeing the interconnections in a system and a discipline for seeing and understanding the whole system; the 'structures' that underlie complex situations. It is a collection of tools and approaches that help support us in thinking systemically about our work

2.1.19 *Vulnerable people* as defined in Section 14.1.7 of Chapter 6 of my Module 3 report *The management and maintenance of Grenfell Tower – Main Report - Chapter 6 – Section 14 ISSUE 2 KCTMO's duty to provide adequate fire protection for vulnerable persons* {BLARP20000042} as follows:

a) Adult resident with cognitive impairments:

i. Dementia

ii. Mental health condition

b) Adult resident with mobility impairments:

i. Wheelchair user

ii. Walking aid user (crutches/stick)

iii. Other mobility difficulties/ restricted mobility (including adults aged 80 years of age or older cited as frail)

iv. Emphysema

v. Early onset Parkinson's disease impacting mobility

c) Adult resident with sensory impairments:

i. Blind and partially sighted

[6] Kania J., Kramer M. and Senge P. (2018) The Water of Systems Change https://www.fsg.org/wp-content/uploads/2021/08/The-Water-of-Systems-Change_rc.pdf. Accessed 17/10/2023.

ii. Deaf and hard of hearing

d) High risk adult resident:

i. Hoarder

e) Adult not in any of the 4 groups above (herein adult resident)

f) Child Resident

i. Resident under the age of 18

g) Visitor (noting all visitors the night of the fire were adults)

2.2 Acronyms

2.2.1 ACM – Aluminium composite material

2.2.2 ACSNI – Advisory Committee on the Safety of Nuclear Installations

2.2.3 AD – Approved Document

2.2.4 AD B –Approved Document B, Fire Safety, Volume 1: Dwellings (multiple editions are referenced in body of the report with relevant edition and date)

2.2.5 AD M – Approved Document M, Access to and Use of Buildings, Volume 1: Dwellings 2015 edition incorporating 2016 amendments – for use in England

2.2.6 AP – Accountable Person

2.2.7 BICoF – Building inspector competence framework

2.2.8 BS – British Standard

2.2.9 BSA 2022 – Building Safety Act 2022

2.2.10 BSR – Building Safety Regulator

2.2.11 CABE – Chartered Association of Building Engineers

2.2.12 CDM – Construction Design and Management

2.2.13 CIC – Construction Industry Council

2.2.14 CPD – Continuing professional development

2.2.15 DLUHC – Department for Levelling Up, Housing and Communities

2.2.16 FIA – Fire Industry Association

2.2.17 FIR – Fire incident report

2.2.18 FSER – The Fire Safety (England) Regulations

2.2.19 FSF – Fire Safety Federation

2.2.20 Inquiry – Grenfell Tower Inquiry

2.2.21 ICE – Institution of Civil Engineers

2.2.22 IFE – Institution of Fire Engineers

2.2.23 ISSG – Industry Safety Steering Group

2.2.24 IStructE – Institution of Structural Engineers

2.2.25 HM – Home office

2.2.26 HRB – Higher risk building

2.2.27 HRRB – High-rise residential building

2.2.28 HSE – Health and Safety Executive

2.2.29 HSC – Health and Safety Commission

2.2.30 INSAG – International Nuclear Safety Advisory Group

2.2.31 KCTMO – Kensington and Chelsea Tenant Management Organisation

2.2.32 LABC – Local Authority Building Control

2.2.33 LGA – Local Government Association

2.2.34 NAO – National Audit Office

2.2.35 NRCP – National Regulator for Construction Products

2.2.36 ONS – Office of National Statistics

2.2.37 OPSS – Office for Product Safety and Standards

2.2.38 PAP – Principal accountable person

2.2.39 PEEP – Personal emergency evacuation plan

2.2.40 RBCA – Registered building control approvers

2.2.41 RBI – Registered building inspector

2.2.42 RBKC – Royal Borough of Kensington and Chelsea

2.2.43 RIBA – Royal Institute of British Architects

2.2.44 RR(FS)O – The Regulatory Reform (Fire Safety) Order 2005

2.2.45 RSH – Regulator of Social Housing

2.2.46 STEEP – Social, Technical, Economic, Environmental and Political

2.2.47 WEF - World Economic Forum

3. Fire safety is an intrinsic component of a complex system – the built environment

3.1 Context

3.1.1 Previously, in my Phase 1 and Phase 2 reports, I referred to the overarching system of fire safety relied upon to protect life, and provided for through legislation, for every stage of the design, construction and occupation of a building.

3.1.2 The protection which should be afforded by this system, is required to be available at all times, so that if or when a fire occurs, all fire safety measures (in any form and for prevention or protection or both) are available, through being maintained to the necessary operating standard, and thus fit for purpose.

3.1.3 In carrying out my work for the Grenfell Tower Inquiry, I analysed the evidence available regarding Grenfell Tower for each part of this fire safety system (design, construction, and occupation). I concluded on what I found in each stage and will not repeat those here.

3.1.4 In my Module 3 report particularly, in each Chapter I explained the relevant evidence and the chain of activity and decision making which resulted in each fire safety measure being in the condition it was the night of the Grenfell Tower Fire. These measures ranged from passive systems such as fire doors, to active systems such as the lobby smoke control system, through to emergency planning.

3.1.5 I analysed this evidence through the appropriate framework – via the duty to make *fire safety arrangements,* a duty far more substantial and wider ranging than simply producing a fire risk assessment report and/or fire action notice; and which notably includes the duty to maintain all fire safety systems, to make emergency plans that rely on those systems, and to communicate those plans effectively to enable all building occupants to take the provided for actions, in the event of a fire.

3.1.6 I explained through my analysis and my conclusions in both Phase 1 and Phase 2 the importance of the need to understand fully the interconnectedness of the work to create any fire safety solution and from design through to occupation and then through ongoing maintenance.

3.1.7 I illustrated the consequences when changes in building condition and changes in occupancy profile occur in real buildings over their life cycle, and the impact this has on risk levels and thus the ongoing suitability of any and all fire safety measures.

3.1.8 As the evidence presented to the Inquiry has demonstrated, fire safety measures and the subsequent management and maintenance of them, are typically both understood and implemented as a series of separate discrete components, and as separate scopes of work. Their combined effects, and the impact of that combination on the subsequent occupancy profile, and the resulting risk level, were not considered in Grenfell Tower.

3.1.9 End user needs (building occupants and the fire and rescue services) and the dynamic conditions typical in any occupied HRRB, (as any building), were not consistently catered for as a priority either.

3.1.10 There is substantial commitment needed to the importance of competence, if one is to be capable of properly considering the *preventative* and *protective* measures, along with the fire safety organisation responsible for ensuring their availability in the event of a fire. Thus, the management and maintenance regimes, as well as realistic occupancy profiles for the purpose of emergency planning etc. It is all these things taken together that have a direct impact on any building user and the available safety level to them in the event of fire.

3.1.11 In my reports for the Inquiry, I wanted to illustrate the stark difference in what the duties required at the time, as distinct from the prevailing poor practice, which was not unique to Grenfell Tower based on my own previous experiences.

3.1.12 Some of the key features of poor practice demonstrated through my analysis of the Grenfell Tower evidence in my opinion include:

(a) the focus on producing quick and easy fire risk assessment documents, as distinct from carrying out a fire risk assessment to clearly communicate pragmatic fire safety arrangements and how they could be relied upon to protect life;

(b) headline fire safety strategy documents without full or due consideration of Regulation 8 of the Building Regulations 2010;

(c) the statutory guidance document AD B contained some important guidance and yet it became prevailing practice to ignore it/cherry pick from it;

(d) an absence of recognition of the interdependency between design stage fire safety solutions and requirements, occupied building fire risk assessments and risk levels, and how together they enable suitable fire safety arrangements to be made;

(e) lack of recognition of the relationship between occupancy profile and risk profile and why this is one of the most important aspects of emergency planning for all building occupants;

(f) the absence of sufficient emergency planning nor the production of plans that could be relied upon in the event of a fire;

(g) optimism bias regarding what is known or unknown of a building condition, resulting in misguided and at times reckless assumptions about how a building and its systems would react in the event of a fire;

(h) the absence of sufficient oversight/independent assessment of safety standards via the building control authority nor via the professional bodies responsible for producing competent professionals, enabling fire safety standards to deteriorate;

(i) the abject failure to connect all of this to the reality of what would as a result face firefighters, residents and visitors, in the event of a fire.

3.1.13 There were other prevailing conditions in the Built Environment industry:

(a) failure to treat the need for ongoing fire safety system maintenance as a fire safety duty;

(b) manufacturer-led informal fire safety guidance documents accepted, sometimes without question, as if statutory guidance documents;

(c) product certification processes and a culture of approval without due consideration of large scale building conditions and the risk to life at that scale;

(d) out of date statutory guidance and little interest by the authorities when concerns were raised about this state of affairs - and they were raised; and

(e) overall, in my opinion very little focus at all on people – the people due to work and live in the buildings created in these conditions.

3.1.14 In the absence of focusing on people and the rising potential harm *they* were being exposed to, and worse unbeknownst to them, was a growing lack of equity across the HRRB occupancy profile; particularly in high rise social housing buildings, where the risk of harm was substantially rising for vulnerable persons.

3.1.15 All of this was in a framework of professional practice where a body of thought had been successfully nurtured into prevailing practice with subsequently negative characteristics and beliefs. These included:

(a) utilising "prescriptive methods" as a "simple" and de facto route to a reliable fire safe solution which required less skill and knowledge compared to performance based methods;

(b) prescriptive based solutions always carried less intrinsic risk than performance based solutions; the prescriptive solutions in the AD B were in any event not mandatory and did not need to form the basis of alternative solutions;

(c) there was no robust methodology nor scrutiny needed for performance based design/formulating alternative solutions;

(d) professional fire safety advice was required during the design phase only and preferably on a limited ad-hoc basis;

(e) fire safety input was needed only from fire safety engineers, if at all;

(f) fire risk assessors required little fire safety knowledge skills or experience; and

(g) the fire performance of products relied upon in fire safe solutions were commercially confidential and their true performance (failures, detailing of test systems etc) could never be revealed.

3.1.16 These became accepted reasons for ignoring statutory guidance, ignoring functional requirements, commencing construction, commissioning and handover without a fit-for-purpose set of technical specifications, and the prevailing use of unsafe materials and systems.

3.1.17 This is very far from what was really needed; where regardless of fire safety design method, it is the outcomes that are key, and those outcomes are totally reliant on the quality of design, construction, commissioning and handover. We refer to this in Arup as 'total fire safety'.

3.1.18 The methodology used to finalise the package of fire safety measures proposed for any building (i.e. the building design) is irrelevant by the time all the disciplines are on site, creating the finished works.

3.1.19 The methodology to finalise the package of measures is also irrelevant if the fire performance of active and passive fire safety systems is not in fact proven for realistic fire events.

3.1.20 The methodology to finalise the package of measures is substantially irrelevant if the final measures chosen are not suited to the occupancy profile and risk profile of the building.

3.1.21 Moving forward, we have to recognise the fire safety system for what it is - an intrinsic component of a complex system (the built environment). If we consider fire safety as a complex system and thus those making any kind of fire safety related decision as having a duty to consider the inter-relationships across all components for the duration of a buildings life cycle, the prevailing notions must shift.

3.1.22 There are very many disciplines and roles involved in keeping an existing building fire safe or creating a new fire safe building. Fire safety professionals have a very serious role to play but it is reckless to ignore the interdisciplinary nature of producing even the "simplest" of buildings and just how many disciplines and trades need to participate in a competent framework.

3.1.23 Any scope of work to produce fire safe buildings cannot be fulfilled by simple piecemeal tick-box approaches to the fire safety strategy or to fire risk assessment, nor can it be fulfilled through simplistic approaches to product performance, ongoing management or maintenance. Focusing on methods rather than outcomes cannot create the changes needed.

3.1.24 The system of fire safety should deliver fire safe buildings, and on an equitable basis for the users of that building. Therefore, providing total fire safety to occupants and users of any building goes further than design and construction; it extends to conditions during occupation

and the consequences of future changes/upgrades to the building over its life cycle, as these changes directly impact the building/risk profile over time.

3.1.25 The fire safety system is complex as it is not limited to the hard elements of the system such as how the physical fire safety measures of a building interlink. It encompasses effects from a much broader context including equitable arrangements for building users to rely upon in the event of fire, user experience in the event of fire, building level investment in emergency preparedness, investment in the emergency services emergency preparedness.

3.1.26 It encompasses too the effectiveness and competence of the supply chain relied upon to create/refurbish/maintain a building, and issues such as the safety maturity of central and local government bodies and housing associations.

3.1.27 The production of a consistent set of fire safe buildings/building works, relies heavily on cross trade and cross discipline competency within a framework of rigorous Building Regulation compliance, and ongoing oversight of methodologies and solutions.

3.1.28 As per my Module 7 report {BLARP20000043}, it is my opinion that the Building Regulations 2010 as written, place the health and safety of people at the heart of their requirements, particularly as described in Regulation 8 (still retained as of October 2023, bold by me):

Limitation on requirements

8. Parts A to D, F to K, F1[F2, N] and P (except for paragraphs G2, H2 and J7) of Schedule 1 shall not require anything to be done except for the purpose of ***securing reasonable standards of health and safety for persons in or about buildings*** *(and any others who may be affected by buildings, or matters connected with buildings).*

3.1.29 The requirements are as per Schedule 1 Part B Fire Safety with reference to Regulation 4 and 6 regarding applicability, and in complying with the requirements, there must be no failure to comply with any other such requirement.

3.1.30 Regulations 14 and 17, create a duty both to demonstrate compliance with the requirements and to document how that compliance is to be achieved. The duty of creating that documentation rests with the party (and any other persons upon which they rely) making the *application for building control approval with full plans*. For relevant buildings, Regulation 38 then requires this information to be communicated to the responsible person(s) for the building at the end of construction.

3.1.31 Those specific requirements have not changed since 2017.

3.1.32 In the following section I set out the RIBA Plan of Work as a framework currently used to deliver building projects. This is to demonstrate the complexity of activity that is intrinsic to a single project. The framework of the RIBA Plan of Work is equally applicable to building works in existing HRRBs as it is to new HRRBs.

3.1.33 I have mapped into this RIBA framework, in summary only, all the new statutory duties which have been introduced since 2017 (for existing and new HRRB) and are intended to strengthen the framework required to produce fire safe buildings for occupation. See Table 3-1.

3.1.34 I have done this to demonstrate the increasing complexity of activity caused by all these changes to date, how it clearly demands higher competency standards throughout the Built Environment industry, and why the lack of prescriptive mandatory statutory guidance for all the new duties, documents, and processes, are a serious cause for concern.

3.1.35 I then introduce the built environment as a complex system and describe why fire safety is an intrinsic part of that system and therefore changing the current prevailing conditions and the current poor fire safety solutions, requires a systems-based approach.

3.2 The current status quo: Building projects within the RIBA Plan of Work 2020

3.2.1 The delivery of a new building project such as a new HRRB in England is typically organised into stages e.g. as defined by the RIBA Plan of Work.

3.2.2 The RIBA Plan of Work "*organises the process of briefing, designing, constructing and operating building projects into eight stages and explains the stage outcomes, core tasks and information exchanges required at each stage*".

3.2.3 This Plan of Work commences with the *Strategic Definition* Stage 0 and ends with the *Use* Stage 7. Stage 7 is defined as "*Building used, operated and maintained efficiently; Stage 7 starts concurrently with Stage 6 [Handover] and lasts for the life of the building."*

3.2.4 RIBA has published a model Plan of Work since 1963. The plan of work that was relevant during the design and construction of the Grenfell Tower primary refurbishment was the 2007 Plan of Work, as amended in November 2008.

3.2.5 The RIBA Plan of Work (RIBA 2021a)[7] relevant today is dated 2020 and the stages are summarised in my Table 3-1, alongside the RIBA defined associated core tasks, core statutory processes and fire safety activities. I have placed Table 3-1 after my analysis of the new legislation at the end of Section 3.3 below.

3.2.6 The RIBA Plan of Work clearly draws on the importance of fire safety and provides guidance on core activities for each Stage of the plan of work. It states in Chapter 5 Page 33 Fire Safety Strategy:

> *The Fire Safety Strategy forms an integral part of the design and must be integrated from the point at which a building project is identified and will continue though the ongoing Asset Management of the building, providing a golden thread of fire safety information.*
>
> *A high-level Site Appraisal to determine the fire safety suitability against the Client Requirements informs the viability of the project through Feasibility Studies. Layers of fire safety are integrated into the design as the project develops then constructed and managed in use in accordance with the Fire Safety Strategy and maintenance requirements.*

3.2.7 The RIBA Plan of Work undergoes changes from time to time and is supplemented by "*overlays*" and additional "*compliance trackers*" that need to be read in conjunction with the Plan of Work. For example, RIBA launched the Fire Safety Compliance Tracker in July 2021 (RIBA, 2021b)[8] which is *"a template that members can use to track and record a project's design development from a fire safety point of view. It can clearly demonstrate compliance with Building Regulations Part B: Fire Safety".*

3.2.8 The 2020 RIBA Plan of Work does not yet incorporate the incoming additional requirements under the Building Safety Act 2022 (BSA 2022) for HRBs; further the requirements continue to be updated through a stream of ongoing publications from the Secretary of State and other bodies, for example, the British Standards Institution (BSI) and the HSE.

3.2.9 Therefore, I have summarised these in Section 3.2 and then described my understanding of the resulting impact on buildings projects through each stage of the RIBA Plan of Work.

3.2.10 The new legislation reinforces the fire safety activities already set down in the RIBA Plan of Work. My analysis below demonstrates the even greater need for fire safety competence in all

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[7] RIBA (2021a) RIBA Plan of Work https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work. Accessed 04/11/2023

[8] RIBA (2021b) Use the RIBA Fire Safety Compliance Tracker to record your project's safety progress https://www.architecture.com/knowledge-and-resources/knowledge-landing-page/use-the-riba-fire-safety-compliance-tracker-to-record-your-projects-safety-progress, Accessed 30/10/2023

stages, as well as the importance of rigorous methods and reports (such as the fire safety strategy) to enable all duty holders to deliver compliance with all relevant requirements.

3.2.11 It is clear to me that it is even more important now, in order to ensure consistent compliance with all relevant requirements, to urgently produce mandatory statutory prescriptive guidance setting out how this can be done for HRRBs, existing and new.

3.3 The new fire safety legislation

3.3.1 Introduction to the new legislation

3.3.2 The primary and secondary legislation and the interconnectivity between them relevant to a building project is illustrated by me in Figure 3-1.

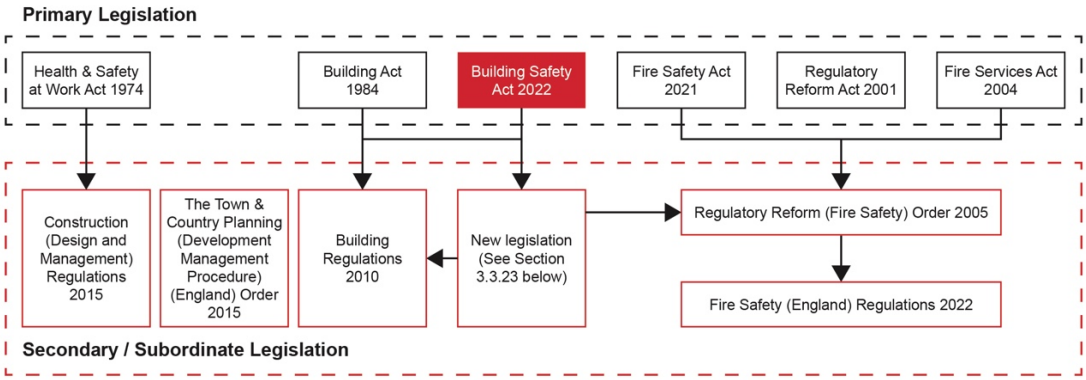


Figure 3-1 Primary and secondary legislation applicable to a building project for new and existing HRBs

3.3.3 Figure 3-1 includes selected new legislation, from which I set out relevant matters informing my recommendations in this report:

- Fire Safety Act 2021
- Building Safety Act 2022 (BSA 2022)
- Fire Safety (England) Regulations 2022
- Selected secondary legislation as required (see Sections 3.3.22 and 3.3.23 for full list)

3.3.4 It is important to note that the Building Safety Act 2022 (BSA 2022) and the Fire Safety Act 2021 are additional pieces of primary legislation, and do not replace the primary legislation in place at the time of the Grenfell Tower primary refurbishment.

3.3.5 In Sections 3.3.94 and 3.3.160 below, I outline the amendments made to the RR(FS)O by the BSA 2022, which are primarily related to competence, cooperation and information management. However, the RR(FS)O remains fundamentally the same as when I relied on it in my assessment of Grenfell Tower in my Module 3 report.

3.3.6 It is reasonable to state therefore that this new legislation has been enacted into the prevailing culture of non-compliance I referred to in both my Phase 1 and Phase 2 reports. Hence why changing the prevailing culture of the industry delivering the built environment is so important.

3.3.7 New primary legislation

3.3.8 <u>The Fire Safety Act 2021</u>

3.3.9 The Fire Safety Act 2021 is an Act "*to make provision about the application of the Regulatory Reform (Fire Safety) Order 2005 where a building contains two or more sets of domestic*

premises; and to confer power to amend that order in future for the purposes of changing the premises to which it applies".

3.3.10 It clarifies that the external façade including windows and attachments, the structure and individual entrance doors to flats of buildings containing two or more sets of domestic premises are within scope of the RR(FS)O. This confirms my experience of and interpretation of the RR(FS)O as set out in my Module 3 report *The management and maintenance of Grenfell Tower Chapter 1 The Regulatory Reform (Fire Safety) Order 2005 and its application to high rise residential buildings* {BLARP20000023}.

3.3.11 The Fire Safety Act 2021 at Section 3 introduces clarification regarding risk-based guidance and the discharge of duties under the Fire Safety Order, including consultation duties for the Secretary of State. It states:

3 Risk based guidance about the discharge of duties under the Fire Safety Order

(1) Article 50 of the Regulatory Reform (Fire Safety) Order 2005 (S.I. 2005/1541) (guidance) is amended as follows.

(2) After paragraph (1) insert—

"(1A) Where in any proceedings it is alleged that a person has contravened a provision of articles 8 to 22 or of regulations made under article 24 in relation to a relevant building (or part of the building)—

(a) proof of a failure to comply with any applicable risk based guidance may be relied on as tending to establish that there was such a contravention, and

(b) proof of compliance with any applicable risk based guidance may be relied on as tending to establish that there was no such contravention."

(3) After paragraph (2) insert—

"(2A) Before revising or withdrawing any risk based guidance in relation to relevant buildings the Secretary of State must consult such persons as the Secretary of State considers appropriate."

(4) After paragraph (3) insert—

"(4) In this article—

*"**relevant building**" means a building in England containing two or more sets of domestic premises;*

*"**risk based guidance**" means guidance under paragraph (1) about how a person who is subject to the duties mentioned there in relation to more than one set of premises is to prioritise the discharge of those duties in respect of the different premises by reference to risk."*

3.3.12 This amendment uses language consistent with that of the Building Act 1984 in relation to Approved Documents providing guidance for compliance with the Building Regulations.

3.3.13 In summary terms, the Fire Safety Act 2021 confirms the extent of a residential building to which the responsible person must assess fire safety risk and clarifies the legal standing of any guidance made available to persons with duties.

3.3.14 The practical impact on the *responsible person* is that they are required to obtain and actively manage a greater amount of information about the construction of the external wall and structure of the building - to enable the fire risk in the building to be assessed considering those important building elements. The appointed fire risk assessor must therefore have sufficient competence to incorporate these building elements into their fire risk assessment documentation.

3.3.15 In relation to building works in new or existing buildings, this detailed information should become readily available as part of the progression through each stage of the RIBA process, i.e. design information in RIBA Stages 0 to 4, as-built construction information from RIBA Stage 5 (Construction), and then the relevant information being included in the Regulation 38 (Part 8 of the Building Regulations 2010) fire safety information which should occur as part of RIBA Stage 6 (Handover).

3.3.16 <u>The Building Safety Act 2022</u>

3.3.17 <u>Overview of the BSA 2022</u>

3.3.18 The Building Safety Act was enacted in April 2022 ('BSA 2022'); it has 6 Parts and 11 supporting schedules, and contains provisions intended "*to secure the safety of people in or about buildings and to improve the standard of buildings"*.

3.3.19 Amongst the full range of changes, the BSA 2022 has the following key themes:

a. Creation of a new Regulator for the construction industry, the Building Safety Regulator (BSR);

b. Enabling change in how the Building Regulations 2010 are applied and enforced;

c. Requirements for competence across the built environment;

d. Creating a new safety regime for HRBs in occupation;

e. Creating regulations relating to construction products;

f. Enabling change in the apportionment of liability for defects in existing buildings, and how such defects can be rectified (not considered any further in this report).

3.3.20 To achieve these goals the BSA 2022 makes extensive changes to existing primary legislation that set out requirements on duty holders; through substantial amendments to 18 existing Acts, which I do not reproduce here.

3.3.21 Consequential amendments[9] have also been made to 15 local Acts as a result of the changes to Building Regulations procedures brought in by the BSA 2022, and the introduction of the BSR as a statutory body.

3.3.22 The following secondary legislation has been amended as a direct result of the requirements of the BSA 2022:

a. The Building Regulations 2010

3.3.23 The following 19 new sets of secondary legislation have also been enacted, or are in draft, to support the new and amended primary legislation (this list does not include any of the procedural regulations issued to amend the Building Regulations 2010, nor to commence the various parts of the new and amended legislation):

a. Regulations relating to control of building design and construction works on HRBs:

i. The Building (Restricted Activities and Functions) (England) Regulations 2023

ii. The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023

iii. The Building (Approved Inspectors etc. and Review of Decisions) (England) Regulations 2023

[9] The Building Safety Act 2022 (Consequential Amendments etc.) Regulations 2023, https://www.legislation.gov.uk/uksi/2023/908/contents/made Accessed 30/10/2023

iv. The Building (Public Bodies and Higher-Risk Building Work) (England) Regulations 2023

v. The Building Regulations etc. (Amendment) (England) Regulations 2023

vi. The Building Safety (Regulator's Charges) Regulations 2023

vii. The Higher-Risk Buildings (Descriptions and Supplementary Provisions) Regulations 2023

viii. The Town and Country Planning (General Permitted Development Procedure and Section 62A Applications) (England) (Amendment) Order 2021

ix. The Town and Country Planning (General Permitted Development etc.) (England) (Amendment) (No. 2) Order 2021

x. The Building Safety Act 2022 (Consequential Amendments etc.) Regulations 2023

b. Regulations relating to the occupation of HRBs:

i. The Higher-Risk Buildings (Keeping and Provision of Information etc.) (England) Regulations 2023 (currently in draft)

ii. The Higher-Risk Buildings (Management of Safety Risks etc) (England) Regulations 2023

iii. The Building Safety (Leaseholder Protections etc.) (England) (Amendment) Regulations 2023

iv. The Building Safety (Responsible Actors Scheme and Prohibitions) Regulations 2023

v. The Higher-Risk Buildings (Key Building Information etc.) (England) Regulations 2023

vi. The Building Safety (Registration of Higher-Risk Buildings and Review of Decisions) (England) Regulations 2023

vii. The Building Safety (Leaseholder Protections) (Information etc.) (England) Regulations 2022

viii. The Building Safety (Leaseholder Protections) (England) Regulations 2022

ix. The Fire Safety (England) Regulations 2022

3.3.24 Due to the scope of the legislation, the BSA 2022 therefore applies, to a greater or lesser extent, to all new and existing buildings. There is a particular focus on "*higher-risk buildings*" (HRBs) during construction, and then during occupation, which seem intended to address many of the failings identified in the reports for the Government by Dame Judith Hackitt as well as those observed in the investigation into the Grenfell Tower fire by this Inquiry.

3.3.25 In the following Sections 3.3.29 to 3.3.184 of my report I provide an overview of the BSA 2022 in terms of:

a. Creation of a new Regulator for the construction industry, the BSR (Section 3.3.29);

b. Enabling change in how the Building Regulations 2010 are applied and enforced (Section 3.3.40);

c. Requirements for competence across the built environment (Section 3.3.94);

d. Creating a new safety regime for HRBs in occupation (Section 3.3.133); and

e. Regulations relating to construction products (Section 3.3.174).

3.3.26 Under each heading, I also set out my review of select parts of the secondary legislation that are supporting these themes, and therefore are relevant to my recommendations regarding safety culture in the design, construction and occupation of HRRBs.

3.3.27 I then set out my conclusions relating to the new legislation in Section 3.3.185.

3.3.28 This section of my report is not intended to provide a complete overview of the new legislation. Updates to legislation and release of new legislation is ongoing and so my Report reflects the situation as at the date of writing this report.

3.3.29 The Building Safety Regulator

3.3.30 Part 2 of the BSA 2022 introduces a new Building Safety Regulator (BSR) and its functions. The BSA 2022 states:

3 The regulator: objectives and regulatory principles

(1) The regulator must exercise its building functions with a view to

(a) securing the safety of people in or about buildings in relation to risks arising from buildings, and

(b) improving the standard of buildings.

3.3.31 The BSR's core duties are outlined in the headings 4 -8 of Part 2 of the BSA 2022:

4 Duty to facilitate building safety: higher-risk buildings

...

5 Duty to keep safety and standard of buildings under review

...

6 Facilitating improvement in competence of industry and building inspectors

...

7 Proposals and consultation relating to regulations

...

8 Duty to establish system for giving of building safety information

...

3.3.32 In outline, the BSR becomes the building control body for new and existing HRBs undergoing building work, and also enforces the new safety regime in occupied HRBs. At a higher level, the BSR is also responsible for monitoring safety and standards in the construction industry as a whole.

3.3.33 Of specific importance to my recommendations regarding safety in existing and new HRBs, during all stages, design, construction, and occupation, the BSA 2022 states (bold by me):

4 Duty to facilitate building safety: higher-risk buildings

*(1) The regulator must provide such **assistance and encouragement** to relevant persons as it considers appropriate with a view to facilitating their securing the safety of people in or about higher-risk buildings in relation to building safety risks as regards those buildings.*

*(2) The assistance and encouragement that must be provided under subsection (1) includes, in particular, assistance and encouragement with a view to **facilitating securing the safety of***

disabled people in or about higher-risk buildings in relation to building safety risks as regards those buildings.

3.3.34 It provides a clear definition of disabled at Section 30:

a person is disabled if the person has a physical or mental impairment which has a substantial and long-term adverse effect on the person's ability to carry out normal day-to-day activities.

3.3.35 The BSA 2022 also requires the BSR to set up the following committees to provide them with advice and information connecting with the BSR's functions:

a. Building Advisory Committee (Section 9 of the BSA 2022)

b. Committee on industry competence (Section 10 of the BSA 2022)

c. Residents' panel (Section 11 of the BSA 2022)

3.3.36 Therefore, the BSR is intended to have broad oversight over the level of competence and safety being provided by the construction industry, with a more detailed focus on HRBs.

3.3.37 However, it is not clear yet how the BSR will lead or cause change in the industry based on the information being fed to them through the various reporting mechanisms that they are responsible for.

3.3.38 Nor is it at all clear what "assistance" will be provided nor what "encouragement" will manifest itself in practice, when it comes to *facilitating securing the safety of disabled people in or about higher-risk buildings*.

3.3.39 I will not review the scope or duties of the BSR any further here but will identify in the following sections where the BSR interacts with the new processes and procedures relating to building design, construction and occupation.

3.3.40 The BSA 2022 enabling change in how the Building Regulations 2010 are applied and enforced

3.3.41 Part 3 of the BSA 2022 sets out a series of amendments to the Building Act 1984 to define HRBs, in relation to building works (see Section 2.1.9).

3.3.42 In particular Section 33 of the BSA 2022 makes amendments that give power to the Secretary of State to create new regulations under the following headings:

Procedural requirements etc: general

Applications for building control approval

Certificates: approved schemes

Obtaining, keeping and giving information and documents

Reporting requirements: duty to establish and operate system

Form and content of documents etc

Inspection, testing etc

Applications to building control authorities: extension of period by agreement

Appeals

3.3.43 A range of new secondary legislation has now been published that bring these powers into force, as I set out in the following section.

3.3.44 Secondary legislation relating to HRBs and the Building Regulations 2010

3.3.45 The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023 came into force on 1st October 2023. This new set of regulations details the building control approval process for new and existing HRBs as follows (explanatory notes by me):

a. PART 1 Preliminary

b. PART 2 Building control approval [Note: Gateway 2]

   i. CHAPTER 1 New HRBs

   ii. CHAPTER 2 Existing HRBs

c. PART 3 Changes before or during construction

d. PART 4 Golden thread, mandatory occurrence reporting, information handover etc

e. PART 5 Completion certificates [Note: Gateway 3]

f. PART 6 Inspections etc, regularisation, review of decisions, appeals and section 30A procedures etc

3.3.46 Different procedures have been defined for building control approval of new and existing HRBs (Part 2 above).

3.3.47 For work on existing HRBs, the following further categories of works are defined:

Building control approval applications for work to existing HRB

...

(6) In this regulation—

"category A work" means work falling within any one or more of the following descriptions—

(a) work which increases or decreases the external height or width of the higher-risk building;

(b) work which changes the number of storeys the higher-risk building has (including adding or removing a mezzanine or gallery floor);

(c) work which changes the number of flats or residential rooms contained in the higher-risk building;

(d) work which changes the number of, or width of, the staircases in a higher-risk building or which changes the number of, or width of, any other escape route within the building;

(e) work to the external wall of a higher-risk building excluding work or materials of a description specified in regulation 7(3) of the 2010 Regulations;

(f) work which changes the internal layout of a higher-risk building;

(g) work which affects the passive fire safety measures in the higher-risk building;

(h) work which affects the active fire safety measures in a higher-risk building;

(i) work which affects the common parts of a higher-risk building (including the external wall) not otherwise falling within category A;

"category B work" means work which does not fall within category A.

(7) The requirements of this regulation do not apply to work to existing HRB which consists only of—

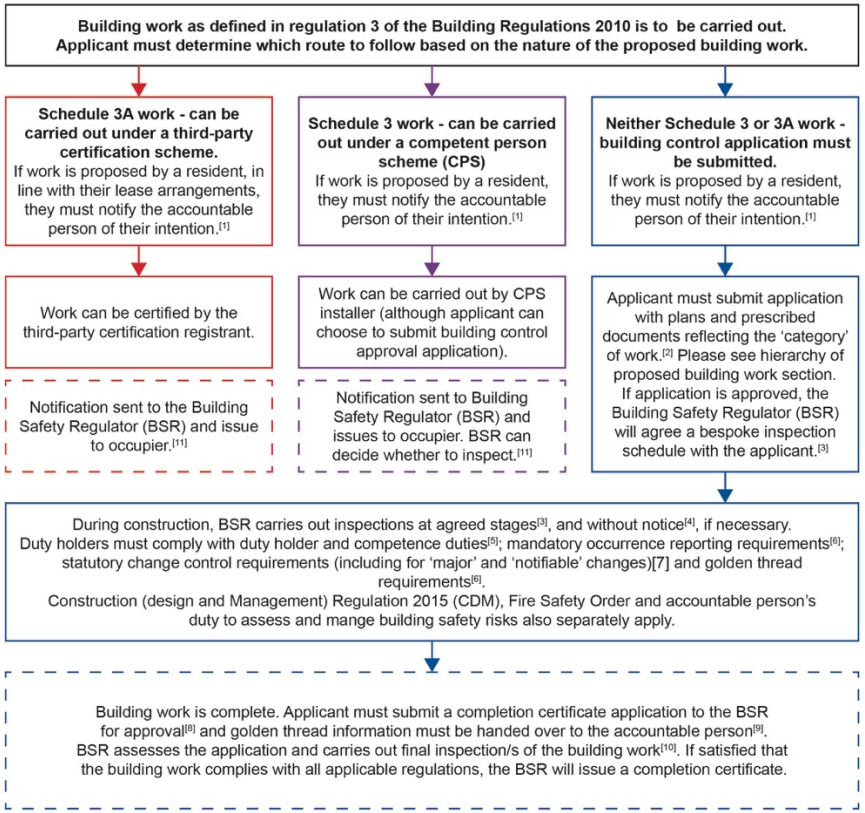
(a) scheme work;

(b) exempt work, or

(c) work to which regulation 10 (notification of emergency repairs to existing HRB) applies.

3.3.48 Further distinctions are made for both new and existing HRBs in terms of whether the approval process applies to work on a whole building, part of a building or different work stages of a multi-stage building project.

3.3.49 In Figure 3-2 I have reviewed a diagram that was produced as part of the Government consultation on implementing the new building control regime for HRBs and wider changes to the Building Regulations for all buildings. I note that the proposals set out in this diagram have been brought through into active legislation, primarily in the form of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.



1. The requirements for notification from residents to the accountable person is not explicitly stated in legislation. However, Section 112 of the BSA sets out implied duties of tenants to cooperate with the relevant accountable person. Residents also have duties under section 95(2) of the BSA to support the AP in assessing and managing safety risks in the building. The PAP has a duty to implement a resident engagement strategy under Section 91 of the BSA. It is my expectation that the specific notification procedure for a building would be defined and communicated in this way.
2. The requirements for making applications for building control approval with full pans for HRBs is set out in Part 2 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.
3. The procedure to agree inspections by the BSR during works is set out in Regulations 16(3), 16(3A) and 16(3B) of the Building Regulations 2010.
4. Regulation 46 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023 gives the BSR powers to make inspections, and does not specify any particular procedure.
5. Dutyholder and competence duties are set out in Part 2A of the Building Regulations 2010.
6. Requirements relating to mandatory occurrence reporting and the golden thread as it applies during construction are set out in Part 4 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.
7. Change control requirements are set out in Part 3 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.
8. Completion certificate application process is set out in Regulation 40 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.
9. Requirements relating to information handover a the end of construction are set out in Regulation 38 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.
10. Requirements relating to BSR assessment and inspections are set out in Regulations 41-44 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.
11. Requirements relating to notification to the BSR are set out in Regulation 39 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.

Figure 3-2 My review of building regulations process diagram issued as part of government consultations[10]

[10] Department for Levelling Up, Housing & Communities (2023b) Consultation on implementing the new building control regime for higher-risk buildings and wider changes to the building regulations for all buildings https://www.gov.uk/government/consultations/consultation-on-implementing-the-new-building-control-regime-for-higher-risk-buildings-and-wider-changes-to-the-building-regulations-for-all-buildings/consultation-on-implementing-the-new-building-control-regime-for-higher-risk-buildings-and-wider-changes-to-the-building-regulations-for-all-buildings, Accessed 1/11/2023

3.3.50 The new categories of work I have quoted above provide specific examples of controllable work. This reduces the risk that uncontrolled building works might occur in an HRB, and therefore if considered properly should reduce the risk to residents as a result.

3.3.51 However, what remains very concerning is that Building Regulation 3 and 4, remain fundamentally unaltered. This is the so called "*non-worsening*" principle and so the potential misuse of it, remains.

3.3.52 This is addressed in Hackitt's findings in her interim report Building a Safer Future dated December 2017[11]. She states at Page 69 (bold by me):

> *While there is a rationale for non-worsening (and more generally for not imposing the latest modern building standards on old buildings, which may quickly make continued occupation, or any refurbishment activity uneconomical), it results in many buildings not having up-to-date arrangements for fire safety and no statutory assumption of continuous improvement over the life of a building.* ***This seriously limits the scope of the law to improve fire safety in pre-existing buildings****.*

3.3.53 Therefore, it is my understanding that as HRBs will be considered on a case by case basis by the BSR, it would be for the BSR to decide on the matter of how Regulation 3 and 4 are being interpreted for that particular project. I do not know what the intention is here as it is not dealt with clearly in any of the legislative changes or explanatory notes issued to date.

3.3.54 For all other buildings, this decision must be made by whichever building control approver is appointed for the project, assuming that the Client decides to consult with building control at all. This condition is the same as the prevailing conditions before the Grenfell fire, with the only change being that the selected building control approver (and the building inspections they employ) will now need to be registered with the BSR.

3.3.55 In terms of impact on work by fire safety engineers, these new regulations require clients to set up a "*Golden Thread*" of information, or where the building is existing to update the existing "*Golden Thread*" information.

3.3.56 The "*Golden Thread*" is the concept of building information management as referred to by Dame Judith Hackitt (2018) in her report *Building a Safer Future: Independent Review of Building Regulations and Fire Safety: Final Report*[12]. It builds on the existing requirements of Building Regulation 38 for fire safety information and of the *health and safety file* defined by the CDM Regulations 2015.

3.3.57 New requirements for the "*Golden Thread*" are set out in draft legislation The Higher-Risk Buildings (Keeping and Provision of Information etc.) (England) Regulations 2023.

3.3.58 I have summarised the main components of the information listed in this draft legislation, and which specifically relate to fire safety, in Table 3-1, below.

3.3.59 To provide confidence that all duty holders are complying with their duties, the new legislation then sets out three decision points (referred to as "Gateways" in government consultations and other industry guidance) relating to works in new or existing HRBs.

3.3.60 These decision points (Gateways) are now in force under The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023 and The Town and Country Planning (Development

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[11] Hackitt, J. (2017) Building a Safer Future: Independent Review of Building Regulations and Fire Safety: Interim Report https://assets.publishing.service.gov.uk/media/5a81d68ced915d74e6234631/Independent_Review_of_Building_Regulations_and_Fire_Safety.pdf, accessed 08/12/2023

[12] Hackitt, J. (2018) Building a Safer Future: Independent Review of Building Regulations and Fire Safety: Final Report https://www.gov.uk/government/publications/independent-review-of-building-regulations-and-fire-safety-final-report. Accessed 4/11/2023

Management Procedure) (England) Order 2015 as amended by The Town and Country Planning (Development Management Procedure and Section 62A Applications) (England) (Amendment) Order 2021.

3.3.61 Figure 3-3 shows where the new Gateways sit within the existing RIBA Plan of Work.

3.3.62 Please note the legislation does not include the term "Gateway", however for the purposes of my report I will continue to refer to "Gateways" for simplicity and alignment with other industry guidance.

3.3.63 Gateway 1 comes at Planning stage, where the HSE is a statutory consultee to the planning process (HSE, n.d.-a)[13]. By reference to the RIBA Plan of work 2020, this would be expected to occur no later than RIBA Stage 3 (Spatial Coordination), see Table 3-1.

3.3.64 The Town and Country Planning (Development Management Procedure and Section 62A Applications) (England) (Amendment) Order 2021 amended two existing sets of planning regulations to insert Section 9A into The Town and Country Planning (Development Management Procedure) (England) Order 2015, and Section 7A into The Town and Country Planning (Section 62A Applications) (Procedure and Consequential Amendments) Order 2013.

3.3.65 Under these amendments, planning applications relating to new or existing HRBs must now be accompanied by a *fire statement* as follows:

(4) An application for planning permission to which this paragraph applies, must, except where paragraph (6) applies, be accompanied by a statement ("a fire statement") about the fire safety design principles, concepts and standards that have been applied to the development.

3.3.66 The Department for Levelling Up, Housing and Communities (DLUHC, 2021)[14] has published a specific *fire statement* form for this purpose, and also specific guidance for the use of that form. I have set out selected requirements of the *fire statement* form in Table 3-1.

3.3.67 While the form itself is intended to present a summary of the building design to the planners (and the BSR as statutory consultee), the information must in my opinion be based on a comprehensive fire safety strategy (that provides an appropriate level of detail for the stage of design) that can *"Explain any specific technical complexities in terms of fire safety (for example green walls) and/or departures from information in the building schedule above"*[15], and *"Explain how any specific issues which might affect the fire safety of the development have been addressed"*[15].

3.3.68 Subsequently, Gateway 2 should be completed by the end of RIBA Stage 4 (Technical Design). The submission requirements for Gateway 2 are set out in Regulations 4 (new HRBs) and 12 (existing HRBs) of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023. An important part of this submission is also the *fire and emergency file*, which I discuss in Section 3.3.80, below.

3.3.69 The level of detail at RIBA Stage 4 needs to be of a detail to enable manufacture and construction of the project, which requires the fire safety strategy to be more detailed than that required for the *fire statement* at planning stage, so it can inform and supplement the design documentation prepared by other designers.

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[13] Health and Safety Executive (n.d.-a). "New buildings: planning design, construction". https://www.hse.gov.uk/building-safety/planning.htm, Accessed 30/10/2023

[14] Department for Levelling Up, Housing and Communities (2021) Planning application and fire statement forms: templates https://www.gov.uk/government/publications/planning-application-forms-templates-for-local-planning-authorities Accessed 30/10/2023

[15] Department for Levelling Up, Housing and Communities (2021) Guidance: fire statement https://assets.publishing.service.gov.uk/media/60db274bd3bf7f7c2ed84b6b/Fire_statement_form_-_guidance.pdf, Accessed 08/12/2023

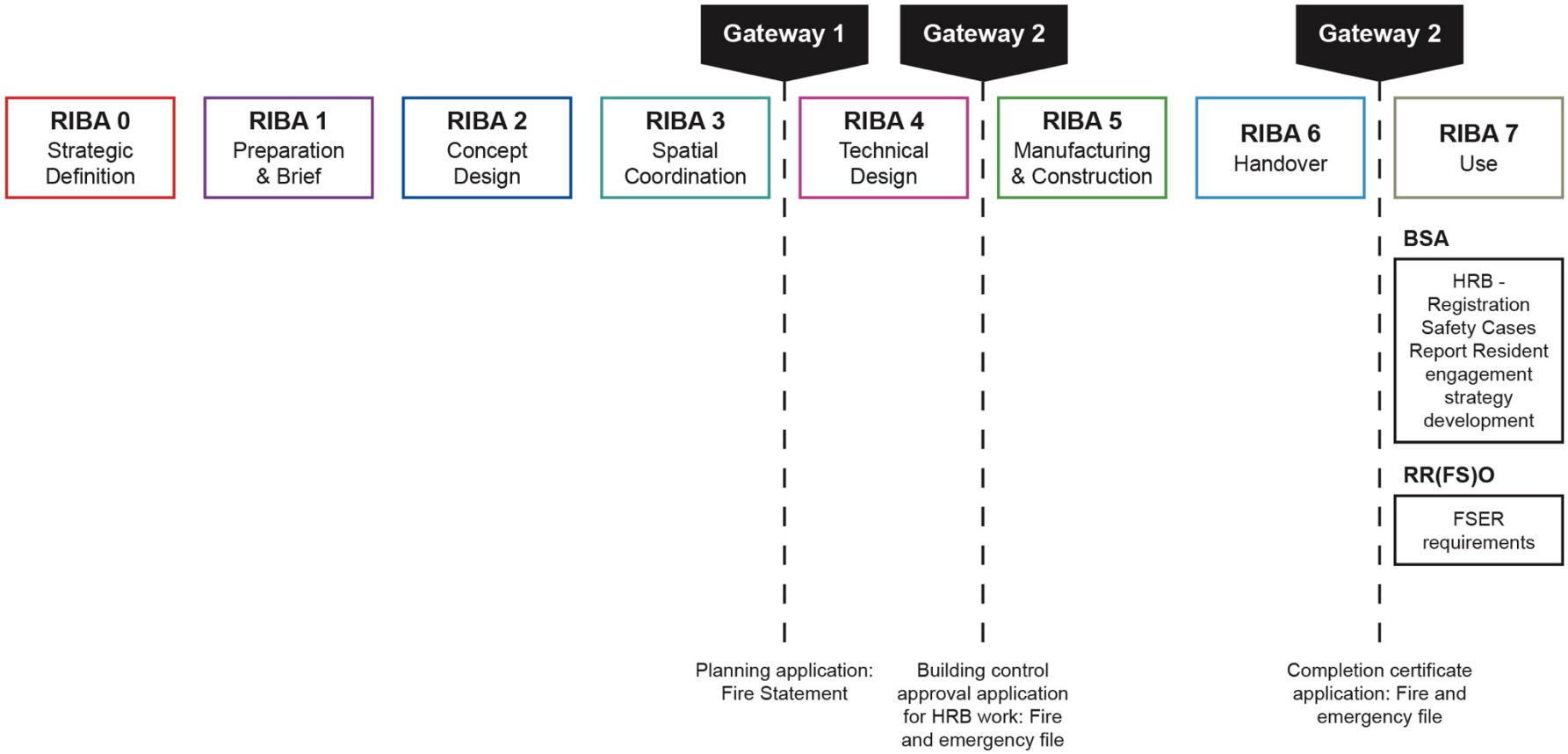

Figure 3-3 Application of Gateways to RIBA plan of work

3.3.70 I note that Regulation 14A *Determination of applications for building control approval with full plans* of the Building Regulations 2010, which applies to all buildings other than HRBs, states:

(6) The relevant authority must notify the applicant of the outcome of the application within five weeks beginning with the date the application is received by the relevant authority, or within such longer period as at any time the authority and the applicant agree in writing.

(7) A failure by the relevant authority to notify the applicant in accordance with paragraph (6) is not to be treated as a grant of the application or a rejection of the application.

3.3.71 While there is no equivalent statement in The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023, the implication of Regulations 7 (new HRBs) and 14 (existing HRBs) is that construction cannot be commenced without the BSR confirming acceptance of the *building control approval application for HRB work*, or *building control approval application for work to existing HRB*.

3.3.72 Additionally, Regulations 9 (new HRBs) and 17 (existing HRBs) require the Client to provide separate notices to the BSR 5 days prior to, and 5 days after, commencement of works on site. This provides the BSR with another decision point where intervention may occur to ensure the proposed fire safety solution meets all the relevant requirements.

3.3.73 Finally, Gateway 3 relates to the provision by the BSR of a completion certificate at the end of construction works, and therefore relates to RIBA Stage 6 (Handover). The submission requirements for Gateway 3 are set out in Regulation 40 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023. An important part of the Gateway 3 requirements is again the need to submit the *fire and emergency file* to the BSR, which I discuss in section 3.3.80 below.

3.3.74 This is important as the BSA 2022 requires a PAP (Principal Accountable Person) to have a completion certificate and have registered the building with the BSR in order to lawfully occupy an HRB, as set out in Sections 76 and 77 of the BSA 2022:

76 Requirement for completion certificate before occupation

(2) If a relevant residential unit is occupied before a completion certificate relating to a relevant part of the building is issued, the relevant accountable person commits an offence.

...

77 Occupation: registration requirement

(1) The principal accountable person for a higher-risk building commits an offence if the building is occupied but not registered.

3.3.75 A completion certificate is also required for a PAP to register an HRB as set out in Regulation 10 of The Building Safety (Registration of Higher-Risk Buildings and Review of Decisions) (England) Regulations 2023:

Applications for registration

10. An application to register a higher-risk building must—

(a) contain the information set out in regulations 11 to 17, 18(1)(a) to (c) and (2), and 19,

(b) be accompanied by any document required by regulation 18(1)(d).

3.3.76 Regulations 17, 18 and 19 relate to provision of relevant completion certificates and/or associated reference numbers for buildings that have work completed before, during or after the transition period (respectively). Therefore, it is clear that the intention of the legislation is for all building works to have been certified by the BSR as completed before an HRB may be occupied.

3.3.77 In my various reports to the Inquiry I have set out evidence that Grenfell Tower lacked consistent and robust fire safety information, and that my experience in practice is that this is the typical condition for buildings and construction projects. I have therefore set out the specific information required by the new and updated legislation at each Gateway stage in Table 3-1 that in my opinion require input from a competent fire safety professional.

3.3.78 I have prepared Table 3-1 to support my opinion, as expressed later in this report, that the new legislation provides a robust set of basic requirements for fire safety information, whilst only setting out general requirements for competence which is relevant to the production of this information.

3.3.79 Further I note that neither fire safety engineers nor fire risk assessors are explicitly identified as duty holders (designers) (See Section 3.3.122) and it is my opinion that they should be. This clarity is expressly needed, particularly in the context of the currently poor fire safety culture in the built environment industry at this time.

3.3.80 The most important part of the new information requirement is the *fire and emergency file* that must be submitted for approval to the BSR at both Gateways 2 and 3.

3.3.81 The following definition is provided in Schedule 1, Section 5 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023:

Fire and emergency file

5.(1) A fire and emergency file must set out—

(a) the matters that were considered when assessing how the building safety risks identified could impact the higher-risk building or the proposed higher-risk building;

(b) the proposals adopted and the approaches taken in relation to designing the proposed higher-risk building or the building work to the higher-risk building to ensure compliance with the applicable requirements of the building regulations relating to the building safety risks;

(c) the measures, strategies and policies it is proposed the owner of the higher-risk building should adopt in order to manage and maintain the higher-risk building or the proposed higher-risk building to ensure anyone in it can be safely evacuated in an emergency, including any assumptions made as to the intended occupiers of the building and their likely characteristics and behaviours.

(2) The measures, strategies and policies referred to in sub-paragraph (1) must include—

(a) a plan which sets out the requirements of the fire and rescue service for the area in relation to access to the higher-risk building and water supply for fire-fighting;

(b) a report which—

(i) where the HRB work, a stage of HRB work or work to existing HRB has not started, demonstrates how compliance with the applicable requirements of the building regulations relating to the building safety risks is to be achieved;

(ii) where the HRB work, a stage of HRB work or work to existing HRB is completed, demonstrates how compliance with the applicable requirements of the building regulations relating to the building safety risks was achieved."

3.3.82 The *fire and emergency file*, therefore, explicitly requires an understanding of the risk of fire spread in the building and resident characteristics so that *"anyone in it can be safely evacuated in an emergency"* (HSE, 2023b)[16].

3.3.83 A specific report and supporting drawings must also be provided at both Gateways 2 and 3 that sets out how the Building Regulations are complied with at the relevant stage of work.

3.3.84 I note that references to "plans" refers to the definition set out by Section 126 of the Building Act 1984 as follows:

"plans" includes drawings of any other description, and also specifications or other information in any form;

3.3.85 I further note that the requirement to provide information in The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023 is designated Regulation 38, just as there is a Regulation 38 in the Building Regulations 2010. The two sets of regulations also have similar, albeit not identical, definitions of *fire safety information*.

3.3.86 The analysis and decision making forming these documents which must demonstrate the route to compliance and the fire safety solutions that deliver compliance with all relevant requirements correctly require significant fire safety competence.

3.3.87 In parallel to the requirements on information management for HRBs during construction, the BSA 2022 has enhanced the requirement for dutyholders to actively utilise this information when the building is in occupation.

3.3.88 During occupation, the Accountable Person responsible for the HRB needs to assess building safety risks and manage such risks as defined in Sections 83 and 84 of the BSA 2022.

3.3.89 The PAP is then required to document the findings in a *safety case report* as per Section 85 of the BSA 2022, which needs to be submitted to the regulator as part of the Building Assessment Certificate Application.

3.3.90 Specific requirements on information required from the construction phase is set out in further secondary legislation which supplements the BSA 2022 e.g. The Higher-Risk Buildings (Management of Safety Risks etc) (England) Regulations 2023 and The Higher-Risk Buildings (Keeping and Provision of Information etc.) (England) Regulations 2023 (currently in draft). In principle, this is what the Golden Thread concept seeks to enable.

[16] Health and Safety Executive (2023b) *Building Control: An overview of the new regime Gateways 2 and 3 – application to completion certificate* https://www.hse.gov.uk/building-safety/assets/docs/regime-overview.pdf Accessed 4/11/2023.

Table 3-1 Comparison of key documents required for new HRB building regulations processes for new HRBs and for undertaking works in existing HRBs

"Golden Thread" information	Gateway 1 (Planning, RIBA Stage 3)	Gateway 2 (pre-construction, RIBA Stage 4)	Gateway 3 (Pre-occupation, RIBA Stage 6)
a. HRB registration information i. Outline information relating to height, number of storeys and number of residential units in the building b. Key building information: i. More detailed information about height, number of storeys and use of the building ii. Outline information regarding materials used in the structure and external wall construction. iii. Outline information on the fire safety strategy, i.e. Evacuation strategy, number of staircases and the storeys they serve and a list of fire and smoke control equipment in the building, and their locations c. Building assessment certificate application: i. The most recent safety case report for the building; ii. Any residents' engagement strategy (relevant to fire safety as it supports the definition of the building occupancy profile). d. A list identifying each fire safety management measure, and a record of where each of those measures is located. e. The evacuation strategy for a building, and the associated information provided to residents f. A list identifying each structural safety measure in the building. g. The schedule of any maintenance and repairs that are planned in relation to any equipment, device or materials required to manage building safety risks h. The most recent reports relating to building safety risk inspections i. Any information recorded as part of the planning, design or construction of the HRB, including in particular— i. any design code applied, ii. any British or International building standard applied to and complied with in its construction; iii. any description as to the intention of the design used in its construction. **j.** The most recent RR(FS)O fire risk assessments, and any other fire risk assessments used to manage the risk of fire spread in the HRB **k.** Relevant building plans	*Fire statement*: a. Description of proposed development including any change of use b. Name of persons completing the *fire statement* and relevant qualifications and experience c. State what, if any, consultation has been undertaken on issues relating to the fire safety of the development; and what account has been taken of this d. Site layout plan e. Information about each building on the site in terms of height, number of storeys and use. f. Building information i. Standards relating to fire safety/ approach applied (including to external wall systems) ii. Balconies iii. External wall systems g. Resident safety information i. Approach to evacuation ii. Automatic suppression iii. Accessible housing provided h. Specific technical complexities i. Issues which might affect the fire safety of the development j. Fire service site plan k. Emergency road vehicle access l. Siting of fire appliances m. Suitability of water supply for the scale of development proposed	Building control approval application for HRBs a. where HRB work consists of work to an existing building, a description of the existing building including— details of its current use (by storey), height, the number of storeys, the number of flats, residential rooms and commercial units currently contained in the higher-risk building; b. For new HRBs, or works in existing HRBs, a description of the proposed HRB work, including— details of the intended use (by storey), height, number of storeys, the number of flats, residential rooms and commercial units it is proposed the higher-risk building will contain; c. such plans as necessary to show that the HRB work would comply with all applicable requirements of the building regulations; d. a competence declaration; e. **a *fire and emergency file*;** f. where the applicant proposes occupation of part of the building before completion of the HRB work, a partial completion strategy.	Completion certificate application for HRBs a. A description of the work, as built, including: location, use, height, number of storeys, number of flats b. a statement, signed by both the client and the relevant person, confirming that the information to be provided to the relevant person in accordance with regulation 38 (handover of information on completion etc) has been given and the relevant person has received the information. c. such plans that are necessary to show that the HRB work complied with all applicable requirements of the building regulations; **d. a *fire and emergency file*** e. a copy of the change control log updated to show all the changes for the project required by these Regulations to be included in the log, Information handover a. "BFLO information" i. where Part B of Schedule 1 to the 2010 Regulations imposes a requirement in relation to the work, the fire safety information; (other requirements under Parts F, L and O of the Building Regulations 2010 omitted for clarity) b. "specified golden thread information" i. a copy of the relevant completion certificate application in relation to the HRB work; ii. each document which under regulation 40 (completion certificate applications) is required to accompany the application (see cell above). c. "fire safety information" means information relating to— i. the design and construction of the building and the services, fittings and equipment provided in or in connection with the building; ii. the design of the material change of use and building work to implement it; iii. the composition of materials used, which will assist the responsible person to operate and maintain the building with reasonable safety;

3.3.91 In conclusion, the new legislation relating to control of any building work in HRBs sets out extensive and specific requirements for fire safety information. These requirements build on the existing requirements under CDM 2015 and the RR(FS)O, especially where works are proposed in existing and/or occupied HRBs.

3.3.92 While I note that the legislation has not specifically defined a "*fire safety strategy"* as a required document, it is my opinion that the requirements set out under the *fire and emergency file*, and the relevant fire safety requirements in Table 3-1, cannot be adequately addressed without a fire safety strategy being prepared by a competent fire safety engineer with relevant experience in the design and construction of HRRBs.

3.3.93 It is my opinion that the RIBA defined Fire Safety activities (see Table 3-1) continue to provide an appropriate scope for a fire safety engineer to adequately define and produce the required information for construction of new HRBs, and for works in existing HRBs.

3.3.94 BSA 2022 requirements for competence across the built environment

3.3.95 A core function of the BSR is industry competence, as set out in Section 6 of the BSA 2022:

6 Facilitating improvement in competence of industry and building inspectors

(1) The regulator must provide such assistance and encouragement as it considers appropriate to—

(a) persons in the built environment industry, and

(b) registered building inspectors,

with a view to facilitating their improving the competence of persons in that industry or members of that profession (as the case may be).

3.3.96 In support of this function, the BSA 2022 directly makes specific new provisions for industry competence under the following headings:

a. Enabling general competence requirements through amendment of the powers in the Building Act 1984 to create building regulations (BSA 2022 Section 35)

b. Making building control a regulated profession through amendment of the Building Act 1984 (BSA 2022 Section 42)

c. Requiring people appointed to deliver fire risk assessments under Article 9 of the RR(FS)O to be competent (BSA 2022 Section 156(4))

3.3.97 While items a. and b. above are now in force, I note that item c. **has been specifically excluded** from the Building Safety Act 2022 (Commencement No. 4 and Transitional Provisions) Regulations 2023 and so did not come into force from 1st October 2023, with all of the other amendments to the RR(FS)O set out in Section 156 of the BSA 2022.

3.3.98 It is not clear to me when this requirement relating to general competence is to be implemented, however I acknowledge that the Home Office (2023a)[17] notes that "*This legislative requirement will be brought into force at a later date*, and *that they will provide relevant guidance in that regard ahead of the commencement date*."

3.3.99 There are no plans to require Chartered Engineers to sign off on the fire safety strategy (at any stage of the works), nor any of the other new statutory fire safety information; therefore the ongoing competency changes through bodies such as the IFE (See Section 5 below) have no

[17] Home Office (2023a) Check your fire safety responsibilities under Section 156 of the Building Safety Act 2022 (accessible) https://www.gov.uk/government/publications/check-your-fire-safety-responsibilities-under-section-156-of-the-building-safety-act-2022/fire-safety-responsibilities-under-section-156-of-the-building-safety-act-2022#contents Accessed 29/10/2023

enforceable change potential. Coupled with the lack of clarification of the duty holder status of fire safety engineers and fire risk assessors this remains a serious concern regarding the likelihood of real change.

3.3.100 The BSR is required to set up a committee on industry competence to assist with monitoring and maintaining industry wide competence under Section 10 of the BSA 2022:

10 Committee on industry competence

(1) The regulator must exercise its powers under section 11A(3) of the Health and Safety at Work etc Act 1974 to establish and maintain a committee concerned with the competence of persons in the built environment industry ("industry competence"), with the following functions (and any other function that the regulator considers appropriate).

(2) The functions are—

(a) monitoring industry competence;

(b) advising the regulator in relation to industry competence;

(c) advising persons in the built environment industry in relation to industry competence;

(d) facilitating persons in the built environment industry to improve industry competence;

(e) providing guidance to the public (or a section of the public) about ways of assessing the competence of persons in the built environment industry;

(f) carrying out analysis and research in connection with a function mentioned in any of paragraphs (a) to (e).

3.3.101 I understand that this committee has now been constituted and is starting its meeting programme[18]. I have set out my opinion on the need for the fire safety engineering and fire risk assessment industry to be a regulated profession in Section 5 of this report. I recommend that the need for a regulated profession should become a standing item on the agenda of this committee.

3.3.102 Competence requirements for building control approvers in primary and secondary legislation

3.3.103 The BSA 2022 amends The Building Act 1984 to make building control a regulated profession. I understand that the following structure is intended:

a. Registered Building Control Approvers are private sector building control organisations;

b. Local authorities are public sector building control organisations;

c. The BSR is the building control body for HRBs;

d. Registered building inspectors are the individuals employed or contracted by a. and b. or c. above.

3.3.104 The new Part 2A of the Building Act 1984 requires the BSR to (noting the relevant section of the Building Act 1984):

a. Establish and maintain registers of building inspectors (Section 58C(1)) and building control approvers (Section 58O(1));

[18] "BSR's new Industry Competence Committee" https://buildingsafety.campaign.gov.uk/making-buildings-safer/building-safety-regulator-news/bsrs-new-industry-competence-committee/, Accessed 30/10/2023

b. Provide for different classes of building inspectors (Section 58C(2)) and building control approvers (Section 58O(3)) to allow for different required competencies, specialisms, levels of training and project types that may be worked on by those parties;

c. Prepare and publish codes of conduct for registered building inspectors (Section 58F) and building control approvers (Section 58R);

d. Make operational standards rules applying to local authorities and registered building control approvers (Section 58Z);

e. Monitor performance; and

f. Investigate contraventions of professional conduct rules (sections 58H and 58T) and impose relevant sanctions (Sections 58I and 58U).

3.3.105 Part 2A of the Building Act 1984 is now in force. The BSR records on their website[19]:

"From Spring 2024 building control bodies and professionals must follow mandatory codes and standards for building control."

3.3.106 The BSR has published the following interim guidance on their website (HSE, n.d.-b)[19]:

a. Strategic context for the regulation of building control

b. Building inspector competence framework (BICoF)

c. Code of conduct for registered building inspectors (RBIs)

d. Operational standards rules for registered building control approvers (RBCAs) and local authorities

e. Professional conduct rules for registered building control approvers (RBCAs)

3.3.107 As I have set out in Section 3.3.40 above, the intention of the new building regulations approval process specifically for HRBs is to introduce decision gateways (controls) in the process that cannot be passed through without confirmed approval from the BSR.

3.3.108 Gateway 2 prevents construction from starting before approval of the building design is granted. For new HRBs, Regulation 5 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023 sets a 12 week review period for Gateway 2. Regulation 12 of these regulations sets an 8 week review period for works in existing HRBs. Both of these periods may be extended by agreement between the BSR and the Client for the works.

3.3.109 Gateway 3 prevents occupation of the building before relevant approval of the building as constructed is gained. Regulation 41 of The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023 sets an 8 week review period for Gateway 3 for both new and existing HRBs. This period may be extended by agreement between the BSR and the Client for the works.

3.3.110 Therefore, the practical implementation of the new requirements on the competence of building control approvers will rely on the availability of adequately competent staff to enable the statutory time limits to be adhered to. This may affect project programmes at RIBA Stage 4 and RIBA Stage 6 in particular.

[19] Health and Safety Executive. (HSE, n.d.-b) "Building control professional codes and standards" https://www.hse.gov.uk/building-safety/building-control/codes-standards.htm Accessed 1/11/2023

3.3.111 The challenge for the BSR will be to impose, maintain, improve and enforce these new standards under pressure from government and industry to minimise the impact on project delivery schedules.

3.3.112 This is why there is a pressing need for change of the safety culture in the Built Environment.

3.3.113 Competence requirements for building design and construction in secondary legislation

3.3.114 As a result of the changes to the amendments to The Building Act 1984 set out in Section 3.3.94 above, The Building Regulations etc. (Amendment) (England) Regulations 2023 came into force on the 1st October 2023, inserting a new Part 2A into the Building Regulations 2010 titled *Dutyholders and competence.*

3.3.115 The new Regulation 11E sets out the general duty on competence as follows:

11E.—(1) This regulation applies where a person (P) is proposing to use any person (A) to carry out any building work or design work.

(2) Before permitting A to carry out any work—

(a) P must take all reasonable steps to satisfy themself that A—

(i) fulfils the requirements in regulation 11F(1) and (2) (competence: general requirement), or

(ii) is an individual who is in training to fulfil the requirements in regulation 11F(1) and (2) and arrangements have been put in place to supervise A, and

(b) where the work relates to a higher-risk building, P must—

(i) ask A whether a serious sanction has occurred, in relation to them, within the 5 years ending on the date of the appointment; and

(ii) consider any information available to P relating to any misconduct of A (including any serious sanction).

3.3.116 In addition to this general requirement, the following duty holders are defined: Client, Principal Designer, Designer, Principal Contractor and Contractor. Part 2A of the Building Regulation 2010 then sets out specific duties for each duty holder.

3.3.117 I note that the dutyholder names are the same as those used in the CDM Regulation 2015. The Government consultation on implementing the new building control regime for higher-risk buildings and wider changes to the building regulations for all buildings states:

Dutyholder requirements

General duties in design and construction

2.4 Under the proposed requirements, dutyholders will need to ensure that there are arrangements and systems in place to plan, manage and monitor both the design work and the building work to ensure compliance with building regulations.

2.5 They will be required to cooperate with other dutyholders, coordinate their work, and communicate and provide information to other dutyholders. They will also need to ensure they and those they appoint are competent (have the necessary skills, knowledge, experience and behaviours) to carry out the design work and building work they are engaged to do and only undertake work within the limits of that competence.

2.6 We have modelled the dutyholders and their duties on those in Construction (Design and Management) Regulations 2015 (CDM). CDM is embedded in the construction industry and has

driven a cultural and behavioural change in relation to compliance with health and safety requirements. The people and organisations procuring and undertaking the work in compliance with CDM are the same as those who should be considering compliance with building regulations, so these regulations will take a similar approach[footnote 1].

2.7 Although these are the same dutyholders identified by CDM for health and safety duties, we do not expect duplicate dutyholders, but they will need the right competence for the work they are engaged to do, and it should also be clear how the statutory roles have been allocated. For example, the client may decide to appoint a Principal Designer or Principal Contractor for CDM, and a Principal Designer or Principal Contractor for building regulations purposes after considering the different statutory requirements. The same person may also fulfil both roles if competent to do so.

2.8 Furthermore, one person can carry out more than one dutyholder role, for example a developer may carry out both the Principal Designer and Principal Contractor role for building regulations on a building project if they possess the required competencies to carry out the design and building work as per the appointment.

2.9 We propose that the following duties will apply to all dutyholders during design and construction, they must:

- *Plan, manage and monitor their work to ensure the building work complies with building regulations;*
- *Cooperate with other dutyholders (e.g. share information, have effective routes of communication, and support other dutyholders in achieving compliance with the regulatory requirements imposed by the new regime for higher-risk buildings, including meeting gateway two and three, golden thread and mandatory occurrence reporting requirements); and*
- *Ensure they and the people they appoint are competent (have the necessary skills, knowledge, experience and behaviours and where organisations are involved, the appropriate organisational capability) to carry out design work and building work they are engaged to do and only undertake work within the limits of that competence.*

3.3.118 There is a clear intention in Section 2.6 of the quoted text above that the CDM dutyholders will also be the dutyholders for the same named roles under the Building Regulations.

3.3.119 The general duty on competence that applies to each of these duty holders is:

Competence: general requirement

11F.—(1) Any person carrying out any building work or any design work must have—

(a) where the person is an individual, the skills, knowledge, experience and behaviours necessary,

(b) where the person is not an individual, the organisational capability,

to carry out—

(i) the building work in accordance with all relevant requirements;

(ii) the design work so that the building work to which the design relates, if built, would be in accordance with all relevant requirements.

(2) Any person carrying out any building work as a contractor or any design work as a designer must have—

(a) where the person is an individual, the skills, knowledge, experience and behaviours necessary,

(b) where the person is not an individual, the organisational capability,

to fulfil the duties of a contractor or designer, as the case may be, under these Regulations in relation to the work.

3.3.120 It is my position that fire safety engineers are designers as defined under CDM Regulations 2015, and now also under the Building Regulations 2010. My reports to the Inquiry have been submitted on that basis, however I am aware that there are other opinions in the industry.

3.3.121 I note that Regulation 11F makes the specific distinction between any person carrying out design work, and the specific "designer" duty holder carrying out design work, and assigns the same duties to both. However, based on the definitions of "design work" and "designer" in Regulation 2 (excerpted below), it is not clear to me how this distinction provides any further protection against parties that refuse to identify themselves as a designer.

"design work" means design of any building work;

"designer" means any person (including a client, contractor or other person referred to in Part 2A of these Regulations) who in the course of a business—

(a) carries out any design work, or

(b) arranges for, or instructs, any person under their control to do so;

3.3.122 I suggest that the Inquiry should recommend that fire safety engineers are specifically and expressly recognised in the legislative schemes as designers under both CDM and the Building Regulations. Without this, a loophole will continue to exist whereby all of the new requirements on competence, coordination and cooperation may be bypassed by those parties who refuse to self-identify as designers.

3.3.123 Specifically for Principal Designers and Principal Contractors, the competence requirements set out under 11F(1) are then effectively repeated in Section 11G and 11H, but referenced against the duties of those roles.

3.3.124 Regulation 11I also requires all duty holders to provide specific notifications to other duty holders in the event that they no longer satisfy the competence requirements.

3.3.125 These new competence requirements are now embedded in the Building Regulations approval process for new HRBs and where controllable works are undertaken on existing HRBs.

3.3.126 I am particularly concerned about the potential for a single individual to be appointed as Principal Designer under the CDM Regulations 2015 and under the Building Regulations 2010. In my experience, the expertise required to deliver the Principal Designer role under the CDM Regulations as they relate to health and safety on construction sites can be substantially different to that required to demonstrate that all of the relevant requirements of the Building Regulations have been complied with during the design and construction process, as per Building Regulation 11M:

Additional duties of a principal designer

11M.—(1) The principal designer must—

(a) plan, manage and monitor the design work during the design phase; and

(b) coordinate matters relating to the design work comprised in the project so that all reasonable steps are taken to ensure that the design is such that if the building work to which the design relates were built in accordance with that design the building work would be in compliance with all relevant requirements.

3.3.127 Principal Contractors also have new duties under the Building Regulations to demonstrate compliance, however it is my opinion that the role of Principal Contractor more clearly requires the appointment of multiple individuals to deliver this compliance on behalf of the organisation.

3.3.128 Competence declarations are required to be submitted alongside the HRB building control approval application at RIBA Stage 4/Gateway 2, as I have set out in Section 3.3.40 and Table 3-1 above. The specific requirements of the competence declaration are set out in Schedule 1 to The Building (Higher-Risk Buildings procedures)(England) Regulations 2023. In summary, the Client must sign a statement that they have taken all reasonable steps to satisfy themselves that the Principal Designer and Principal Contractor:

a) Comply with the relevant requirements of Part 2A of the Building Regulations in terms of competence; and

b) Confirm that the dutyholder has not been subject to *"serious sanction"* in the last 5 years.

3.3.129 For "*any other person, appointed in relation to the work*" (i.e. including Designers and Contractors), the competence declaration is limited to confirmation that the dutyholder has not been subject to *"serious sanction"* in the last 5 years.

3.3.130 In contrast, Building Regulation 14 *Applications for building control approval with full plans,* which applies when works are undertaken for/in all other new or existing buildings and the *applications for building control approval with full plans* route is selected, does not include even this limited requirement for demonstration of competence to be issued to the relevant building control body.

3.3.131 However, I acknowledge that Regulation 14 does at least require the identification of the principal designer and principal contractor (where known at the date of the application), and that those parties now have general competence requirements as well as specific competence requirements and duties identified under the new Part 2A of the Building Regulations.

3.3.132 In conclusion, and as I have set out in Section 5 of this report, given the current poor safety culture of the industry, I consider more substantial evidence of competence is required particularly for fire safety engineers and fire risk assessors and thus there is a strong case to regulate the fire safety profession.

3.3.133 Creating a new safety regime for HRBs in occupation

3.3.134 BSA 2022 Part 4 contains *"provisions about the management of building safety risks as regards occupied higher-risk buildings".*

3.3.135 By reference to Table 3-1, the new safety regime for HRBs in occupation applies during RIBA Stage 7 (Use).

3.3.136 For the purposes of Part 4 of the BSA 2022, HRB is defined as:

65 Meaning of "higher-risk building" etc

(1) In this Part "higher-risk building" means a building in England that—

(a) is at least 18 metres in height or has at least 7 storeys, and

(b) contains at least 2 residential units.

3.3.137 It is important to note that this is a different definition of HRB to that used by the Building Act 1984 amendment with respect to the new Building Regulations processes for building works in new and existing HRBs. This difference is also reflected in how HRBs are to be defined under Regulation 4 of The Higher-Risk Buildings (Descriptions and Supplementary Provisions) Regulation 2023 in terms of buildings in use compared to buildings undergoing works.

3.3.138 Building safety risk is defined in the BSA 2022 as follows (explanatory notes by me):

62 Meaning of "building safety risk"

(1) In this Part "building safety risk" means a risk to the safety of people in or about a building arising from any of the following occurring as regards the building—

(a) the spread of fire;

(b) structural failure;

(c) any other prescribed matter. [Note: no other matters are currently prescribed]

3.3.139 Part 4 of the BSA 2022 directly defines the new dutyholder roles of the Accountable Person (see Section 2.1.1) and Principal Accountable Person. As per Section 73 of the BSA 2022, each building must have a single Principal Accountable Person (PAP):

73 Meaning of "principal accountable person"

(1) In this Part the "principal accountable person" for a higher-risk building is—

(a) in relation to a building with one accountable person, that person;

(b) in relation to a building with more than one accountable person, the accountable person who—

(i) holds a legal estate in possession in the relevant parts of the structure and exterior of the building, or

(ii) is within section 72(1)(b) because of a relevant repairing obligation (within the meaning of that section) in relation to the relevant parts of the structure and exterior of the building.

(2) For the purposes of this section—

(a) the reference to "the relevant parts of the structure and exterior" of a building is to its structure and exterior except so far as included in a demise of a single dwelling or of premises to be occupied for the purposes of a business;

(b) the reference to "possession" does not include the receipt of rents and profits or the right to receive the same.

(3) Subsection (1)(b) is subject to section 75(2) (powers of tribunal where more than one accountable person is within subsection (1)(b)).

3.3.140 The BSA 2022 imposes the following duties on accountable persons (explanatory notes by me):

83 Assessment of building safety risks

84 Management of building safety risks

…

87 Mandatory reporting requirements [implementing the PAPs reporting process with the residents the AP is specifically accountable for]

88 Keeping information about higher-risk buildings

…

90 Provision of information etc on change in accountable person

…

92 Requests for further information

…

96 Contravention notices [powers for the AP to notify residents that are not complying with their duties under Section 85 of the BSA 2022]

…

109 Cooperation and coordination [between APs, the PAP and any responsible persons in the building as defined under the RR(FS)O]"

3.3.141 In addition to their duties as APs, PAPs have the following duties:

77 Occupation: registration requirement

…

79 Occupied building: duty to apply for building assessment certificate

…

82 Duty to display building assessment certificate etc

…

85 Safety case report

86 Notification and provision of report to the regulator

87 Mandatory reporting requirements [managing the building-wide reporting process to the BSR]

…

91 Residents' engagement strategy

…

93 Complaints procedure operated by principal accountable person

3.3.142 In summary, the BSA 2022 introduces 5 key processes that APs and the PAP must manage over the life of the building:

a. HRB registration

b. HRB safety case

c. HRB Building Assessment Certificate application

d. Resident engagement strategy

e. Information flow between BSR, PAP, APs, RPs, residents and any other relevant stakeholders in the building.

3.3.143 The BSA 2022 therefore creates an explicit set of duties on dutyholders to assess, manage and communicate risk in HRBs, and to have those processes overseen by the BSR as the industry regulator.

3.3.144 Fire safety engineers are critical to items Section 3.3.140b. and c. above, as they must define the fire risk in the building and therefore the requirements for active, passive and management-based measures that must be relied upon to control that risk to occupants, i.e. in the building fire safety strategy.

3.3.145 The expertise of fire safety engineers is also relevant in assessing risk to occupants where one or more of the required protection measures is demonstrated to be missing or faulty, and therefore

where the building fire safety strategy may need to change to account for the change in risk profile.

3.3.146 The work of the fire safety engineer then informs items in Section 3.3.140a. d. and e. in terms of the information that must be communicated to the other key stakeholders (BSR, residents, APs, RPs, etc).

3.3.147 I understand from Section 3.22 of the government consultation (DLUCH, 2023c)[20] that the intention is for the BSR to re-assess all HRBs at least every 5 years. In this way, the BSR should have the opportunity to comply with their own duties as stated in the BSA 2022 (see Section 3.3.29):

"3 The regulator: objectives and regulatory principles

(1) The regulator must exercise its building functions with a view to—

(a) securing the safety of people in or about buildings in relation to risks arising from buildings, and

(b) improving the standard of buildings."

3.3.148 It is important to note that the new regime can result in one person holding multiple duty holder roles, i.e. be a PAP, AP and Responsible Person, with differing duties arising under each in relation to fire safety. This creates an overlapping set of duties relating to fire safety, and also enables overlapping fields of scrutiny by the enforcing authorities of the RR(FS)O 2005 and the BSA 2022, the fire and rescue service and the BSR respectively.

3.3.149 The requirements of the BSA 2022 also provide explicit powers for residents in HRBs to scrutinise the information held about safety in their homes, and to escalate matters if it appears that one or more dutyholders is not complying with the relevant requirements.

3.3.150 Taken as a whole, the new requirements on those responsible for managing occupied HRBs should reduce the likelihood that failure or omission by a single party could lead to substantial failure in fire safety in any one building.

3.3.151 However, the complexity of the overlapping duties makes it even more important that clear prescriptive statutory guidance is urgently provided to all dutyholders on the purpose and extent of their duties.

3.3.152 Secondary legislation defining the HRB safety regime

3.3.153 Table 3-2 identifies the secondary legislation and guidance that has been published with details of how to comply with the core duties of the BSA 2022. In this table, I have also set out the key documents referred to in the legislation and guidance that are relevant to the work of a fire safety engineer.

3.3.154 Regarding guidance, the HSE has provided a range of web-based guidance that is hosted directly by the HSE (HSE, n.d.-c)[21] and also on the UK Government website (HSE, n.d.-d)[22]. I note there are more detailed guidance documents for *Assessing safety risks in high-rise residential buildings: a detailed guide* (HSE, 2023a); *Managing safety risks in high-rise residential*

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[20] Department for Levelling Up, Housing & Communities (2023c) Consultation on the new safety regime for occupied higher-risk buildings https://www.gov.uk/government/consultations/consultation-on-the-new-safety-regime-for-occupied-higher-risk-buildings/consultation-on-the-new-safety-regime-for-occupied-higher-risk-buildings#building-assessment-certificate, Accessed 30/10/2023

[21] Health and Safety Executive. (HSE, n.d.-c) "Building safety: Building safety reforms". https://www.hse.gov.uk/building-safety/index.htm, Accessed 1/11/2023

[22] Health and Safety Executive (HSE, n.d.-d). "Health and Safety Executive". https://www.gov.uk/government/organisations/health-and-safety-executive Accessed 1/11/2023

buildings: a detailed guide (HSE, 2023c)[23]; and *Safety management systems for high-rise residential buildings* (HSE, 2023d)[24].

3.3.155 I will not provide a detailed breakdown of all of the guidance here.

[23] Health and Safety Executive (2023c) Managing safety risks in high-rise residential buildings: a detailed guide https://www.gov.uk/government/publications/building-safety-guides-for-accountable-persons/managing-safety-risks-in-high-rise-residential-buildings-a-detailed-guide Accessed 04/11/2023

[24] Health and Safety Executive (2023d) Safety management systems for high-rise residential buildings https://www.gov.uk/government/publications/building-safety-guides-for-accountable-persons/safety-management-systems-for-high-rise-residential-buildings Accessed 04/11/2023

Table 3-2 Legislation and guidance for core BSA 2022 duties (as of 1/11/2023)

BSA 2022 duty	Supporting secondary legislation	Guidance provided?	Key information relating to fire safety referred to in regulation or guidance
65 Meaning of ”higher-risk building	The Higher-Risk Buildings (Descriptions and Supplementary Provisions) Regulations 2023	Yes	NA
77 Registration of HRBs	The Building Safety (Registration of Higher-Risk Buildings and Review of Decisions) (England) Regulations 2023 The Higher-Risk Buildings (Key Building Information etc.) (England) Regulations 2023	Yes	Building height, number of storeys and a reference to the completion certificate. A description of use of the building Outline information regarding materials used in the structure and external wall construction. Outline information on the fire safety strategy, i.e. evacuation strategy, number of staircases and the storeys they serve and a list of fire and smoke control equipment in the building, and their locations
79 Application for building assessment certificate	The Higher-Risk Buildings (Management of Safety Risks etc) (England) Regulations 2023	No	As per Section 79 of the BSA 2022, an application for a **building assessment certificate** must be accompanied by the current **safety case report** and relevant information regarding the **resident engagement strategy** and the **mandatory occurrence reporting system**.
87 Mandatory reporting requirements		No	NA
91 Residents engagement strategy		Yes	NA
93 Complaints procedure operated by the PAP		No	NA
84 Management of building safety risks in HRBs		Yes	No specific documents are named in regulations. The relevant guidance (HSE, 2023c) recommends the following documents are kept: A record of all relevant safety standards which were in place when your building was built and following any later refurbishments. Details of the original design and construction, including drawings. The types of refurbishment or other changes that have taken place. Evidence that building safety measures in place were designed, installed maintained and inspected by competent people, and in accordance with relevant legislation, standards and manufacturers recommendations. A **safety management system**. Evidence that anyone undertaking building works is competent, and review the impact those works may have on the HRB.

BSA 2022 duty	Supporting secondary legislation	Guidance provided?	Key information relating to fire safety referred to in regulation or guidance
85 Safety case report		Yes	As per Regulation 5 of The Higher-Risk Buildings (Management of Safety Risks etc) (England) Regulations 2023, the **safety case report** must specifically include: a. A description of the risks identified, their likelihood and consequence. b. A summary of how safety measures are tested and maintained c. A summary of the policies and procedures in place for managing works to the building, including for assuring the competence of designers and contractors appointed, quality of materials used and assessment and management of building safety risks whilst works are in progress d. A description of emergency plans in place for the building, including fire service equipment and an expectation with regard to residents and how they are to respond to a fire. In addition to the general building information set out above, the relevant guidance identifies the health and safety file required under CDM as a key source of information. The guidance also recommends the following additional information is kept: a description of the primary load-bearing system, for example, pre-cast planks on a steel frame; a description of the stability system, for example, concrete shear walls; the materials used on the outside of the building; the roofing material; the insulation material; access and escape routes; a description of the fire compartmentation. The guidance (HSE, 2023e) [25] also states: *"Resident profile* *You should keep information about your residents that can have an impact on building safety risks and emergency plans, for example, residents:* • *who cannot evacuate without help* • *whose first language is not English* ... *You need to keep a record of all the safety measures, which includes:* • *their design and installation* • *how they control building safety risks* • *their current condition* • *how they are managed and maintained* • *any impact on them from building alterations or refurbishments"*
88 Keeping information about HRBs	The Higher-Risk Buildings (Keeping and Provision of Information etc.) (England) Regulations 2023 **(currently in draft)**	Yes	This legislation sets out the key information to be held as part of the "Golden Thread", which is intended to form the basis of safety cases and dutyholder compliance. See Table 3-2 for details.
83 Assessment of building safety risks in HRBs	-	Yes	A document setting out the record of the building safety risk assessment. This should record and track any actions or recommendations until they are done, and store and maintain any new information. If potential additional measures are identified, but the PAP does not think they are reasonable, an explanation should be recorded.

[25] Health and Safety Executive (2023e) Safety case for a high-rise residential building https://www.gov.uk/guidance/safety-case-for-a-high-rise-residential-building Accessed 1/11/2023

3.3.156 In summary, to comply with the legislation, the PAP must record:

a. The fire risks relevant in the building;

b. The resident profile;

c. The evacuation strategy;

d. The active, passive and management-based fire protection measures in the building that control those risks;

e. The current condition of those measures and where in the building they are positioned;

f. How the measures are managed and maintained.

3.3.157 A specific requirement for a fire safety strategy is not stated, however it is my opinion that the information that the PAP requires to discharge their duties in occupied HRBs under the BSA 2022 could not be adequately defined without a comprehensive fire safety strategy report for a building.

3.3.158 Where an existing building does not have a fire safety strategy, a competent fire safety professional capable of understanding the relevant fire risks to occupants, and therefore adequately defining the protection measures, will be necessary. The resulting reporting on this is typically referred to as a retrospective fire safety strategy.

3.3.159 I explain in Section 5 the urgent need to mandate minimum information requirements in all forms of fire safety strategy report for the RIBA stages.

3.3.160 Other amendments to the RR(FS)O made by the BSA 2022

3.3.161 In addition to the requirement for competence that I have described in Section 3.3.94, the BSA 2022 amends the RR(FS)O to address the following issues:

a. Article 21A – Provision of information to residents of domestic premises

b. Article 22A – Provision of information to new responsible person

c. Amending Article 22 to require responsible persons to take "*such steps which are reasonably practicable*" to identify any other responsible persons in the premises;

d. Article 22B – Co-operation with accountable persons

3.3.162 These amendments do not fundamentally change the duties of the responsible person, but they clarify duties regarding information provision to residents in particular, and they also set the basis for cooperation and coordination between responsible persons and accountable persons under the BSA 2022.

3.3.163 <u>The Fire Safety (England) Regulations 2022 (FSER)</u>

3.3.164 These regulations (FSER) are not made under the BSA 2022; however they introduce a range of specific requirements on responsible persons of high-rise residential buildings and any buildings with two or more sets of domestic premises and common parts through which residents would need to evacuate in case of an emergency (of all heights) in occupation. Therefore, it is relevant to discuss them alongside the requirements of the BSA 2022.

3.3.165 The FSER is made under the powers of the RR(FS)O. These regulations implemented the majority of the recommendations made by the Inquiry in its Phase 1 report which required a change in the law; with notable exceptions being the recommendations relating to means of escape for persons requiring assistance in an evacuation.

3.3.166 The FSER applies specific requirements to the following building categories:

a. "*High-rise residential building"* (HRRB):

Meaning of high-rise residential building

3.—(1) In these Regulations "high-rise residential building" means a building containing two or more sets of domestic premises that—

(a) is at least 18 metres above ground level; or

(b) has at least seven storeys.

(2) For the purposes of paragraph (1)—

(a) the height of a building is to be measured to the height to the top storey in accordance with Appendix D to Approved Document B;

(b)when determining the number of storeys a building has—

(i) any storey which is below ground level is to be ignored,

(ii) any mezzanine floor is a storey if its internal floor area is at least 50% of the internal floor area of the largest storey in the building which is not below ground level, and

(iii) a storey is treated as below ground level if any part of the finished surface of the ceiling of the storey is below the ground level immediately adjacent to that part of the building.

b. Buildings greater than 11m in height, measured as per a. above; and

c. All buildings which contain two or more sets of domestic premises and which contains common parts through which residents would need to evacuate in case of emergency.

3.3.167 The way heights are measured to categorize HRRBs under the FSER differs slightly to how HRBs are measured under the BSA 2022. Therefore, I expect that there will be complex borderline cases where only one or other of the new sets of duties will be required.

3.3.168 For the purposes of my report, I describe the case where the relevant *responsible persons* in HRBs must also comply with the FSER.

3.3.169 Under the FSER, relevant *responsible persons* must:

a. Provide a secure information box for the purpose of storing relevant information for the fire service to use in the event of a fire in the building.

b. Prepare a record of the design and material in the external walls, including an assessment of any relevant risk that the external wall represents as required under Article 9 of the RR(FS)O.

c. Prepare building drawings for each level showing key fire-fire equipment (including lifts, rising mains, smoke control systems, suppression systems) (to be included in the secure information box).

d. Prepare a site plan showing fire service access and facilities, an overview of the building use and details of the area around the building (to be included in the secure information box).

e. Undertake routine monthly checks of lifts and essential fire-fighting equipment (including lifts, rising mains, smoke control systems, suppression systems, detection and alarm systems, evacuation alert systems, access control systems).

f. Report to the fire service any failures of lifts and essential fire-fighting equipment that cannot be rectified in 24 hours.

g. Provide clear wayfinding signage.

h. Display fire safety instructions for residents in the building, and provide this information directly to residents.

i. Provide information to residents about fire doors in the building.

j. Inspect all flat entrance fire doors every 12 months, and every fire door in common parts every 3 months (including checks of self-closing devices).

3.3.170 Items b, c and d above are also to be sent to the relevant fire and rescue service electronically.

3.3.171 The requirements of the FSER therefore provide a key set of information about the current condition of the active fire protection measures in a building. This will form an important input into the Golden Thread of information to be managed by the relevant APs and the PAP of an HRB.

3.3.172 The FSER also provides a core set of management and maintenance requirements around which the duty holders must develop the wider building safety management system.

3.3.173 In my opinion, in order for the responsible person to understand what measures are required to be maintained under the requirements of the FSER, a building fire safety strategy created by a competent fire safety professional will be required. A competent fire safety professional will also be required to develop the fire risk assessment relating to the external wall construction.

3.3.174 **Creating regulations relating to construction products**

3.3.175 Section 146 of the BSA 2022 states:

146 Construction products

Schedule 11 contains provision for regulations relating to construction products.

3.3.176 Schedule 11 of the BSA 2022 then sets out broad powers of the Secretary of State to implement regulations to control construction products, explicitly relating to safety.

3.3.177 At this time, the proposed National Regulator for Construction Products (NRCP) is still being formed as part of the Office for Product Safety and Standards (OPSS), as stated on the OPSS government website (OPSS, 2022)[26]:

In January 2021, the government announced that the Office for Product Safety and Standards (OPSS) would take on responsibility for the national regulation of construction products. This is in line with a recommendation made in the Independent Review of Building Regulations and Fire Safety led by Dame Judith Hackitt following the Grenfell Tower fire.

OPSS started work to establish the new Regulator in April 2021 and has begun to lead and coordinate work that will set a new regulatory approach for construction products. The intention is that the National Regulator for Construction Products (NRCP) will become fully operational once the Building Safety Bill and subsequent secondary legislation have been approved by Parliament. This new legislation would give OPSS all the necessary legal powers to carry out its duties as the Regulator in full.

3.3.178 As I have shown in my various reports to the Inquiry, correct selection of products and materials, based on robust evidence of fire performance, is fundamental to delivering fire safe buildings in practice.

[26] Office for Product Safety and Standards (2022) National regulation: construction products https://www.gov.uk/government/news/national-regulation-construction-products, Accessed 30/10/2023

3.3.179 I note the significant findings of the Independent Review of the Construction Products Testing Regime by Morrell and Day, as are captured in a report titled *Testing for a Safer Future: An Independent Review of the Construction Products Testing Regime* (Morell & Day, 2023) [27] published by DLUHC in April 2023; though will not cover this further.

3.3.180 An important function of competent fire safety professionals is assisting project teams in interpreting product certification, and checking that the proposed use of a product or system is appropriate for the purpose for which it proposed to be used in any specific building project.

3.3.181 The work of the NRCP will therefore have to focus on the creation of clear and robust methodologies for the purposes of making physical evidence relevant to building design, and how such evidence can also be used to assess product and system applications that do not match the configuration of standardised tests.

3.3.182 Clarity must be provided to manufacturers to allow them to confidently embark on fire testing in the knowledge that they are testing the right things and generating the right data for wider market application.

3.3.183 Clarity must also be provided on the competencies required to enable product evidence, product assessment and certification to be interpreted, and so be suitable for use in a broad array of buildings. The need for new materials, new products and new systems, are a fundamental part of a sustainable future.

3.3.184 As I have set out in Table 3-1, a key role of the competent fire safety professionals during RIBA Stage 5 (manufacturing and construction) is to help guide project teams in ensuring that all products and systems are fit for purpose in terms of delivering the correct fire safety outcomes. This requires a high level of competence, and experience.

3.3.185 **My conclusions regarding the Building Safety Act and other new legislation**

3.3.186 The BSA 2022 and associated reforms and new legislation is extensive, complicated and evolving. In Table 3-1 I have mapped out, in summary, where the new legislation relates to the RIBA Plan of Work.

3.3.187 I note that the new legislation has the potential to improve building safety, including for disabled persons and to set a framework to require higher standards of competence for some types of professionals responsible for designing, constructing, controlling, monitoring and influencing fire safety standards in buildings.

3.3.188 However, I have identified a range of areas where there is scope for confusion in the industry caused by overlapping or similar requirements in different parts of the legislation. I recommend that the BSR review all such cases where similar legislation uses slightly different definitions or measures, and revise the definitions as required to create alignment. For example, ensuring that building heights are measured consistently across Planning, AD B, the FSER and the BSA 2022. Similarly, there should be a consistent set of building height and/or complexity bands across building design and occupation where an increased level of scrutiny or additional protection measures become appropriate.

3.3.189 As yet there is also no guidance on the appropriate format or content for emergency plans and other information on fire safety being provided to residents. The guidance produced by the BSR sets general requirements for this information only, leaving it to each dutyholder to define for themselves what is reasonable for them to produce. I recommended in Chapter 11 of my Module 3 report {BLARP20000040} that the Inquiry panel explore this matter further when considering

[27] Morell,P. & Day, A. (2023) Testing for a Safer Future: An Independent Review of the Construction Products Testing Regime https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1151666/Independent_Review_of_the_Construction_Product_Testing_Regime.pdf accessed 4/22/2023

any future recommendations, to support the responsible person, for high rise blocks of flats, to improve current standards.

3.3.190 I have set out in my Phase 2 Module 1 report *Regulation 38 Fire Safety Information* {BLARP20000021}, my analysis of the requirements as they relate to work in existing buildings, and the interrelationships specifically between Building Regulations 3, 4, and 38 and the RR(FS)O:

9.4.5 If one reads Regulation 3 and 4 when contemplating works that are simply a like for like replacement (i.e. fully compliant with a standard from the relevant time and in a fully functioning condition), then it is easy to understand where the thresholds have been set for works to become controllable and why there are provisions which refer to works "not complying with a relevant requirement where previously it did" and work which "did not comply with a relevant requirement, being more unsatisfactory in relation to such a requirement.

9.4.6 As I read the Regulations, it is not the intention of them to simply require the previous standard of the works to be maintained if, over time, a fire protection measure has become damaged or was not at the time of its installation or construction compliant with the relevant standards.

[…]

9.4.12 Regulations 3 and 4 taken together, therefore identify in my opinion that:

a) Any alterations to a building because of work, or any part of that work, which would at any stage make a building more unsatisfactory or to become non-compliant with Parts BI, B3, B4 and/or B5 (but specifically not Part B2) of Schedule l are building work and therefore must be controlled; and

b) At the end of any such works, the building must comply with the requirements of Schedule 1 (i.e. Part B for Fire Safety and Regulation 38 [only if that work of the two types listed in 38(l)(a) and (b) and Part B imposes a requirement]) or be no less compliant than before the works began.

9.4.15 Again, in the absence of plain English, it is my interpretation this replacement can be to either the original compliance standard, or today's compliance standard. I assume that is the intention of the requirement in Regulation 4 "complies with the applicable requirements of Schedule I or, where it did not comply with any such requirement, is no more unsatisfactory in relation to that requirement than before the work was carried out."

9.4.22 It is my opinion that the only way a person intending to carry out works could understand if any alterations that they were proposing were or were not material in accordance with Regulation 3, would be:

(a) to very clearly derive why the current building condition, being considered, is still fully compliant with the relevant requirement at the time;

(b) prepare a works proposal where the requirement for the new works clearly complies with either provision Regulation (3) (2) (a) or (b), supported by technical evidence;

I and then approach a building control body (e.g. a local authority or approved inspector) and request an opinion as to if they agree with the application of Regulation 3, for the works proposed.

9.4.23 There is a body of opinion that no discussion with building control is required in this situation.

9.4.24 Ultimately a process like this is not defined anywhere.

9.4.25 I for one find the language around material alteration not clear in the Regulations. I am aware from my own experience, and as shown in the evidence I present in this report, that the interpretation of Regulation 3 varies widely.

9.4.26 I am also aware it is relied upon, to not make good, non-compliant fire protection features.

9.4.27 Regulation 3(2) also states "An alteration is material for the purposes of these Regulations if the work, or any part of it, would ***at any stage*** *result-...*

9.4.28 " I do not understand the meaning of ***at any stage*** *here; and so, I do not understand what is intended.*

9.4.29 Finally, it is my opinion that if re-installing a fire protection feature to an original standard, or simply leaving an old fire protection feature, of unknown status by relying on a "grandfathering" principle (as is the common belief of the purpose of Regulation 3), I do not agree that if the consequence of that, is the relevant persons cannot be protected, as required under the RR(FS)O, this is an acceptable state of affairs.

9.4.30 Nor do I read this as the intention of Regulation 3 in the first place.

9.4.31 I would welcome greater clarity on this in the Building Regulations now.

9.4.32 Regardless, currently if the fire door works proposal in my example, is demonstrated as either not building work, or is a material alteration, Regulation 38 does not apply in either case.

9.4.33 I do not understand why a person carrying out works that consists of a material alteration to any fire protection measure, is not required to provide fire safety information to the responsible person.

3.3.191 Consequently, when undertaking building work in existing buildings, the initial site appraisals should include works to confirm the status of compliance of existing fire safety measures in the building. This information should also then inform the full extent of building work required, and whether or not that will be controlled work.

3.3.192 In the future the legislation changes require key building information, safety case reports, and reports of mandatory incidents to be made available, as well as fire risk assessments, to help inform these initial site appraisals.

3.3.193 I would expect that in the future, any building work planned in HRBs must take account of the safety case prepared for it, and for that safety case to be reviewed to take account of the planned building work.

3.3.194 Unlike the fire risk assessment required under the RR(FS)O, the PAP must notify the BSR of any substantial changes in the safety case for an HRB. This creates an alternative route by which changes introduced through new building work may lead to scrutiny by the BSR.

3.3.195 This acts in parallel with any assessment by a Client of whether changes to a building are subject to a Building Regulations submission.

3.3.196 It is important there is clear guidance provided throughout industry to make sure these activities occur, and are carried out consistently.

3.3.197 I note that the BSA 2022 specifically states under *Section 84 Management of building safety risks* that (bold by me):

(1) An accountable person for an occupied higher-risk building must take ***all reasonable steps for the following purposes****—*

(a) preventing a building safety risk materialising as regards the part of the building for which they are responsible;

(b) reducing the severity of any incident resulting from such a risk materialising.

***(2) Those steps may in particular involve the accountable person carrying out works to the part of the building for which they are responsible**.*

3.3.198 I do not know how this is to be taken together with Regulation 3 and 4 and would prefer a clear statement to be made on this.

3.3.199 Regarding the need to clarify Building Regulations 3 and 4, I note the benefit of the specific definitions of relevant types of work set out in The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.

3.3.200 However, the Building Regulations remain unaltered in the context of the "non-worsening" principle and none of the new primary or secondary legislation amends this aspect. There is also no requirement to apply the statutory guidance in AD B in full on existing HRBs that are undergoing works. This will continue to cause variations in how Regulations 3 and 4 are applied in practice. It is important that the BSR provides guidance on this in future.

3.3.201 I can also foresee some challenges for buildings with multiple APs, where the PAP will arrange for the **safety case** to be prepared; if that **safety case** identifies building work *needing to be done* in areas of the building that are under control by different APs to the PAP. The complexity of contractual relationships between the different stakeholders in a building may prevent or substantially delay fire safety improvements being made to buildings if there is disagreement between APs as to what the "*reasonable steps*" are to take. Arup is already witnessing this in current project work.

3.3.202 The extent to which the BSA 2022 clarification that "*taking all reasonable steps may require carrying out works in the building*", when the existing Building Regulations 3 and 4 remain unaltered, still seems to me to be problematic and likely to lead to inconsistent interpretation of when further works will be required and thus is a potential weakness in the improvement potential for existing HRRBs.

3.3.203 Ultimately the reliability of leaving these provisions in the legislation, in an unchanged fire safety culture, remains a serious concern.

Table 3-3 Summary of RIBA Plan of work 2020 with text descriptions from the RIBA Plan of Work 2020 Template

RIBA Plan of Work Stage		RIBA Core tasks as per Plan of Work template	RIBA Core statutory processes	RIBA defined Fire Safety activities	Key deliverables requiring input from fire safety engineers (before 2017)	Key deliverables requiring input from fire safety engineers (after 1st October 2023) (See Section 3.1 for details)
0	Strategic Definition	Prepare **Client Requirements.** Develop **Business Case** for feasible options including review of **Project Risks** and **Project Budget.** Ratify option that best delivers **Client Requirements.** Review **Feedback** from previous projects. Undertake **Site Appraisals**.	Strategic appraisal of **Planning** considerations.	Undertake **Site Appraisals** to determine the high level fire safety suitability of the site against the **Client Requirements** including high level **Spatial Requirements**, particularly in relation to access and facilities for the fire service and means of escape. Identify relevant current and emerging global, European, national and local fire-related trends, policy and legislation. Review **Feedback** from previous projects. Define whether the client team require any specialist fire safety expertise.	Early ad-hoc guidance to Clients and design team members	
1	Preparation and Briefing	Prepare **Project Brief** including **Project Outcomes** and **Sustainability Outcomes, Quality Aspirations** and **Spatial Requirements**. Undertake **Feasibility Studies.** Agree **Project Budget.** Source **Site Information** including **Site Surveys.** Prepare **Project Programme.** Prepare **Project Execution Plan.**	Source pre-application **Planning Advice** Initiate collation of health & safety **Pre-construction information.**	Identify **Project Stakeholders** including building users, residents, building managers and facilities managers and seek **Feedback** on access requirements, occupant behaviour, and building use and maintenance requirements to inform the development of the Project Brief (as well as technical requirements to qualify for insurance and warranties). Develop overarching fire safety requirements to inform the **Project Brief**, including initial fire safety measures such as access and facilities for the fire service, and the number and location of cores. Source **Site Information** relating to fire safety including fire strategies for existing buildings (e.g. existing compartmentation arrangements). Use **Feasibility Studies** to confirm that the Project Brief can be accommodated on the site in accordance with the overarching fire safety requirements. Identify whether specialist fire safety expertise is required in the design team, include it within the **Responsibility Matrix** and appoint consultants		
2	Concept Design	Prepare **Architectural Concept** incorporating **Strategic Engineering** requirements and aligned to **Cost Plan, Project Strategies** and **Outline Specification.** Agree **Project Brief Derogations.** Undertake **Design Reviews** with client and **Project Stakeholders.** Prepare stage **Design Programme.**	Obtain pre-application **Planning Advice** Agree route to **Building Regulations** compliance. Option: submit outline **Planning Application.**	Develop the **Architectural Concept** to align with the fire safety strategy and the **Project Brief**, incorporating input from Project Stakeholders (end users, facilities managers, specialist consultants, building control bodies and the fire and rescue authority where appropriate), to identify and address the fire safety measures relating to means of warning and escape, external fire spread and access and facilities for the fire service. Include a record of key fire safety design decisions in the fire safety strategy as part of the **Stage Report.**	Concept fire safety strategy – Historically, the key focus was on exit stair and firefighting shaft (building core), space planning for major plant associated with e.g. sprinklers, placement and fire spread between buildings, not on fire spread over the surface of a building	Concept fire safety strategy focussing on the requirements for the *fire statement*, including: • Site layout • Fire service access and facilities • Occupant profile (including residents and cohorts who may require assistance to escape) • Building height and overall layout, e.g. building core layout • External wall design • Special fire hazards • Space planning for major plant associated with e.g. sprinklers
3	Spatial Coordination	Undertake **Design Studies, Engineering Analysis** and **Cost Exercises** to I **Architectural Concept** resulting in **Spatially Coordinated** design aligned	Review design against **Building Regulations**.	Undertake **Design Studies** and **Engineering Analysis**, with input from end users, facilities managers, specialist consultants (e.g. access consultant, subcontractors and the contractor if	Detailed fire safety strategy focussing on compliance with Parts B1 to B5 of the Building Regulations: • B1 Means of warning and escape	**Gateway 1 – Submission of *Fire Statement* (see Table 3-1)** Detailed fire safety strategy as per the items to the left, but with greater emphasis on:

RIBA Plan of Work Stage		RIBA Core tasks as per Plan of Work template	RIBA Core statutory processes	RIBA defined Fire Safety activities	Key deliverables requiring input from fire safety engineers (before 2017)	Key deliverables requiring input from fire safety engineers (after 1st October 2023) (See Section 3.1 for details)
		to updated **Cost Plan, Project Strategies** and **Outline Specification**. Initiate **Change Control Procedures.** Prepare stage **Design Programme.**	Prepare and submit **Planning Application**.	appointed, to I the design for fire safety and develop the fire safety measures in more detail). Undertake a **Building Regulations** review of Part B, Part A, Part M and Regulation 7 requirements, with input from the building control body and fire rescue authority where appropriate. Integrate the fire safety measures into a **Spatially Coordinated** design, aligned to **Feedback** from the fire service, and building insurers if required. Identify and record any risks to fire safety and mitigate any deviation from the Fire Safety Strategy and include key design decisions relating to fire safety in the **Stage Report**. Establish the input and responsibilities of specialist subcontractors required (e.g. fire stopping) to inform the **Procurement Strategy**.	• B2 Internal fire spread (linings) • B3 Internal fire spread (structure and compartmentation) • B4 External fire spread (between buildings and over the face of the building) • B5 Access and facilities for the fire service • Fire safety management • Scoping calculations for design aspects such as occupancy, external fire spread, structural fire engineering, internal fire and smoke spread • Local requirements (if any) e.g. Greater London Authority.	• Occupant characteristics • Materials making up the external wall • New local requirements, such as the London Plan
4	Technical Design	Develop architectural and engineering technical design Prepare and coordinate design team **Building Systems** information. Prepare and integrate specialist subcontractor **Building Systems** information. Prepare stage **Design Programme.**	Submit **Building Regulations Application**. Discharge pre-commencement **Planning Conditions.** Prepare **Construction Phase Plan** Submit form F10 to HSE if applicable.	Undertake technical design, including **Final Specifications**, to manufacture and construct a fire safe building, including passive and active fire protection measures, means of warning and escape, and access and facilities for firefighting. Prepare and coordinate fire safety technical design information including **Final Specifications** required to manufacture and construct the building, and review against any insurer/warranty provider requirements, and building use, management and maintenance requirements. Identify and contact suitable contractors, and name or nominate specialist fire protection and fire safety subcontractors. Include the fire safety requirements in tender information or **Employer's Requirements** and review tender returns or **Contractors Proposals,** including any alternatives proposed to reduce costs, against fire safety outcomes. Close down design risks in relation to the fire safety in use by the end of Stage 4. Address **Building Regulations** Part B, Part A, Part M and Regulation 7 requirements in full and submit a **Building Regulations Application**	Fully detailed fire safety strategy with all required calculations and analysis completed demonstrating how Parts B1 to B5 of the building regulations are complied with.	As per left, and including sufficient evidence to comply with Gateway 2 requirements. **Gateway 2 at end of RIBA Stage 4, requiring** • A Building Regulations compliance statement setting out the approach taken in the proposed HRB work, the building standards applied in relation to each element of the building and an explanation of why the approach is appropriate and achieves compliance with all applicable requirements of the building regulations. • A *fire and emergency file* demonstrating how compliance with the applicable requirements of Part B of the Building Regulations is to be achieved before construction begins.
5	Manufacturing and Construction	Finalise **Site Logistics.** Manufacture **Building Systems** and construct building. Monitor progress against **Construction Programme** Inspect **Construction Quality.** Resolve **Site Queries** as required. Undertake **Commissioning** of building. Prepare **Building Manual**.	Carry out **Construction Phase Plan.** Comply with **Planning Conditions** related to construction.	Manufacture and construct fire safety measures, informing operatives of the importance of proper workmanship, regularly inspecting the **Construction Quality**; insurers/warranty providers may be required to review and validate the works. No fire safety measures should be outstanding in the **Defects List** prior to **Practical Completion** being certified. Resolve fire safety **Site Queries**. Undertake **Commissioning** of fire protection and life safety systems, including fire detection, alarm and ventilation systems. Update fire safety information for inclusion in the **Building Manual**, including fire safety specific **Commissioning** and **Facilities Management** requirements (e.g. testing of ventilation systems).	No requirement for fire safety engineers to be appointed.	To provide assistance to the contractor and design team in ensuring that all relevant products and materials being relied upon by the building fire safety strategy meet the correct requirements and are installed in accordance with the manufacturers' testing and certification information. Where the nature of the building does not allow products and materials to be installed within their existing certification, the fire safety engineer must assist the project team in identifying how adequate evidence may be produced. A fire safety engineer is also required to support the statutory change control process required to agree design changes during construction with the BSR.

RIBA Plan of Work Stage		RIBA Core tasks as per Plan of Work template	RIBA Core statutory processes	RIBA defined Fire Safety activities	Key deliverables requiring input from fire safety engineers (before 2017)	Key deliverables requiring input from fire safety engineers (after 1st October 2023) (See Section 3.1 for details)
6	Handover	Hand over building in line with **Plan for Use Strategy** Undertake review of **Project Performance**. Undertake seasonal **Commissioning**. Rectify defects. Complete initial **Aftercare** tasks including light touch **Post Occupancy Evaluation.**	Comply with **Planning Conditions** as required.	Hand over the fire safety information in the **Building Manual** to the client. Review **Project Performance** to learn lessons on design and construction for fire safety from the **Feedback** gathered (e.g. on the management of fire information between members of the project team). Identify relevant fire safety training and maintenance requirements, and provide induction and training of building users and facilities managers. Close out any new defects that arise during the defects liability period as they relate to fire safety. Undertake an initial fire risk assessment to gather **Feedback** on the operation of fire safety design measures and management systems, and building user behaviour.	Building Regulation 38 fire safety information handed over to the relevant responsible persons	**Gateway 3 requiring** • A Building Regulations compliance statement setting out the approach taken in the proposed HRB work, the building standards applied in relation to each element of the building and an explanation of why the approach is appropriate and ensures compliance with all applicable requirements of the building regulations. • A ***fire and emergency file*** demonstrating how compliance with the applicable requirements of Part B of the Building Regulations has been achieved after construction is completed. • Building Regulation 38 fire safety information handed over to the relevant responsible persons. • HRB Regulation 38 fire safety information handed over to the relevant accountable persons and responsible persons. **Building Safety Act 2022 duties for (P)AP:** • HRB Registration and submission of Key Building Information • Safety case development • Resident engagement strategy development • Safety management strategy development **RR(FS)O duties for RPs of HRRBs (FSER 2022):** • Initial fire risk assessment • Secure information box and content • Define inspection and maintenance strategy for lifts and essential firefighting equipment • Ensure wayfinding signage • Define inspection and maintenance strategy for relevant fire doors • Provision of relevant information to the fire service
7	Use	Implement **Facilities Management** and **Asset Management** Undertake **Post Occupancy Evaluation** of building performance in use. Verify **Project Outcomes** including **Sustainability Outcomes.**	Comply with **Planning Conditions** as required.	Implement **Facilities Management** of building as set out in the Fire Strategy. Undertake regular fire risk assessments to gather **Feedback** on the operation of fire safety measures and management systems, and building user behaviour, to inform any subsequent management, maintenance or refurbishment works. Review and update the **Fire Safety Information** to reflect any management, maintenance and refurbishment works and updates to the fire risk assessment	Definition of retrospective fire strategies	Providing relevant input to support dutyholders in: • Definition of retrospective fire strategies • Review and audit of safety management systems • Review of existing construction • RR(FS)O Article 9 Fire risk assessments • Review of impact of proposed building works on the safety of occupants • Delivery of safety cases

3.4 The need for clear unambiguous guidance to enable compliance with the relevant requirements

3.4.1 The range of guidance types

3.4.2 The design and construction industry is required through interlocking and to an extent overlapping primary and secondary legislation to deliver buildings *securing reasonable standards of health and safety for persons in or about buildings*; and now, Section 84 of the BSA 2022 requires all Accountable Persons (APs) in a building (including the PAP) to "*take all reasonable steps*" to prevent a building safety risk materialising, and to reduce the severity of any incident resulting from such a risk materialising.

3.4.3 The volume and complexity of the legislation means that designers, contractors, all relevant trades and disciplines, should be able to rely substantially on statutory fire safety guidance to assist them in delivering fire safe solutions.

3.4.4 Instead, a range of guidance is available such as statutory guidance (the AD B), non-statutory guidance such as British Standards (e.g. specifically BS 9991 referred to in the AD B[28]) and other industry standards, which should establish what is "*reasonable*" and can safely be relied upon to meet all relevant requirements. But the evidence the Grenfell Tower Inquiry has heard shows that this is not always the case.

3.4.5 This in my opinion requires the statutory guidance to become clear, unambiguous, not open to interpretation, and thus enable consistency in the supply chain in achieving a final fire safe building condition.

3.4.6 While updates have been made to existing fire safety design guidance (see Section 4.3.11 below), there continue to exist substantial gaps and inconsistencies. I refer here only to a selection of the guidance documents that are relevant to my recommendations.

3.4.7 Statutory fire safety design guidance AD B has been updated multiple times since 2017, introducing new fire safety measures for residential buildings (both for new and for existing buildings, subject to individual interpretation of Building Regulations 3 and 4).

3.4.8 New requirements include an evacuation alert system to enable the fire and rescue service to move away from Stay Put, reducing the height for which sprinklers are to be required in residential buildings, and improving the fire performance of external walls of residential buildings under 18m.

3.4.9 Further updates are expected as 10 research streams are currently instructed by DLUHC[29] and are apparently to inform technical updates to AD B over the coming years.

3.4.10 However, the important point here is that the published guidance and research informing future updates of guidance will apply in full to new building work. How it will be implemented to existing buildings will depend on the interpretation of Building Regulations 3 and 4, and may not deliver long term improvements of building safety standards if the culture of misapplying the "*non-worsening*" principle prevails.

3.4.11 Fire risk assessment guidance has been added to, by a further fire risk assessment guidance document commissioned by DLUHC, PAS 9980:2022 *Fire risk appraisal of external wall construction and cladding of existing blocks of flats. Code of practice.*

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[28] Approved Document B 2019 incorporating 2020 and 2022 amendments references BS 9991 Fire safety in the design, management and use of residential buildings. Code of practice (2015).

[29] Department for Levelling Up, Housing and Communities (2022) Technical review of Approved Document B: 2022 progress update https://www.gov.uk/government/consultations/technical-review-of-approved-document-b-of-the-building-regulations-a-call-for-evidence/outcome/technical-review-of-approved-document-b-2022-progress-update Accessed 25/05/2023.

3.4.12 This Code of practice, supplements existing guidance documents that I have analysed as part of my work for the Inquiry. For example, the LGA Guide *Fire safety in purpose-built block of flats* (currently undated, but recorded as being revised 11th January 2023), PAS 79-2:2020 *Fire risk assessment, Housing, Code of practice*, HM Guides (Home Office, 2023b)[30], all of which remain in circulation.

3.4.13 Other fire risk guidance documents, including the fire risk assessment guide for small blocks of flats have been updated, or remain in the process of being revised (e.g. LGA Guide 2023 (Home Office, 2023c)[31]; PAS79-2**:** 2020 currently temporarily suspended and removed from sale by the BSI as it was agreed a full revision should be undertaken as a British Standard (BSI, 2021)[32]).

3.4.14 There is an array of non-statutory guidance notes such as those published by The Building Control Association (BCA) "*for designers and those working in Building Control* ***to assist in understanding and applying the Building Regulations"*** [33] (bold by me).

3.4.15 In addition to the guidance for building design, the HSE and the UK Government has published a range of guidance on how dutyholders are intended to comply with their duties under the BSA 2022 as they relate to HRBs. I have provided selected links to this guidance in Section 3.3.152 above.

3.4.16 The disparity in guidance between new and existing buildings

3.4.17 The available guidance to industry to address fire safety in existing buildings is limited; this state of affairs is not helpful to the new BSR tasked with discharging its duty to improve building safety standards of **all** buildings, in line with their remit defined in Part 1 Article 1 of the BSA 2022 which states:

This Act has 6 Parts, and contains provisions intended to secure the safety of people in or about buildings and to improve the standard of buildings.

3.4.18 The factsheet published on gov.uk on the BSR's approach to enforcement[34] makes clear that the BSR's Aims and Objectives are (bold by me):

The Building Safety Regulator will:

- *implement a new, more stringent regulatory regime for high-rise buildings in England*
    - *being the building control authority in England for building work on high-rise buildings*
    - ***overseeing and enforcing the new regime in occupation*** *of high-rise buildings*
- ***oversee the safety and performance of all buildings.*** *This has two aspects:*
    - *overseeing the performance of other building control bodies (local authorities and registered building control approvers (currently known as approved inspectors))*

[30] Home Office (2023b) Fire safety: guidance for those with legal duties https://www.gov.uk/government/collections/fire-safety-legislation-guidance-for-those-with-legal-duties Accessed 25/05/2023.

[31] Home Office (2023c) Fire safety in purpose-built blocks of flats https://www.gov.uk/government/publications/fire-safety-in-purpose-built-blocks-of-flats#full-publication-update-history. Accessed 7/11/2023.

[32] British Standard Institution (2021) Statement: PAS 79-2 - Fire risk assessment. Housing. Code of practice https://www.bsigroup.com/en-GB/about-bsi/media-centre/press-releases/2021/august/statement-pas-79-2----fire-risk-assessment.-housing.-code-of-practice/ Accessed 25/05/2023.

[33] Building Control Alliance "A range of guidance" https://buildingcontrolalliance.org/guidance-documents/ Accessed 18/05/2023 and 29/10/2023.

[34] Health and Safety Executive (2022) Building Safety Regulator approach to enforcement: factsheet https://www.gov.uk/government/publications/health-and-safety-executive-factsheets/building-safety-regulator-approach-to-enforcement-factsheet Accessed 25/05/2023.

- ***understanding and advising on existing and emerging*** *building standards and safety risks*

- *promote competence among industry professionals and regulators to raise standards in the design, construction, and management of buildings.*

3.4.19 Overall the benchmark of what is considered reasonable for new-build HRRBs has evolved substantially since 2017. In Table 3-4 I set out a comparison of the fire safety provisions recommended by AD B in HRRBs in England before and after 2017, for buildings with a top storey over 18m and for medium rise buildings with a top storey between 11 to 18m.

Table 3-4 Comparison of fire safety provisions in blocks of flats in England before and after 2017 in Statutory Guidance (AD B)

Fire safety provisions in new-build residential buildings	AD B 2006 Edition including 2010 and 2013 amendments. Top storey >= 18 m	AD B 2019 Edition including 2020 and 2022 amendments. top storey >= 18 m	AD B 2006 Edition including 2010 and 2013 amendments. top storey 11 to <18 m	AD B 2019 Edition including 2020 and 2022 amendments. top storey 11 to <18 m
	Before 2017	After 2017	Before 2017	After 2017
Fire resisting construction required to separate each flat, common corridor and stair	Yes	Yes	Yes	Yes
Sprinkler system required	Not up to 30m, unless added to permit open-plan kitchen / living	Yes	Not up to 30m, unless added to permit open-plan kitchen / living	Yes
Purpose of Internal firefighting access provisions	Sufficient means of access into and within, the building for firefighting personnel to effect search and rescue and fight fire.	Access into and within the building for firefighting personnel to both: i. search for and rescue people; ii. fight fire	Sufficient means of access into and within, the building for firefighting personnel to effect search and rescue and fight fire.	Access into and within the building for firefighting personnel to both: i. search for and rescue people; ii. fight fire
Firefighting shaft with protected and ventilated lobby/corridor and firefighting lift	Yes	Yes	No In low-rise buildings fire and rescue service personnel access requirements will be met by a combination of the normal means of escape and the measures for vehicle access, which facilitate ladder access to upper storeys.	No In low rise buildings, access for firefighting personnel is typically achieved by providing measures for fire service vehicle access and means of escape.
Fire main	Yes	Yes	No	No
Way finding signage for the fire service	No	Yes	No	No

Fire safety provisions in new-build residential buildings	AD B 2006 Edition including 2010 and 2013 amendments. Top storey >= 18 m	AD B 2019 Edition including 2020 and 2022 amendments. top storey >= 18 m	AD B 2006 Edition including 2010 and 2013 amendments. top storey 11 to <18 m	AD B 2019 Edition including 2020 and 2022 amendments. top storey 11 to <18 m
	Before 2017	After 2017	Before 2017	After 2017
Secure information boxes for use by the fire service during an incident.	No	Yes	No	No
The external wall to meet the A2 or better reaction to fire performance specified for external walls > 1m from boundary	No	Yes A2-s1,d0 now required by law	No	Yes A2-s1,d0 included in AD B
Two separate and protected escape stairs (where travel distances in the lobby / corridor are *compliant* with single direction limits)	No	Confirmed for future update of AD B, based on Written Ministerial Statement by Rt Hon M Gove (UK Parliament, 2023) [35]	No	No
Two separate and protected escape stairs (where travel distances in the lobby / corridor are *not compliant* with single direction limits)	Yes	Yes	Yes	Yes
Evacuation strategy – Stay Put	A high degree of compartmentation and therefore a low probability of fire spread beyond the flat of origin, so that simultaneous evacuation of the building is unlikely to be necessary	Simultaneous evacuation of all flats is unlikely to be necessary due to compartmentation. Provisions are recommended to support a Stay Put evacuation strategy for blocks of flats; Provisions made for the fire and rescue service to change from Stay Put	A high degree of compartmentation and therefore a low probability of fire spread beyond the flat of origin, so that simultaneous evacuation of the building is unlikely to be necessary	A high degree of compartmentation and therefore a low probability of fire spread beyond the flat of origin, so that simultaneous evacuation of the building is unlikely to be necessary

[35] UK Parliament (2023) Building Safety Update Statement made on 24 October 2023 Statement UIN HCWS1090 https://questions-statements.parliament.uk/written-statements/detail/2023-10-24/hcws1090, Accessed 29/10/2023

Fire safety provisions in new-build residential buildings	AD B 2006 Edition including 2010 and 2013 amendments. Top storey >= 18 m	AD B 2019 Edition including 2020 and 2022 amendments. top storey >= 18 m	AD B 2006 Edition including 2010 and 2013 amendments. top storey 11 to <18 m	AD B 2019 Edition including 2020 and 2022 amendments. top storey 11 to <18 m
	Before 2017	After 2017	Before 2017	After 2017
Additional evacuation strategy triggered by the fire and rescue service	No	Yes via an evacuation alert system Provisions are recommended to enable the evacuation of sections of a floor (in a large building), individual floors, or the entire building	No	No
Evacuation lift for occupants unable to use the stairs, in addition to the firefighting lift	Yes through General Provisions (evacuation lift or firefighting lift)	No. Noting for London, per local planning policy set out in the 2021 London Plan	No	No. Noting for London, per local planning policy set out in the 2021 London Plan
Refuge provided for each stair way	No	No	No	No

3.4.20 The issue of cherry-picking from project to project

3.4.21 The ambiguity caused by having multiple statutory and non-statutory guidance and non-mandatory standards covering the same ground, (AD B and via the British Standard BS9999 and BS9991), along with the quality of available fire risk assessment guidance for the in-occupation stage of buildings, enables cherry picking and misapplication of the limited prescriptive guidance available, and thus enables the culture of non-compliance to prevail.

3.4.22 AD B continues to acknowledge the risk of misapplication (cherry picking) where there are multiple overlapping guidance documents available, by clarifying, as set out in AD B Vol. 1 (2019, including 2020 and 2022 amendments) Section 0.9 (bold by me):

0.9 The fire safety requirements of the Building Regulations will probably be satisfied by following the relevant guidance in this approved document. However, approved documents provide guidance for some common building situations, and there may be alternative methods of complying with the Building Regulation requirements.

If alternative methods are adopted, the overall level of safety should not be lower than the approved document provides. *It is the responsibility of those undertaking the work to demonstrate compliance.*

If other standards or guidance documents are adopted, the relevant fire safety recommendations in those publications should be followed in their entirety*. However, in some circumstances it may be necessary to use one publication to supplement another. Care must be taken when using supplementary guidance to ensure that an integrated approach is used in any one building.*

3.4.23 The guidance does not explain or mandate reasonable basis for design

3.4.24 Whilst design for the anticipated building use, i.e. occupants, and also the fire and rescue service, must be treated as a building design parameter, little integration with operational capability or operational needs for firefighters and little user centred design to capture the needs

of occupants (esp. vulnerable people) in a fire emergency has prevailed in the commonly adopted fire safety solutions.

3.4.25 In my opinion this was particularly illustrated through the final arrangements at Grenfell Tower where an ACM polyethylene panel was used on the external wall of a building with only Stay Put evacuation arrangements in place; in the final condition of the smoke control system which did not incorporate the relevant compartmentation requirements; and the lack of specific fire safety arrangements made for every period of building work (e.g. lift replacement works in 2004 - 2006 etc) that took place in the life time of Grenfell Tower (Section 4.3 of my Phase 1 report *Overview of building works at Grenfell Tower, including recent refurbishment* {BLAS0000004}).

3.4.26 I set out at length in my Module 7 report {BLARP20000043} the consequences of profoundly differing standards of professional practice as relate to routes to compliance prevalent in the industry. Examples include the mixing of guidance, the absence of standard operational design scenarios for the specification of smoke control systems, and finding loopholes in legislation and guidance documents to lower performance objectives.

3.4.27 There is no requirement for example, even today, that sets out what operational scenarios a smoke control system should be designed for as a minimum in HRRB (this was argued at length in Module 7 with respect to door positions, damper performance, amongst other detailed characteristics of smoke control systems).

3.4.28 This is even more important now, given the different forms of evacuation strategy which may be in place in new or existing HRRBs. For new build, AD B 2020 recommends stay-put explicitly for new HRRBs (unlike AD B 2013) but with the provision of an evacuation alert system for use by the fire and rescue service to allow them to trigger a different evacuation strategy.

3.4.29 HSE guidance on Key Building Information (HSE, 2023f)[36] required for registration of new and existing HRBs notes the evacuation strategy could be *phased, progressive horizontal, simultaneous, stay put or temporary simultaneous,* which create the need for different smoke control performances through door opening positions etc.

3.4.30 I have identified in Section 3.3 terms and definitions that have been brought in with the new legislation and guidance that may lead to confusion in the industry, such as:

a. How building heights are measured.

b. How fire safety information is defined.

3.4.31 There is no rigour in the terms and definitions relied upon in the guidance

3.4.32 Fundamental terms relied upon in statutory fire safety guidance, such as "*common building*" referred to in the Introduction and also Section 0.9 of AD B 2019 (as amended), still remain only generally described, rather than clearly defined.

3.4.33 I have set out at length in my Module 3 report *The management and maintenance of Grenfell Tower Chapter 9 KCTMO's duty to create a system of emergency planning - The resulting emergency plan for Grenfell Tower* {BLARP20000028} the conflicting definitions of "*Complex Buildings*". Complex Buildings are still referred to in the Introduction to the AD B "*How to use this approved document*"; noting that buildings of high levels of complexity may ultimately be a *non-standard condition* to which AD B apparently does not relate. Section 19 in AD B 2019 (as amended) which refers to Regulation 38 Fire safety information, also continues to rely on this term without definition.

[36] Health and Safety Executive (2023f) Building Safety Regulator: giving us structure and safety information (key building information) https://www.gov.uk/government/publications/giving-bsr-structure-and-fire-safety-information-key-building-information/building-safety-regulator-giving-us-structure-and-safety-information-key-building-information Accessed 19/12/2023.

3.4.34 So too does the LGA Guide (2021 edition) which is still published by the government as providing fire risk assessment guidance for the RR(FS)O 2005.

3.4.35 Ultimately the ambiguity and confusion regarding statutory guidance has not been resolved since the Grenfell Tower Fire.

3.4.36 In AD B 2019 it states with no definitions provided (bold by me):

How to use this approved document

Each approved document contains:

• general guidance on the performance expected of materials and building work in order to comply with each of the requirements of the Building Regulations, and

*• **practical examples and solutions on how to achieve compliance** for some of the more common building situations.*

*They may not provide appropriate guidance if the case is unusual in terms of its design, setting, use, scale or technology. **Non-standard conditions may include** any of the following:*

• difficult ground conditions

*• buildings with **unusual occupancies or high levels of complexity***

• very large or very tall buildings

• large timber buildings

• some buildings that incorporate modern construction methods.

3.4.37 The AD B continues to state you do not need to follow it

3.4.38 In 2020 the MHCLG published the Manual to the Building Regulations[37] updated after 19 years; with the earlier version published in 2001 and relating to the Building Regulations 2000[38]; it states that (bold by me):

*The approved documents give more detailed advice on how to meet the legal requirements of the Building Regulations for some common situations…The approved documents may not be relevant for all situations…**You do not have to follow the guidance in approved documents**, but if you don't **you need to be sure** that **your** building **work meets the legal rules**. Following the approved documents **does not always guarantee** that you are complying with the Building Regulations."*

3.4.39 There is no formal framework for how to formulate an alternative solution and to what required standard.

3.4.40 In light of all the additional relevant requirements I have summarised in this Section 3, this continuing ambiguity is extraordinary.

3.5 Current framework for delivering fire safety oversimplifies the extent of the ramifications of dealing with fire safety requirements

3.5.1 In summary, the statutory processes set out in primary and secondary legislation, supported through statutory, non-statutory and industry guidance, can be assigned to each Stage of the RIBA Plan of Work, as I have set out in this report.

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[37] Department for Levelling Up, Housing and Communities (2020) Manual to the Building Regulations https://www.gov.uk/government/publications/manual-to-the-building-regulations Accessed 29/10/2023.

[38] NBS "Manual to the Building Regulations. 3rd edition". https://www.thenbs.com/PublicationIndex/documents/details?DocId=255225. Accessed 8/11/2023.

3.5.2 In framing the legislation and guidance in this way, it can be considered as the current framework available to guide the delivery of HRRB fire safety to the point of handover and beyond into occupation; including the information required for the responsible persons, accountable persons and the principal accountable person to manage the occupied building.

3.5.3 The relative simplicity of the structure provided through the RIBA Plan of Work, hides the deep complexity of delivering building fire safety throughout all the project stages, which relies fully on keeping track of the level of specification and communication of same to so very many different parties, in order to ensure robust compliance with the myriad of primary and secondary legislation.

3.5.4 In occupation, residents must be informed of and understand the fire safety measures in the building and the evacuation procedures to follow in a fire emergency. Ongoing holistic fire risk assessment and investment in fire safety by the duty holders is then important in order to maintain the necessary fire safety standards throughout what is the dynamic nature of the building and its components with time, and the changing risk profile of building residents over time.

3.5.5 When undertaking building work to existing buildings the complexity is even greater as there remain multiple routes to compliance, depending on who is employed to complete the work, and the type of the work (see Figure 3-2). The expectation is that the applicant is to decide what is the right compliance route which I consider to be unreasonable.

3.5.6 As described in the Section 3.4, the system will become more complicated, while the ambiguities I have previously identified in Regulations 3 and 4 continue in place.

3.5.7 The extent of duty to provide for fire safety upgrades in existing buildings has not been made any clearer in the updates to the statutory guidance. The safety case, now a statutory requirement, would need to conclude that additional fire safety measures are required in an existing building – and currently this all relies on interpretation of the meaning of "*all reasonable steps*".

3.5.8 As shown in this Section 3 of this report, there is a substantive quantity of new legislation and even greater complexity through the volume of the changes being made, the staggered nature in which they are being introduced through a process of amendments to numerous existing primary and secondary legislation, as well as the ongoing introduction of new secondary legislation.

3.5.9 We must accept, despite its notably good intention to cause change, it is all being placed upon an industry that has not yet demonstrated a consistent commitment to change (See Section 6 below).

3.6 The built environment as a complex system

3.6.1 This section explores the increasing complexity of fire safety, and the built environment, and shows the potential impact of megatrends shaping the future, on this complexity.

3.6.2 It is proposed that we need to adopt a systems approach to fire safety and I refer to an example of an international fire safety ecosystem that could be adopted or adapted for England. "*Complex system*" and "*systems thinking*" are defined in Figure 3-4.

The UK Government Office for Science's guidance document "*Introduction to systems thinking for civil servants"* (Government Office for Science, 2023) provides a useful definition of complex systems and systems thinking as follows (bold by me):

What is a complex system?

Complex systems behave in a way that is greater than the sum of their parts – you can't understand the system just by looking at individual elements, it needs to be studied as a whole. Likewise **in complex systems there are underlying patterns – feedback loops – which mean that it becomes difficult to relate cause to effect and actions to consequences**.

Examples of these kinds of systems are the human brain, weather, economies. But a lot of policymaking is also complex and attempts to understand and influence policy need to take this complexity into account. Thus systems thinking is increasingly being promoted as a key tool for policymakers to be aware of.

Our systems thinking definitions:

A system is a set of elements or parts interconnected in such a way that they produce their own pattern of behaviour over time. **Systems thinking is a framework for seeing the interconnections in a system and a discipline for seeing and understanding the whole system; the 'structures' that underlie complex situations.** It is a collection of tools and approaches that help support us in thinking systemically about our work. Systems thinking is particularly powerful when applied to complex systems. By creating simple models of complex systems, systems thinking can be a useful building block towards understanding and visualising data flows within a system.

Figure 3-4 Definition of "*complex system*" and "*systems thinking*"

3.6.3 The built environment as a complex system

3.6.4 In their simplest form, towns and cities are comprised of layers of infrastructure and an array of buildings built at different times through history for different purposes related to living, working and recreation.

3.6.5 Williams (2013)[39] with reference to other authors explains the complexity of the built environment:

The built environment, comprised of the physical structures and elements of man-made living, working, travelling and recreational environment, is a complex and multi-layered system governed by a web of ecological, social, cultural, economic, and political relationships. These relationships operate at multiple scales from individual households to neighbourhoods to entire metropolitan regions, thus adding to the level of complexity, risk and unpredictability inherent in urban systems.

3.6.6 Romice et al (2022)[40] also discuss the complexity of the built environment:

Urban environments are complex, impacting on climate change, social justice and health globally and locally. Their spatial, social, economic, environmental dimensions are interlinked and must be studied from a complexity viewpoint.

[39] Williams, L.M. (2013) Getting To Know The Built Environment As A Complex System. https://www.wellesleyinstitute.com/wp-content/uploads/2013/12/Getting-To-Know-The-Built-Environment-As-A-Complex-System.pdf Accessed 17/10/2023.

[40] Romice, O. Rudlin, D. AlWaer, H. Greaves, M. Thwaites, K. Porta, S. (2022) Setting urban design as a specialised, evidence-led, coordinated education and profession. Proceedings of the Institution of Civil Engineers - Urban Design and Planning 2022 175:4, 179-198 https://doi.org/10.1680/jurdp.22.00023 Accessed 17/10/2023.

3.6.7 Stressors such as the Covid-19 pandemic combined with consumers moving to online shopping and therefore leaving office buildings and retail units vacant or redundant is adding to the complexity of the built environment and the need for planning adaptation to accommodate this flux and complexity (Muldoon-Smith &Moreton (2022)).[41]

3.6.8 However, while "*complexity has successfully entered urban scholarship and practice in many fields", urban form i.e., the physical form of an urban environment or city, including its buildings, "is not yet studied in these terms and consequently they are not yet designed as complex."* (Romice et al (2022))

3.6.9 Jackson (2019) [42] explains that due to the interconnections between parts of a complex system, "*attempts to address problems in one part of the system often lead to unforeseen consequences*." Jackson quotes philosopher Churchman who in 1968 wrote:

> *"The problem is very simple: How can we design improvements in large systems without understanding the whole system, and if the answer is that we cannot, how is it possible to understand the whole system."*

3.6.10 From the evidence presented to the Grenfell Tower Inquiry, it is however clear that currently the professionals involved in the built environment do not think systematically about the possible impact or consequence of their work on the broader system, instead seeing and conducting their work in isolation.

3.6.11 It is this need to understand the whole system so that the interconnections and unforeseen consequences of activities and actions on other parts of the system can be understood, that underlies the need for a systems approach to understanding and managing the complexity of fire safety.

3.6.12 To produce the change needed post-Grenfell (and based on the evidence heard in the Inquiry), the boundaries of the "*whole system"* need to extend beyond considering a single building (which is itself a complex system) and extend to the broader system of the built environment.

3.6.13 The system must include accountability at all relevant levels of Government, an informed and prepared fire and rescue service and an informed public – I explain this point in Section 6 below.

3.6.14 I will illustrate the complexity and interconnectivity of the fire safety system in the context of the Built Environment (Section 3.6.25) to set out the importance of adopting a whole system approach to fire safety; and so show why there is the need to mitigate against possible unforeseen consequences of attempting to address problems in one part of the system, without understanding the impact on the system as a whole.

3.6.15 Before doing so, I will briefly explain some key megatrends shaping the future as these are adding even more complexity and thus re-enforce the need to take a systems perspective. It is important to consider any and all post-Grenfell changes in the context of a changing world.

3.6.16 Key megatrends shaping the future adding further complexity

3.6.17 Post-Grenfell recommendations will be implemented in the context of pressing global and regional (mega)trends adding further complexity for delivering fire safety.

3.6.18 The Inquiry, Government and industry should consider a longer-term perspective in writing recommendations to take account of the impact of these trends. This will help to understand the changing nature of risks and hence make recommendations that will endure into the future. It will also provide an opportunity to seek efficiencies by tackling issues holistically and in an integrated manner.

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[41] Muldoon-Smith, K., & Moreton, L. (2022). Planning Adaptation: Accommodating Complexity in the Built Environment. Urban Planning, 7(1), 44-55. doi: https://doi.org/10.17645/up.v7i1.4590 Accessed 17/10/2023.

[42] Jackson, M. (2019) Critical Systems Thinking and the Management of Complexity.

3.6.19 Such trends are often considered as part of a STEEP (Social, Technical, Economic, Environmental and Political) context.

3.6.20 For this report Arup's foresight team have outlined several key STEEP factors or trends that are shaping the future of housing in the UK as summarised in Figure 3-5; Arup relies on these trends, and I provide them for context here only.

Trends shaping the future of housing in the UK

Social

Demographic change and urbanisation
- Ageing population
- Backlog of missing homes
- Student housing supply shortage

Recalibration of work, life, and place
- Flexible and hybrid homes
- Multifunctional homes
- Multigenerational homes

New housing models
- Micro housing
- Holiday lets
- High-rise buildings

Worsening living standards, poverty, and inequality
- Over crowding
- Patterns in home ownership
- Lack of accessible housing
- Housing standards impact on health

Technology

Increasing pressure to retrofit
- Social Housing
- Retrofit prioritisation
- Adaptive reuse

Growing digitalisation and connectivity
- Internet of things
- Digital twins

Modern methods of construction
- Automation and robotics
- Innovation homebuilding technologies
- Modular, adaptable housing
- High-tech materials

Decarbonising homes
- Green buildings and efficient homes
- Social housing
- Carbon sequestering materials

Energy transition
- Renewable energy
- Diverse, decarbonised, and energy sources
- Intelligent buildings and energy monitoring

Economic

Impairment by inflation
- Increasing house prices
- Rising interest rate for mortgages and loans
- Rental sector, homelessness and housing benefits
- Wider impact on inequalities and consequences
- Impact of Britain's historic housing shortage inflation

Death of skills
- Labour market shortages
- Lack of skills in retrofit

Changing nature of financing housing
- Housing affordability challenges
- Environmental Social Governance
- New forms of financing

Environmental

Climate resilient homes
- Increasing vulnerabilities in UK homes
- Identity hubs for grassroots climate solutions
- Sponginess

Regenerative design
- Off-grid housing and circularity
- Removing the boundary between humans and ecosystems
- Systems change towards regenerative solutions

Political

New regulations & changes in the building safety landscape
- Building safety Act 2022
- Regulation of construction products
- New regulator, new gateways & new information requirements for HRBs
- Updates to statutory fire safety guidance
- Competency requirement for working on high rise buildings

Changes in regulations driven by sustainability
- F-gas Regulations
- Managing carbon in the built environment
- Net Zero and "whole life carbon"

Conservationism
- Desire to keep the history of a place
- Desire to protect and define the identity of an urban area
- Housing seen as identifier of mortality / structure / order

Green washing and rewashing
- Performance and compliance
- Nature based solutions

Figure 3-5 Selection of trends shaping the future of housing in the UK

3.6.21 The ageing population (a demographics parameter) is already a well-recognised phenomenon impacting the built environment – I discuss this later in Section 4.7 in the context of the fire safety measures for vulnerable people. The statutory guidance continues to overlook this parameter (AD B Vol 1 2022), as does current guidance for persons with responsibility for fire risk assessments (see Section 4.4.31). This is an unreasonable omission.

3.6.22 The energy transition required to address the climate crisis is already causing increased fire safety hazards. To quote one indicator from London, as raised by the London Fire Brigade in a recent announcement[43], is the rapid change in fires being caused by lithium-ion batteries on charge; the LFB warns that e-bikes and e-scooters are the fastest growing fire risk in London. They have said that "*When these batteries are charged in communal areas or escape routes, a fire breaking out can quickly block peoples ability to escape."* How societal habits change therefore needs to be factored into the evolution of fire safety guidance.

3.6.23 One other important trend I want to bring to the attention of the Inquiry is the urgency with which the construction industry is looking to retrofit and re-use existing buildings, instead of demolishing and building anew, to reduce the amount of embodied carbon created through construction activities.

3.6.24 All of these trends and others not mentioned here are adding further complexity to the built environment and fire safety of the built environment. This furthers the case for adopting a systems perspective of fire safety so that we are considering the impact of such trends on the system as a whole and thus reduce unforeseen or unintended consequences.

3.6.25 The complexity and interconnectedness of fire safety within the Built Environment

3.6.26 Thus far I have considered the built environment and fire safety as complex systems and illustrated some trends that are shaping the future and are adding to the complexity of the system. I have argued therefore for the need to adopt a systems approach to fire safety in the built environment.

3.6.27 I now turn to looking in more detail at the complexity and interconnectedness of fire safety within the Built Environment as detailed evidence for the need to adopt a systems approach.

3.6.28 Fire safety over the lifecycle of a single building as described in Table 3-3 above through the framework of RIBA or in considering it through a lens of legislation only in Section 3.3, is in fact a complex system within the complexity of this built environment.

3.6.29 To illustrate the complex interactions involved in fire safety, Figure 3-6 is a matrix I have prepared for illustrative purposes only for this report, using the building life cycle based on the RIBA Plan of Work Stages on the horizontal axis and the stakeholders involved in a building project on the vertical axis.

[43] London Fire Brigade "The danger of e-bike and e-scooter batteries when charging." https://www.london-fire.gov.uk/safety/lithium-batteries/the-dangers-of-electric-scooter-and-electric-bicycle-batteries/ Accessed 17/05/2023.

Figure 3-6 The complex interactions involved in fire safety: Responsibilities of key stakeholders for fire safety at various stages of a building project life cycle illustrating

3.6.30 The coloured dots in various cells of the matrix indicate the numerous stakeholders who have responsibilities for fire safety or in my experience can influence fire safety at each stage of the building life cycle.

3.6.31 The red dots represent those stakeholders, the residents, who have very limited control over fire safety and therefore *receive* the resulting fire safety measures provided by other stakeholders. The extent of influence can differ project by project as a function of contractual arrangements put in place or even by behaviours of the individual(s) on any one project.

3.6.32 Each part of active and passive fire protection measures that are chosen to create a fire-safe building, are all interlinked. In Section 2.6.18 of my Supplemental report *The proprietary smoke ventilation system designed and commissioned by PSB UK* {BLARP20000043} I explained how AD B 2013 warns about this, and this is retained in AD B 2022 where at clause 0.4: it states:

*0.4 Guidance is given on each aspect separately, though many **are closely interlinked**. The document should be considered as a whole. The relationship between different requirements and their interdependency should be recognised. Particular attention should be given to the situation where one part of the guidance is not fully followed as this could have a negative effect on other provisions.*

3.6.33 Figure 3-7 provides an illustration produced by Arup which shows the complexity of interactions required between only some of the design disciplines relied upon to coordinate and deliver the required fire safety measures across all the components of a new building or refurbishing of an existing building. Design is only one Stage of a project, yet it is such a highly complex process.

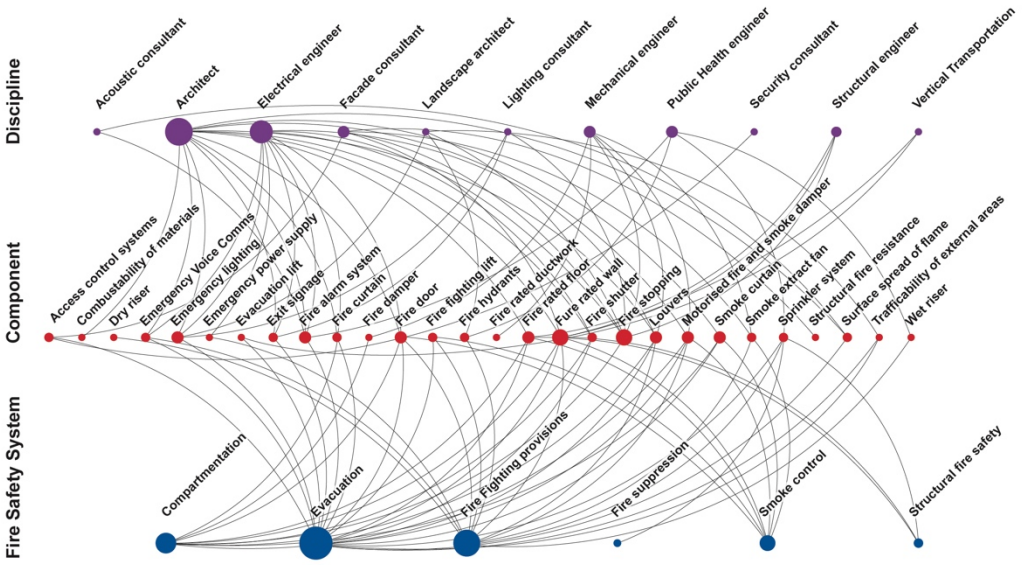

Figure 3-7 The complex interaction involved in fire safety: Network diagram of interactions required between only some of the design disciplines relied upon to coordinate and deliver the required fire safety measures across all the components of a new building or

3.6.34 Much attention was given during Phase 2 of the Inquiry as to whether or not the Grenfell Tower Primary Refurbishment was complex and indeed whether the Tower itself was a complex building. I have made my position on this matter clear and reject the simple building categorisation by some, fully.

3.6.35 As shown in Figure 3-7, fire safety measures impact almost all aspects of a building form, and therefore all disciplines and end users (owners, facilities managers, residents, visitors) can impact the final condition of fire safety measures.

3.6.36 Therefore fire safety relies on careful consideration and coordination by, and across, a myriad of disciplines and stakeholders. If this is overlooked or ignored it inevitably causes a lower provision of fire safety and does not consistently result in the package of fire safety measures required to meet all relevant requirements, and which should also be clearly described for all through the production of a comprehensive building fire safety strategy.

3.6.37 It is proposed that regulating the fire safety profession is one part of the solution. Legislating for a Chartered Engineer to work on HRBs will provide an expert in fire safety to lead, advise and help coordinate the fire safety activities required by legislation and as set down in the RIBA Plan of Work – to be fully accountable. I discuss the need for a regulated fire safety profession further in Section 5.

3.6.38 But all parties involved in a building project must be competent in delivering and coordinating with others the necessary fire safety precautions. It cannot be left to the fire safety engineer alone, as one person does not have all the skills and knowledge required to, for example, design a fire alarm system, detail a fire rated wall and engineer all aspects of a smoke control system etc.

3.6.39 A competent fire safety engineer should understand and be able to articulate to duty holders how the protective and preventative measures operate together holistically to deliver the fire safety strategy (objectives) for a project; and the specify the performance required for each system.

3.6.40 However, they cannot be expected to do the full detailed design and associated assurance during construction to handover without the support and expertise of the associated disciplines (architect, mechanical, electrical, plumbing etc).

3.6.41 No single duty holder or the people they rely on can act in isolation, and future approaches to raising competency must reflect the multi-disciplinary nature of delivering fire safety in new and existing buildings. It must reflect the need to understand the individual and collective responsibility to consider the fire safety system as a whole and consider the impact of working on a part of the system.

3.6.42 Piecemeal approaches to building fire safety must end and we need to develop the competence within industry to ensure this happens.

3.6.43 Experience of delivering fire safety solutions on projects under the supervision of more experienced/competent professionals will be a key component of the competence required.

3.6.44 Therefore professional bodies delivering on training and professional development for competency will need to collaborate to achieve this; and professional bodies will need to strongly elevate their commitment to a competency framework.

3.6.45 Increasing complexity causes the need for increased competency and clear requirements for demonstrating how all relevant requirements have been met

3.6.46 An unforeseen consequence arising from the BSA 2022 and associated legislation reforms is that this has added increasing complexity to an already complex system.

3.6.47 The legislative reforms discussed at length in Section 3.3 and summarised in Figure 3-1 add to the range of fire safety legislation already in place prior to 2017. The process relies on and requires more input and advice from a professional fire safety engineer but yet the fire safety engineer is not explicitly named as a dutyholder (unless a consensus agreement can be reached that a fire safety engineer is also a designer).

3.6.48 As I set out in Section 3.3 the intent of the additional new legislation is clear – through the provision of gateways, recording of key building information, and mandatory reporting – to drive up the likelihood of moments in time when fundamental risks to life can be captured before being built into the final fire safety solution. This should be a substantially positive way forward.

3.6.49 Applying this raft of additional and new legislation in practice, particularly in the absence of clear mandatory prescriptive guidance, is increasingly complex. Albeit duty holders should, over time, become more familiar and conversant with the complexity of it. The reality in practice is that most dutyholders, PAP/APs and Responsible Persons, as well as owners, designers and contractors, will need mandatory guidance, to navigate the requirements and to comply with them.

3.6.50 It is critical, to participate effectively in a systems approach to fire safety, that the legislative reforms and guidance are understood and their full intention complied with. This means all relevant requirements, not a piecemeal approach to preferred parts of the requirements. This deep level of commitment to compliance that requires an understanding of the intent of legislation and guidance is consistent with a systems approach to fire safety.

3.6.51 The fire safety strategy for a building should be an important source of narrative information about how the different active and passive fire protection measures contribute to the safety of the relevant persons in the building.

3.6.52 The contents of a fire safety strategy report are now required, post-Grenfell, to complete the *fire and emergency file* (see Section 3.3.80) and the safety case report (see Table 3-2).

3.6.53 Additionally, a fire safety strategy should be the primary and definitive source for the detailed specification of the relevant performance criteria that enables a building to be demonstrated as complying with Part B of the Building Regulations.

3.6.54 The fire safety manual should then demonstrate how the materials, products and systems installed meet that set performance criteria.

3.6.55 As I noted earlier, whilst there are a range of regulations that require fire safety related information, the fire safety strategy currently has no regulatory status. It is my opinion, based on the recent publication of secondary legislation and guidance, that it is not possible to comply with the Building Safety Act 2022 without an appropriate fire safety strategy.

3.6.56 Building Regulations requirements, and the relevant statutory and non-statutory guidance, change over time. Therefore, an existing building may not comply with the regulations and guidance in force at the time that works are undertaken. Development of a retrospective fire safety strategy for an existing building provides an opportunity to fully investigate the current condition of the building and the guidance to which it was originally designed; to provide an assessment of the fire risks that result from any differences between the original design guidance and current guidance; as well as any fire risks caused by the condition of the existing measures, and whether mitigation measures are needed to make the risk tolerable.

3.6.57 Undertaking, and documenting an adequate assessment of risk, through a safety case regime, enables the relevant package of active and passive fire protection measures, combined with any specific management action, to be formulated.

3.6.58 Once completed, the documented assessment of fire risk and resulting controls, allows the responsible person to understand their asset and what general fire measures may be required, which would form an integral part of the wider organisational fire risk management system duties that requires leadership responsibilities; planning; support; occupation, performance evaluation; and improvement.

3.6.59 All of these items described above, together, form the elements of a total fire safety system approach and in my opinion are consistent with the approach the regulations required before the Grenfell Tower Fire, and even more so since the regulatory changes made by the BSA 2022.

3.6.60 While there were some known issues with the statutory guidance before the Grenfell Tower fire, a competent fire safety professional would have reasonably been expected to take a holistic approach to meet the purpose of all the relevant requirements – to consider risks in the round and in relation to all components of the fire safety system.

3.6.61 The evidence heard from the fire safety engineer and the fire risk assessor employed at Grenfell Tower, demonstrated a significantly siloed approach to understanding fire risk, and a significantly light touch approach to considering the consequences as a result for people.

3.6.62 Grenfell and the failure to take a systems view of fire safety

3.6.63 I will now turn to considering Grenfell in the context of a systems view of fire safety.

3.6.64 According to the evidence heard by the Inquiry, the fundamental failure by the fire safety profession and wider industry, was that of failing to take a systems view of fire safety. It also highlighted a failure on the part of the fire safety profession to understand that their job was to be responsible for and be an integral part of this system, not a discrete aspect of it.

3.6.65 Counsel to the Inquiry's "*Web of Blame*" (Counsel to the Inquiry, 2022) [44] (see Figure 3-8) illustrates how each party attributed blame to parties other than themselves in their closing statements to the Inquiry. It is a simple example of the complex interactions which occur in practice, including companies with no formal presence within the project delivery team, such as product manufacturers or testing establishments, when ostensibly every party was committed to providing a fire-safe building. Hence the need to consider the fire safety of a single building within the broader context of the built environment system and its impact on fire safety.

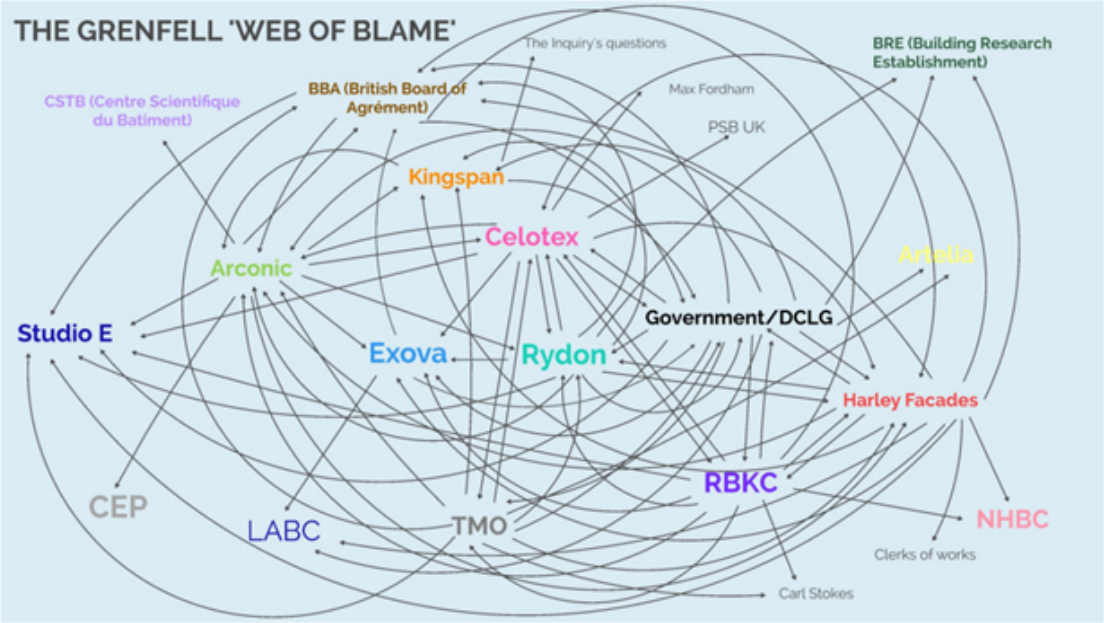

Figure 3-8 Grenfell Web of Blame (Counsel to the Inquiry, 2022)

3.6.66 It should be noted that this web of blame is not an inclusive list as it does not include, for example, the fire and rescue service, professional bodies, other organisations in the built environment or government scrutiny bodies. Thus it is not offered as an illustration of the entire built environment system as it relates to fire safety but rather as an indicator of the complexity of the system.

3.6.67 Whilst the RIBA Plan of Work could form a framework for delivering a fire-safe building project, the problem remains that the framework assumes that the built environment system it is operating in is functioning properly. It relies on robust regulations/mandatory guidance, agreed measures and methods of demonstrating compliance and the competence of all parties involved etc.

3.6.68 There is therefore the need to consider a framework that forces us to consider the broader system and its impact on fire safety. I now turn to an international example of such a framework.

3.6.69 Example of an internationally recognised fire safety system – NFPA Fire & Life Safety Ecosystem™

3.6.70 The complexity of fire safety as laid out above is recognised internationally and is being realised in practice as evidenced by the National Fire Protection Association (NFPA) and the development of their NFPA Fire & Life Safety Ecosystem™.

[44] Counsel to the Inquiry (2022) Grenfell Web of Blame. Counsel to the Inquiry's Closing Presentation, p.15. https://assets.grenfelltowerinquiry.org.uk/Grenfell%20Web%20of%20Blame.pdf Accessed 6/11/2023.

3.6.71 Further, Meacham & van Straalen (2017)[45] make the case for a socio technical system framework for fire safety. He posits "*that framing the building regulatory system as a socio-technical system (STS) will highlight the complex interactions which exist between regulators and the market, the roles stakeholders play in characterizing risk for use in building regulation, and what steps are required to shift to a risk informed performance-based building regulatory system, taking into account different legal structures and regulatory approaches that exist between jurisdictions.*"

3.6.72 This international example and the emerging ways of thinking of fire safety as a system, offer strong foundational concepts to build on in the post-Grenfell regulatory environment.

3.6.73 An overview of the NFPA ecosystem

3.6.74 The National Fire Protection Association (NFPA), founded in 1896 to safeguard people and property from fire and other hazards, is a global non-profit organisation based in the USA. Their circa 300 consensus fire safety codes and standards are adopted by governments or jurisdictions in many parts of the world across the USA, Canada, Asia, Middle East and by international organisations seeking a consistent level of fire safety across their portfolio of assets, as well as some global insurers.

3.6.75 In 2018, NFPA published their Fire and Life Safety Ecosystem™ as a framework that identifies the components that must work together to minimize risk and help prevent loss, injuries, and death from fire, electrical and other hazards.

3.6.76 There are eight key components as shown in Figure 3-9.

[45] Meacham, B.J. van Straalen, I.J. (2017) A socio-technical system framework for risk-informed performance-based building regulation Meacham, Building Research & Information. 46. 1-19. 10.1080/09613218.2017.1299525.

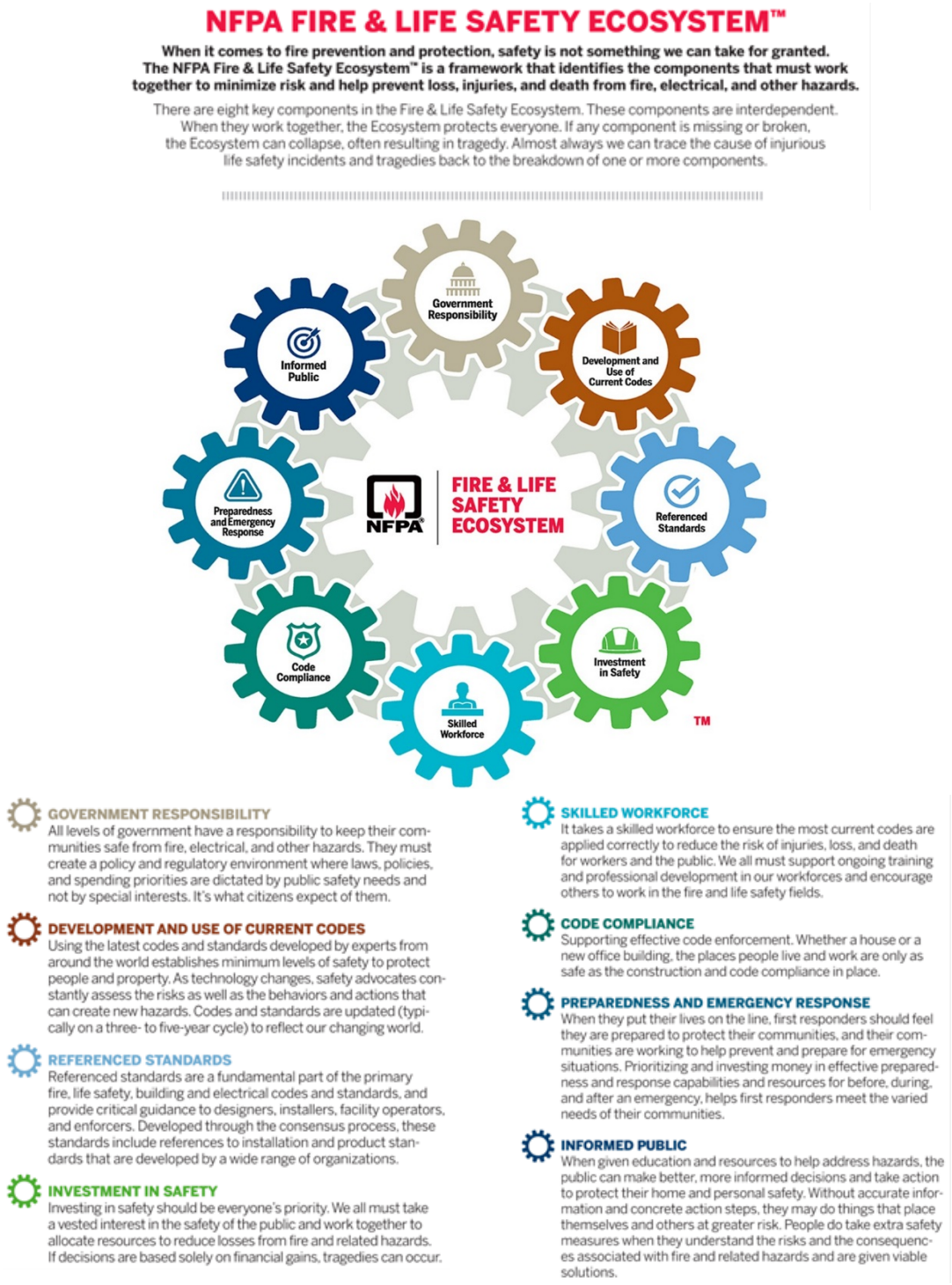

Figure 3-9 NFPA Fire & Life Safey Ecosystem™[46]

3.6.77 In August 2021, the NFPA went further and published their Fire & Life Safety Ecosystem™ Assessment Tool[47] to help users identify gaps in a community's capacity to provide fire safety

[46] National Fire Protection Association (n.d.) NFPA Fire & Life Safety Ecosystem™ Fact Sheet, https://www.nfpa.org/-/media/Project/Storefront/Catalog/Files/Ecosystem/NFPAOneInfographic.pdf, Accessed 08/12/2023.

[47] National Fire Protection Association (2021) NFPA Fire and Life safety Ecosystem https://www.nfpa.org/about-nfpa/nfpa-fire-and-life-safety-ecosystem, Accessed 08/12/2023.

and to inform future investment to enact the changes required to strengthen/improve the weaker parts of the system.

3.6.78 The NFPA fire and life safety ecosystem™ provides a fire safety system for adoption and adaption by communities globally. It encompasses fire safety in both new and existing buildings and the need to evolve regulations, standards, and skills to address new hazards arising from social and technological change.

3.6.79 The ecosystem starts to formulate the explicit importance of systems thinking and recognition of dependencies across the "*gears*", of a holistic and integrated fire safety system to deliver fire safety in the built environment. In addition to the regulations, standards and guidance the ecosystem recognises the need for government responsibility (accountability), the importance of ongoing investment in fire safety, a competent workforce, the preparedness of fire and rescue services and an informed public.

3.6.80 To tackle fire safety as an intrinsic component of a complex system – the built environment, the NFPA fire and life safety Ecosystem™ could be adopted or adapted in England.

3.6.81 Critically, any new fire safety ecosystem needs to explicitly address two systemic issues that are currently not addressed by current statutory guidance in England nor through the post-Grenfell reforms. The measures required to achieve equitable fire safety for vulnerable people (see Section 4 below) and the need to improve fire safety in all buildings (new and existing), as I have explained throughout Section 3 above.

3.6.82 Concluding points

3.6.83 In Section 3 I have described the myriad of existing fire safety legislation and new additive legislation arising since 2017 that form the current regulatory system for delivering fire safety in new and existing HRRBs. The new additive legislation has increased the complexity of an already complex system and requires increasing competency in fire safety by all parties involved.

3.6.84 The RIBA Plan of Work provides a framework to guide and deliver the numerous fire safety activities required by legislation in new and existing buildings, but it is a framework within a system and not a system itself.

3.6.85 The new duties (e.g. HRB registration, safety case development, resident engagement strategy, safety management strategy) and new documents to be prepared (e.g. the *fire statement*, Building regulations compliance statement, *fire and emergency file* and the safety case report) through multiple stages of the RIBA Plan of Work mean dutyholders are increasingly reliant on fire safety expertise from a professional fire safety engineer. But the fire engineer is not regulated nor listed as a dutyholder themselves, unless it can be agreed, as I do, that a fire safety engineer is a designer.

3.6.86 I have shown that we need to consider the built environment as a complex system and shown that future trends such as ageing populations and the impact of climate change are increasing this complexity, and need to be considered to future-proof post-Grenfell reforms.

3.6.87 The complexity of fire safety in the built environment is unquestionable given the number of interactions and interfaces involved in providing a fire-safe building. The Grenfell Tower fire was a systems failure. The fire safety profession needs to be regulated to elevate its importance in delivering fire safety in this complex system. I discuss this further in Section 5. But a focus only on fire safety professionals will be insufficient as all those involved in the fire safety system need to understand their impact on the system as a whole.

3.6.88 There is a need to elevate the industry as a whole in its ability to adopt a systems thinking approach. Examples of international fire safety systems such as the NFPA fire and the life safety

ecosystem™, exist and can be adopted and adapted in England. Some of the thinking and actions required to adopt or adapt such a system are discussed further in Section 6.

3.6.89 Any framework or approach to addressing the fire safety system must address equitable fire safety for vulnerable people and the disparity in fire safety standards between new and existing buildings.

4. Treatment of vulnerable persons in building fire safety

4.1 Introduction

4.1.1 This Section specifically highlights the treatment of vulnerable persons in the context of building fire safety in HRRBs, as the fire safety measures required post reforms still do not require equitable egress for all building occupants.

4.1.2 As evidenced in Chapter 6 of my Module 3 report {BLARP20000034}, the management of fire safety was inadequate to protect vulnerable persons at Grenfell Tower; and I refer the Inquiry particularly to Sections 12-16 Chapter 11 of my Module 3 report {BLARP20000040}.

4.1.3 The RR(FS)O has been updated under article 24 to incorporate some of the recommendations made to Government in the Chairman's Phase 1 Report, Volume 4, Part V with the exception of two Inquiry recommendations.

4.1.4 These are related to a requirement to provide Personal Emergency Evacuation Plans (PEEPs) and fire safety information for the purposes of notifying the authorities of people of reduced mobility in an emergency (Part V Chapter 33: Recommendations Section 12 of Chairman's Phase 1 report).

4.1.5 These points have been made part of a separate Government consultation which has not yet caused change to the RR(FS)O or associated guidance. They are described as:

e. that the owner and manager of every high-rise residential building be required by law to prepare personal emergency evacuation plans (PEEPs) for all residents whose ability to self-evacuate may be compromised (such as persons with reduced mobility or cognition);

f. that the owner and manager of every high-rise residential building be required by law to include up-to-date information about persons with reduced mobility and their associated PEEPs in the premises information box;

4.1.6 A PEEP can in itself only be of value if fire safety measures and arrangements are in place to assist persons whose ability to self-evacuate becomes compromised. Therefore, it is my opinion that equitable egress and arrangements to enable evacuation are the primary changes needed. I do not agree that the focus on the process of a PEEP, in the absence of equitable arrangements in practice, is a robust change mechanism.

4.1.7 It is also important to note that the post-Grenfell reforms such as updates to statutory guidance for new buildings and new guidance for fire safety risk assessments of existing exterior walls could cause increased fire safety inequity for persons living in existing buildings in comparison with persons living in a new building.

4.1.8 In Table 3-4 and my associated commentary I have already compared the improvements made in the AD B since 2017 and show that the fire safety precautions in new HRRBs are increasing.

4.1.9 I now present the result of my analysis of the additional fire safety guidance published since 2017, to explain why I am of the opinion that the post-Grenfell reforms are causing increased fire safety inequity for vulnerable people.

4.2 KCTMOs arrangements for vulnerable residents of Grenfell Tower

4.2.1 My extensive analysis of the evidence in Chapter 6 of my Module 3 report {BLARP20000034} allowed me to explain the basis for my serious concerns about the consideration of vulnerable

persons generally in the fire safety regime at that time; and also how arrangements made explicitly in Grenfell Tower caused vulnerable persons to be exposed to serious harm the night of the fire.

4.2.2 I explained in detail how the regulatory environment and the guidance documents published, particularly relating to the carrying out of fire risk assessments, enabled a prevailing culture of fire safety solutions that did not incorporate equitable evacuation methods for all building occupant types in HRRBs.

4.2.3 It is important (and in my opinion it was and remains a requirement) that the fire safety needs of vulnerable persons are always part of the formal fire risk assessment process, and that practical and pragmatic protection solutions are then found which reflect the needs of all relevant persons.

4.2.4 This is especially the case in the typical operating conditions for HRRBs which tend to have no on-site staff for the purposes of bespoke evacuation assistance.

4.2.5 Quoting from parts of my concluding evidence in Chapter 11 of my Module 3 {BLARP20000040}:

16.1.4 KCTMO did not communicate information about the needs of vulnerable residents in Grenfell Tower, to the LFB, despite KCTMO having made formal arrangements for regular meetings with LFB and LFEPA (the "bi-monthly meetings").

16.1.7 These meetings were not treated as a formal mechanism for KCTMO to communicate up to date information, as part of an emergency plan, as to which residents had vulnerabilities, including those that merited a PEEP procedure by KCTMO and whether there were any consequential effects for the fire and rescue services.

16.1.8 What could (and should) have been a productive process was not, in fact, used to share premises specific information regarding evacuation needs with the fire and rescue services.

16.1.9 It remains my opinion that a failure to provide adequate means of escape for persons requiring assistance causes a breach of the RR(FS)O, which I consider to have explained in detail in this Module 3 report."

16.1.10 KCTMO's duty at the time, was to identify persons especially at risk and make provision for protective measures, including specific provisions for (a) emergency routes and exits which must lead as directly as possible to a place of safety; and (b) in the event of danger, it must be possible for persons to evacuate the premises as quickly and as safely as possible.

16.1.11 Instead, the KCTMO Executive Team failed to make suitable arrangements for the evacuation of vulnerable persons – they relied fully on their Health and Safety Manager Ms Wray and their fire risk assessor Mr Stokes and did not carry out the required monitoring or review activities needed to assure themselves of compliance with the RR(FS)O.

16.1.12 Mr Stokes and Ms Wray had made substantial technical errors and omissions in their work and had consistently failed to produce an accurate record, by means of the fire risk assessment documents for Grenfell Tower, of the reality of the arrangements being implemented in Grenfell Tower.

16.1.13 That reality was no vulnerable residents were incorporated into the fire risk assessment for Grenfell Tower and no emergency plan was made for any vulnerable residents.

4.2.6 I have analysed additional fire safety guidance published since 2017 for first new and then existing HRRBs to understand how the situation has changed since I concluded on the points above in 2021.

4.3 Post-Grenfell reforms and their impact on fire safety equity in *new* HRRBs

4.3.1 I have structured this section into three sub-sections:

- The Building Safety Act 2022;
- Changes made to the statutory guidance document AD B since 2017 which improve fire safety equity; and
- How fire safety inequity has been maintained or made worse by the changes to AD B for new HRRBs.

4.3.2 The Building Safety Act 2022

4.3.3 As discussed in Section 3.1, the introduction of the Building Safety Act 2022 is a significant legislative reform for all (new and existing) HRBs and encompasses an in-occupation regime, building registration, application for building assessment certificate, safety cases, resident engagement strategies, mandatory incident reporting etc. This is a major change programme which appears in my reviewing of it to be attempting to take considerable steps to move away from the prevailing system of fire safety at the time of the Grenfell Tower Fire.

4.3.4 Time will tell if it makes meaningful improvements to building fire safety, which will rely substantially on the commitment and safety culture in the array of disciplines, trades and companies responsible for the production of a fire safe building.

4.3.5 As stated previously in Section 3.3.30, the Building Safety Regulator (BSR), according to Part 2, Section 3 of the Building Safety Act, "*must exercise its building functions with a view to (a) securing the safety of people in or about buildings in relation to risks arising from buildings, and (b)improving the standard of buildings. It also has a duty to facilitate building safety"* **,** which requires, in accordance with Part 2, Section 4 of the Building Safety Act, for HRBs that (bold by me):

4 Duty to facilitate building safety: higher-risk buildings

(1) The regulator must provide such assistance and encouragement to relevant persons as it considers appropriate with a view to facilitating their securing the safety of people in or about higher-risk buildings in relation to building safety risks as regards those buildings.
(2) ***The assistance and encouragement*** *that must be provided under subsection (1)* ***includes, in particular, assistance and encouragement with a view to facilitating securing the safety of disabled people in or about higher-risk buildings*** *in relation to building safety risks as regards those buildings.*

4.3.6 There is further consideration of vulnerable people referred to as "*disabled*" in Part 2 "*The regulator and its general functions*", Sections 11, 20 and 21 of the BSA 2022 (bold by me):

11 Residents' panel

(1) The regulator must exercise its powers undersection 11A(3) of the Health and Safety at Work etc Act 1974 to establish and maintain a committee with the functions mentioned in this section (and any other function that the regulator considers appropriate).

(2) The committee is to consist of—

(a) such residents of higher-risk buildings as the regulator considers appropriate, and

(b) such relevant persons (if any) as it considers appropriate.

(3) The regulator must take all reasonable steps to ensure that the committee includes—

(a) one or more residents of a higher-risk building who are disabled,

(b) a body that represents, supports or promotes the interests of any description of disabled people that includes residents of higher-risk buildings, or

(c)a member of a body within paragraph (b).

…

20 Statement of regulator's engagement with residents etc

(1) The regulator must, at least once each financial year, publish a statement about its engagement with—

(a) the committee mentioned in section 11 (residents' panel),

(b) residents of higher-risk buildings,

(c) owners of residential units in higher-risk buildings, and

(d) bodies that represent, support or promote—

(i) the interests of any description of residents of higher-risk buildings or owners of residential units in such buildings, or

(ii)the interests of persons including any description of such residents or owners.

(2) A statement under subsection (1) must, in particular, include information about the regulator's engagement with residents of higher-risk buildings who are disabled.

(3) A statement under subsection (1) may be published by including it in the regulator's annual report.

(4) In this section—

"annual report" means the report made under paragraph 10(3) of Schedule 2 to the Health and Safety at Work etc Act 1974; "higher-risk building" means—

(a) a higher-risk building within the meaning of Part 4, or

(b) a higher-risk building within the meaning of the Building Act 1984.

21 Report on certain safety-related matters

(1) ***Before the end of the period of three years beginning when this section comes into force****, the regulator must—*

(a) carry out a cost-benefit analysis of making regular inspections of, and testing and reporting on, the condition of electrical installations in relevant buildings;

(b) consider what further provision under the Building Act 1984, or in guidance under that Act, may be made about—

(i) stairs and ramps in relevant buildings,

(ii) emergency egress of disabled persons from relevant buildings, and

(iii) automatic water fire suppression systems in relevant buildings, with a view to improving the safety of persons in or about relevant buildings, and carry out a cost-benefit analysis of the making of that provision.

4.3.7 The Building Safety Act 2022 Part 2, Section 30 *Interpretation of Part 2* defines disabled:

a person is disabled if the person has a physical or mental impairment which has a substantial and long-term adverse effect on the person's ability to carry out normal day-to-day activities.

4.3.8 So the BSR is required to engage with occupants who are disabled and live in HRRBs, using the results to influence the construction industry through annual reporting and further provisions to be made under the Building Act and/or guidance.

4.3.9 It is anticipated these arrangements will assist in improving fire safety equity for new and existing HRRBs.

4.3.10 The impact of the BSA 2022 on the fire safety equity for occupants of HRRBs who may be more vulnerable in a fire event is not yet known, but for new buildings it is expected that fire safety equity could improve because statutory guidance document AD B has increased the fire safety precautions required in new HRRBs, though unfortunately AD B is still classified as non-mandatory.

4.3.11 Changes made to the statutory guidance document AD B since 2017 which improve fire safety equity

4.3.12 In Section 3.4, Table 3-4, above, I provided a comparison of the fire safety provisions in blocks of flats in England before 2017 from AD B Vol. 2 2013 and after 2017 for AD B Vol. 1. 2022.

4.3.13 In this section I outline the changes in the guidance in AD B which can improve the fire safety equity for vulnerable people in an HRRB; specifically:

a) Minimum requirements for the construction of external walls;

b) Requirement to provide sprinklers;

c) Secure information boxes;

d) Evacuation alert systems.

4.3.14 External wall construction

4.3.15 In AD B Vol. 1 2019, the introductory text regarding the intent of functional requirement B4 regarding resisting fire spread over external walls was revised to state (bold by me):

Resisting fire spread over external walls

The external envelope of a building should not contribute to undue fire spread from one part of a building to another part. This intention can be met by constructing external walls so that both of the following are satisfied.

a. The risk of ignition by an external source to the outside surface of the building and spread of fire over the outside surface is restricted.

b. The materials used to construct external walls, and attachments to them, and how they are assembled do not contribute to the rate of fire spread up the outside of the building.

The extent to which this is necessary depends on the height and use of the building.

4.3.16 Whilst item a. above was reworded from the previous AD B Vol. 2 2013, item b. was new – and specifically records the intent that materials used to construct external walls do not contribute to the rate of external fire spread.

4.3.17 Consequently, and taking into account the Building (Amendment) Regulations 2018 for HRRBs, the minimum performance standard for the materials forming the external wall construction was increased, with AD B Vol. 1 2019 stating at Paragraph 10.10:

Regulation 7(2) applies to any building with a storey at least 18m above ground level (as measured in accordance with Diagram D6 in Appendix D) and which contains one or more dwellings; an institution; or a room for residential purposes (excluding any room in a hostel, hotel or a boarding house). It requires that all materials which become part of an external wall or specified attachment achieve class A2-s1, d0 or class A1, other than those exempted by regulation 7(3).

4.3.18 The change in the minimum performance standard for external wall construction was maintained in AD B Vol. 1 2020 and the current AD B Vol. 1 2022; providing as a result an improved safety standard for vulnerable people, who may not be able to evacuate via stairs when required to do so, and therefore being safer to remain is an improvement for them.

4.3.19 Provision of sprinklers

4.3.20 In AD B Vol. 1 2019, the introductory text regarding the intent of functional requirement B3 was revised (bold by me):

Intention

In the Secretary of State's view, requirement B3 is met by achieving all of the following.

…

***c. Automatic fire suppression is provided where it is necessary**.*

…

The extent to which any of these measures are necessary is dependent on the use of the building and, in some cases, its size, and on the location of the elements of construction.

4.3.21 In AD B Vol. 2 2013, Table A2 requires that buildings with a storey height more than 30m above ground are to be provided with sprinklers, and this has continued to be the case in AD B Vol. 1 2019. However, in AD B Vol. 1 2020, the trigger height was lowered to 11m and remains as such in the current AD B Vol. 1 2022, thus encompassing even more residential buildings in the future.

4.3.22 With sprinklers now required at a lower trigger height, from 2020, this provides an improved safety standard for vulnerable people, who may not be able to evacuate via stairs when required to do so, and therefore being safer to remain is an improvement. This is on the basis that the provision of sprinklers in HRRB's should control a fire within the flat of fire origin and reduce the likelihood of spread beyond that compartment.

4.3.23 Sprinklers should also help occupants within the flat of fire origin, who are disabled and require assistance to leave the flat, by controlling the fire size, heat and toxic gases produced, and in a limited area.

4.3.24 Secure information boxes

4.3.25 In AD B Vol. 1 2022, the introductory text regarding the intent of functional requirement B5 was revised to include a new item (e.) following the introduction of The Fire Safety (England) Regulations 2022 (bold by me):

Provisions covering access and facilities for the fire service are to safeguard the health and safety of people in and around the building. Their extent depends on the size and use of the building. Most firefighting is carried out within the building. In the Secretary of State's view, requirement B5 is met by achieving all of the following.

…

***e. A facility to store building information for firefighters to complete their tasks**.*

…

4.3.26 To facilitate the above, AD B Vol. 1 2022 includes a new sub-section regarding *secure information boxes* within Section 15 *Access to buildings for firefighting personnel – flats* with secure information boxes being required:

15.19 Blocks of flats (purpose group 1(a)) with a top storey more than 11m above ground level (see Diagram D6 in Appendix D) should be provided with a secure information box.

4.3.27 And regarding the content:

15.21 Best practice guidance can be found in Sections 2 to 4 of the Code of Practice for the Provision of Premises Information Boxes in Residential Buildings published by the Fire Industry Association (FIA).

4.3.28 The foreword to the Code of Practice referred to above, published by the FIA in December 2020 states:

The need to ensure that information is available to the fire and rescue service in a consistent format to assist with the emergency response, especially taking into account those with mobility, cognitive or sensory impairments is crucial. This guide helps ensure that those most in need of support are fully considered in the decisions and plans for managing an incident.
This is why the FIA are pleased to co-produce this code of practice.

4.3.29 Appendix A of the FIA 2020 Code of Practice provides guidance on the content of the emergency response pack which should be located within the *secure information box* and with particular regard to vulnerable persons requires:

Personal rescue emergency plans (PREPs) for residents with mobility, cognitive or sensory impairments or those who require assistance in an evacuation situation.

4.3.30 The provision of secure information boxes, and the information therein, will assist firefighters by providing information on vulnerable residents to inform their firefighting operations, thereby, improving the fire safety equity in HRRBs (and residential buildings > 11m).

4.3.31 Evacuation alert system

4.3.32 In AD B Vol. 1 2019, the introductory text regarding the intent of functional requirement B5 was revised (bold by me):

Provisions covering access and facilities for the fire service are to safeguard the health and safety of people in and around the building. Their extent depends on the size and use of the building. Most firefighting is carried out within the building. In the Secretary of State's view, requirement B5 is met by achieving all of the following.

…

c. Provision for internal fire facilities for firefighters to complete their tasks.

…

4.3.33 The above text was also included in AD B Vol. 1 2020 and the current AD B Vol. 1 2022.

4.3.34 However, AD B Vol. 1 2022 version was further updated to include:

A new recommendation for evacuation alert systems in blocks of flats with storeys over 18m.

4.3.35 In Section 15: *Access to buildings for firefighting personnel – flats* of AD B Vol. 1 2022 the new recommendation was included at paragraph 15.17 of AD B Vol. 2 2022 which states:

In blocks of flats (purpose group 1(a)) with a top storey over 18m above ground level (see Diagram D6 in Appendix D) an evacuation alert system should be provided in accordance with BS 8629.

4.3.36 BS 8629:2019+A1:2023 defines an *evacuation alert system for use by the fire and rescue service* at Clause 3.11 as:

system intended for installation in a building containing flats or maisonettes to enable the fire and rescue service to initiate an evacuation alert signal by means of evacuation alert devices within the flats or maisonettes, using manual controls incorporated within the EACIE (Evacuation Alert Control and Indicating Equipment) *(see 3.7)*

4.3.37 The introduction of evacuation alert systems for HRRBs should improve the safety standard for vulnerable residents by providing a facility to alert occupants of the need to evacuate should the fire brigade consider this necessary; noting that if self-evacuation is not possible, this system has limited effect as full reliance on rescue remains.

4.3.38 How fire safety equity has not been improved by the changes to AD B for new HRRBs

4.3.39 I welcome the clearer statements of intent by the Secretary of State within AD B Vol. 1 2019 on how requirement B1 can be met (bold by me):

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

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

b. ***All people*** *can escape to a place of safety without external assistance.*

c. Escape routes are suitably located, sufficient in number and of adequate capacity.

d. Where necessary, escape routes are sufficiently protected from the effects of fire and smoke.

e. Escape routes are adequately lit and exits are suitably signed.

f. There are appropriate provisions to limit the ingress of smoke to the escape routes, or to restrict the spread of fire and remove smoke.

g. For buildings containing flats, there are appropriate provisions to support a stay put evacuation strategy.

…

4.3.40 However, the restructured AD B Vol.1 2019, 2020, and 2022 editions do not provide any specific provisions relating to inclusive design of egress routes, despite retaining at Section 0.8 (bold by me):

0.8 The fire safety aspects of the Building Regulations aim to achieve reasonable standards of health and safety for people in and around buildings. ***People, regardless of ability, age or gender, should be able to access buildings and use their facilities.*** *The fire safety measures incorporated into a building should take account of the needs of everyone who may access the building, both as visitors and as people who live or work in it.* ***It is not appropriate, except in exceptional circumstances, to assume that certain groups of people will be excluded from a building because of its use.***

The provisions in this approved document are considered to be of a reasonable standard for most buildings. However, ***some people's specific needs might not be addressed****. In some situations, additional measures may be needed to accommodate these needs.* ***This should be done on a case-by-case basis.***

4.3.41 In Section 4.7 of Chapter 6 of my Module 3 report {BLARP20000034} I presented my analysis of AD B Vol. 2 2013 with regard to the provisions for vulnerable persons. I explained there that the AD B Vol. 2 2013 contained a Section 5 *General provisions* and stated in the introduction (bold by me):

5.1 This Section gives guidance on the construction and protection of escape routes generally, service installations and other matters associated with the design of escape routes. ***It applies to all buildings****.*

It should therefore be read in conjunction with Section 2 (in respect of flats) and in conjunction with Sections 3 and 4 (in respect of other buildings).

4.3.42 Within Section 5 of AD B Vol. 2 2013, paragraph 5.39 states (bold by me):

In general it is not appropriate to use lifts when there is a fire in the building because there is always the danger of people being trapped in a lift that has become immobilised as a result of the fire. However, in some circumstances a lift may be provided as part of a management plan for evacuating people. ***In such cases the lift installation may need to be appropriately sited and protected and may need to contain a number of safety features that are intended to ensure that the lift remains usable for evacuation purposes during the fire. Guidance on the design and use of evacuation lifts is given in BS 5588-8:1999****.*

Where a firefighting lift has been provided to satisfy requirement B5, this can be utilised as part of a management plan for evacuating disabled people*. Any such plan should include a contingency for when the Fire and Rescue Service arrive.*

4.3.43 As stated in Chapter 6 of my Module 3 report {BLARP20000034} whilst the Building Regulations do not impose any requirements on management of the building, the design and construction of the building should be such that the building can be managed appropriately and so as to secure the fire safety of those in the building.

4.3.44 In the restructuring of AD B in 2019, despite the 2013 edition confirming Section 5 of AD B Vol. 2 2013 applies to all buildings, AD B Vol. 1 2019, 2020, and 2022 make no reference, nor recommends that consideration be given, to the provision of evacuation lifts in an HRRB.

4.3.45 The only reference to evacuation lifts within AD B Vol. 1 2019, 2020, and 2022 is in the definitions section.

4.3.46 Further, AD B Vol. 1 2019, 2020, and 2022 cause fire safety inequity by failing to make provisions for refuges and emergency voice communication systems within them in HRRBs.

4.3.47 AD B Vol. 1 2019, 2020, and 2022 Section 17*: Fire safety information* asks for information about any provisions that enable evacuation of disabled people but yet the design guidance in AD B Vol. 1 (2019) does not suggest any such provisions (bold by me):

17.4 Details should be provided of all of the following.

a. Specifications of any fire safety equipment provided, including routine maintenance schedules.

b. Any assumptions regarding the management of the building in the design of the fire safety arrangements.

c. ***Any provision enabling the evacuation of disabled people, which can be used when designing suitable personal emergency evacuation plans.***

4.3.48 To use an example of a resident with mobility impairment, the resident can either control the fire in their apartment to the point that they are able to safely Stay Put in their flat, move to the common corridor and then down the stair as best they can or rely on assistance from neighbours

or the fire and rescue service to evacuate the building. They do this for themselves, and only if they can; no statutory obligation appears to rest on anyone else to make provisions such as evacuation lifts or refuges with emergency voice communication systems.

4.3.49 I consider this is a missed opportunity to provide fire safety equity for vulnerable persons in HRRBs.

4.3.50 It is notable The Greater London Authority has stipulated a requirement for evacuation lifts in any building where a passenger lift is installed as part of the London Plan 2021.

4.3.51 The consultation draft of BS 9991 *Fire safety in the design, management and use of residential buildings* dated 6 August 2021 includes evacuation lifts for HRRBs. However, developers and their advisors unaffected by the London Plan can simply choose not to provide these by reference to AD B Vol. 1 (2019). This also goes to the issue of safety culture maturity as I explain in Section 6 below.

4.3.52 With reference to the intent of the Secretary of State as set out above in Section 4.3.39, the amendments to the approved documents have focussed on "*g. provisions to support a stay put evacuation strategy"* through the change in performance requirements for external wall construction and lowering the threshold height for where sprinklers are required.

4.3.53 However, disabled occupants from the flat of fire origin who are not in a position to self-evacuate continue to be overlooked (Section 15.6 of my Phase 1 report *Construction of the common lobbies - the provisions made at Grenfell Tower to comply with the Building Regulations* {BLAS0000015}, Appendix G2.8 of my Phase 1 report *Compliance assessment - means of warning and escape Regulation B1* {BLAS0000028} and Chapter 6 of my Module 3 report {BLARP20000034}). They are fully reliant on rescue by the fire service via the stairs and other fire service access provisions through Requirement B5.

4.3.54 There is still no statutory guidance that helps designers meet requirement B1 of the Building Regulations for residents that may require assistance to escape which requires that (bold by me):

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****.*

4.3.55 DLUHC have commissioned research to inform the revision of Part M relating to access to, and use of, buildings, undertaken by Arup. The Policy Lead within Government for accessibility and security in the Building Regulations team, Luke Turner (then Principal Architect at DLUHC), issued a presentation on 26 April 2022[48] that notes this research programme covers the prevalence and demographics of impairment in England and ergonomic requirements and experiences of disabled people. The research findings will likely also be of relevance for Part B and in particular Means of Escape.

4.3.56 An extension to that research was instructed and published to support a Part T consultation[49]; though other parts of the research remain unpublished.

4.3.57 Therefore, HRRBs may continue to be constructed for some time without consideration of means of egress for vulnerable persons.

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[48] Turner, L. (2022) Building Regulation's accessible housing standards M4(1), M4(2) and M4(3). Access Association Seminar. https://accessassociation.co.uk/wp-content/uploads/2022/04/Luke-Turner-slides-26-April-2022.pdf Accessed 6/11/2023.

[49] Arup (2022), Part M Research extension: toilets - Research report, https://assets.publishing.service.gov.uk/media/64d63baedd15ff0014277fd4/Part_M_Research_extension_toilets_research_report.pdf, accessed 11/12/2023

4.3.58 It is hoped that research commissioned by DLUHC into means of escape for disabled people and into means of escape from blocks of flats informs future policy and updates of statutory guidance to achieve fire safety equity (DLUHC, 2022).

4.3.59 This should also be aided by the consultation required by the BSR. As set out in Section 21 of the BSA 2022, the BSR has 3 years to:

(b) consider what further provision under the Building Act 1984, or in guidance under that Act, may be made about-

(i) stairs and ramps in relevant buildings,

(ii) emergency egress of disabled persons from relevant buildings, and

(iii) automatic water fire suppression systems in relevant buildings, with a view to improving the safety of persons in or about relevant buildings, and carry out a cost-benefit analysis of the making of that provision.

4.3.60 Finally, the written ministerial statement by Secretary of State for Levelling Up, Housing and Communities and Minister for Intergovernmental Relations, Rt Hon. Michael Gove (MP), sets out the intended transitional arrangements for the change to AD B (2019 incl. 2020 and 2022 amendments) to introduce a new threshold for two stair requirements for residential buildings as a function of building height, supplementing the existing threshold relating to travel distances, where that height threshold is to be set at 18m (UK Parliament, 2023)[50].

4.3.61 If implemented as proposed,

From the date when we publish and confirm those changes to Approved Document B formally, developers will have 30 months during which new building regulation applications can confirm[sic] to either the guidance as it exists today, or to the updated guidance requiring second stair cases. […] Any approved applications that do not follow the new guidance will have 18 months for construction to get underway in earnest.

4.3.62 In extremis this means that applications for building regulation compliance with a single stair and with no provisions for means of escape for disabled persons can continue to be built to the current version of AD B Vol. 1 2022 for another 30+18 = 48 months (4 years) from the date the changes to AD B are formally in place.

4.3.63 This is entirely unacceptable, and, in my opinion, will lead to breaches of functional requirement B1 on Means of escape and warning in Schedule 1 of the Building Regulations in the interim.

4.3.64 Supporting statutory guidance urgently needs to make explicit mandatory recommendations to protect vulnerable people during a fire, and designers and other stakeholders need to be trained in making provisions for the needs of vulnerable persons in a fire event; irrespective of the number of staircases required in any HRRB.

4.3.65 Equality of access, but not equality of emergency egress

4.3.66 Local planning authorities in England are responsible for setting how many homes must be accessible within their jurisdiction. Planning consent for a new development should set targets.

[50] Building Safety Update. Statement made on 24 October 2023 https://questions-statements.parliament.uk/written-statements/detail/2023-10-24/hcws1090

4.3.67 In 2022, DLUHC have confirmed in a press release *Supply of accessible homes to receive vital boost*[51] that:

> *New homes will be more accessible for older and disabled people as the government today (29 July) confirms plans to raise the accessibility standard following full consultation of proposals. […] Raising the minimum accessibility standard will require all new homes to have step-free access to all entrance level rooms and facilities as well as further features to make homes more easily adaptable over time, supporting people to live independent lives. […] From over 400 responses to the consultation, an overwhelming 98% supported government's intention to raise accessibility standards of new homes. The most favoured options were the two that included mandating a higher accessibility standard.*
>
> *Since 2010 we have given councils over £4.5 billion to deliver almost half a million home adaptations. Current planning rules already mean councils must consider the needs of older and disabled people when planning for new homes.*
>
> *This change means older and disabled people can live more independently in their own homes, with greater choice and control over their lives, and be able to work, socialise and contribute to society as fully as possible. It will 'future proof' new homes for successive generations, saving costs associated with moving or adapting homes.*

4.3.68 In the London Plan 2021 as one example, which defines local planning requirements for London, Policy D7 requires that residential developments need to provide at least 10% of all homes as "*wheelchair user dwellings*" (as defined by Approved Document M Volume 1 Dwellings (2015 incorporating 2016 amendments) M4(3)) and all others as "*accessible and adaptable dwellings*" (M4(2)).

4.3.69 London Plan 2021 Policy D5 *Inclusive design* (part B) states that "*development proposals should achieve the highest standards of accessible and inclusive design* and that they should be able to *be entered, used and exited safely, easily and with dignity for all"*; it requires explicitly evacuation lifts in all developments where lifts are installed.

4.3.70 In all other areas of England, where to my knowledge no such explicit requirement exists as part of the Planning framework, AD B 2019 will be the sole relevant statutory guidance document which, as I have explained above, still does not provide specific provisions relating to means of egress for persons relying on lift access.

4.3.71 It is also important to note that planning policies will not always apply to existing HRRBs or upgrades if the building works planned do not require a planning application in the first place. I deal with existing buildings in Section 4.4 below.

4.3.72 It is therefore important to ensure that future AD M updates take place in step with AD B updates, with Part B1 and Part M reviewed and updated in conjunction with each other.

4.3.73 Proportionally more people with mobility impairments live in HRRBs because these buildings often have better step free access than houses or low-rise buildings that have been converted into flats.

4.3.74 There is a clear trend of a higher proportion of disabled people (applying a much broader definition than mobility impairment) living in urban areas from the most recent census completed in 2021 and published by the Office for National Statistics, with a significant proportion of completed housing in the UK being flats (in 2020, based on the NHBC *New Home Statistics review 2020*, 27% of registrations by house type were flats, vs 2% being bungalows).

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[51] Supply of accessible homes to receive vital boost https://www.gov.uk/government/news/supply-of-accessible-homes-to-receive-vital-boost-:~:text=New homes will be more,to raise the accessibility standard

4.3.75 It is therefore important that equitable egress provision in the event of fire, is tackled across England and not just London; that evacuation lifts are installed in all new HRRBs, and improvements made to create egress provisions in existing HRRBs where they provide homes to vulnerable persons (See Section 4.4 below).

4.3.76 The Arup approach to this is to keep the firefighting lift running in normal mode, with occupants able to use the lift as they would day to day. This is on the basis that compartmentation contains the fire to the flat of fire origin. If smoke is detected in the lift lobby or lift shaft, then the lift needs to ground and a refuge area with two-way communication system is required to allow the occupant to contact the fire service arrival point so that that person then can be rescued.

4.3.77 This description is a brief summary only. The approach needs careful coordination at all stages of design/construction and handover as part of a holistic fire safety strategy and sharing of information with the *responsible person*, as well as effective communication with residents, via signage and regular consultation.

4.4 Post-Grenfell reforms and their impact on fire safety equity in *existing* HRRBs

4.4.1 Context – the legacy building stock resulting from historic statutory guidance

4.4.2 Because of historic guidance in the AD B, (and British Standard Code of Practice CP 3 prior to 1985) almost all existing blocks of flats in England have no specific provisions for inclusive egress in the event of fire.

4.4.3 Furthermore, the post-Grenfell reforms to AD B which focused on new HRRBs only, causes a widening safety gap between new and existing HRRBs as those built before 2017 are unlikely to have sprinklers or an evacuation alert system and may be clad in combustible materials.

4.4.4 The reasoning for stating there is a widening safety gap is illustrated in Table 3-4 where some relevant fire safety provisions made in the AD B before and after 2017 are compared.

4.4.5 I go on to explain a selection of post-Grenfell reforms which impact on fire safety equity in existing HRRBs. Much of these reforms are in their early stages of implementation, so the actual impact they will have is not yet fully known.

4.4.6 The Building Safety Act 2022

4.4.7 The BSA 2022 and the requirement for a safety case report should improve fire safety equity in existing buildings for the same reasons as discussed above in the context of new HRRBs.

4.4.8 Section 156 of The Building Safety Act 2022 makes several amendments to the RR(FS)O 2005.

4.4.9 One of the amendments to Article 9 *Risk assessment* of the RR(FS)O removes the word "*significant*" from paragraph (7)(a) so that the responsible person must record the prescribed information as follows (strike-through added by me):

> *7) The prescribed information is—*
>
> *(a) the ~~significant~~ findings of the assessment, including the measures which have been or will be taken by the responsible person pursuant to this Order; and*
>
> *(b) any group of persons identified by the assessment as being especially at risk.*

4.4.10 Deletion of this one word means there is no longer a debate about what is significant or not and all the findings of the assessment must be recorded which is important and welcomed.

4.4.11 It is of concern however that there is still only a requirement to record information about *"any **group of** persons identified by the assessment as being especially at risk"* (bold by me). It is

unclear to me what is intended here; generic information such as "*there is a group of children living in Grenfell Tower*", or "*some adult residents may have an impairment*" will not aid fire and rescue service intervention in case of fire, nor be sufficient for the preparation of safety cases.

4.4.12 However, the requirement for a building assessment certificate means HRBs must have a safety case report, a residents engagement strategy and an adequate system to manage safety risks.

4.4.13 For example, the HSE guidance setting out responsibilities of accountable persons for a building safety case (HSE, 2023e) includes a section on "*Information you must keep*". Within that section it notes that the *information that must be kept up to date and in an easily accessible digital format* and further sets out under Resident profile:

Resident profile

You should keep information about your residents that can have an impact on building safety risks and emergency plans, for example, residents:

- *who cannot evacuate without help*
- *whose first language is not English*

You should ask your residents to provide you with this information. You can use various ways to collect this information including post, email or meetings.

4.4.14 HSE guidance on preparing a resident engagement strategy (HSE, 2023g)[52] notes:

Purpose of a resident engagement strategy

Your strategy must describe how you'll include residents over the age of 16 and anyone who owns a residential unit in building safety decisions.

A building safety decision is any decision made by an accountable person about the management of the building, the management of building safety risks or any other decision connected to the duties of an accountable person.

You'll need a separate complaints procedure that residents and others can use to raise safety concerns. You can mention your complaints procedure in the strategy, but your strategy should not deal with how you will handle complaints about the building's safety.

4.4.15 HSE guidance on safety management systems for high-rise residential buildings (HSE, 2023d) for accountable persons notes, under "*Be proportionate*" (bold by me):

Be proportionate

Base your SMS on a risk assessment of your building. Your SMS should be proportionate to the hazards of your building. Things that might influence you are the:

[52] Health and Safety Executive (2023g) Preparing a resident engagement strategy https://www.gov.uk/guidance/preparing-a-resident-engagement-strategy Accessed 04/11/2023.

- *complexity of your building, is it a mixed-use building, or is it a complex design structurally*
- *complexity of the measures in place to control building safety risks, consider how many safety measures you have in place, and how they integrate*
- *number of buildings you manage*
- *size of your organisation*
- *extent to which contractors and third parties manage or maintain the measures in place*
- ***resident profile, for example, do any of your residents need help to evacuate or have any additional needs***

If you produce any documents, they should be concise and easily understood.

4.4.16 The guide further states (bold by me):

Manage change

Effective change management is essential to ensure you are managing building safety. Changes that may impact building safety risks normally fall into one of 4 categories, changes:

- *to the building*
- ***to the number of residents, or their needs***
- *to existing management systems, including organisational changes such as the (sic) which organisations run the building or the individuals in particular roles*
- *made by others that may affect building safety*

[…]

4.4.17 These are all substantial steps to elevate the plight of vulnerable persons and are to be strongly welcomed.

4.4.18 I foresee two particular mechanisms by which safety of vulnerable persons in occupied HRRBs may be monitored and/or audited, i.e. the BSA 2022 safety case, and the RR(FS)O 2005 Article 9 fire risk assessments.

4.4.19 Pursuant to BSA 2022, Part 4, Section 79, the safety case report for occupied HRBs is due as soon as reasonably practicable, and within 28 days of the BSR asking the Principal Accountable Person (PAP) to apply for a building assessment certificate. As mentioned in Section 3.3.147. I understand they are to be reviewed by the BSR every 5 years as suggested in the consultation proposals; this period is not defined in law. Therefore, there exists a mechanism by which the building APs, the PAP and the BSR will all have a defined opportunity to inspect the current information about vulnerable persons in a building, and the associated protection measures, and decide if "all reasonable steps" are being taken.

4.4.20 Specifically, in their review of safety case reports, I would expect the BSR to pay particular attention to how dutyholders are assessing fire risks to vulnerable persons, and defining relevant protection measures. I further expect the BSR to use this insight to discharge their duties under the BSA 2022, which includes improving the competence of the profession, the protection of disabled persons in HRRBs and continually improving the quality of buildings.

4.4.21 I have set out in Chapter 2 *Organising and planning a system of management that provides the fire safety arrangements required by the RR(FS)O* {BLARP20000024} and Chapter 3 *The fire safety arrangements made by the KCTMO* {BLARP20000029} of my Module 3 report the

importance of RR(FS)O 2005 Article 9 fire risk assessments in the monitoring and auditing of fire risk management systems, and therefore of the active, passive and management-based fire protection measures available to protect vulnerable persons in HRRBs. I also note that the frequency of such fire risk assessments is not currently mandated. Section 40.6 of *Fire safety in purpose-built blocks of flats* recommends (bold by me):

40.6 As a general guide, for a low risk, modern, low-rise block (e.g. a block of no more than three storeys above ground, built within the last 20 years), a review every two years might be sufficient, with a new fire risk assessment completed every four years. ***For blocks with higher risk – arising from social factors, the age of the building, and so forth – and blocks over four storeys in height, an annual review might be more appropriate, with a new fire risk assessment every three years. In extreme cases, for the highest risk premises, an annual fire risk assessment might be appropriate.***

4.4.22 Therefore, in practice and based on this guidance, the Article 9 fire risk assessments may not enable review of the protection measures provided to vulnerable persons any more frequently than that required under the BSA 2022 safety case.

4.4.23 I therefore recommend that the Inquiry considers recommending that there are formal requirements on the frequency and extent of review of arrangements made to protect vulnerable persons living in the HRRBs.

4.4.24 I also recommend that the BSR clarify the steps they will be taking to take lessons learned through their statutory monitoring duties and feed them back effectively into construction industry guidance.

4.4.25 The Fire Safety Act 2021, updates to RR(FS)O 2005 and Fire Safety (England) Regulations 2022

4.4.26 Section 2 of the Fire Safety Act 2021 gives the Secretary of State (in England) power to change the premises to which the RR(FS)O applies.

4.4.27 Article 24 of the RR(FS)O enables the making of regulations regarding measures to be taken or observed in relation to the risk to safety of persons from fire in premises to which that Order applies.

4.4.28 The Fire Safety (England) Regulations 2022, which came into force on 23rd January 2023 were made under Article 24 of the RR(FS)O and incorporate some of the recommendations made to Government in the Inquiry Phase 1 reports.

4.4.29 I discussed this in Section 3.3.163 above. The changes provide additional information to residents and the fire and rescue service, mandate monthly checks of lifts and firefighting equipment, require yearly fire door inspections and allow the fire and rescue service to better plan for a fire emergency, for new and existing buildings greater than 18m.

4.4.30 Therefore, these changes should improve fire safety equity in existing buildings although only through better information and planning.

4.4.31 Guidance published under Article 50 of the RR(FS)O

4.4.32 I am concerned about entrenched current practices whereby the necessary assistance in the event of fire for persons most at risk becomes disregarded. I am concerned that this may, at a point in the future, be sanctioned by law through the amendments made by the Fire Safety Act 2021.

4.4.33 Section 3 of the Fire Safety Act 2021 clarifies that in proceedings against a person for contravention of regulations made under the RR(FS)O, that following applicable risk-based guidance published under Article 50 tends to establish that there was no such contravention, and that failing to follow such risk based guidance may be relied upon as tending to establish that there was no such contravention.

4.4.34 As a reminder, the guidance published by the Secretary of State under Article 50, as relevant to HRRBs, is as follows (with the publication date for the most recent version noted):

- *Fire safety risk assessment: sleeping accommodation*, HM Government, 2006 reprinted 2015
- *Fire safety risk assessment: means of escape for disabled people*, HM Government, 2007
- *Fire Safety Act Commencement Prioritisation guidance*, Home Office, 2022
- *Fire Safety Act – addendum*, Home Office, May 2022
- *Fire safety in purpose-built blocks of flats*, Formerly LGA and republished by Home Office, January 2023
- *Fire safety risk assessment: 5-step checklist*, Home Office, 2022
- *Check your fire safety responsibilities under Section 156 of the Building Safety Act 2022*, Home Office, 2023
- *Check your fire safety responsibilities under the Fire Safety (England) Regulations 2022*, Home Office, 2023
- *Fire Safety (England) Regulations 2022 A simple guide to fire doors for Responsible Persons: how to conduct routine checks and provide information to residents*, Home Office, 2023
- *Fire Safety Order: enforcement and sanctions for non-compliance*, Home Office, 2023

4.4.35 There are also various other published guidance documents which are relevant to the undertaking of Fire Risk Assessments and fulfilling obligations under the RR(FS)O. These include the following, in alphabetical order:

- BS 9997:2019 *Fire Risk Management Systems*, British Standards Institution, 2019
- BS 9999:2017 *Fire safety in the design, management and use of buildings. Code of practice*, British Standards Institution, 2017
- *Guidance on fire safety provisions for certain types of existing housing*, Local Authorities Coordinators of Regulatory Services (LACORS), 2008
- HSG 65 *Managing for health and safety*, Health and Safety Executive, 2013
- PAS 79-2:2020 *Fire risk assessment, Housing, Code of practice* (withdrawn but still available), British Standards Institution, 2020
- PAS 9980:2022 *Fire risk appraisal of external wall construction and cladding of existing blocks of flats. Code of practice*, British Standards Institution, 2022

4.4.36 Much of the fire risk assessment guidance is being reviewed and revised at the time of writing and it is critical that the importance of making reasonable assumptions regarding occupancy profiling when making such assessments is dealt with as a matter of urgency.

4.4.37 Of concern is the first release of updated guidance in March 2023 by the Home Office (Home Office, 2023d)[53], published under Article 50 of the FRA, for small blocks of flats which does not mention "*people at risk*" or "*disabled persons*" or "*vulnerable persons*".

4.4.38 It is, in my opinion, an indication that the failings I identified in Chapter 6 and 11 of my Module 3 report ({BLARP20000034},{BLARP20000040}) regarding the *Fire safety in purpose-built blocks of flats* guidance published by LGA in 2012 (in place at the time of the Grenfell Tower Fire) have not been addressed, as I now explain.

4.4.39 Current status of the LGA Guide 2023 on fire safety in purpose-built flats

4.4.40 I set out in detail in Chapter 6 of my Module 3 report {BLARP20000034} the fire safety duties the LGA Guide 2012 fails to effectively specify, and the three substantial differences between the LGA Guide 2012 and the HM "*Sleeping Accommodation"* guide 2006, in the context of the duties required of the RR(FS)O. These are (a) the treatment of vulnerable residents; (b) the recording of fire safety arrangements; and (c) the approach to the detail of the emergency plan.

4.4.41 Both the LGA Guide (republished in 2023 by the Home Office) and HM "*Sleeping Accommodation"* guide 2006 have been retained by the Secretary of State as Article 50 guidance.

4.4.42 In my view, the LGA Guide 2012 approach to these matters did not fully or effectively reflect the duties imposed under the RR(FS)O for purpose-built blocks of flats. This remains the case in its most recent revision 2023 published by the Home Office.

4.4.43 I previously stated my view that paragraph 79.9 of the LGA Guide 2012 is an incorrect explanation of the duties placed on any *responsible person* and that, more worryingly, it is, a fundamental breach of the fire safety duties imposed by the RR(FS)O 2005.

4.4.44 Paragraphs 79.9 to 79.11 regarding vulnerable persons have been removed from the LGA Guide when republished in 2021 by the Home Office and remain omitted in the most recent 2023 revision.

4.4.45 On 16 April 2021 LGA posted an update on its website (LGA, 2021)[54] stating that it was no longer hosting the guide and instead referred to four other documents that could be used by people with responsibilities for fire safety in purpose built blocks of flats:

Approved Document B – building regulations guidance

MHCLG Consolidated Advice note of January 2020.

National Fire Chief Council's guidance on simultaneous evacuation.

Government response to Home office consultation on Fire Safety

4.4.46 The LGA Guide 2023 (Home Office, 2023c) also states that the Government is currently producing a new version of the guide which it anticipates will be available in 2023. The LGA Guide 2023 notes that:

This guide was produced in 2011 and summarised the legislation, guidance and best practice at the time of writing, as such it should be viewed as no longer comprehensive. The Home Office is working on a revised version of this guide which we intend to publish in 2023. In the interim, it

[53] Home Office (2023d) A guide to making your small block of flats safe from fire https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147631/A_guide_to_making_your_small_block_of_flats_safe_from_fire.pdf. Accessed: 19/12/2023

[54] Local Government Association (2021) Fire safety in purpose-built flats https://www.local.gov.uk/publications/fire-safety-purpose-built-flats Accessed 1/11/2023.

is continued to be made available to fire safety professionals as it contains relevant and useful information for purpose-built blocks of flats.

In particular, the position laid out regarding vulnerable persons in paragraphs 79.9 to 79.11 is subject to developing policy, through the Personal Emergency Evacuations Plan Consultation which closed on 19 July 2021, and the Emergency Evacuation Information Sharing Plus consultation (the EEIS+ consultation), which ran from 18 May to 21 August 2022. The responses to the EEIS+ consultation are currently being reviewed and the government will publish a response in due course.

4.4.47 The LGA Guide 2023 can still be relied upon by responsible persons and fire risk assessors as it is listed in Article 50 in its current form - republished in 2023 by the Home Office – and thus is maintaining fire safety inequity.

4.4.48 I would expect the BSR to review and then ensure that any new guidance published by the Home Office makes clear how duty holders must discharge their obligations under the new HRB regime in occupation; with specific provisions made in relation to the duty to provide adequate measures for vulnerable persons in the event of fire.

4.4.49 PAS 9980 2022 ignores reasonable demographics as a basis for occupancy risk profiling in general needs housing

4.4.50 In 2022, the non-Article 50 guidance, PAS 9980: 2022 was published to give recommendations and advice on how to conduct and record fire risk appraisals of external walls in existing buildings as required by the revised RR(FS)O.

4.4.51 PAS 9980:2022 supplements the recommendations given in PAS 79-2:2020, or can be used on its own to assess the fire safety risk to residents and visitors posed by a combustible exterior wall systems. Note: PAS 79-2: 2020 has been withdrawn and is being revised by BSI as a British Standard.

4.4.52 PAS 9980:2022 refers to vulnerable people only in its informative annex Table F.1 (Figure 4-1) under "*F.1 Occupancy*".

4.4.53 It states that (bold by me):

*General needs housing NOTE In general needs housing, there **might well be occupants with varying degrees of physical disability** in line with the general population. Unless the accommodation is **predominantly occupied** by people requiring assistance to escape in a fire, it would **remain a neutral risk factor**;*

4.4.54 This incorrectly focuses on "*physical*" disability only and incorrectly advises users of the document to focus on predominance, as distinct from assessing fire safety needs for all. The usual occupancy profile for general needs housing in modern Britain would suggest that you need to do an accurate occupancy profile exercise each time.

4.4.55 If data from the occupancy of Grenfell Tower is used as an example, this demonstrates that predominance, is not the accurate technical parameter to rely on to result in accommodation being categorised as a neutral risk factor. Grenfell Tower was not "*predominantly occupied*" by persons requiring assistance to escape in a fire and yet a significant proportion of residents did require that assistance.

4.4.56 As set out in Table 14-3, Chapter 6 of my Module 3 report {BLARP20000034}, on the night of the fire there were 297 persons present in Grenfell Tower (including residents and visitors). Of those 297 people, 70 people died. Of those who died there were 17 children, 6 visitors and 47 adult residents.

4.4.57 46 of the 203 adult residents present on the night of the fire had an impairment which was of a sensory, mobility or cognitive nature (23%). A further 67 children and 27 visitors present the night of the fire, brought the total number of vulnerable persons in Grenfell Tower to 140 (of a total of 297 persons present that night). 25% of the total resident children died in fire; 22% of the total visitors to Grenfell Tower the night of the fire died in the fire; 41% of adult residents with sensory, mobility or cognitive impairments died in the fire; 18% of adults with no defined impairments died in the fire.

4.4.58 Accordingly, the occupancy risk factor at Grenfell Tower was not *neutral*, and there is no evidence that the occupancy of Grenfell Tower was not reflective of a reasonable representation demographically.

Table F.1 – Risk factors arising from fire strategy/fire hazards (including limitations of fire and rescue service intervention)

Positive	Neutral	Negative
Where a risk factor is marked with an asterisk (*), this indicates that it is notably more of a positive influence.		
F.1 Occupancy		
Accommodation in which there will be short evacuation times ***NOTE 1*** *Principally, this is likely to apply to student accommodation, which is managed on-site and has a fire detection and fire alarm system that can support escalation from a stay put evacuation strategy to a simultaneous evacuation strategy, in given circumstances. The building's FRA would be expected to confirm that this is the case.* ***NOTE 2*** *There might well be occupants with varying degrees of physical disability. Unless the accommodation is predominantly occupied by people requiring assistance to escape in a fire, it would remain a positive risk factor.*	General needs housing ***NOTE*** *In general needs housing, there might well be occupants with varying degrees of physical disability in line with the general population. Unless the accommodation is predominantly occupied by people requiring assistance to escape in a fire, it would remain a neutral risk factor.*	Specialized housing: • sheltered/retirement; • extra care; and • supported ***NOTE 1*** *These housing types are indicative; terminology applying to specialized housing varies. See also BS 9991 and NFCC publication* Fire safety in specialised housing *[31].* Other accommodation in which there will be long evacuation times ***NOTE 2*** *This refers to accommodation that is predominantly occupied by people who are likely to require assistance to escape in a fire. It does not apply to general needs housing or student accommodation, in which there most likely will be at least a proportion of such people but not a predominance.*
NOTE *This relates to the predominant occupant type within the building, recognizing that the occupancy might be mixed.*		
F.2 Evacuation strategy		
Immediate, total evacuation (or with simultaneous evacuation and a suitable investigation time) Phased evacuation (see Note) ***NOTE*** *Phased evacuation could be a positive or neutral depending on the extent of the phased evacuation protocol and how it is managed (e.g. in student accommodation).*	Stay put Phased evacuation (see Note) ***NOTE*** *Phased evacuation could be a positive or neutral depending on the extent of the phased evacuation protocol and how it is managed (e.g. in student accommodation).*	—

Figure 4-1 Extract from PAS 9980:2022 Table F.1

4.4.59 In summary there are now multiple opportunities to improve fire safety equity in existing HRRBs driven by new legislation.

4.4.60 However the statutory and non-statutory guidance documents available in support of the Fire Safety Act 2021 to assess existing buildings are out of date, provide no information or provide substantially incorrect guidance as I have explained above about occupancy profile and need to be urgently updated to reflect the intent of the legislation.

4.4.61 This is essential to properly support the various duty holders in their role of delivering on the intent of the legislation. The intent of the legislation is that evacuation is possible from all HRRB for all people.

4.5 Post-Grenfell reforms and their impacts on fire safety equity in existing HRRBs *undergoing* building work

4.5.1 Building Regulations 3 (unamended) and 4 (amended)

4.5.2 Building Regulations 3 (unamended) and 4 (amended) continue to allow a mindset of accepting a "*grandfathering*" or "*non-worsening*" principle, without proper evaluation of fire risk to relevant persons in and around buildings; especially persons needing assistance to evacuate {BLARP20000021}:

> *9.4.29 Finally, it is my opinion that if re-installing a fire protection feature to an original standard, or simply leaving an old fire protection feature, of unknown status by relying on a "grandfathering" principle (as is the common belief of the purpose of Regulation 3), I do not agree that if the consequence of that, is the relevant persons cannot be protected, as required under the RR(FS)O, this is an acceptable state of affairs.*

4.5.3 Regulations 3 and 4 of the Building Regulations 2010 are still applicable to HRBs even with the new additional legislation including the Building (Higher-Risk Buildings Procedures) (England) Regulations 2023.

4.5.4 Building Safety Act 2022

4.5.5 For the same reasons set out in Section 4.3 for new HRRBs, the requirements for a safety case report for occupied HRRBs should lead to improvements in fire safety equity of existing HRRBs including those undergoing works.

4.5.6 Building (Higher-Risk Buildings Procedures) (England) Regulations 2023

4.5.7 In addition, and as described in Section 3.3.47, the Building (Higher-Risk Buildings Procedures) (England) Regulations 2023 details the building control approval process for new HRBs and work on existing HRBs. "*Category A work*" on existing buildings is clearly defined and must be approved by the BSR.

4.5.8 "*Category A work*" would not explicitly capture the addition of a new gas connection from the existing gas system at Grenfell Tower to serve the new boiler (as discussed in Appendix K of my Phase 1 report *Gas supply – fire safety requirements and provisions* {BLAS0000032}). Therefore these regulations still require the PAP to understand the intention of the regulations. The safety case report required by the BSA 2022 should capture changes like this but it remains the case that the PAP must understand the intention of the regulations.

4.5.9 As stated above, there are now multiple opportunities to improve fire safety equity in existing HRRBs, including those undergoing works via the fire risk assessments required under the RR(FS)O and the duties (e.g. assessment of building safety risks) and documents (e.g. safety case report) required to obtain a building assessment certificate as defined by Section 81 of the BSA 2022.

4.5.10 A PAP must revise a safety case report if they consider it necessary as a result of assessment of building safety risk by an AP or during the management of building safety risks. As mentioned in Section 3.3.147 I understand the safety case reports are also to be reviewed by the BSR every 5 years.

4.5.11 An example of the approach of new works in an existing building not requiring consideration of fire safety improvements, and thus potentially exposing occupants of that building to differing

degrees of harm in the event of fire, is the statement in the LABC 2020 *Building regulations and fire safety procedural guidance* (LABC, 2020) [55], at Section 3.1.4 (bold by me):

Building work that complies with the Building Regulations' requirements for fire safety will normally be satisfactory when the building is occupied. However, where ***alterations to an existing*** *building are involved, compliance with the Building Regulations will not always result in the fire measures to parts of that building being upgraded. The Building Regulations* ***do not require improvements to be made in areas where, before the work starts, a relevant requirement does not comply with the Regulations and after completion that area will not be any more unsatisfactory****. However, there may be hazards and risks associated with the specific operations of the occupier that would not be covered by the Building Regulations and* ***would need to be taken into account to meet the requirements of the Fire Safety Order.*** *There is obvious* ***practical value*** *in taking these other fire safety matters into account, where possible, in the design and construction phases,* ***although the legislation only becomes applicable on occupation*** *of the building.*

The Fire Safety Order encompasses the concept of continuous improvement and to reduce the risk in an existing building, ***where work is proposed, responsible persons*** *should review their fire safety measures to take account of* ***changes in guidance and technology****.*

4.5.12 There is no clear signposting by the LABC that fire risk assessments (and going forward safety cases) may require building work to be undertaken to mitigate fire safety risk; nor do they signpost that this *should* be considered when determining whether or not improvements are required to a building to enable a Responsible Person to meet their primary duty.

4.5.13 Amendment to Regulation 6 Building Regulations 2010

4.5.14 I am aware of only one place where the Building Regulations 2010 mandates fire safety upgrade works outside of the area of the building undergoing material change of use, which I set out in the following paragraphs. In all other cases, the need to implement improvements outside the direct area of building work rests solely on the interpretation of the Building Regulations by the relevant building control approver.

4.5.15 Regulation 6 *Requirements relating to material change of use* sets out the requirements on building work where there is a material change of use. There are separate requirements where the change of use applies to the whole building, or only part of the building. The relevant parts of Regulation 6(2) have been retained unchanged since the regulations were first published in 2010 as follows (bold by me):

(2) Where there is a material change of use of part only of a building, such work, if any, shall be carried out as is necessary to ensure that—

(a) ***that part complies in all cases with any applicable requirements referred to in paragraph (1)(a)****;*

(b) in a case in which sub-paragraphs (b), (e), (f), (g) or (h) of paragraph (1) apply, that part complies with the requirements referred to in the relevant sub-paragraph

(c) ***in a case to which sub-paragraph (c) of paragraph (1) applies, the <u>whole building</u> complies with the requirement referred to in that sub-paragraph****;*

4.5.16 Where sub-paragraph (c) of Regulation 6(1) has been amended to refer to buildings over 11m, rather than 15m as originally published:

[55] Local Authority Building Control (2020) Building Regulations and Fire Safety Procedural Guidance July 2020 Edition published https://www.labc.co.uk/business/resources/building-regulations-and-fire-safety-procedural-guidance-july-2020-edition-published Accessed 17/10/2023.

*(1)(c)in the case of a building exceeding **eleven metres** in height, B4(1) (external fire spread—walls).*

4.5.17 This means that the exterior wall of the entire building needs to comply with B4(1) even if there is a material change of use only in part of a building. This is important because the changes to AD B and Regulation 7 will now mandate that any material change of use to any part of a building where the external wall materials do not achieve Class A2, s1-d0 or better, must allow for a full upgrade to the external wall construction.

4.5.18 This is a significant change as it aims to address the particular hazard associated with combustible exterior walls in existing buildings. As stated in Section 4.3.14 above, external wall systems that are compliant with AD B 2022 are a significant improved safety standard for vulnerable people who may not be able to evacuate via stairs when required to do so; so it is a positive development that this is also now required in existing buildings undergoing a change of use (e.g. to a HRRB).

4.5.19 This means that when there is change of use in a building over 11m then the external wall must be brought up to meet the Requirements of Part B4 of the Building Regulations 2010 apparently without any test of whether it is *reasonably practicable*.

4.5.20 Concluding points

4.5.21 Vulnerable people in new HRRBs could have increased protection through the updates to statutory guidance in AD B 2022, but unfortunately these are not mandatory.

4.5.22 Sprinklers and evacuation alert systems are now prescribed in the AD B for new HRRBs and external walls are regulated in new HRRBs and existing buildings over 11m undergoing a change of use (e.g. to an HRRB).

4.5.23 Equitable egress is still not provided for, so HRRBs can continue to omit refuges, two-way communication systems and evacuation lifts.

4.5.24 Vulnerable people are exposed to more harm in existing HRRBs as Regulation 3 & 4 of the Building Regulations 2010 continue to allow reliance on the so called "*non-worsening principle*" which means the updates to AD B are not applied retrospectively in existing buildings undergoing works.

4.6 Fire statistics and vulnerable people

4.6.1 The Home Office collects data sets about fires in buildings and publishes fire statistics in England. The published information is often grouped in a way that it is not possible to understand the number of fires in a house versus a block of flats.

4.6.2 Also published data sets do not always contain information about the residents that died or were injured. This is not to say that the data does not exist but it is not in the public domain.

4.6.3 The following text describes the trends that I have found in some limited fire statistics in the public domain.

4.6.4 The Home Office conducted a review of fire-related fatalities and severe casualties in England from 2010/11 to 2018/19 and this was published in March 2023, as a summary of research conducted in two phases (Home Office, 2023e)[56].

[56] Home Office (2023e) An in-depth review of fire-related fatalities and severe casualties in England, 2010/11 to 2018/19 https://www.gov.uk/government/publications/an-in-depth-review-of-fire-related-fatalities-and-severe-casualties-in-england-2010-to-201819/an-in-depth-review-of-fire-related-fatalities-and-severe-casualties-in-england-201011-to-201819#executive-summary. Accessed 17/05/2023.

4.6.5 In Phase 1 of the review, data was taken from Home Office Incident Reporting Systems (IRS) to explore the circumstances of fires involving a fatality or severe casualty in the years ending March 2011 to 2019; although limited information is collected about the victims of the fire in an IRS. The analysis found that older people (65 or over) are more likely to die than those in the 45-64 age bracket.

4.6.6 Phase 2 of the study then analysed data from fire incident reports (FIRs) from one year (1 April 2016 to 31 March 2017) to explore the circumstances and behaviours of individuals leading up to and during the fires attended by the fire and rescue service that were recorded in FIRs. The data set created from FIRs contains 109 different data categories, 29 of which relate to impairments of people impacted by the fire, and 20 relating to human behaviour.

4.6.7 The data does not differentiate between dwelling types (e.g. flats versus houses) in the published information.

4.6.8 Key findings included:

5.1 Profile of fatal fires in the year ending March 2017

Key findings

- *there were 185 fatal dwelling fires involving 201 victims in the year ending March 2017 for which there was an available FIR*
- *the fatal fires in the year ending March 2017 largely have the same profile of fatal fires since the year ending March 2011 as they generally started in the bedroom or sitting room, occurred in houses and the most common source of ignition was smoking materials*
- *most victims were male (115 of 201, 57%) and or over the age of 65 (98, 49%)*

5.3 Impact of impairments on the outcomes of a fire

Key findings

- *the majority of victims had some level of overall impairment (123 of 201 victims)*
- *physical impairments were the most prevalent (76 victims); however, there were several victims where this was combined with mental (16 victims) or substance (7 victims) related impairments (10 victims had all three combined)*
- *the most frequently recorded impairments were alcohol (56 victims), prescribed drugs (42 victims) and age-related physical impairments (45 victims)*
- *the victims' responses were thought likely to be affected by impairment in the majority of cases (101 victims)*

4.6.9 It also notes that "*Local factors, for example age profile of residents and building composition, could have contributed to the likelihood of fires and, at a more local level, fatal and severe casualty fires occurred more frequently in areas of high deprivation".*

4.6.10 Fire and rescue incident statistics for England for the year ending March 2022 published by the Home Office in August 2022 (Home Office, 2022)[57] indicate that fire safety improved in the period 1999-2014 and has remained relatively stable since, across all reported major categories

[57] Home Office (2022) Fire and rescue incident statistics: England, year ending March 2022 https://www.gov.uk/government/statistics/fire-and-rescue-incident-statistics-england-year-ending-march-2022/fire-and-rescue-incident-statistics-england-year-ending-march-2022 Accessed 17/05/2023.

for the number of fire incidents attended i.e. "*dwellings*" which includes all housing types, "*other primary fires*" and "*secondary and chimney fires*" as indicators.

4.6.11 The data set made available in this study does not provide any correlation to vulnerability of residents that died or were injured because of a fire in their home.

4.6.12 The Home Office (2022) reports that:

> *The 272 fire-related fatalities in the year ending March 2022 included 208 in dwelling fires (consistently the largest category). It should also be noted that the numbers of fire-related fatalities, whether annual or quarterly, are prone to fluctuations due to relatively low numbers. The total number of fire-related fatalities is at a historically low level.*
>
> *There were zero fire-related fatalities in purpose-built **high-rise** (10+ storeys) flats or maisonettes in the year ending March 2022, in zero fatal fires. FRSs attended 783 fires in these flats or maisonettes. This compares to six fire-related fatalities in the previous year in four fatal fires.*
>
> *There were ten fire-related fatalities in purpose-built **medium-rise** (4 to 9 storeys) flats or maisonettes in the year ending March 2022, in nine fatal fires. FRSs attended 1,907 fires in these flats or maisonettes. This compares to nine fire-related fatalities in the previous year in eight fatal fires.*
>
> *There were 20 fire-related fatalities in purpose-built **low-rise** (1 to 3 storeys) flats or maisonettes in the year ending March 2022, in 20 fatal fires. FRSs attended 4,645 fires in these flats or maisonettes. This compares to 31 fire-related fatalities in the previous year in 31 fatal fires.*
>
> *There were 115 fire-related fatalities in **single occupancy houses** in the year ending March 2022, compared to 90 in the previous year.*

4.6.13 The summary provides unfortunately no further contextual review. Matters such as setting out how many of the fires in high and medium-rise flats were either in buildings that no longer operate the standard Stay Put evacuation approach and instead operate a temporary simultaneous evacuation strategy should be made clear, so that this data can be used in practice.

4.6.14 For example, as of June 2022, there were over 1,000 buildings in London where the evacuation strategy had been changed due to cladding or other fire safety issues (London Assembly, 2022)[58], or due to the hazardous construction of the building. This number is subject to change e.g. as cladding remediation works are completed.

4.6.15 The coarse data categories in which fire incident data is presented by the Home Office also do not allow third parties to further investigate and correlate such data with other datasets, in order to draw out what may be relevant indicators to be considered when seeking to develop safety cases for existing HRRBs, or fire strategies for new HRRB buildings.

4.6.16 There is a need for better granularity and definition of data to inform this type of advice, to assess whether fire safety regulatory reforms are having an impact and/or if some of the hazards arising from megatrends are in fact causing more fires and whether or not there is an increase or decrease in the number of injuries or fatalities.

[58] London Assembly (2022) Temporary Simultaneous Evacuation https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/temporary-simultaneous-evacuation Accessed 27/05/2023.

4.7 Ageing population

4.7.1 Looking to the future, statistics and projections produced by ONS (2018) in their website *Living longer: how our population is changing and why it matters* [59] have long shown that the UK's population is ageing to quote ONS:

> *Through the latter half of the 20th Century, the UK population has been steadily getting older and this trend is projected to continue in the future. In 2016, there were 11.8 million UK residents aged 65 years and over, representing 18% of the total population – 25 years before, there were 9.1 million, accounting for 15.8% of the population.*

4.7.2 The latest projections show that in 50 years' time, there are likely to be an additional 8.6 million people aged 65 years and over. There is a correlation between age and disability[60] - in 2021/22, the "*80 years and over age group, 60 percent of women and 55 percent of men had a disability*".

4.7.3 A research briefing paper by the UK Parliament House of Commons Library (2023) *UK disability statistics: Prevalence and life experiences*[61] states that (bold by me):

> *The latest estimates from the Department for Work and Pensions' Family Resources Survey indicate that **16.0 million people in the UK** had a disability in the 2021/22 financial year. This represents **24% of the total population**.*
>
> *The proportion of the population reporting a disability has risen by 6 percentage points since 2002/03, up from 18%. Most of this increase has been observed over the past decade, with disability prevalence up by 5 percentage points from 19% in 2010/11.*
>
> ***The prevalence of disability rises with age**: in 2021/22 around 11% of children in the UK were disabled, compared to 23% of working-age adults and **45% of adults** over State Pension age. **Most people aged 80 and over reported a disability (58%).***

4.7.4 Other countries are showing similar trends in their fire statistics and have similar concerns about fire safety of an ageing population.[62,63,64] This trend will put a significant strain on health and social systems including fire safety systems that are required to protect all people.

4.7.5 As the UK (and global) population continues to age, the lack of inclusive means of escape is exacerbated. Guidance documents which fail to consider the current and looming trends, such as the entrenched position in PAS 9980:2022 (See Section 4.4.49 above) which incorrectly advises on occupancy profiling, are indicators of key fire safety stakeholders either not willing to change or being incapable of changing.

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[59] Office of National Statistics (2018) Living longer: how our population is changing and why it matters https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/livinglongerhowourpopulationischangingandwhyitmatters/2018-08-13 Accessed 17/10/2023.

[60] Office for National Statistics (UK), & Department of Education (Northern Ireland). (July 21, 2023). Share of disability in the United Kingdom (UK) in 2021/22, by age and gender [Graph]. In Statista. Retrieved November 06, 2023, from https://www.statista.com/statistics/449258/disability-prevalence-age-gender-united-kingdom-uk/

[61] UK Parliament House of Commons Library (2023) *UK disability statistics: Prevalence and life experiences* https://commonslibrary.parliament.uk/research-briefings/cbp-9602/#:~:text=The%20prevalence%20of%20disability%20rises,reported%20a%20disability%20(58%25). Accessed 4/11/2023.

[62] FEMA (2011) Fire Death Rate Trends: An International Perspective. Topical Fire Report Series. Volume 12. Issue 8. https://www.usfa.fema.gov/downloads/pdf/statistics/v12i8.pdf. Accessed 5/11/2023.

[63] Cassidy, P., McConnell, N. C., & Boyce, K. E. (2020). The older adult: Associated fire risks and current challenges for the development of future fire safety intervention strategies. Fire and Materials, 45(4), 553-563.

[64] Fernández-Vigil, M., Gil Rodríguez, B. & Echeverría Trueba, J.B. (2020) Fire Safety Strategies to Reduce Mortality in Dwellings Occupied by Elderly People: The Spanish Case. Fire Technol 56, 2257–2281

4.7.6 The ongoing failure to accept the changing needs of the population, and thus the changing needs of housing, means there is implicit acceptance that it is reasonable and even lawful to expose multiple occupant types to severe harm in the event of fire.

4.8 Need for an equitable fire safety system that protects through requiring arrangements to be made for vulnerable persons

4.8.1 For the reasons outlined above, it is imperative that the total fire safety system with all its relevant components, ultimately enables equitable fire safety; clearly acknowledging needs arising from the complexity that exists within the built environment and the consequential effect on fire safety requirements.

4.8.2 The trends are clearly demonstrating that this complexity is not going away. The aging population particularly means that the current failure to protect vulnerable persons can only have worsening consequences over time.

4.8.3 To ensure an evidence based approach, data collected by fire and rescue services if studied in more detail may enable an understanding of what relevant factors might be contributing to fire casualties in blocks of flats.

4.8.4 Re-defining the data to be collected after a fire incident may also be required, depending upon what information is already being collected and available with the Home Office, but is not currently in the public domain.

4.8.5 The fire safety system must address the relevant factors (e.g. regulation, mandatory guidance, competency, investment, culture, human behaviour, ownership structures etc) as discussed in Section 6 below, as these are the factors that can prevent further improvement of fire safety in the built environment. This is especially the case for existing buildings and for vulnerable people.

4.8.6 The fire safety system needed is one that causes "*equitable fire safety*" or "*fire safety equity*" and thus is a system that seeks to eradicate the unequal fire risk burden carried by vulnerable persons arising from fires in their homes and their neighbours' homes.

5. The need for a regulated fire safety profession

5.1 Unregulated profession

5.1.1 It is my opinion that any fire safety professional, regardless of what report they are writing or activity they are contracted to do, needs to be part of a regulated profession with legal minimum competency requirements and ongoing accreditation. Fire safety professionals should be registered or licensed for their role by Government through enforceable building regulations, and not through accreditation by professional bodies only.

5.1.2 There are no requirements under the regulatory system for a fire safety engineer to be a Chartered Engineer or for a fire safety engineer to authorise fire safety documentation for regulatory approval or for any other purpose. Anybody can call themselves a fire safety engineer, without any qualifications or experience. This means there are no formal controls of competence in the profession.

5.1.3 The only time a fire safety engineer is required to prove Chartered Engineer status with the Engineering Council is when conducting RICS EWS1 assessments where an external wall contains combustible materials and an assessment has to be made about the level of risk posed by the wall. This was only implemented post-Grenfell.

5.1.4 The development of fire safety strategies, *fire statements*, fire safety system designs and fire risk assessments etc. can be carried out by anyone calling themselves a so called 'fire safety professional'.

5.1.5 The scope of fire safety work and of key responsibilities are also unclear. There are widely varying views on the expected role of different parties in relation to fire safety work.

5.1.6 Fire safety risk assessors and others advising management organisations about how to maintain fire safety for the life of the building in use are also unregulated.

5.1.7 In Section 3 of this report I emphasised the increasing layers of responsibility and additional requirements imposed by the new legislation since 2017, which I welcome. This introduces further complexity, which we should not shy away from – it means greater rigour and attention is needed to understand the full meaning of all relevant requirements. This rigour and care was *always* needed.

5.1.8 Table 3-3 sets out the key deliverables now requiring input from skilled fire safety professionals at each of the stages in the RIBA Plan of Work. This increasing reliance on sound fire safety knowledge, makes an even stronger case for an intervention in how fire safety professionals operate and thus an even stronger case for setting formal competency requirements and the enforcement of them.

5.1.9 This is why I recommend the need for a regulated fire safety profession.

5.1.10 The use of words such as prescriptive, performance, mandatory, non-mandatory, are used interchangeably and are not well understood and this inaccuracy has eroded the part of our culture where our commitment to life safety should be at the fore of our thinking and decision making (as I explained in Section 3.6).

5.1.11 For the avoidance of any doubt, I provide the following basis for my own opinion.

5.1.12 Using the language in Felicia Rankl's research briefing *Building regulations and safety* dated 6 June 2023 (Rankl, 2023)[65] (bold by me):

> ***Summary***
>
> *Building regulations are performance based: they set outcomes that need to be met but do not set out **how these outcomes** must be achieved. For example, a building needs to meet energy efficiency requirements, but it does **not need to be fitted with a specific type of insulation** or heating system. The government provides **guidance of how to comply** with building regulations in common building situations in Approved Documents.*

5.1.13 And at Section 1.2:

> *The Building Regulations 2010 set **performance-based requirements**: they set outcomes that building work needs to achieve, but **they do not set out how these outcomes need to be met.** They **do not set prescriptive rules over which materials, methods or technologies** should be used to achieve compliance*

5.1.14 And later

> *The Approved Documents provide **examples and solutions on how to achieve compliance** in common building situations. **Effectively, they provide prescriptive guidance on how to meet the performance-based requirements of the Building Regulations 2010**.*

5.1.15 For the avoidance of any doubt, I do not at all subscribe to the opinion that fully prescriptive rules (so rules which prescribe materials, methods or technologies) mean less knowledge, experience, or skill is needed from the professionals taking responsibility for fire safety standards on a project.

5.1.16 I have worked in highly regulated countries with regard to fire safety, and deep expertise and knowledge on fundamental fire safety engineering and fire safety science is still required. Ultimately the assembly of any fire safety solution in a real building, through prescriptive rules or through prescriptive guidance (i.e. guidance that sets out how to meet performance based requirements), cannot be done effectively without competence.

5.1.17 In my opinion, AD B does not provide clear guidance on how to implement performance-based design methodologies, nor does it set sufficiently prescriptive rules that can be relied upon as a route to demonstrating compliance with the Building Regulations Part B. This requires the full attention of the Secretary of State and the BSR, to ensure the welcome intentions emerging through the new regulations become prevailing practice.

5.1.18 As an example, I present the difference between *British Standard Code of Practice: Code of basic data for the design of buildings – Chapter IV: Precautions against fire – Part 1 Flats and Maisonettes (in blocks over two storeys)* 1971 (CP3) and the current level of detail in AD B, Vol. 1, 2022. CP3 provides extensive narrative to describe why certain solutions are provided for, explaining what parts of the package of protection are relevant to occupants in different stages of escaping from a fire. Whereas AD B provides a much more limited description of the intent of the protection measures, and importantly does not set a clear limit when it is no longer applicable, referring to imprecise descriptions only of what is a 'common building'.

5.1.19 There is insufficient clarity on both the functional requirements, and the basis for the guidance in the AD B; as well as the limits of the statutory guidance thus when it is no longer suitable as a basis for demonstrating compliance with Part B of the Building Regulations. Much further provision of supporting information and analysis is required to enable rigorous performance-

[65] Rankl, F. (2023) Building regulations and safety: Research Briefing. House of Commons Library. https://researchbriefings.files.parliament.uk/documents/CBP-8482/CBP-8482.pdf. Accessed 7/11/2023.

based design methods and indeed to enable rigorous compliance with the guidance in AD B itself.

5.2 New BSA 2022 does not yet require a regulated fire safety profession

5.2.1 Dame Judith Hackitt's final report (Hackitt, 2018) identifies the following recommendation in relation to competence:

> *Setting out demanding expectations around improved levels of competence (set out in Chapter 5) through […] The construction sector and fire safety sector demonstrating more effective leadership for ensuring building safety amongst key roles including an overarching body to provide oversight of competence requirements…*

5.2.2 As I described earlier in Section 3.3.94, a core function of the BSR is its responsibility for industry wide competence.

5.2.3 Importantly though, there are no areas of work that I am aware of for which there are current building regulations or specific standards stipulating that professionals are required to have a particular accreditation, such as Chartered Engineer, when undertaking fire safety work.

5.2.4 I am aware of clients that do set out such criteria, as part of their Employer Requirements for a project, but this is neither mandated nor necessarily common practice.

5.2.5 Thus, at the current time there is little incentive to obtain professional accreditation as a fire safety engineer, or membership of a professional engineering institution (e.g. the Institution of Fire Engineers, IFE). As a result, the professional institutions have limited powers to enforce competency and ethics across the industry.

5.2.6 I note that the Building Regulations etc. (Amendment) (England) Regulations 2023 came into force on the 1st October 2023 and inserted a new Part 2A into the Building Regulations 2010 titled *Dutyholders and competence* (see also my Section 3.3.113 above).

5.2.7 Dutyholders for building work on all buildings in England, including HRBs are defined as "*Client*", "*Principal Designer*", "*Designer*", "*Principal Contractor*" and "*Contractor*". A fire safety engineer is not listed as a dutyholder unless they are considered a "*Designer*".

5.2.8 New standards have also been published to set core criteria for building safety in competency frameworks (BSI Flex 8670 v3.0:2021-04 Core criteria for building safety in competence frameworks. Code of practice), as well as frameworks for Principal Designers (PAS 8671:2022), Principal Contractors (PAS 8672:2022), and competence requirements for the management of safety in residential buildings (PAS 8673:2022).

5.2.9 BSI Flex 8670 is currently being converted to a full British Standard *BS 8670 Built environment. Core criteria for building safety in competence frameworks. Code of practice* (BSI, 2022)[66].

5.2.10 The BS 8670 draft proposes competence frameworks in the Built Environment industry to be organised under: a) core criteria for the structure of sector-specific competence frameworks, which include e.g. roles in scope, types of buildings in scope, requirements for (re-)validation and maintaining competence; b) behavioural competence for building safety; and c) core criteria for building safety, with specific sub-sections for i) fire safety, structural safety and public safety; ii) managing building safety; iii) knowledge management and communication; and iv) buildings as systems, building systems and construction products and materials.

[66] British Standards Institute (2022) BS 8670 Built environment. Core criteria for building safety in competence frameworks. Code of practice https://standardsdevelopment.bsigroup.com/projects/9022-06761#/section Accessed 4/11/2023.

5.2.11 The draft standard further provides four informative annexes to support the development of competence for specific competence frameworks, namely:

Annex A (informative) Behavioural competence;

Annex B (informative) Fire and life safety in buildings;

Annex C (informative) Structural safety in buildings; and

Annex D (informative) Public health and public safety in buildings.

5.2.12 I expect that Professional Engineering Institutions will review their existing competence frameworks against this standard once it is published, and make adjustments where identified.

5.2.13 My opinion that a fire safety engineer giving advice during the design and construction stage of projects is a "*designer*" under CDM and now also under the new dutyholder roles in the Building Regulations is not universally agreed.

5.2.14 For this standard to be adopted by the Professional Engineering Institutions responsible for the professional accreditation of designers influencing building safety, full understanding and agreement about the substantial influence fire safety engineers have on the fire safety features selected for a building during design, and the way they are installed during construction, will be required, as well as understanding why this role is so important and requires regulation.

5.2.15 Specialist registration with the Engineering Council provides a possible route to raise the duties required of the role and elevate the competency requirements of fire safety engineers with those duties.

5.3 Existing specialist registrations with the Engineering Council

5.3.1 The Engineering Council notes under "*Status of Engineers*"[67] (bold by me):

The word Engineer and the Engineering Council's professional titles

Commonplace use of the word engineer in our language has evolved over many centuries. Hence anyone in the UK may describe themselves as an engineer. Seeking to ***regulate or legislate*** *on the use of a* ***now common term*** *is recognised by the Engineering Council as totally impractical. However, the professional titles of Engineering Technician (EngTech), Incorporated Engineer (IEng),* ***Chartered Engineer*** *(CEng) and ICT Technician (ICTTech) may only be used by those who have been granted these titles through registration with the Engineering Council.*

These titles attest to the professional competence of their holders and their commitment to professional ethics and practice. They are only awarded to those who can demonstrate, through a process of peer assessment, that they meet the required standards. The Engineering Council, with the professional engineering institutions, keeps these standards under constant review to ensure that they remain valid and are clearly defined. ***Taken together, these features of our regulatory system provide assurance, serve to protect the public and give confidence to society as a whole. It is upon such recognition that the status of professional engineers and technicians must rest.***

These professional titles are fully protected under law *by means of the Engineering Council's Royal Charter and Bye-laws; further legislation is thus unnecessary. In order to protect these titles* ***action is taken through the courts against their unauthorised use.***

[67] Engineering Council "Status of Engineers" https://www.engc.org.uk/glossary-faqs/frequently-asked-questions/status-of-engineers/ Accessed 17/10/2023.

Shouldn't there be some restriction on who can practise engineering?

Engineering is continually evolving and by its nature embraces innovation. Accordingly, the engineering profession has always recognised and encouraged this approach. Efforts to restrict its practice would go against this ethos and risk stifling innovation, and would therefore be likely to be seen as anti-competitive and unjustified.

However, there are ***quite correctly restrictions on practice in some safety-critical areas****, such as dam engineering, aircraft maintenance, and railway signalling, where specialist registers exist.* ***The Engineering Council would support the extension of specialist registration*** *to other areas when justified.*

5.3.2 It is my opinion that the current state of fire safety in the built environment, and the ongoing risk of harm and rising cost burden caused by the need for repairs, imposed on society as a result, merits the Engineering Council considering (a) fire safety as a safety-critical area and (b) extending its specialist registration to persons with duties to carry out fire safety engineering (using prescriptive or performance based methods) and fire risk assessments.

5.3.3 Additionally, the increasing fire safety hazards arising from new technologies and the focus on decarbonisation resulting in increased use of timber in construction and reusing/repurposing existing buildings reinforces the need for specialist registration of the fire safety profession.

5.3.4 It is my opinion that persons that do not have the required expertise should not be able to practice fire safety engineering, a life safety critical role; though without a regulated profession it will not be possible to control who practices and who should not.

5.4 The Institution of Fire Engineers response to competencies required for HRBs (during design, construction and occupation)

5.4.1 The Institution of Fire Engineers (IFE) already provides guidance on minimum competencies required if one chooses to become professionally registered with them as CEng, IEng or EngTech. These are aligned with the latest Engineering Council UK-SPEC (UK Standard for Professional Engineering Competence) with the IFE's own Initial Professional Development (IPD) objectives set out specific to fire safety engineering.

5.4.2 The UK-SPEC are used for IFE registration anywhere in the world, and they span across the following categories: (1) Knowledge and understanding, (2) Design, development and solving engineering problems, (3) Responsibility, management and leadership, (4) Communication and interpersonal skills, and (5) Professional commitment.

5.4.3 The Engineering Council have published the ***UK Standard for Professional Engineering Competence and Commitment Contextualised for Higher-Risk Buildings*** (UK-SPEC HRB)**. They state the following[68]:**

UK-SPEC HRB is a version of UK-SPEC that has been contextualised for engineers and technicians involved in building work, including design, construction, maintenance and operation. It incorporates the British Standards Institution, Built environment – Core Criteria for building safety in competence frameworks – Code of practice (BSI Flex 8670), which sets out core building safety competence criteria, including fire safety, structural safety and public health.

5.4.4 To become registered, one will need to be a member of one of the professional engineering institutions that the Engineering Council have licensed to carry out assessment to UK-SPEC

[68] Engineering Council "UK-SPEC HRB" https://www.engc.org.uk/standards-guidance/standards/uk-spec/uk-spec-hrb/ Accessed 29/10/2023.

HRB. The initial discipline annexes are fire engineering, structural engineering, building services engineering.

5.4.5 At the time of writing, the Chartered Association of Building Engineers (CABE) has been granted a license to award professional HRB registration (Engineering Council, 2023) [69]. It is my understanding that the IFE have been granted a licence, while ICE and IStructE are expecting that applications for registration to their jointly run register will be open early in 2024 for structural engineers (ICE, 2023)[70].

5.4.6 I note that the readiness of these contextualised registers is some 6+ months behind the aspirational timeline for competence activity published by the Construction Industry Council (CIC)[71] which anticipated these contextualised registers to be available from June 2023; an updated timeline was not available at the time of writing.

5.4.7 To date, the BSR has not set specific requirements for competence for fire safety engineers, and currently Clients are required to take all reasonable steps to ensure that the designers they appoint have the required competence, as part of their new duties under Part 2A of the Building Regulations.

5.4.8 Whilst I fully support formal competency definitions and more formal and relevant competency frameworks, if there is no duty to have a registered title to practise, and thus no requirement to be competent to practise, such frameworks are ultimately futile.

5.5 Role of the fire safety engineer, accountabilities and contractual duties

5.5.1 The role of Exova as the fire safety engineer for the upgrade works at Grenfell Tower was the topic of significant evidence as referred to in my Phase 2 Module 2 report on this matter *The fire safety engineer – The adequacy of the advice provided by the fire safety engineer for the primary refurbishment: Exova* {BLARP20000017}.

5.5.2 It is imperative that not only the competency of a Chartered Engineer advising on fire safety including compliance with relevant Regulations, should be defined and regulated, but also their accountability and their role and responsibilities. The aim of this being to bring rigour to our work and create a strong sense of responsibility for any and all activities by professional fire safety engineers.

5.5.3 The extensive legislative changes require additional outputs – See Section 3.1 above; but the following issues require further attention.

5.5.4 These include:

a. Defining the minimum information and minimum delivery expectation from a fire safety engineer when contracted to produce a **new building** fire safety strategy, for all Stages of the plan of work:

i. The fire safety strategy report should document key assumptions, constraints and fire hazards identified, and the required fire safety measures to meet legislative and client objectives, but this cannot be the end of the fire safety engineer's role. A fire safety

[69] Engineering Council (2023) First license to offer Higher-Risk Building (HRB) registration awarded https://www.engc.org.uk/news/press-releases/pr2023/first-hrb-licence-awarded/ Accessed 2/11/2023.

[70] Institute of Civil Engineers (2023) ICE and IStructE announce partnership to ensure the safety of tall buildings https://www.ice.org.uk/news-insight/news-and-blogs/latest-news/news/ice-istructe-higher-risk-buildings-register Accessed 29/10/2023

[71] Construction Industry Council. "Timeline for competence activity" https://www.cic.org.uk/uploads/images/CSG-Timeline-for-competence-activity-V4-Final-14.10.2022.pdf?v=1667382281 Accessed 4/11/2023

engineer should also be made responsible for participating in the ongoing design process to help coordinate and check the fire safety requirements are being provided by the other professional disciples delivering the project, including proactively checking milestone deliverables such as the concept and detailed design reports, drawings, models or specifications produced by other disciplines etc.

ii. There is a strong need for the fire safety engineer to check the works by the contractor and also the fire testing and certification of products or materials to be used in the building. This requires substantial expansion of competency to do so throughout the current profession; and preparing future professionals to be capable of undertaking this crucial activity.

iii. The owner / responsible person must be briefed by the fire safety engineer so they understand the fire safety strategy and related fire safety documentation at handover and the minimum expectations the fire safety engineer has assumed of the owner in their future role under the RR(FS)O. The fire safety engineer must take responsibility for ensuring the occupation stage reflects the approved basis for design. They are a critical stakeholder in a robust handover. Handover is one of the most important aspects of future safety standards based on my own extensive experience.

iv. There should also be a "*post occupation evaluation*" by the fire safety engineer, i.e. a process of obtaining feedback on the building's fire safety performance in use after it has been built and occupied, to collect information about the building's fire safety features and building user satisfaction.

v. It is recognised that the fire safety engineer cannot take sole design responsibility for other discipline tasks and outputs, for example a particular fire safety system by an electrical engineer or a wall lining by an architect, but the fire safety engineer must seek to obtain sufficient evidence from the rest of the design team to satisfy themselves the specified materials/products meet the minimum performance requirements set out in their fire safety strategy. This is part of formally confirming that their own design has been specified and constructed, and again is a crucial part of a robust handover for safe occupation.

5.5.5 These points are a limited set of exemplars to explain the urgent need for a holistic and integrated approach and a more fundamental requirement of responsibility from fire safety professionals for the whole life cycle of building works and the consequences for building occupants.

5.5.6 This substantial uplift in diligence, competency and rigour, is required at all stages; irrespective of a prescriptive or performance methodology employed in formalising the fire safety design stage of a project.

5.5.7 Design is only one stage in a framework that must operate highly effectively in every stage and most substantially during construction and then handover, to produce a fire safe building.

5.5.8 I oppose any distinction in acceptable levels of rigour, as a function of design methodology. It is an entirely incorrect proposition.

5.5.9 The reliability and quality and accuracy of the constructed building and all the active and passive fire safety measures once combined together, is the most important stage: whether those measures *are derived* in a prescriptive or performance regime is irrelevant by then.

5.5.10 The minimum information and minimum expectation from a fire safety engineer when contracted to produce a retrospective fire safety strategy for an **existing building** also requires definition:

i. As for 5.5.4 (a) except there is significant work to be done to understand:

   a. the existing fire safety measures in place and the people in and about the building that the measures are designed to protect, and

   b. how (or if) these fire safety measures deliver the known or anticipated fire safety strategy for the building, and

   c. the status of these fire safety measures, and

   d. the compliance status with fire safety guidance at the time the building was originally constructed (where known), and with current fire safety standards, and

   e. where there are non-compliances, what risks these pose to persons in and about the building, and to what extent these risks need to be further mitigated;

ii. to then set out the proposed retrospective fire safety strategy, and any remedial works necessary, as well as residual risks, for agreement with the relevant dutyholders.

iii. Input from other engineers and architects etc. may be required to determine the status of fire safety measures.

5.5.11 Where **building work is undertaken in an existing building with a documented fire safety strategy**, for example when there are ongoing changes to a tenancy, or additional storeys or other extensions made, it will be important to continue to retain a single source of reliable fire safety information for the full building. This document needs to be a clear record of any changes to the fire safety arrangements for the building. Otherwise I can foresee that a single building could end up with multiple fire safety strategy documents, potentially by different fire safety engineering companies, which could result in conflicting information. This is particularly relevant to a single building with multiple dutyholders.

5.5.12 For occupied HRBs, the new regime identifies the PAP as the dutyholder responsible for maintaining the safety case for the HRB; HSE guidance (HSE, 2023h)[72] notes at a high level what a safety case report must contain and that:

You should update your safety case report, for example, when:

- *improvement work is carried out to manage building safety risks*
- *work on the building impacts building safety risks*

You should notify the Building Safety Regulator of any updates or revisions to your safety case report. We (the BSR) *may ask to submit an updated copy of the report.*

5.5.13 There is no requirement for a fire safety strategy to be in place to inform the safety case report in HSE guidance, nor does the Home Office guide for persons with duties under fire safety legislation published in September 2023 by the Secretary of State (Home Office, 2023f)[73] in accordance with Article 50 of the RR(FS)O expect such a document to inform fire risk assessments.

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[72] Health and Safety Executive (2023h) Preparing a safety case report https://www.gov.uk/guidance/preparing-a-safety-case-report Accessed 04/11/2023.

[73] Home Office (2023f) A guide for persons with duties under the Regulatory Reform (Fire Safety) Order 2005 (as amended) and the Fire Safety (England) Regulations 2022 https://assets.publishing.service.gov.uk/media/651567fe7c2c4a001395e180/14.310_HO_How_To_Guide_FINAL_RX_v04_.pdf Accessed 04/11/2023

5.5.14 There is also no guidance currently as to how a new or retrospective fire safety strategy should be prepared, or how updates to a retrospective fire safety strategy should be managed.

5.5.15 The new regulatory requirements when undertaking building work in HRBs prescribe in more detail which information must be submitted to the BSR as part of the building control approval application, as a function of the type of building work (Category A or B work), however a fire safety strategy is not required by law, as I have set out in my earlier Section 3.3.47.

5.5.16 The deliverables, roles and responsibilities of a fire safety engineer and any other disciplines delivering fire safety measures should be documented and agreed for each project stage at the start of a project. This will lead to greater consistency from the wider supply chain.

5.5.17 Fire safety engineers giving design advice on regulatory compliance in new and existing HRBs should have the status of Chartered Engineer against the new Engineering Council UK Standard for Professional Engineering Competence and Commitment Contextualized for Higher-Risk Buildings (UK-SPEC Higher-Risk Buildings (HRB)). This would show that they understand the new legislation and activities now required and understand their full responsibilities when delivering compliance for all relevant requirements for any project they provide services on.

5.5.18 Equivalent expectations should be imposed on other engineers (e.g. structural engineers) giving safety critical advice in HRBs.

5.6 Role of persons carrying out fire risk assessments and any activities to comply with the RR(FS)O

5.6.1 As I have explained above, the Grenfell Tower Fire, and the scale of defective fire safety related building work throughout England which subsequently came to light, warrants an extension of specialist registration to anyone wishing to practice in fire safety, but this should include fire risk assessors, not just fire safety engineers.

5.6.2 I have set out my analysis of the competence requirements of the RR(FS)O in Section 4 to 6 of Chapter 8 of my Module *3* report *The adequacy of the advice provided by the fire risk assessor Carl Stokes of CS Stokes + Associates Ltd to the KCTMO* {BLARP20000027}, where I conclude that "*[…] fire risk assessors do require competence as defined by article 18(5) of the RR(FS)O",* where competence is defined, in relation to safety assistance as follows:

(5) A person is to be regarded as competent for the purposes of this article where he has sufficient training and experience or knowledge and other qualities to enable him properly to assist in undertaking the preventive and protective measures.

5.6.3 New guidance has been published on competence expected by fire risk assessors, including e.g. in PAS 9980:2022, in Section 7 of PAS 79-1: 2020 *Fire risk assessment. Premises other than housing. Code of practice*, and stand-alone documents published by industry such as the Fire Sector Federation (FSF).

5.6.4 In November 2020, the FSF published an Approved Code of Practice which seeks to provide a National Framework for Fire Risk Assessor Competency (FSF, 2020)[74]. It was prepared by the Fire Risk Assessors Working Group, as one of several groups established by the Competency for Building a Safer Future Steering Group (CSG).

5.6.5 To quote from the FSF Approved Code of Practice:

[74] Fire Sector Federation (2020) Approved Code of Practice: A National Framework for Fire Risk Assessor Competency https://www.firesectorfederation.co.uk/wp-content/uploads/2021/09/FSF_Approved-Code-of-Practice_Sept-2021-1.pdf. Accessed 27/05/2023.

The Code seeks consolidate the fire industry recommendations of best practice on how to assess the competency of individuals who conduct fire risk assessments. The Code's foundation remains the guidance criteria originally undertaken to introduce The Regulatory Reform (Fire Safety) Order 2005, which requires the Responsible Person to 'make a suitable and sufficient assessment of the risks to which relevant persons are exposed for the purpose of identifying general fire precautions'. This foundation has be [sic] updated and expanded taking into account experience and learning over the intervening period.

5.6.6 The Code of Practice states in Chapter 3 Accredited Third Party Certification & Professional Body Membership that (bold by me):

***Accredited third party certification** (ATPC) **is judged essential for fire risk assessors**, particularly those working on high risk buildings. Competence of fire risk assessors can be assured by either certification of the individual fire risk assessor or through a company providing fire risk assessments under a third party certification scheme accredited by the UK Accreditation Service (UKAS), or by registration of the fire risk assessor by a Professional Engineering Institution (PEI) that is licensed by the Engineering Council (EngC).*

5.6.7 Its framework for demonstrating competency, copied in Figure 5-1 below, fundamentally retains the same principles I set out in my evidence, with an added endorsement stage when working in HRBs.

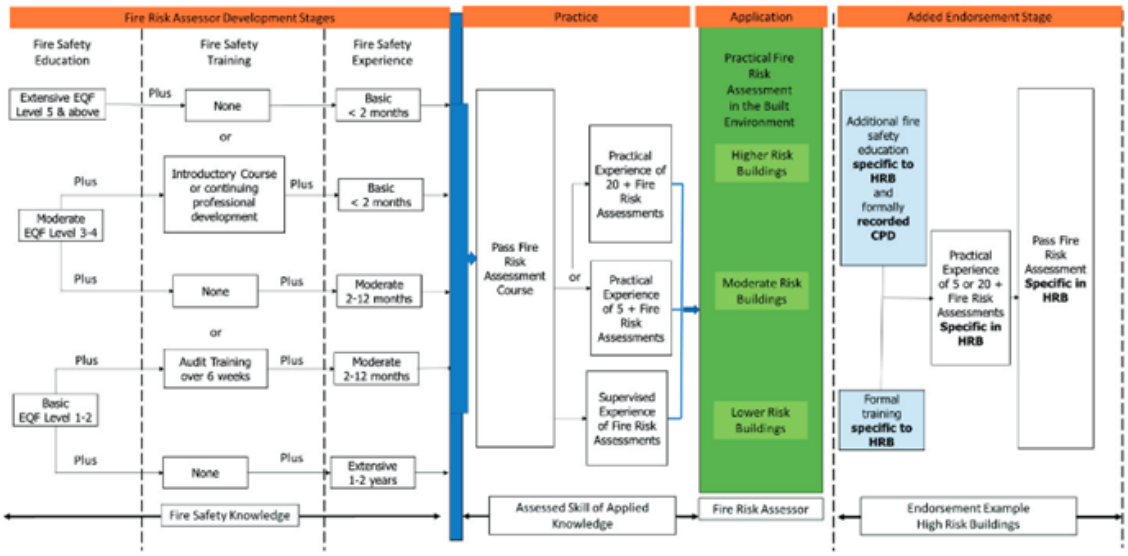

Figure 5-1 Competency Framework with HRRB Endorsement demonstrating competency (from FSF Code of Practice)

5.6.8 A further guide was published by the FSF in December 2022, the Industry Benchmark Standards for Fire Risk Assessors (V1.1) (FSF, 2022)[75] which "*identifies criteria reflecting, at three distinct core levels, individual, not company, competency for those undertaking general fire risk assessment. The three levels are intended to provide a pathway for individual progression, one that recognises entry into the profession will often commence with no understanding followed by personal development to an advanced level*". The document includes a framework setting out three competence levels, "*foundation standard*", "*intermediate standard*" and "*advanced standard*" a fire risk assessor should hold for undertaking fire risk assessments in buildings. A simple building fire risk framework comprising five different fire risk categories is also included

[75] Fire Sector Federation (2022) Industry Benchmark Standards for Fire Risk Assessors https://www.firesectorfederation.co.uk/wp-content/uploads/2023/01/FSF_FRA_BenmarkStandard_Dec2022-Version1-1-1.pdf. Accessed 27/05/2023.

that maps buildings into risk bands, and then notes which competence level is necessary for each risk band.

5.6.9 I made clear in my evidence, in Section 6.3.4 of Chapter 8 *The adequacy of the advice provided by the fire risk assessor Carl Stokes of CS Stokes & Associates Ltd to the KCTMO* of my Module *3* report {BLARP20000027}, that "*for the avoidance of any doubt joining the register is entirely voluntary and there is no requirement by Government that fire risk assessments for any kind of building be carried out by registered fire risk assessors".* This has not changed at the time of writing this report.

5.6.10 Whilst the BSA 2022 makes provisions to introduce competence in RR(FS)O via BSA 2022 Section 156 (4), as noted in Section 3.3.96 above, the relevant paragraph (4) of Section 156 did not come into force from 1st October 2023; though I acknowledge that the Home Office notes that "*This legislative requirement will be brought into force at a later date*, and *that they will provide relevant guidance in that regard ahead of the commencement date"* (Home Office, 2023a)

5.6.11 It is essential that this requirement is brought into force; together with a requirement for fire risk assessors to be registered.

5.7 Complaints mechanism

5.7.1 A mechanism to register complaints about the professional conduct of members of professional institutions should be available as part of a commitment to raising competence throughout their respective professions.

5.7.2 For example, the IFE[76] has an online form which is to be submitted by email. Its eight-page disciplinary procedure document reserves the right to publish information about established breaches (IFE, 2022) [77]; however I am not aware of such a breach ever having been published.

5.7.3 There is also a whistleblowing policy and guidance document for members (IFE, 2018).[78]

5.7.4 It is my understanding that there are no changes to the complaints procedures planned, nor within the new contextualised HRB registration, when it will be available to members.

5.7.5 It is possible to make complaints directly to the Engineering Council about the conduct of a Professional Engineering Institution (PEI), but not about a "*member"* that is registered with a PEI licensed through the Engineering Council; such matters are to be raised with the relevant PEI[79].

5.8 International examples of a regulated fire safety profession

5.8.1 There are numerous examples of regulated fire safety professions in other countries. These include Professional Engineer (PE) in the USA, Professional Engineer (P.Eng) in Canada, Qualified Person (QP) in Singapore, House of Expertise (HoE) in the UAE, and Chartered Engineer (CEng) in countries like Ireland and New Zealand..

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[76] Institute of Fire Engineers "Complaints" https://www.ife.org.uk/Complaints Accessed 17/10/2023.

[77] Institute of Fire Engineers (2022) IFE Disciplinary Procedure https://www.ife.org.uk/write/mediauploads/documents/IFE_Disciplinary_Procedure_v1.06.pdf Accessed 17/10/2023.

[78] Institute of Fire Engineers (2018) IFE Guidance for members for whistleblowing https://www.ife.org.uk/write/MediaUploads/Membership/IFE_whistleblowing_guidance_for_members_May_2018.pdf Accessed 29/10/2023

[79] Engineering Council "Giving feedback to the Engineering Council" https://www.engc.org.uk/glossary-faqs/frequently-asked-questions/giving-feedback-to-the-engineering-council/ Accessed 29/10/2023

5.8.2 Building Regulations and/or Building Codes require these professionals to review and sign/stamp design documents such as reports and drawings before they are submitted for approval to the authorities (see International examples of assurance during design and construction below).

5.8.3 To perform this role, professionals must have a minimum level of tertiary education in a fire safety or a related engineering discipline, have passed necessary exams set by professional bodies and or authorities, and be able to prove ongoing continual professional development.

5.8.4 Often registrations with authorities to prove competence must be renewed on a regular basis (e.g. every six years)[80].

5.8.5 Publicly available official registers of licensed professionals are available in places like Singapore, UAE, etc. although this is sometimes controlled by local authorities (e.g. Civil Defence) rather than professional bodies.

5.8.6 The Society of Fire Protection Engineers in the USA provides early career training, professional engineering exams and continued professional development (CPD) for fire protection engineers (e.g. comparable to "fire safety engineers" in the UK and other countries). They have also published core competencies[81] for fire protection engineers.

5.8.7 The Warren Centre in Australia has published similar guidance on core competencies for fire safety engineers in the aftermath of the Lacrosse fire. (The Warren Centre, 2020a)[82]

5.8.8 The above provide international benchmarks for some required core competencies, and some examples of ongoing training and professional exams for fire safety engineers that could be emulated in England.

5.9 International examples of a process for assurance during design and construction

5.9.1 New Zealand

5.9.2 Engineering New Zealand sets out standardised *producer statements* for engineers to provide confirmation of their professional opinion. These include that aspects of a building's design comply with the Building Code and/or that construction complies with the approved Building Regulation application[83]. They also include standardised *producer statements* for activities such as fire safety peer review of a project.

5.9.3 Five levels of construction monitoring (CM) are defined by Engineering New Zealand as a function of the project scale, complexity of the building work taking place, experience of the contractor, experience of the inspector and consequence of non-compliance[84]. This provides a consistent level of construction monitoring during the installation and commissioning of fire safety provisions. The levels include CM1 to CM5 where for example CM1 means the engineer is only available to answer questions arising from the contractor about the design while CM3 requires the engineer to review at least 30% of critical work and the frequency of reviews can

[80] Engineering New Zealand "Chartered Professional Engineer" https://www.engineeringnz.org/join-us/cpeng/ Accessed 29/10/2023.

[81] Society of Fire Protection Engineers "Fire Protection Engineering Roles" https://www.sfpe.org/advocacy-qualifications/core-competencies/fperoles Accessed 17/10/2023.

[82] The Warren Centre (2020a) Fire Safety Engineering Competencies Report https://ses.library.usyd.edu.au/bitstream/handle/2123/23532/TWC_FSE_wc4965-8_DIGITAL.pdf?sequence=1&isAllowed=y Accessed 29/10/2023

[83] Engineering New Zealand "Producer Statements" https://www.engineeringnz.org/engineer-tools/engineering-documents/producer-statements/ Accessed 17/10/2023.

[84] Engineering New Zealand (2022) Construction Monitoring https://d2rjvl4n5h2b61.cloudfront.net/media/documents/Construction_monitoring_-_final.pdf Accessed 29/10/2023.

increase if errors found. CM5 requires personnel to be on site full-time to review ongoing work although this level of monitoring is not usual for fire safety engineers.

5.9.4 Ireland

5.9.5 In Ireland, the BCAR Process (Building Control "Amendment" Regulations) was introduced in 2014, in the wake of the industry's recognition of poor workmanship and little or no oversight during the construction stage.

5.9.6 The Assigned Certifier has a key role in the BCAR Process and is defined by the *Code of Practice for Inspecting and Certifying Buildings and Works* (2016)[85]*:*

> *"Assigned Certifier" means the competent, registered professional person assigned by the Building Owner to inspect and certify works in accordance with the Building Control Regulations.*

5.9.7 The Assigned Certifier has a role in coordinating the inspection activities of others during construction and coordinating the procurement of ancillary certificates from members of the design team and relevant others.

5.9.8 As set out in Section 7.1 of the *Code of Practice for Inspecting and Certifying Buildings and Works* (2016):

> *The Assigned Certifier and other persons nominated to undertake necessary inspections should adopt an appropriate Inspection Plan which takes full account of relevant factors for the building work concerned. Relevant factors should be assessed at the outset and regularly reviewed so that effective control is maintained for the duration of each project, with adequate site inspections and records sufficient to demonstrate the application of reasonable skill, care and diligence.*

5.9.9 Fire Safety Engineers act as "*Ancillary Certifiers*" where they sign design, inspection and completion certificates which are then furnished to the Assigned Certifier. The Fire Safety Engineer is one of many Ancillary Certifier roles (such as Structural, Mechanical, Electrical) who provides necessary confirmations to the Assigned Certifier.

5.9.10 The Ancillary Certifier is defined by a Code of Practice for Inspecting and Certifying Buildings and Works (2016) (bold by me):

> *"Ancillary Certificates" means a certificate other than a statutory certificate of compliance as prescribed in the Building Control Regulations given by a competent person to confirm compliance of elements of the building, design or works with Building Regulations; and* ***"Ancillary Certifier"*** *means a person proposed to issue such a statement. (Note: a "person" also includes a company);*

5.9.11 On completion, a Certificate of Compliance must be signed by both the Builder and the Assigned Certifier.

5.9.12 Overall, BCAR results in the need to assign a team of competent designers during the construction stage to reduce the risk of poor workmanship and to allow for independent appraisal and recording of site quality and appropriate benchmarking of fire safety installations.

5.9.13 This is a significant improvement on the previous forms of certification which were heavily qualified and commonly relied on visual inspection at the end of the construction process.

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[85] Department of Housing, Planning, Community and Local Government (2016) Code of Practice for Inspecting and Certifying Buildings and Works https://nbco.localgov.ie/sites/default/files/2016-10-21_code_of_practice_for_inspecting_and_certifying_buildings_and_works_final_version-2016.pdf

5.9.14 Canada

5.9.15 In Canada, requirements vary by province and territory, but generally, the process is assured using an architect of record and engineers of record for each of the core engineering disciplines (structural, mechanical, electrical and plumbing). Division C of the National Building Code of Canada "Administrative Provisions" sets out the requirements. Each province and territory adopts and amends the National Building Code of Canada so the requirements of Division C vary by geography.

5.9.16 The architect and/or engineer(s) of record must stamp drawings and specifications as part of the building permit application (as an example see Table 1.2.2.1. from the Ontario Building Code in Figure 5-2). The design architect may not always be the architect of record.

5.9.17 Applications must be reviewed by a registered code agency (the City Building Department) and are issued with a building permit once all queries are resolved. The architect and/or engineer(s) of record will sign a "*commitment to general review*" for aspects of the design requiring it, which means that the architect and/or engineer(s) will conduct periodic inspections during construction. The registered code agency will also have its own building inspectors conducting periodic site inspections.

5.9.18 Once the work of the sub-contractors is complete, they will offer a "*certificate of substantial performance*" to the engineer(s) and/or architect, and it will be the role of the architect of record (typically) to collate this documentation, along with project completion notices from the engineer(s). The collated documentation is submitted to the registered code agency, and provided the documentation is in order, and any defects identified by the building inspectors are resolved, then the registered code agency will issue an occupancy permit and close out the building permit as complete.

5.9.19 For the fire engineering discipline, persons providing fire safety advice must either be a Professional Engineer (P.Eng) or be a Registered Building Practitioner.

5.9.20 As fire engineering is not a core engineering discipline in Canada, the fire engineer or Registered Building Practitioner is not involved in construction reviews to the same extent as other disciplines, who generally oversee such reviews.

(1) The *construction*, including, for greater certainty, enlargement or alteration, of every *building* or part of it described in Table 1.2.2.1. shall be reviewed by an *architect* or a *professional engineer* or a combination of both as set out in Column 3 of the Table.

Table 1.2.2.1.(4).
General Review

Forming Part of Sentence 1.2.2.1.(1)

Item	Column 1 *Building* Classification by *Major Occupancy*(5)	Column 2 *Building* Description	Column 3 General Review by:
1.	*Assembly occupancy* only	Every *building*	*Architect* and *professional engineer*(1)
2.	*Assembly occupancy* and any other *major occupancy* except *industrial*	Every *building*	*Architect* and *professional engineer*(1)
3.	*Care, care and treatment* or *detention occupancy* only	Every *building*	*Architect* and *professional engineer*(1)
4.	*Care, care and treatment* or *detention occupancy* and any other *major occupancy* except *industrial*	Every *building*	*Architect* and *professional engineer*(1)
5.	*Residential occupancy* only, other than *retirement homes*	Every *building* that exceeds 3 *storeys* in *building height*	*Architect* and *professional engineer*(1)
		Every *building* that exceeds 600 m^2 in *gross area* and that contains a *residential occupancy* other than a *dwelling unit* or *dwelling units*	*Architect*(2)
6.	*Residential occupancy* only, other than *retirement homes*	Every *building* that exceeds 600 m^2 in *gross area* and contains a *dwelling unit* above another *dwelling unit*	*Architect*(2)
		Every *building* that exceeds 600 m^2 in *building area*, contains 3 or more *dwelling units* and has no *dwelling unit* above another *dwelling unit*	*Architect*(2)
7.	*Residential occupancy*, other than *retirement homes*, and any other *major occupancy* except *assembly, care, care and treatment, detention* or *industrial occupancy*	Every *building* that exceeds 600 m^2 in *gross area* or 3 *storeys* in *building height*	*Architect* and *professional engineer*(1)
7.1	*Retirement home* only	Every *building*	*Architect* and *professional engineer*(1)
7.2	*Retirement home* and any *major occupancy* except *industrial*	Every *building*	*Architect* and *professional engineer*(1)
8.	*Business and personal services occupancy* only	Every *building* that exceeds 600 m^2 in *gross area* or 3 *storeys* in *building height*	*Architect* and *professional engineer*(1)
9.	*Business and personal services occupancy* and any other *major occupancy* except *assembly, care, care and treatment, detention* or *industrial occupancy*	Every *building* that exceeds 600 m^2 in *gross area* or 3 *storeys* in *building height*	*Architect* and *professional engineer*(1)
10.	*Mercantile occupancy* only	Every *building* that exceeds 600 m^2 in *gross area* or 3 *storeys* in *building height*	*Architect* and *professional engineer*(1)
11.	*Mercantile occupancy* and any other *major occupancy* except *assembly, care, care and treatment, detention* or *industrial occupancy*	Every *building* that exceeds 600 m^2 in *gross area* or 3 *storeys* in *building height*	*Architect* and *professional engineer*(1)
12.	*Industrial occupancy* only and where there are no subsidiary *occupancies*	Every *building* that exceeds 600 m^2 in *gross area* or 3 *storeys* in *building height*	*Architect* or *professional engineer*(3)
13.	*Industrial occupancy* and one or more other *major occupancies* where the portion of the area occupied by one of the other *major* or subsidiary *occupancies* exceeds 600 m^2	The non-industrial portion of every *building*	*Architect* and *professional engineer*(1)
		The industrial portion of every *building*	*Architect* or *professional engineer*(3)
14.	*Industrial occupancy* and one or more other *major occupancies* where no portion of the area occupied by one of the other *major* or subsidiary *occupancies* exceeds 600 m^2	Every *building* that exceeds 600 m^2 in *gross area* or 3 *storeys* in *building height*	*Architect* or *professional engineer*(3)

Notes to Table 1.2.2.1.:

Figure 5-2 Extract from the Ontario Building Code[86]

5.9.21 USA

5.9.22 In the USA, licensing boards in each State set out requirements for Professional Engineers (PE). Registration as a PE is a multi-step process typically requiring successful completion of an accredited undergraduate engineering program, the Fundamentals of Engineering Exam

[86] Ontario Building Code (2023) https://www.ontario.ca/laws/regulation/120332 Accessed 5/11/2023.

(comprehensive engineering exam), requisite professional experience under a registered engineer (experience varies by state) and the Professional Engineering Exam (discipline specific engineering exam). Some of these requirements can be waived through experience on a case-by-basis basis and this varies by state.

5.9.23 Both the Fundamentals of Engineering Exam and PE exams are nationally consistent, and the PE exam is supported by the professional body, the Society of Fire Protection Engineers (SFPE). Records of the status of an engineer's PE status are available by State and are public record. Public records typically list whether an individual's PE licence is active, delinquent or expired. A licence can be revoked by an authority having jurisdiction (AHJ) for non-performance.

5.9.24 In all States, a Registered Design Professional (PE or Registered Architect) is required to sign and stamp drawings before they are submitted to the AHJ. In some jurisdictions, a fire protection PE is required to sign drawings for specific fire safety systems that they have designed or peer reviewed. This varies by jurisdiction (US State, City or Federal Agency) and by fire safety system.

5.9.25 For example, the US General Services Administration (PBS P100 2021.v1 Section 7.1.3.1[87]) requires a fire protection PE to complete the following:

Analysis of:

- *Building construction*
- *Occupancy classification*
- *Means of egress*
- *Fire alarm system*
- *Water-based fire extinguishing system(s)*
- *Non-water-based fire extinguishing system(s)*
- *Smoke control system(s)*

Calculations for:

- *Egress*
- *Water supply*
- *Smoke control (fire dynamics)*

Design of all fire protection and life safety systems, including, but not limited to:

- *Egress system*
- *Fire alarm system*
- *Water-based fire extinguishing system(s)*
- *Fire detection system*

[87] U.S. General Services Administration (GSA) (2021) Facilities Standards for the Public Buildings Service (P100) https://www.gsa.gov/system/files/P100%202021%20v1.pdf Accessed 31/10/2023.

5.9.26 Some jurisdictions simply require a PE to design these systems with no peer review requirements. This also varies by jurisdiction (US City, State, or Federal Agency) and by fire safety system.

5.9.27 In some States the PE is also required to confirm to the AHJ that design drawings and the as-built condition meets the code requirements. In Massachusetts as an example, signed affidavits must be produced by the PE and provided to the AHJ at the design submission and handover phases of the project. In order to sign the handover affidavit, the PE must be confident the as-built condition meets the code requirements by regular inspections and witnessing of integrated fire safety systems testing.

5.9.28 The baseline requirements for assurance during design and construction are set out in Chapter 1 Part 2: Administration and enforcement of the International Building Code[88] which is adopted across the US with amendments by State.

5.10 International example of change to create licensing and accreditation of fire safety engineers – Australia

5.10.1 Australia is a federation of eight States and Territories which sit under the umbrella of the Commonwealth Government. The eight State and Territory governments have developed their own building legislation and regulations, based around a model Building Code of Australia developed nationally but implemented at the State/Territory level.

5.10.2 Following the Lacrosse cladding fire in Melbourne in 2014 and the Grenfell Tower fire, the Commonwealth Government commissioned the Shergold/Weir Building Confidence Report.[89]

5.10.3 Just prior to Grenfell the project "*Professionalising Fire Safety Engineering*" had commenced at the Warren Centre for Advanced Engineering at the University of Sydney[90].

5.10.4 The first report of the Warren Centre project (The Warren Centre, 2019)[91] highlighted the fact that only two Governments, Queensland and Tasmania, had a licensing scheme for fire safety engineers in place in 2017. Some other states had written requirements for "*registration*" but they were not enforceable and there were no penalties if someone practised fire safety engineering design but was not registered.

5.10.5 The concern of Shergold and Weir in their Building Confidence Report was that there was insufficient attention given to the competence of building design practitioners, including fire safety engineers and fire systems designers. The first two recommendations were:

Recommendation 1 – Registration of building practitioners

Recommendation 2 – (Nationally) Consistent requirements for registration

5.10.6 By "registration" of building practitioners, Shergold/Weir meant "*licensing*" by Government through enforceable building regulations, and not accreditation by professional bodies such as

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[88] International Code Council (2018) International Building Code.

[89] Shergold, P. & Weir, B. (2018) Building Confidence - Improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia https://www.industry.gov.au/sites/default/files/July%202018/document/pdf/building_ministers_forum_expert_assessment_-_building_confidence.pdf Accessed 17/10/2023.

[90] The University of Sydney "Fire safety engineering – Understanding the core of fire safety engineering" https://www.sydney.edu.au/engineering/industry-and-community/the-warren-centre/fire-safety-engineering.html Accessed 17/10/2023.

[91] The Warren Centre (2019) Fire Safety Engineering: Regulation, Control and Accreditation https://ses.library.usyd.edu.au/bitstream/handle/2123/23425/wc4574-9%20Regulation%20Report.pdf?sequence=1&isAllowed=y. Accessed 17/10/2023.

Engineers Australia. This included fire safety engineers and fire system designers, for whom licensing was given a high priority.

5.10.7 After looking at various approaches to accreditation and licensing internationally, the Warren Centre made the case for registration or licensing of fire safety engineers, based on a co-regulatory model (jointly via Government regulators and professional bodies) rather than an accreditation scheme just run by the professional body alone (The Warren Centre, 2019).

5.10.8 In this co-regulatory model, The Warren Centre report recommended that professional accreditation bodies, such as Engineers Australia act as "assessment bodies" to control the qualifications and competency standards of fire safety engineers, with systems established for assessing the professional competency, experience and continuing professional development (CPD) of practitioners. Professional bodies also need to develop monitoring and disciplinary procedures. This would leave the governments to issue the registration or licence to practice, based on those fire safety engineers having the professional body accreditation, meeting any other regulatory requirements and being subject to government regulatory enforcement and penalties if applicable.

5.10.9 In some States and Territories, government regulators have included requirements in new (or in some cases previous) building regulations to monitor the "assessment bodies", their systems, and the standards being applied to practitioners. In those cases, government agencies control authority or permission to practise, review professional practice of engineers and performance on projects, undertake audits and enforcement of professional practice, and apply legal and other sanctions where required, with penalties as appropriate. As an example, see the *NSW Design and Building Practitioners Regulation* (2021) under the Design and Building Practitioners Act 2020 – and specifically page 22 of Part 5 - *Recognition of professional bodies of engineers*[92].

5.10.10 It is clear that the appropriate Government structures need to be defined to enable Government regulators to adequately monitor the "assessment bodies" and some governments and regulations have such provisions.

5.10.11 Through the National Building Ministers' Forum, all States and Territories committed to following this proposed co-regulatory model and following the National Registration Framework[93] developed by Australian Building Codes Board for the Building Ministers Forum in response to the Building Confidence Report recommendations.

5.10.12 This requires fire safety engineers to obtain an engineering degree plus at least a Graduate Diploma if not Master's degree in fire safety engineering from a recognised university. In addition, fire safety engineers (and other engineers such as electrical, mechanical and structural engineers) adopting the co-regulatory model are required by those governments to carry Professional Indemnity Insurance, have special training in the National Construction Code, and must have 5 years professional experience before being considered for licensing.

5.10.13 Having set out the principles of licensing by the Commonwealth Government, not all States and Territories have achieved full licensing of fire safety engineers as yet. For fire safety engineers, government registration or licence to practice, effectively the co-regulatory model in association with Engineers Australia as the accreditation body, is in place or has been put in place and strengthened in Queensland, NSW, Victoria and Tasmania. Western Australia is also moving in that direction over a 5 year implementation period. Victoria has mandatory registration of fire

[92] New South Wales (2021) Design and Building Practitioners Regulation 2021https://legislation.nsw.gov.au/view/pdf/asmade/sl-2021-152 Accessed 31/10/2023.

[93] Australian Building Codes Board (2021) National Registration Framework for building practitioners Model guidance on BCR recommendations 1 and 2. https://www.abcb.gov.au/sites/default/files/resources/2022/BCR-rec1-2-National-registration-framework.pdf Accessed 17/10/2023

safety engineers and is gradually implementing similar requirements for other engineers over time. Other states and territories are yet to finalise their implementation for engineers[94].

5.10.14 Under new regulations by Government bodies, licensing is becoming increasingly mandatory for sign off and certification of fire safety designs by fire safety engineers at the building approval stage and will become a requirement at the occupancy permit stage of a building project. New South Wales Government is the best example of this[95].

5.10.15 With regard to professional competency of fire safety engineers, Engineers Australia as an "*assessment body*" has adopted new competencies written in the Warren Centre project (The Warren Centre, 2020a) as indicators of attainment linked to their general competencies when assessing candidates for Chartered Engineer (CEng) status.

5.10.16 Please note I am not aware of involvement by the IFE in becoming an "assessment body" in Australia.

5.10.17 In summary, there is a consensus in Australia that Governments cannot leave control of professional practice for fire safety engineers and other building practitioners simply to professional bodies such as Engineers Australia. It is agreed that there needs to be Government licensing (sometimes referred to as registration), where Governments control the right to practice (or not), set qualifications and experience, demand CPD, require Professional Indemnity Insurance, and conduct audits and enforcement, with penalties for poor practice.

5.11 Summary

5.11.1 In summary, it is my opinion that professionals working on HRB's (HRRBs in the context of this report) to deliver fire safety need to be regulated before any significant change will occur.

5.11.2 Only Chartered Engineers should be made fully responsible for fire safety in design and should participate in construction performance and technical specification compliance works, including overseeing commissioning and handover; thus taking responsibility for the full compliance status of fire safety measures from a legislative and project specific perspective for any HRBs.

5.11.3 Regulation and registration must also apply to any professionals carrying out fire risk assessment activities. I do not agree that fire risk assessments merit lower standards of competency and this requires urgent change.

5.11.4 Once the regulation is in place then professional institutions should provide the competencies, training, CPD etc. to meet the regulation; as well as formally intervene where inappropriate behaviours or evidence of consistent lowering of standards is reported (including removing the right to practice as a Chartered Engineer); some of this is in the process of being put in place, and needs to urgently be finalised.

5.11.5 The competence declaration now required by the client to confirm that they are satisfied that their Principal Designer, Principal Contractor and other appointed persons are competent to carry out their roles, and required to be submitted alongside the HRB building control approval application at RIBA Stage 4/Gateway 2 is an example of a mechanism to check that the fire safety works is being undertaken by these registered professionals. However, the minimum expectations for such declarations should be strengthened to expressly require fire safety engineers to be Chartered engineers.

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[94] Engineers Australia (2023) "State registration" https://www.engineersaustralia.org.au/credentials/registration/state-registration#accordion-1496 Accessed 31/10/2023.

[95] Engineers Australia (2023) Important information on changes for fire safety practitioners in https://www.engineersaustralia.org.au/news-and-media/2023/02/important-information-changes-fire-safety-practitioners-nsw Accessed 8/11/2023.

5.11.6 The roles and responsibilities as well as mechanisms for approval already exist in international practice and can be copied or adapted for England. Not all registered professionals delivering fire safety need to be fire safety engineers, but the professional should have the competence required for the role. For example, a registered electrical engineer with requisite experience in fire alarm design could carry out design and inspection of a fire alarm system.

5.11.7 It is imperative that not only the competency of a Chartered Engineer advising on fire safety including the detailed information required to demonstrate full compliance with all relevant requirements, should be defined and regulated, but also the standards of accountability and the minimum operating standards required of their role and duties.

5.11.8 Subjects that should be addressed include the minimum information standards and minimum technical expectations from a fire safety engineer in each Stage, when contracted to produce any documented fire safety deliverable; a responsibility matrix should be created for a fire safety engineer and other relevant disciplines that is appropriate for most projects and can be adapted for bespoke major project; this must include any person carrying out fire risk assessments.

5.11.9 The RIBA Stages are clear on the extent of technical information and the purpose of it for all building projects; the fire safety engineering profession has not been consistently delivering their input to these Stages nor taking responsibility for the outputs in those Stages and there is a deep seated need for fit for purpose professional practice to become the norm.

5.11.10 Therefore, regardless of the design stage methodology chosen (performance or prescriptive route to compliance with all relevant requirements) the fundamental change needed is in the standard of professional advice and commitment to professional practice in **all stages** of the building works, particularly during construction and handover.

5.11.11 The connection onwards with fire risk assessment, and thus the impact on building occupants cannot be ignored any longer, nor denigrated in its importance by the ongoing promotion of fire risk assessment as a lower competency discipline.

6. A change framework to create an equitable fire safety system

6.1 Introduction

6.1.1 In carrying out my work for the Inquiry, particularly in preparing my Module 3 report I was struck by how removed from wider safety culture research and models the fire safety profession and its preferred solutions and practices were, and continue to be. I was also struck by the profession's disconnect from classic organisational risk management and associated matters of scrutiny and assurance.

6.1.2 In this Section 6 I briefly direct the Inquiry to some published models (there are many others also) that form the reasoning for the arrangement of my recommendations presented in detail in Section 7.

6.1.3 My focus in this Recommendations Report is to propose *selected* critical shifts required to move away from the current status quo and towards an equitable fire safety system. How we produce new fire-safe buildings is important, but how we tackle the systemic safety issues in the existing building portfolio in England also needs to be addressed. This will need to be over time and through pragmatic solutions.

6.1.4 The systems change models and safety maturity models cited here are part of my work, together with Gill Kernick and others at Arup at this time, in forming the basis for operational excellence; they are not therefore cited here in a theoretical capacity.

6.1.5 The evidence presented at the Grenfell Tower Inquiry since 2018 has demonstrated the deep complexity underpinning fire safety in the built environment. Issues have ranged from project specific non-compliances to more fundamental matters such as minimum competency levels, the rejection or (potentially) fear of accountability, a prevailing culture of quick fixes and "*clever*" loop holes, competing goals and constraints (safety versus energy conservation, speed versus rigour, cost versus life safety, bare minimum versus integrated outcomes for all relevant persons).

6.1.6 In my opinion there has been deliberate obfuscation of the role, responsibilities and deliverables of fire safety engineers and fire risk assessors which cast the fire safety profession in a very poor light. We are not seen as trusted partners in delivering fire safety equity.

6.1.7 Given the evidence we have heard during the Grenfell Tower Inquiry and the scale of the building safety crisis that has since emerged, there is an understandable lack of trust in the fire safety profession. It will only be by professionalising the industry and creating an equitable fire safety system that reliably delivers safe buildings that trust will be restored.

6.1.8 In the previous sections I have emphasised the need to adopt a systems approach to fire safety and that this framework should also be robust enough to resolve the prevailing cultural and governmental (through guidance) tendency to overlook the lack of equity in the fire safety arrangements made for vulnerable persons in high rise residential buildings. These form the basis of my recommendations set out in Section 7.

6.1.9 I now turn to some other significant parameters that are in my opinion either preventing systemic change to be realised or continue to be a risk to systemic change being realised despite the huge efforts by Government to reform the regulatory system since the Grenfell Tower Fire.

6.1.10 Therefore in this section I have chosen to outline four additional themes, where there is striking evidence of a need for change, which in my opinion has emerged through the evidence heard at the Grenfell Tower Inquiry and based on my own experiences in the Industry.

6.1.11 The themes I explore are:

a. Creating change in complex systems

b. Fire safety culture: Elements and Maturity

c. Vulnerabilities and disruptions challenging the regulatory system

d. Oversight

6.1.12 I propose these as parameters within a change framework intended to shift the Built Environment industry towards an equitable and effective fire safety system.

6.1.13 The change framework is intended to move us from the current condition via a series of key shifts, with operating principles that cause a meaningful new fire safety framework.

6.1.14 Whilst structural change (government policy etc) is typically most understood and relied upon, the complexity demonstrated by the findings of the Grenfell Tower Inquiry, raises the need for thorough consideration of relational change (power dynamics etc) and transformative change (changing deeply held beliefs/ taken for granted ways of operating). I explain this in full in Section 6.2.13 below.

6.1.15 This framework forms the basis of my recommendations in Section 7 and is intended to cause the shifts needed to move towards an equitable fire safety system.

6.1.16 Thus far I have pointed out three inter-related issues that contributed to the Grenfell Tower fire:

a. A piecemeal approach to fire safety;

b. The unequal treatment of vulnerable persons in building fire safety; and

c. The lack of a regulated fire safety profession.

6.1.17 To make meaningful and sustained change in these areas the fire safety profession and all its stakeholders including those involved in the broader built environment, central and local government, and society more generally, will need to alter how to think about and approach fire safety. This will require complex systems level change. The recommendations I make in this Report have been created to contribute to fostering change of this nature.

6.1.18 The extensive legislative changes are to be highly commended; but given the complex systemic issues revealed during the Inquiry, that include evidence of pathological behaviours (Section 6.3), consistently achieving fire safe buildings for all occupants will require more than legislative and regulatory reform. What is needed is change throughout the system.

6.1.19 To this end I have referred to the work of systems thinker Peter Senge and others as referred to below, and explain their framework for systems change, which they define as "*shifting the conditions holding the problem in place*".

6.1.20 Their work is applicable to what the final body of recommendations the Grenfell Tower Inquiry call for; as their systems change approaches are designed to guide those wanting to create systems change at a societal level and to advance equity.

6.1.21 I say this because their approach to systems change is comparable with the post-Grenfell context – given its complexity and its intractable nature - due to a myriad of constraints involved, including *"government policies, societal norms and goals, market forces, incentives, power imbalances, knowledge gaps, embedded social narratives."* (Kania et al, 2018)

6.1.22 The framework for change presented in this Section 6 articulates the conditions that in my view are holding the problem of fire risk inequity in existing and new HRRB's in place currently, and

offers suggestions as to how Government together with Industry and key stakeholders can shift these conditions

6.2 Creating change in complex systems

6.2.1 Context

6.2.2 It is evident that creating an equitable fire safety system is a so called "*wicked problem*" (Rittel & Webber, 1973)[96] that will require systems-level change. Wicked problems are broadly defined as problems that are complex, multi-faceted and difficult to solve because of their complex and interconnected nature.

6.2.3 To effectively deal with such wicked problems, we need to depart from the application of the more typical reductionist approach whereby the STEEP (socio-technical-environmental-economic-political) aspects of the built (urban) environment are broken down into siloed parts, studied and then acted on in isolation from the whole, with the hope of solving a complex problem.

6.2.4 We need to learn and adopt new ways of thinking to enable us to deal with the complex challenges fire safety in the built environment presents now and will continue to do in the future.

6.2.5 The concept of systems thinking offers an alternative (holistic) approach to reductionist and siloed thinking and enables both a greater understanding of the complexity of the built environment and an ability to consider the consequences of actions on the system as a whole.

6.2.6 An understanding of systems thinking requires, first and foremost, an understanding of complexity as it is the very nature and characteristics of complex systems that necessitates systems thinking. Johnson (2009) [97] argued that the science of complexity defines the "*study of the phenomena which emerge from a collection of interacting objects*."

6.2.7 Systems thinking can broadly be defined as a holistic approach to solving complex problems by looking at systems as "*wholes*" and the relationships of parts, rather than splitting systems into parts (Ramage & Shipp, 2020)[98]. Systems thinking considers the interdependent relationships between various components of a system and recognises that changes in one part of a system can have a ripple effect throughout the whole system.

6.2.8 The NFPA fire safety ecosystem discussed in Section 3.6 reflects this concept and intends that the fire safety components of the system (the gears) act together and are interdependent.

6.2.9 Systems mapping is one of the key tools used by systems-thinkers and allows visualisation of the system that is being analysed. Although there are a variety of ways in which systems-mapping can be undertaken the essential principles and practices of systems mapping are universal.

6.2.10 It requires an identification of the elements in the system, the mapping of these elements and an understanding of how they relate, interconnect and act in the complex system. This will allow for insights to be gained that will in turn be applied to develop and chart interventions and policy decisions to influence the whole system in the most efficient way possible.

6.2.11 Therefore, to create change as a result of the Grenfell Tower fire, this will require a totally different perspective on managing complexity, a recognition that we are dealing with a complex

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[96] Rittel, H. & Webber, M. (1973) Dilemmas in General Theory of Planning https://urbanpolicy.net/wp-content/uploads/2015/06/Rittel-Webber_1973_DilemmasInAGeneralTheoryOfPlanning.pdf Accessed 17/10/2023.

[97] Johnson, N. (2009). Simply Complexity: A Clear Guide to Complexity Theory, Reprint edition

[98] Ramage, M., Shipp, K. (2020). Systems Thinkers. Springer.

system, a mapping of that complex system and then to consider current and future changes and their systems wide consequences and impacts within that framing.

6.2.12 I am not aware of such a system-mapping exercise in support of the many very well-intentioned changes implemented and planned since 2017. I note that Hackitt (2018) mapped the regulatory system at the time of the Grenfell Tower fire and the new building safety regulatory framework for construction and occupation of a HRRB. These are helpful but do not (nor were they intended to) reflect the complex relationships and interfaces across the built environment that impact decisions regarding fire safety.

6.2.13 A framework for systems change: Conditions and Levels

6.2.14 Frameworks and models to approach and create systems-level change do exist. For example, Kania et al (2018) offer a framework for enabling equitable systems level change.

6.2.15 Developed in the context of organisations grappling with creating lasting change when dealing with complex intractable social problems such as environmental degradation, it is therefore analogous to the post-Grenfell context (Kania et al, 2018, p.2) given the number of different stakeholders and parties involved in ensuring fire safety throughout the building life cycle, all with different interests and agendas.

6.2.16 This systems level change framework (Kania et al, 2018, p.4) is presented as an *"inverted triangle*" (Figure 6-1) and is designed as an actionable model for those interested in creating systems change.

6.2.17 Systems level change is defined as *"shifting the conditions that are holding a problem in place"*. The goal therefore becomes to derive the strategies and actions required to shift those conditions and thus enable systems level change.

6.2.18 The framework is comprised of six interdependent conditions that are deemed to *"typically play significant roles in holding a social or environmental problem in place."* as illustrated in Figure 6-1. (Kania et al, 2018, p.3),

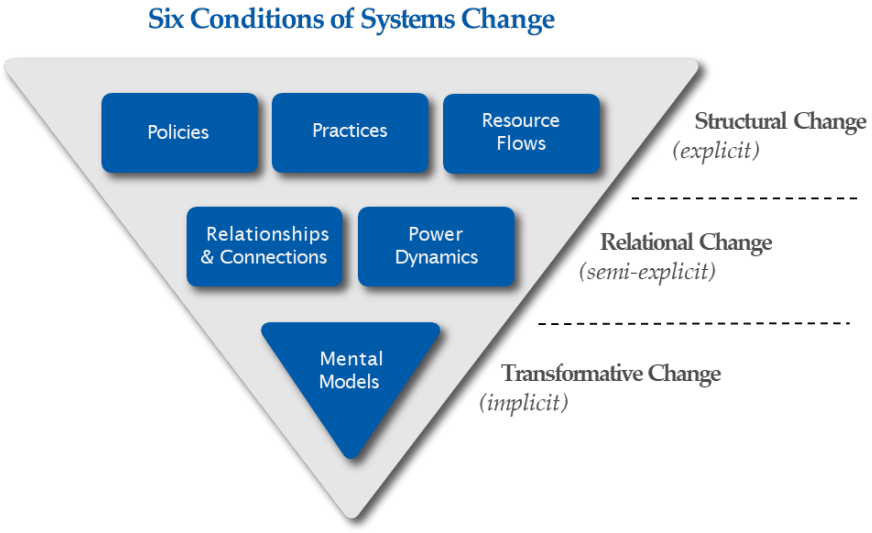

Figure 6-1 Shifting the conditions that hold the problems in place (Kania et al, 2018, p.4)

6.2.19 Kania et al (2018, p.4) define the six conditions of systems change as follows:

***Policies**: Government, institutional and organizational rules, regulations, and priorities that guide the entity's own and others' actions.*

***Practices**: Espoused activities of institutions, coalitions, networks, and other entities targeted to improving social and environmental progress. Also, within the entity, the procedures, guidelines, or informal shared habits that comprise their work.*

***Resource Flows**: How money, people, knowledge, information, and other assets such as infrastructure are allocated and distributed.*

***Relationships & Connections**: Quality of connections and communication occurring among actors in the system, especially among those with differing histories and viewpoints.*

***Power Dynamics**: The distribution of decision-making power, authority, and both formal and informal influence among individuals and organizations.*

***Mental Models**: Habits of thought—deeply held beliefs and assumptions and taken-for-granted ways of operating that influence how we think, what we do, and how we talk.*

6.2.20 These conditions *"exist with varying degrees of visibility to players in the system due to how explicit, or tangible, they are made to most people"* (Kania et al, 2018, p.3) hence the conditions are categorised up into three levels of change:

1. **Structural Change (explicit)** involves informing government policy, promoting effective practices, and directing human and financial resources towards a chosen goal. This is the level of change most often targeted and can have powerful effects "*But without working at the other two levels, shifts in system conditions are unlikely to be sustained.*" (Kania et al, 2018, p.6).

2. **Relational Change (semi-explicit)** is concerned with shifting power dynamics and building relationships across sectors and political divides and "*is essential work in systems change*". Transforming a system is about transforming the relationships between people who make up the system. Simply breaking down siloes and bringing people "*into relationship can have a huge impact*". (Kania et al, 2018, p.7)

3. **Transformational Change (implicit)** poses the greatest challenge. "*Most systems theorists agree that mental models are key drivers of activity in any system.*" (Kania et al, 2018, p.8) Without working at this transformational level, changes at the other two levels "*will, at best be temporary, or incomplete*". (Kania et al, 2018, p.8)

6.2.21 Critically, one cannot fully support efforts that run counter to one's own mental models. Therefore, to fully embrace systems change, any organisations and institutions involved in change *"must be prepared to see how their own ways of thinking and acting must change as well"* (Kania et al, 2018, p.5).

6.2.22 Kania et al (2018, p.4-5) stress that:

It is important to note that, while these conditions can be independently defined, measured, and targeted for change, they are also intertwined and interact with each other. The interaction can be mutually reinforcing (e.g., a change in community and legislator mental models may trigger a policy change). The interaction can also be counteracting (e.g., scaling effective practices may be thwarted by poor relationships between players in the system). Moreover, since the less explicit conditions are the most challenging to clarify but can have huge impacts on shifting the system, changemakers must ensure that they pay sufficient attention to the relationships, power dynamics, and especially the underlying mental models (such as racism and gender biases) embedded in the systems in which they work.

6.2.23 This intertwined nature of the conditions perpetuates a system that can *"reinforce any inequity. For instance, the mental models that individuals hold, can create implicit biases through which*

they interpret and make sense of other people, ideas and events. Historically those who are in power have shaped the mental models of their constituents."

6.2.24 Therefore, systems level change often means "*challenging power structures that have defined influence and shaped those mental models historically."* (Kania et al, 2018, p.11)

6.2.25 Importantly, *"shifts in system conditions are more likely to be sustained when working at all three levels of change".* Therefore, unless changes are designed to occur and in fact do occur at all three levels (as set out in Section 6.2.20 above), impact will be limited.

6.2.26 Fundamentally, unless we can learn to work at this third level (transformational change) and alter mindsets, *"change at the other two levels will, at best, be temporary or incomplete*." (Kania et al, 2018, p.8)

6.2.27 Hence, the Kania et al (2018) change framework (Figure 6-1) should be viewed holistically as an actionable model that can be used to explore and enable systems level change.

6.2.28 Impacting change at all three levels, targeting all six conditions (Figure 6-1) will greatly enhance the effectiveness of post-Grenfell change. A piecemeal approach that does not impact at this scale will limit the impact of interventions.

6.2.29 Using the perspectives of firstly (a) the conditions that typically hold problems in place and secondly (b) the levels of change needed, can help improve "*strategies for systems change, as well as the implementation and evaluation of change efforts*" (Kania et al, 2018, p.5).

6.2.30 Concluding points relevant to creating a change framework

6.2.31 There is a need to think systemically about fire safety in the Built Environment and to map the complex fire safety system in order to identify the elements in the system, and thus develop a robust understanding of how they relate, interconnect and act in the complex system.

6.2.32 This mapping will allow for insights to be gained that can in turn be applied to develop and chart interventions in support of policy and other decisions to influence the system in the most efficient way possible. Importantly mapping will enable us to consider the (unintended) consequences of siloed actions on the system.

6.2.33 Developing industry's capability and providing the tools to think systemically will be fundamentally important to creating conditions for a unified commitment to change.

6.2.34 Effective systems-level change strategies contain interventions designed to create structural change (for example, changes to policies, practices and how money, people and information are allocated and distributed through the system).

6.2.35 But strategies must also contain interventions that will enable relational changes (for example, by creating connections between different players in the system who have different histories and viewpoints and considering the re-distribution of decision-making power and authority).

6.2.36 Interventions must also enable transformative changes (for example understanding and altering mental models – the deeply held beliefs, assumptions and taken-for granted ways of operating).

6.2.37 Systems level change is defined as shifting the conditions holding a problem in place. Shifting these conditions that typically hold problems in place are more likely to be sustained and impactful when working at these three different levels of change.

6.2.38 Therefore, there is a need to consider what conditions are holding the current problem of fire inequity and the poor standard of building fire safety in place and to derive how to shift these conditions (relevant to the fire safety system problem being considered); taking care not just to consider those relevant to structural change.

6.3 Fire safety culture: elements and maturity

6.3.1 Context

6.3.2 Dame Judith Hackitt (2018) described a "*cultural issue across the sector, which can be described as a 'race to the bottom' caused either through ignorance, indifference, or because the system does not facilitate good practice. There is insufficient focus on delivering the best quality building possible, in order to ensure that residents are safe, and feel safe."* (Hackitt, 2018).

6.3.3 In my own analysis for the Inquiry in both Phases, I set out the extensive evidence of the consistent practice of non-compliance with all relevant requirements; even the acceptance of this as reasonable practice. It was notable that even well known industry-led guidance such as the LGA Guide, was also ignored in practice by key organisations such as the KCTMO, despite their claims it formed the basis of their fire safety approach to their portfolio of HRRB.

6.3.4 However it is well documented, that players in mature safety cultures are intrinsically motivated to improve and have high levels of trust, accountability and are well-informed.

6.3.5 Therefore, I present below some basic concepts used by mature industries, when exploring safety culture.

6.3.6 I summarise a proven example of developing safety culture maturity, the Hearts and Minds Programme published by the Energy Institute. [99]

6.3.7 There is a whole body of work on developing a strong safety culture and I make no attempt to set this out here; but it is clear to me based on my own professional experiences that other industries regardless of the nature of their work, have much to offer the fire safety profession and the wider Built Environment industry in terms of considering how to change culture.

6.3.8 Changing the Built Environment industry's safety culture will mean prioritising interventions that cause a significant shift in the prevailing condition and enables a mature safety culture to thrive, hence why understanding these models is so important.

6.3.9 Safety culture: definitions, levels and elements

6.3.10 The concept of safety culture was primarily introduced in the wake of the Chernobyl nuclear disaster. A 1992 report "*The Chernobyl Accident"* by the International Nuclear Safety Advisory group (INSAG) states (INSAG, 1992, p.20-21): [100]

> *In both operating and regulatory regimes, safety culture must be instilled in organizations through proper attitudes and practices of management. It has been pointed out several times in the preceding discussion that safety culture was lacking in the operating regime at Chernobyl… INSAG now confirms the view that safety culture had not been properly instilled in nuclear power plants in the USSR prior to the Chernobyl accident. Many of its requirements seem to have existed in regulations, but these were not enforced. Many other necessary features did not exist at all. Local practices at nuclear plants, of which it may be assumed that practices at Chernobyl were typical, did not reflect a safety culture.*

6.3.11 The Health and Safety Commission (HSC) which later merged with the Health and Safety Executive (HSE) defined safety culture in 1993 (HSC, 1993)[101] as "*the product of individual and*

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[99] Energy Institute "Hearts & Minds: The toolkit" https://heartsandminds.energyinst.org/toolkit Accessed 4/11/2023.

[100] International Nuclear Safety Advisory Group (1992) The Chernobyl Accident: Updating of INSAG-1 INSAG07. https://www-pub.iaea.org/MTCD/Publications/PDF/Pub913e_web.pdf Accessed 17/10/2023.

[101] Health and Safety Commission (HSC) (1993) #CSNI Study Group on Human Factors, 3rd Report. Organising for Safety.

group values, attitudes, perceptions, competencies, and patterns of behaviour that determine commitment to, and the style and proficiency of, an organisation's health and safety management"

6.3.12 In a later December 2002 report *Safety Culture in nuclear installation* by the International Atomic Energy Agency (IAEA) that provides guidance for use in the enhancement of safety culture, IAEA defines safety culture as *"that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance."* (IAEA, 2002, p.14)[102].

6.3.13 The nuclear industry is considered to be a frontrunner in understanding safety culture and its complexities, and the 2002 IAEA report (IAEA, 2002, p.10) introduces the important notion of levels of a culture (originally developed by Edgar Schein, a distinguished organisational psychologist), saying (bold by me):

*To understand safety culture in its entirety, we must identify the **artefacts**, **espoused values** and **basic assumptions** that form the totality of the concept of culture as it applies to safety.*

6.3.14 An illustrative example of these three levels mean is provided in Figure 6-2 (IAEA, 2002, p.9).

6.3.15 It is useful to note that *"artefacts are the easiest to observe, but the most difficult to interpret the meaning of. Knowledge of espoused values will help with the meaning, but it is only when the basic assumptions are understood, that the meaning of the components at the artefact level will become apparent."*

Level	**Example**
Artefacts	
– objects	Safety policy statement
– language	Zero lost time accidents
– stories	The day the boss broke his ankle
– rituals	Safety award presentations
– behaviour	Use of safety equipment
Espoused values	Safety is the top priority Zero tolerance for safety deficiencies Blame-free work environment Errors are learning opportunities
Basic assumptions	Accidents are caused by carelessness Some people are accident-prone Risks have to be taken to achieve targets. Safety can always be improved Accidents are avoidable Properly designed plant is inherently safe.

Figure 6-2 Examples of the levels of safety culture (IAEA, 2002, p.10)

[102] International Atomic Energy Agency (2002) Safety culture in nuclear installations: Guidance for use in the enhancement of safety culture https://www-pub.iaea.org/MTCD/Publications/PDF/te_1329_web.pdf Accessed 5/11/2023.

6.3.16 This multi-level view of understanding culture, where many aspects are not visible and in the case of basic assumptions "*may not even be consciously held"*, makes assessment "*one of the greatest challenges associated with safety culture*". (IAEA, 2002, p.22).

6.3.17 Therefore identifying the multiple levels relevant to the post-Grenfell context will allow for a holistic view of the current fire safety culture in a way that can lead to more impactful change.

6.3.18 Safety culture maturity

6.3.19 Professor Hudson[103] is one of the world's leading authorities on the human factor in management of safety. He is Professor of the Human Factor in Safety at Delft University of Technology in the Netherlands.

6.3.20 He was part of the team of academics that collaborated with Shell to develop its approach to developing its safety culture in the 1980s and 1990s and is the creator of the Safety Culture Maturity Ladder (Hudson, 2007). It led to the creation of the well-known *Hearts and Minds program* and associated tools now managed by the Energy Institute.

6.3.21 This toolkit is also listed as a resource by the Health and Safety Executive (HSE) for improving safety culture. [104]

6.3.22 Hudson (2007) describes the process of implementing an increasingly mature safety culture in an oil and gas multi-national. As shown in Figure 6-3 below he shows schematically how historically approaches to improving safety performance have reached plateaus in terms of their ability to lead to a reduction in incident rates. A focus on technology safety (such as engineering and equipment) led to improvements and then plateaued in terms of its impact, and was followed by a focus on systems safety (such as certification and risk assessments).

[103] Australian Institute of Health and Safety (2021) MEDIA RELEASE: Honorary Fellowship awarded to Emeritus Professor Patrick Hudson https://www.aihs.org.au/news-and-publications/news/media-release-honorary-fellowship-awarded-emeritus-professor-patrick. Accessed 4/11/2023.

[104] Health and Safety Executive "Organisational culture" https://www.hse.gov.uk/humanfactors/topics/culture.htm Accessed 4/11/2023.

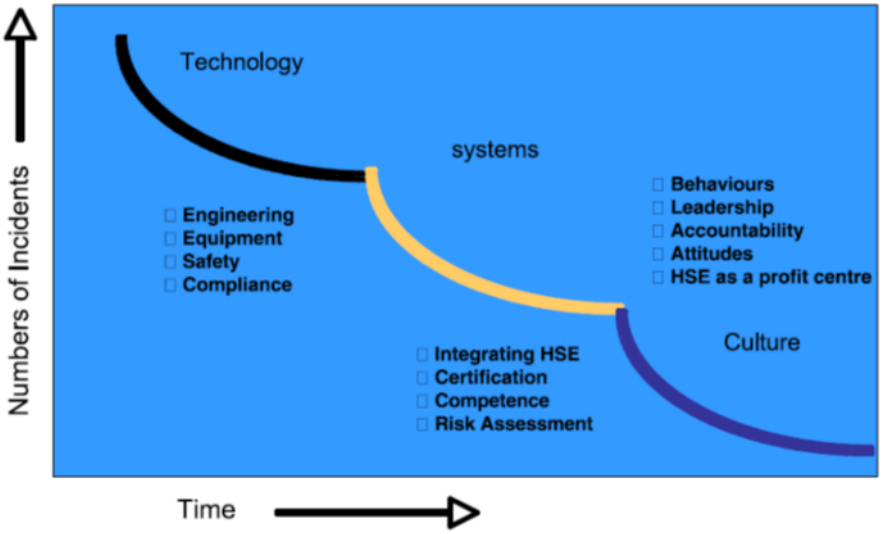

Figure 6-3 The development line, culture becomes the next wave after systems safety (Hudson, 2007)

6.3.23 The need for culture change, not just technological and/or systems change, is reinforced in the Hackett (2017) *Building a Safer Future: Independent Review of Building Regulations and Fire Safety: Interim Report* [105] which states:

> *Changes to the regulatory regime will help, but on their own will not be sufficient unless we can change the culture away from one of doing the minimum required for compliance, to one of taking ownership and responsibility for delivering a safe system throughout the life cycle of a building.*

6.3.24 I do not agree that the "*doing the minimum"* has typically been done in order to achieve compliance. The evidence presented at the Grenfell Tower Inquiry clearly demonstrates the extent to which the professionals involved neglected fire safety and did not do the minimum to comply. I do agree with the principle of a safe system throughout the life cycle of a building being a true need and particularly the deep need for a cultural shift to a strong sense of ownership and responsibility.

6.3.25 Safety culture is often treated as a dichotomy, i.e., an organisation either has it or it does not (Hudson, 2007). Hudson suggests that an alternative and more promising approach would be *"an evolutionary model in which there was more of a continuum between organisations from those that were quite clearly not safety cultures up to those that were agreed to be advanced, such as the high reliability organisations". (Rochlin et al., 1987; Weick, 1987). Allowing intermediate stages allows progress to proceed in manageable steps, rather than requiring a major leap into what might be the unknown"* (Hudson 2007, p.702).

6.3.26 I am interested in how this evolutionary model can be used to change the safety culture maturity of the Built Environment industry.

6.3.27 The evolutionary stages to increasing safety culture maturity are outlined in Figure 6-4 below, in the Hudson Health, Safety and Environment (HSE) Culture Maturity Ladder "*which helps define a pathway from less to more advanced".* (Hudson 2007, p.703).

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[105] Hackitt, J. (2017) Building a Safer Future: Independent Review of Building Regulations and Fire Safety: Interim Report https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/668831/Independent_Review_of_Building_Regulations_and_Fire_Safety_web_accessible.pdf Accessed 5/11/2023

6.3.28 The ladder from pathological to generative can be understood through the definitions that follow as taken from the Energy Institute publication (2018)[106] (explanatory notes by me):

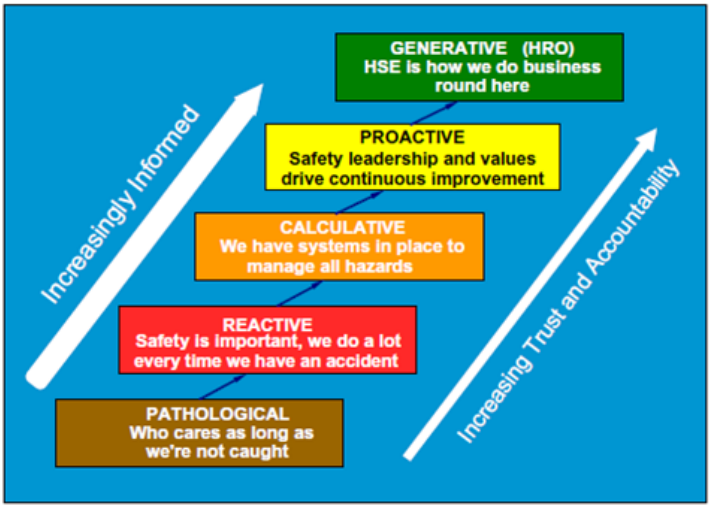

Figure 6-4 The HSE (Health, Safety and Environment) Culture Maturity Ladder (Hudson, 2007)

Pathological: *people don't really care about HSE* [Health, Safety and Environment function of an organisation] *and are only driven by regulatory compliance and/or not getting caught.*

Reactive: *safety is taken seriously, but only after things have gone wrong. Managers feel frustrated about how the workforce won't do what they are told.*

Calculative: *focus on systems and numbers. Lots of data is collected and analysed, lots of audits are performed and people begin to feel they know "how it works". The effectiveness of the gathered data is not always proven though.*

Proactive: *moving away from managing HSE based on what has happened in the past to preventing what might go wrong in the future.*

The workforce start to be involved in practice and the Line [operations of the organisation that deliver the work, as distinct from corporate functions or services] *begins to take over the HSE function, while HSE personnel reduce in numbers and provide advice rather than execution.*

Generative: *organisations set very high standards and attempt to exceed them. They use failure to improve, not to blame. Management knows what is really going on, because the workforce tells them. People are trying to be as informed as possible, because it prepares them for the unexpected. This state of "chronic unease" reflects a belief that despite all efforts, errors will occur and that even minor problems can quickly escalate into system-threatening failures.*

6.3.29 In Figure 6-4 above, Hudson uses the term High Reliability Organisation (HRO) as an example of organisations with a generative culture; the top rung of the ladder, which means health and safety "*is how we do business round here*".

6.3.30 The principles of HROs that lead to this high reliability include a pre-occupation with failure (chronic unease); a reluctance to simplify; a sensitivity to operations / the front-line work of an organisation; a deference to expertise that embraces diversity and a commitment to resilience or

[106] Energy Institute (2018) Understanding your HSE culture https://publishing.energyinst.org/topics/hearts-and-minds/hearts-and-minds/english/hse-201-understanding-your-hse-culture-v6-english Accessed: 5/11/2023

"the ability to regain a dynamically stable state, which allows it to continue operations after a major mishap and/or in the presence of a continuous stress" (Weick & Sutcliffe, 2007, p.9-15)

6.3.31 Chronic unease reflects a belief that "*despite all efforts, errors will occur and that even minor problems can quickly escalate into system-threatening failures".* For example, the Safety Case regime being implemented by the BSR attempts to tackle this as set out in HSE's guidance "*Assessing safety risks in high-rise residential buildings: a detailed guide*" (HSE, 2023a) which asks for "worst case scenarios" to be considered.

6.3.32 Critically, Hudson's evolutionary approach is dependent on an intrinsic motivation for safety (Hudson et.al, 2002)[107]:

The original remit for the research program was to create a workforce that is sufficiently well motivated to behave in safe and responsible ways without external control. Such a workforce would be intrinsically motivated to act in ways that were safe, environmentally responsible and fundamentally healthy.

6.3.33 The importance of intrinsic motivation cannot be underestimated here.

6.3.34 Simplistically, when considering the views and evidence heard at the Grenfell Tower Inquiry, in the framework of the Hudson Maturity Model one can easily conclude the refurbishment project and the Built Environment industry framing of the refurbishment project had a "*pathological*" level of safety culture maturity on the Culture Maturity Ladder (Figure 6-4). This is where "*people don't really care about safety and are only driven by regulatory compliance and/or not getting caught"*. (See Section 6.3.28)

6.3.35 There is also evidence to suggest that in the six years since Grenfell the stakeholders that impact the Built Environment and fire safety are not demonstrating significant culture change.

6.3.36 This lack of cultural change has repeatedly been raised in the Industry Safety Steering Group's independent report *Building safety: The Industry Safety Steering Group's third report for the Secretary of State and the Minister for Building Safety* which deal with post-Grenfell progress (ISSG, 2022)[108]. For example, the report states (bold by me):

4. …However, it is disappointing that ***we still cannot report*** *a critical mass or groundswell of action across industry to suggest there is* ***significant momentum on culture change****. We still see an industry that, at best, is in compliance mode rather than a leadership mode. There is still more work for the industry to do* ***to regain the public's trust****, across the full range of activities in the industry; from the early work of the client and the initial procurement through to designing, constructing, managing and maintaining homes, or manufacturing construction products. This is starting to happen in some places* ***but must be done more proactively, visibly, faster, and across the whole breadth of industry and throughout the supply-chain****.*

5. ***We want to see an industry that prioritises safer buildings****, and ongoing, high standards of professional competence, and* ***understands how to minimise the risk of serious failures****. It must be normal to challenge and address poor behaviours and for firms to seek out partners and suppliers with a demonstrable commitment to building safety.*

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[107] Hudson, P.T.W, Parker, D. van der Graaf, G. C. (2002) The Hearts and Minds Program: Understanding HSE Culture https://www.researchgate.net/profile/Patrick_Hudson/publication/281236503_SPE73938/data/55dc3f2408aed6a199ac8d82/SPE73938.pdf Accessed 5/11/2023

[108] Industry Safety Steering Group (2022) Building safety: The Industry Safety Steering Group's third report for the Secretary of State and the Minister for Building Safety https://www.gov.uk/government/publications/industry-safety-steering-group-third-report-on-culture-change-in-the-built-environment-industry/building-safety-the-industry-safety-steering-groups-third-report-for-the-secretary-of-state-and-the-minister-for-building-safety#:~:text=However%2C%20it%20is%20disappointing%20that,rather%20than%20a%20leadership%20mode. Accessed 5/11/2023.

6.3.37 This lack of culture change post-Grenfell is an important factor when considering the potential effectiveness of any recommendations; all of which should improve cultural maturity.

6.3.38 Based on my experience and observations in working in the built environment, this inability to learn and change extends beyond the circumstances that caused the Grenfell Tower fire. For example, since the 1990's there have been numerous government reports calling for industry reform that have not led to the desired level of change - Constructing the Team (Latham, 1994)[109], Rethinking Construction (Construction Task Force, 1998)[110] and Modernise or Die (Farmer, 2016)[111].

6.3.39 This is also mentioned by Hackitt (2018) where she says:

Reports dating back as far as the 1990s, such as 'Rethinking Construction' authored by the eminent Sir John Egan, highlight many of the cultural issues which needed to be addressed, even then, to develop a modern, productive and safe construction sector.

6.3.40 Hence, when considering the (fire) safety culture maturity of the Built Environment industry, it is evident that we are both immature as an industry, and suffer from a chronic inability to learn and change. This is why we need to draw on the expertise and tools from others.

6.3.41 The Hearts and Minds Toolkit for improving safety culture (Energy Institute) [112] is one such example of a toolkit to improve safety culture maturity. It explains that:

Improving the safety culture of an organisation is about:

- ***building trust*** *– in leadership, in the safety management system, in the team, in the equipment;*
- ***building capability*** *– people know how to do their jobs and do them well, they are authorised to do 'the right thing', the organisation is flexible and can adapt to challenges;*
- ***making expectations clear*** *– it is clear what 'the right thing' means, and this does not change from day-to-day, a 'just' culture;*
- ***learning from what goes right and what goes wrong*** *– reporting incidents and near misses, and actively learning from them, and*
- ***knowing what is really going on*** *– leaders are 'informed', they understand the gap between 'work as done' and 'work as imagined'.*

6.3.42 My intent in introducing safety culture and safety culture maturity in this way has been to illustrate the complex nature of developing strong safety cultures and referenced examples that show how other industries have approached improving cultural maturity.

6.3.43 The post-Grenfell need is not about change in one organisation however, it is about industry wide intrinsic motivation and commitment to change.

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[109] Latham, M. (1994) Constructing the team https://constructingexcellence.org.uk/wp-content/uploads/2014/10/Constructing-the-team-The-Latham-Report.pdf Accessed 17/10/2023.

[110] Construction Task Force (1998) Rethinking Construction https://constructingexcellence.org.uk/wp-content/uploads/2014/10/rethinking_construction_report.pdf Accessed 17/10/2023.

[111] Farmer, M (2016) The Farmer Review of UK Construction Labour Model: Modernise or Die: Time to decide the industry's future https://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2016/10/Farmer-Review.pdf Accessed 17/10/2023.

[112] Energy Institute "How to improve safety culture" https://heartsandminds.energyinst.org/About/how-to-improve-safety-culture Accessed 5/11/2023.

6.3.44 Concluding points relevant to creating a change framework

6.3.45 Regarding safety culture the following are the key components that have informed both the development of the framework for change (See Section 6.6 below) and my recommendations in Section 7.

6.3.46 There are approaches and models that can be used to assess and improve safety culture. Key to generating improvements are enhanced levels of communication, trust and accountability and ownership for change; an intrinsic motivation to change.

6.3.47 The industry is continuing to be recorded as operating at a low level of fire safety cultural maturity since Grenfell. An immature culture will undermine efforts, reforms and interventions to achieve equitable fire safety standards in buildings post-Grenfell.

6.3.48 Learning and change are critical to improving culture and as an industry it has not yet been proven or demonstrated there is a prevailing ability to learn, nor a unified commitment to change. This precedes Grenfell but continues post-Grenfell.

6.3.49 Recommendations implemented as a result of the Grenfell Tower fire must thoughtfully and intentionally be created to move the Built Environment industry and Government responsibility (the fire and life safety ecosystem) toward increasing cultural maturity and with the aspiration, given the hazardous nature of the fire industry, to becoming a generative safety culture. This is a culture where organisations "*set very high standards and attempt to exceed them. They use failure to improve, not to blame"* (See Section 6.3.28)

6.3.50 We have much to learn by drawing on the expertise and thinking of other professions. Learning about safety culture and safety culture maturity provides important insights; many sectors have demonstrated that it is possible to improve safety culture and have adopted rigorous collaborative approaches to developing the tools and techniques for improving culture.

6.3.51 To this end, I have included a specific recommendation to research and understand how the Built Environment industry might improve its safety culture. And specifically, to understand and advise how to create a road map for change that provides an inclusive "*pull*" approach to change that could be co-created and adopted by the Built Environment industry.

6.3.52 I am aware of efforts to instigate culture change post-Grenfell but these are not working as effectively as we need them to; hence rigorous and independent research is called for to formulate an approach that will work across industry in the Built Environment.

6.4 Vulnerabilities and disruptions challenging the regulatory system

6.4.1 Context

6.4.2 Thus far I have covered the need to map the complex system to understand the interfaces, the need for systems level change, and why this should contain structural, relational, and transformational levels in a post-Grenfell context (Section 6.2); and that there is a need to improve the safety culture of the Built Environment industry (Section 6.3). These both relate to current challenges.

6.4.3 The fire safety system needs to be resilient and to be able to operate with resilience in the future. It is not sufficient that we create recommendations that are only fit for today. It is therefore important that we consider potential future trends, when making recommendations to build an equitable fire safety system that has relevance both now and in the future.

6.4.4 Given, much of the response to the Grenfell Tower fire will rely on regulatory reform and changes, to fully consider what is needed to implement post-Grenfell change and specifically to ensure recommendations and solutions are effective in the future, we need to understand the

vulnerabilities and disruptions that are challenging and will continue to challenge the regulatory system.

6.4.5 After briefly considering regulation in an increasingly disruptive world, I will refer to the complex regulatory framework created post-Grenfell, point to the issue of the variable effectiveness of public inquiries and offer some concluding remarks that I have taken into consideration in the development of my framework for change.

6.4.6 Regulating in an increasingly disruptive world

6.4.7 A 2021 report by Judge, R & Elahi, S (2021) *Foresight review of the future of regulatory systems: Regulating in a disruptive world' by the Lloyd's Register Foundation* [113] says:

Regulation has shown its value over many years as one of the tools used by governments to manage risks to critical infrastructures and to protect people from harm. Yet many regulatory methods were designed for worlds and risks that can be very different from those faced today.

6.4.8 At a global scale, we are facing enormous challenges. Figure 6-5 identifies the most severe risks on a global scale over the next 10 years as identified in the World Economic Forum *The Global Risks Report 2022*(WEF, 2022).[114]

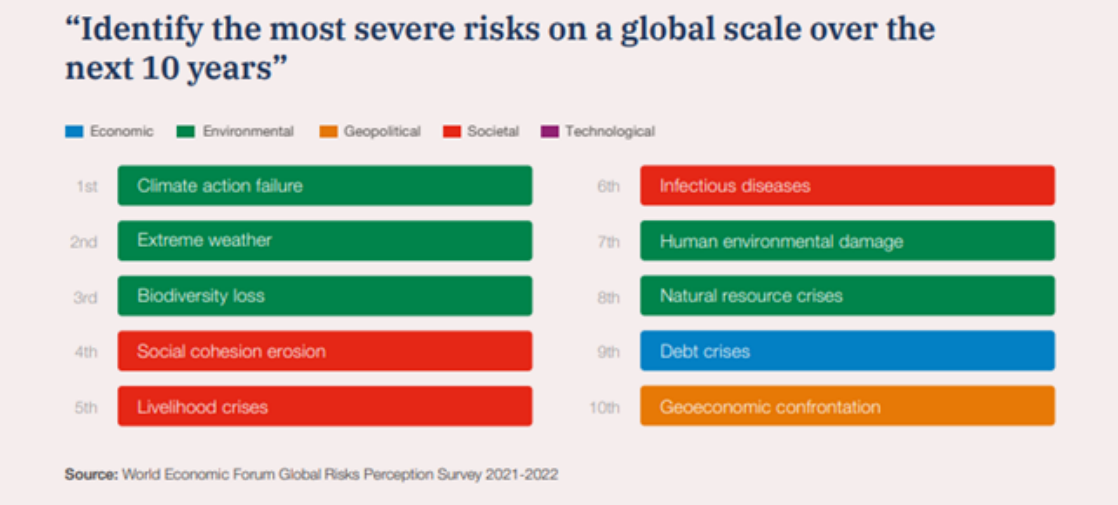

Figure 6-5 The most severe risks

6.4.9 Many of the impacts of these global risks will be borne unequally. For example, the WEF report (WEF, 2022) states that:

A disorderly climate transition will exacerbate inequalities. Respondents to the GRPS rank "climate action failure" as the number one long-term threat to the world and the risk with potentially the most severe impacts over the next decade. Climate change is already manifesting rapidly in the form of droughts, fires, floods, resource scarcity and species loss, among other impacts. Governments, businesses and societies are facing increasing pressure to thwart the worst consequences. Yet a disorderly climate transition characterized by divergent trajectories worldwide and across sectors will further drive apart countries and bifurcate societies, creating barriers to cooperation.

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[113] Judge, R & Elahi, S (2021) Foresight Review on the Future of Regulatory Systems: regulating in a disruptive world. [online] Lloyd's Register Foundation.

[114] World Economic Forum (2022) The Global Risks Report 2022 17th Edition Insight report https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf. Accessed 17/10/2023.

Given the complexities of technological, economic and societal change at this scale, and the insufficient nature of current commitments, it is likely that any transition that achieves the net zero goal by 2050 will be disorderly.

Adopting hasty environmental policies will also have unintended consequences for nature—there are still many unknown risks from deploying untested biotechnical and geoengineering technologies—while lack of public support for land use transitions or new pricing schemes will create political complications that further slow action. A transition that fails to account for societal implications will exacerbate inequalities within and between countries, heightening geopolitical frictions.

6.4.10 And:

Inequality—economic, political, technological and intergenerational—was already challenging societies even before income disparities increased through the pandemic. These disparities are now expected to widen further: research by the World Bank estimates that the richest 20% of the world's population will have recovered half their losses in 2021, while the poorest 20% will have lost 5% more of their income.

By 2030, 51 million more people are projected to live in extreme poverty compared to the pre-pandemic trend. Income disparities exacerbated by an uneven economic recovery risk increasing polarization and resentment within societies.

6.4.11 These risks and inequalities will particularly impact housing needs. To further understand these impacts, Arup University's foresight team researched the trends shaping the future of housing in the UK. The findings are summarised in Figure 3-5. These will create challenges and problems both for industry and the regulation of industry, and in my experience are not currently being considered in a post-Grenfell context.

6.4.12 Other fire safety risks facing the Built Environment industry globally are referenced previously in Section 3.6, covering future megatrends such as the impact of the ageing population, and the consequences of the energy transition such as retrofit prioritisation.

6.4.13 Regarding existing regulatory challenges at a global level, Judge, R & Elahi, S (2021) refers to existing regulatory vulnerabilities including:

Regulatory gaps/overlaps inconsistencies or unclear accountabilities. *A regulatory system with gaps between regulatory powers and intended focus, or with other similar inconsistencies or unclear accountabilities, can cause issues. Such inconsistencies and unclear accountabilities make it harder to enforce the law, can allow businesses to manipulate the system and can undermine the regulator's legitimacy.*

…

Power imbalances. *Regulatory systems involve complex interactions of politics, power, competing views and many different vested interests. These dynamics (the political economy), power imbalances (wealth/ power loops), and lobbying can lead to situations that have potential to undermine credibility and erode public trust.*

…

Lack of diversity. *Many regulatory policies reflect the values of those making choices and judgements. These can be overly influenced by unconscious biases and by failures to engage people who might bring different styles of problem-solving or who have unique perspectives to offer (for example, the intended beneficiaries of regulation). A lack of diverse thinking limits the creativity and injection of new ideas needed to respond to complex or uncertain conditions.*

…

Long term or latent issues. *Governments generally prioritise short-term goals and interests over those of a longer-term nature. This happens for a number of reasons that include a human bias towards the present, the deeper uncertainties of longer-term futures and electoral cycles.*
…

Institutional inertia. *For regulators, legitimacy and credibility are inter-related cornerstones of regulatory success. Either can be lost through "institutional inertia". Institutional inertia reflects the tendency of long-established organisations to continue with their deeply embedded procedures and systems, sometimes unaware of the extent to which these have become out of touch with changing priorities or circumstances. This can, in turn, undermine the entire regulatory system.*

…

Knowledge gaps and asymmetries. *Regulatory systems rely on trustworthy science and evidence, coupled with knowledge of on-the-ground reality and a level of future foresight, to inform decision making and take appropriate action. In some situations, particularly for emerging technologies, regulators struggle to keep up with the pace of innovation in high tech industry. As the application of technology accelerates rapidly across geographic and sector boundaries, there is no longer time to reflect, review and test the impact of this technology as has happened traditionally. Besides, technology decisions are often made behind closed (corporate) doors, protected by intellectual property.*

…

Failure to learn or to spot warning signals. *The ability of industry, regulators and governments to understand what is happening across a regulatory system, to obtain timely feedback and to learn from this, is critical. Yet all too often there is a failure to spot the warning signals of imminent failures or of fundamental changes in the behaviour of the system being regulated. Organisational cultures and closed mind-sets can lead to warning signals being missed – whether from events in different geographies or domains, or from lone voices. This can be further complicated by blurred regulatory boundaries (with gaps or overlaps) that make it harder to determine which regulator is accountable either for spotting or receiving warning signals.*

6.4.14 When we add the impacts of a disruptive future onto these existing vulnerabilities, Judge, R & Elahi, S (2021) points to significant challenges (bold by me):

regulatory systems are facing challenges that can be vastly different from what they are designed for or are used to dealing with. ***Without action, the consequences of disruptive futures could be profound*** *if critical infrastructures were compromised, with risks to lives and livelihoods, the social structures and natural systems that we rely on. The global interconnectivity and pace of change enabled by the communication and data networks of the information age has brought new business models and fundamentally changed societal dynamics.* ***With that connectivity comes a range of systemic challenges: conflicting viewpoints and complex trade-offs are more exposed; static, centralised, physical infrastructures and big organisations are shifting to dynamic distributed virtual worlds and individual operators, where innovations can seamlessly move across sector or national boundaries at speeds and scales not previously experienced****.*

6.4.15 According to Judge, R & Elahi, S (2021), the potential implications for regulation of these trends include (bold by me):

Firstly, it places greater emphasis on the ***"regulatory system****". To this end, taking a whole-of-system perspective opens up more options for achieving regulatory outcomes than simply defining and enforcing "rules". For example, it creates* ***opportunities for the many people and organisations across the regulatory system to become more involved in shaping and***

delivering the intended outcomes. Thinking in terms of the system *can also improve understanding of local contexts (what works well in one geography or industry sector may not be effective or appropriate in another) and of those developments beyond the system boundaries that might affect it.*

Second, ***innovations*** *seen elsewhere in business and society can be applied within regulatory systems. These can create* ***regulatory models that are more forward looking****, experimental and collaborative. For example, decision sciences are helping us understand better why people take decisions that may lead to harm, with this insight used to design and test suitable responses.*

Third, disruptive trends can apply pressure to ***existing (or new) vulnerabilities****. Regulatory systems can be* ***undermined*** *by the influence of politics or powerful industry players, or by knowledge imbalances when* ***industry expertise is far ahead of the regulator's expertise****. They can struggle with long term issues or those attracting divergent societal views. Some existing practices may not work for fast moving and highly interconnected systems, or for risks that cross regulatory, industry or national boundaries.* ***Regulatory vulnerabilities such as these can be intensified and exposed by the complexity, chaos and contradictions of disruptive worlds.*** *In addition, regulatory decisions may have to be taken at pace while simultaneously grappling with deep uncertainties about the issues in question, imperfect information and the need to balance multi-dimensional trade-offs (such as safety, social, environmental and economic aspects).*

6.4.16 Finally, at a national level, the National Audit Office (NAO)'s *A Short Guide to Regulation* (NAO, 2017)[115] indicates that many of these global issues are directly relevant in the UK. The guide identifies current and future challenges under the following key headings:

- *"Complex regulatory frameworks and objectives"*
- *"Responding to significant and fast-paced change"*
- *"Significant operational demands"*

6.4.17 It is critical as we move into creating and implementing recommendations that we understand the disruptions and vulnerabilities of the regulatory system both now and in the future and that "*well-designed regulatory systems will continue to work well, but it will be crucial to recognise their limits".* (Judge, R & Elahi, 2021 p.2)

6.4.18 Post-Grenfell: A complex regulatory framework

6.4.19 As set out in Section 3, it is important to understand that the post-Grenfell regulatory reform has not simplified regulations, it has adopted an additive approach to fire safety regulations with the BSA 2022 wrapping around the Building Regulations 2010 and RR(FS)O 2005. Therefore, the potential for the regulatory vulnerabilities outlined above to impact on and hinder post-Grenfell reforms should be a consideration in making recommendations.

6.4.20 I have therefore, in Section 7, included a specific recommendation to map the regulatory changes to date and to understand their impacts (intended and otherwise) on the fire safety system. This will help to understand the impact of any regulatory vulnerabilities and mitigate against these.

6.4.21 It is essential that complete well referenced mandatory statutory guidance documents are produced to enable a full understanding of the vast regulatory landscape relevant to producing fire safe buildings. There is an array of disciplines, trades and activities, upon which the successful delivery of the regulatory regime relies.

[115] National Audit Office (2017) A Short Guide to Regulation https://www.nao.org.uk/wp-content/uploads/2017/09/A-Short-Guide-to-Regulation.pdf Accessed 17/10/2023.

6.4.22 There remains limited assistance (see Section 5.1 above) for all necessary parties during design and particularly during construction and handover. Construction and handover are complex and regardless of a prescriptive or performance based fire safety design, require rigour and a unified commitment to compliant technical specifications and the resulting as-built construction.

6.4.23 Lasting effects of public inquiries can be varied

6.4.24 In addition to regulatory vulnerabilities, the Grenfell Tower Inquiry will be aware of the issues surrounding the efficacy of previous public inquiry recommendations, which were raised in several closing statements ({BSR00000202}, {BSR00000201}, {BSR00000199}, { FBU00000193}, { BSR00000200/1}):

6.4.25 The 2017 report *How public inquiries can lead to change* by the Institute of Government (Norris & Shepheard, 2017)[116] cites effective and ineffective public inquiries, and makes the following point regarding implementation and learning (bold by me):

> *overall, the **formal checks and procedures we have in place to ensure that public inquiries lead to change are inadequate**. There is no routine procedure for holding the Government to account for promises made in the aftermath of inquiries, the implementation of recommendations is patchy, in **some cases repeat incidents have occurred** and there is no system for allowing inquiries to **build on the learning of** their predecessors.*

6.4.26 Two of the four main conclusions relate to implementation and lessons learnt and are reproduced below (bold by me):

> *Government should implement the repeated recommendation of Parliament to create a permanent inquiries unit within the Cabinet Office. Its first task should be the production of more detailed – and ideally public – guidance on running inquiries. Its second task should be to **act as the repository for lessons learned from previous inquiries** and to work with inquiry secretariats to ensure that this duty can be discharged.*

6.4.27 And (bold by me):

> *Parliament can and should play a more significant role in holding ministers to account. To facilitate this, the Liaison Committee should consider adding an eleventh core task to the guidance that steers select committee work: **scrutinising the implementation of inquiry findings.** This scrutiny should be based on a comprehensive and timely government response to inquiry recommendations after the publication of an inquiry report. Departments should update the relevant select committee on implementation progress on an annual basis for at least five years following an inquiry report.*

6.4.28 It is not for me to advise on matters of Government but given the importance of ensuring that recommendations are both implemented and have the desired impact it is critical that there is oversight of progress against recommendations. This should include considering whether they are having the desired impact and allow for recommending iterations as needed.

6.4.29 This is even more important given the systems level change required (Section 6.2), and the need to improve the Built Environment industry safety culture (Section 6.4) which will demand learning and a commitment to change.

6.4.30 Concluding points relevant to creating a change framework

[116] Norris, E. & Shepheard, M. (2017) How public inquiries can lead to change https://www.instituteforgovernment.org.uk/sites/default/files/publications/Public%20Inquiries%20%28final%29.pdf Accessed 17/10/2023.

6.4.31 Given much of the response to Grenfell will rely on regulatory reform and changes, the whole system perspective is again important in order to achieve desired regulatory outcomes.

6.4.32 Many people and organisations across the regulatory system will need to become more involved in shaping and delivering the intended outcomes.

6.4.33 Regulatory models that are more forward-looking, experimental and collaborative are needed.

6.4.34 We would need to recognise that there are existing vulnerabilities in our regulatory system, for example the possibility of reforms being undermined by powerful stakeholders serving their own agendas and interests, preventing a unified commitment to change. By unifying around this commitment we can bring wider confidence to the Built Environment industry and thus increase the likelihood of better outcomes.

6.4.35 In addition, regulatory decisions may have to be taken at pace while simultaneously grappling with deep uncertainties about the issues in question, with imperfect information and the need to balance multi-dimensional trade-offs (such as safety, social, environmental and economic aspects).

6.4.36 There is the need for awareness of what is a highly interconnected built environment system and so to understand the vulnerabilities and disruptions that are and will continue to introduce greater complexity and so challenge the regulatory system supporting fire safety equity.

6.4.37 To help alleviate the risk of failure, I propose that there is a need for independent oversight, as explained in Section 6.5 below.

6.5 Oversight

6.5.1 I am calling for an independent multi-disciplinary oversight body reporting directly to the Cabinet or Secretary of State [whichever is the most appropriate route], in my detailed recommendations in Section 7.

6.5.2 In my opinion there is real need for enhanced oversight to provide a systems-level view of progress and to make this a crucial requirement of the final body of recommendations the Panel proposes. This is particularly because of the broad range of stakeholders across multiple industries and regulators (Section 3, 4 and 5); the complex systems level change needed (Section 6.2), the immaturity of the fire safety culture (Section 6.3), and the current and future regulatory vulnerabilities (Section 6.4).

6.5.3 It is beyond the scope of this report, to advise on the detailed scope or structure of this oversight body but from my professional viewpoint, the following important issues should be taken into consideration:

a. The need for holistic systems level oversight that is both independent and multi-disciplinary.

b. The need for the body providing such oversight to report at a level of government that can influence and impact all parts of the complex, built environment system.

c. To this end, a temporary body reporting to the Cabinet/Secretary of State may provide the appropriate level of influence and oversight needed.

6.5.4 My reasons for this are outlined below.

6.5.5 I have made clear that complex systems change is required (Section 6.2) which demands holistic oversight of the fire safety system in the context of all the stakeholders and players that impact on fire safety and throughout the full life cycle of a building project, which includes the whole life cycle in occupation.

6.5.6 Systems change also needs to be delivered at all levels, therefore structural, relational, and transformational (Section 6.2) and this will require holistic oversight. Systems-level change will not be delivered by a tick-box completion of structural level actions.

6.5.7 Additionally given the complexity of the system, and the quantum of changes in play, there is the need for careful and rigorous insight and oversight, of the effectiveness of implemented changes, and whether they achieve what was intended.

6.5.8 This includes sufficient insight and oversight to respond to and iterate any unforeseen consequences on the system as a whole; and to respond for example to the ineffectiveness of any proposed solutions, should this arise.

6.5.9 To provide oversight of this breadth and nature will require an independent, multi-disciplinary body that must be collectively competent, truthful and committed to change and held to account for individual and collective performance.

6.5.10 My Module 7 report demonstrated the importance of understanding building constraints, the behaviour of supply chains as regards system components and performance, as well as the necessarily interlinking regulatory provisions, plus the cause and effect of any one system on the performance of another. This is why an oversight body cannot be delivered by a limited academia led consortium. Cross- sector and international expertise should also seriously be considered and should include expertise in understanding and causing systems change at all levels (systems, relational, transformation).

6.5.11 Given the breadth of the stakeholders involved in creating an equitable fire safety system, for such an oversight body to be effective it would need to report into government at a level that can influence change across the entire system.

6.5.12 Various other institutions have recommended oversight at this level regarding the implementation of inquiry and inquest recommendations more broadly. See for example, the Institute for Government report "*How public inquiries can lead to change*" (Norris & Shepheard, 2017) and a 2020 report by JUSTICE "*When Things Go Wrong: the response of the justice system*" (JUSTICE, 2020) [117].

6.5.13 Changes that enable an equitable fire safety system will rely on the inter-relationships, interfaces, acts, commissions, and omissions of a broad range of stakeholders, including:

a. multiple regulatory bodies and regulatory frameworks

b. several central and local government departments

c. complex housing and built environment sectors

d. developers, supply chains and professional and testing / advisory bodies

e. multiple emergency prevention and response bodies

f. residents of social housing and higher-risk buildings with complex ownership structures, and

g. the public.

6.5.14 I therefore would propose considering the establishment of a temporary (~10 years) independent and multi-disciplinary body reporting directly to the Cabinet/Secretary of State to be the single point of accountability to holistically track, monitor, view systemically and advise government

[117] JUSTICE (2020) When Things Go Wrong: The response of the justice system https://files.justice.org.uk/wp-content/uploads/2020/08/06165913/When-Things-Go-Wrong.pdf Accessed 8/11/2023

both on progress and on course corrections and proactively recommend other needed interventions when considering building and fire safety in the round.

6.5.15 The body would include two primary functions:

a. Research and report holistically on the status of an equitable fire safety system in the England in HRRB (and any other areas identified of concern or risk). The context outlined in this report (such as the need for systems level change, the need to improve the fire industry's safety culture, and regulatory vulnerabilities) could inform the scoping of the work of this body.

   This is not academic focused research – this is sector-focused research commissioned by parties with deep experience of the whole building works life cycle. Some research would be expected to be relevant to expertise held in some academic bodies in the UK and some internationally; but not wholly. Additionally expertise should be drawn from a broad range of disciplines such as complexity and systems change theory.

b. Make recommendations about how an equitable fire safety system can be improved from a holistic systems perspective. Any reports should be made publicly available to increase the level of information available to the fire safety profession and build trust by being transparent about progress and thus help enhance the Built Environment industry's safety culture maturity.

6.5.16 The three committees established under the BSA 2022 (building advisory, industrial competence and residents' panel) that are described in Section 3.3.35, are not currently tasked with such a scope to fulfil this oversight function. Although I would expect at this time, they would be a key stakeholder.

6.5.17 This oversight body will, in my view be a critical enabler of the systems level change called for post-Grenfell, and without such oversight our ability to enable the totality of change needed will be significantly hindered.

6.6 A framework for change: Towards an equitable and effective fire safety system

6.6.1 Introduction

6.6.2 There are numerous efforts already in progress to bring about change through legislation and regulation. It is essential that the time and resources of those involved in the fire safety system are spent implementing changes that will yield best safety improvement outcomes for all in society.

6.6.3 To bring about the shifts needed to transition to an equitable and effective fire safety system and approach, actions that are targeted to impact culture and the complex and interconnectedness of the fire safety arrangements in any one building, as well as the whole building stock, are required.

6.6.4 Considerations in creating the change framework and subsequent recommendations

6.6.5 Firstly, any recommendations need to improve the three key issues that I have raised in Sections 3, 4 and 5. Namely:

a. The **piecemeal approach** adopted to fire safety – dealing with the failure to understand that fire safety is an intrinsic component of a complex system.

b. The **unequal treatment of vulnerable people** in building fire safety.

c. The consequences of the lack of a **regulated fire safety profession**.

6.6.6 Secondly, when considered holistically, any recommendations should also:

a. Enable or promote **systems level change** by impacting change at all levels (structural, relational and transformational) (Section 6.2)

b. Promote or enable an improvement in the Built Environment Industry's **safety culture**, and to hence improve the Built Environment industry's ability to be well informed, improve trust and increase accountability and ownership for driving change (intrinsic motivation) (Section 6.3)

c. Consider and where possible mitigate against current and **future regulatory vulnerabilities** (Section 6.4).

d. Incorporate the benefits of an independent multi-disciplinary system-level **oversight body** (Section 6.5).

6.6.7 Therefore I propose the following change framework (Table 6-1) as a means to provide context and a change narrative around recommendations.

6.6.8 The elements of the framework for change: Towards an equitable fire safety system.

6.6.9 The framework for change is represented by a description of the current state where fire safety is un-systemic and can cause inequity, and shifting to an equitable fire safety system, the operating principles of which are described in Table 6-1.

6.6.10 The current state is described by presenting the conditions holding the current problems in place and outlining prevailing practices that are indicative of the current conditions, some perpetuating or even exacerbating the problem.

6.6.11 Based on the extensive evidence and my analysis of it throughout all of my reports in Phase 1 and Phase 2 of the Inquiry, the rationale for selecting these particular conditions as some of the most significant should be clear. I do not intend therefore to revisit why I have focused on these in depth.

6.6.12 I also describe corresponding operating principles and new conditions of an equitable effective fire safety system.

6.6.13 To achieve this will require shifting the current conditions and embedding new conditions as the basis for fire safety in the Built Environment.

6.6.14 Establishing these new conditions will require the adoption of new operating principles that guide thinking, acting, behaviours and decision making.

6.6.15 The recommendations in Section 7 provide some means to begin to do this.

6.6.16 Please note as tagged in Table 6-1, the impact of these new operating principles on the following have been considered:

- Systems level change, by indicating the primary level of change/s targeted (Structural, Relational, or Transformational) (Reference Section 6.2).
- Safety culture maturity by indicating the primary anticipated impact (Informed, Trust, Accountability) (Reference Section 6.3)
- Indicating whether the operating principle is intended to improve or mitigate against regulatory vulnerabilities (Reference Section 6.4).

Table 6-1 Change framework towards an effective and equitable fire safety system

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable and effective fire safety system				
Element No.	Current Condition	Prevailing practice indicative of the current condition	New Condition	Operating principles of an equitable fire safety system	Primary System Level Change Targeted Structural (S) Relational (R) Transformational (T)	Safety culture primary anticipated impact Trust (Tr) Informed (I) Accountability (A)	Intended to Improve / Mitigate regulatory vulnerabilities. (Y)
1	A piecemeal approach to fire safety	Lack of consideration of and response to systemic issues and vulnerabilities of the fire safety ecosystem.	Adopting a systems approach to fire safety	Independent oversight of the fire safety system to proactively monitor, consider and address systemic issues and vulnerabilities.	T	Tr	Y
		Key stakeholders affecting fire safety operating in silos with no rigorous consideration or understanding of the system they are operating in.		The Built Environment industry is viewed and managed as an ecosystem.	R	I/A	
		Stakeholders and supply chains do not understand or consider the impact of their discrete work on the performance standard of a building; nor the impact on building users, the emergency services etc.		Building fire safety is understood and managed as a complex system and there is cross trade and cross discipline competence and the regulatory framework and tools to enable this.	S	I/A	
		Improvements and changes do not adequately consider the complexity of the built environment and are not designed to enable systems level change.		Proposed changes intended to create an equitable fire safety system are (a) Rigorously considered against their effectiveness in creating systems change (shifting the conditions holding the problem in place and impacting all change levels – structural, relational and transformational); and (b) Rigorously mapped to understand the impact of any changes on the system accompanied by assessment and monitoring of impact across all levels of systems change (Structural, relational, and transformational).	T/S/R	I	Y
2	Tolerance of a weak (pathological) fire safety culture	Little awareness as an industry of what safety culture is or how to build a mature safety culture as an industry.	Effectively causing a strong (generative) fire safety culture throughout the Built Environment industry	An industry wide evidence-based evolutionary approach to causing a strong (generative safety culture) is created, adopted, and implemented.	T/S	Tr	Y
		Tolerance of bad practices and a lack of compliance		Intolerance of bad practice and intolerance of a lack of compliance with all relevant requirements.	T	A	Y
		A systemic failure to learn and change.		Intrinsic motivation to change and to learn - including from other industries and professions.	S	I	Y
		Fire risk strategies and risk assessments created without sufficient evidence base or understanding of the full intent of all relevant requirements.		Fire safety documentation, including fire safety strategy reports and fire risk assessment reports delivered on the basis of agreed minimum acceptable operating standards, conducted based on transparent and freely available information, with the express intent of complying with all relevant requirements.	S	A	Y
3	Unclear regulations and non-mandatory inadequate statutory guidance relating to fire safety in design, construction and occupation of buildings	The statutory guidance document AD B is not fit for purpose if it were to be adopted as a prescriptive guidance document as it is too high level, contains multiple errors and substantially insufficient information regarding the performance requirements for multiple active and passive systems. It provides no background to its content, preventing a clear understanding of when the bounds of the guidance are exceeded. There are too many non-statutory guidance documents requiring differing levels of fire safety and conflicting fire safety solutions.	Setting fire safety standards through unambiguous regulations and reliable, detailed prescriptive guidance, supported by a mandatory performance based design framework, with sufficient data and scrutiny in support of construction and occupation.	There is one reliable detailed source of prescriptive fire safety guidance to enable consistent compliance with the full intent of all relevant requirements. The basis for this prescriptive mandatory guidance is clearly communicated and described in sufficient detail to ensure a common understanding of application, and when the bounds of the mandatory guidance are exceeded.	T/S	A	Y
3 (contd.)		AD B does not provide prescriptive guidance that sets out how to meet performance-based requirements when undertaking design that deviates from the guidance within AD B. This causes designs being set out that claim a level of		A new statutory guidance document that provides the required methodology for performance based design approaches to demonstrating compliance with the functional requirements of the Building Regulations.	T	I/A	Y

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable and effective fire safety system				
Element No.	Current Condition	Prevailing practice indicative of the current condition	New Condition	Operating principles of an equitable fire safety system	Primary System Level Change Targeted Structural (S) Relational (R) Transformational (T)	Safety culture primary anticipated impact Trust (Tr) Informed (I) Accountability (A)	Intended to Improve / Mitigate regulatory vulnerabilities. (Y)
	Unclear regulations and non-mandatory inadequate statutory guidance relating to fire safety in design, construction and occupation of buildings (Contd.)	rigour and evidence that is unwarranted and do not consistently meet all relevant requirements.	Setting fire safety standards through unambiguous regulations and reliable, detailed prescriptive guidance, supported by a mandatory performance based design framework, with sufficient data and scrutiny in support of construction and occupation (Contd.)				
		Fire safety guidance does not explicitly address operational fire scenarios required to form the basis of design e.g., the impact of doors opening when the fire and rescue service enter the area of the fire.		Standard operational fire scenarios as a basis for design, are clearly described in the statutory prescriptive guidance and can be relied upon and referred to when utilising a performance based design methodology - in order to meet all relevant requirements.	S	A	Y
		Fire safety guidance and regulations lag the evolving needs of industry and society as they are updated in a reactive, sporadic, piecemeal fashion, and are ambiguous, especially for the trades upon which fit for purpose construction relies		Statutory prescriptive guidance is kept up to date through frequent periodic reviews, with input from industry, research, residents and the wider public.	S	A	Y
		Proof of fire performance of materials, products, assemblies and systems is a nice-to-have; misleading safety information is rewarded with market advantage; it is based on “bench scale” fire tests that bear little resemble to full scale assembly arrangements or fire scenarios.		Evidence of the fire performance of materials, products assemblies and systems is third party certified; all bench scale and full scale test data and certification information are accessible and transparent; a range of performance evidence on large scale testing for typical building products is available; there is mandatory testing for new products or unique project specific assemblies.	S/R	I	Y
		No mandated oversight during construction to ensure that the required fire safety provisions are installed adequately. There is no incentive for scrutiny as it prolongs construction and adds cost, and non-compliance has limited consequence.		A framework that sets out proportionate levels of inspection and oversight to provide assurance that the required protection measures are installed effectively. Taking account of the complexity of the design proposal and the consequences of failure on the expected occupants. Robust penalties are applied after a fair and proportionate investigation.	T	A	Y
		Handover process set out in Regulation is ineffective and is considered irrelevant in relation to demonstrating the building fire safety features meet the functional requirements.		Sufficient scrutiny and attention given to the handover process to ensure that the relevant fire safety information is given to the correct recipient. The required fire safety performance is proven as being achieved in the as-built condition via a post occupancy review with the principal designer.	T	Tr/I/A	Y
4	Unregulated fire safety profession of variable competence and accountability	Anyone can claim to be a fire safety professional. When things go wrong, no one is responsible or taken to account.	Regulating the fire safety profession: with entry requirements, regular audits of competence, and consequences for malpractice.	Only those who can evidence appropriate competence are allowed to do work that impacts fire safety. Roles, responsibilities and accountability are clear across the full set of design and contractor teams including the role requirements, responsibilities and accountability of fire safety engineers and fire risk assessors and those roles are regulated for and thus mandatory.	T/R	Tr	Y
		Professional and industry bodies do not effectively uphold standards, drive good practice, or enable change.		Professional and industry bodies drive change and competence across the built environment and housing sectors. Ethics are prioritised and malpractice is dealt with fairly and transparently.	R	Tr/A	Y
		Fire safety professionals are not required to sign-off or take accountability for their designs/works as part of the approvals process.		Design documentation is formally approved by the responsible Chartered engineer/consultant (signed and/or stamped) when submitted to the authorities for approval.	R/S	A	Y
		Engineers and consultants, including fire safety professionals, are not involved enough during construction and handover to check that fire safety measures (passive and active) are fully integrated and comply with the fire safety strategy for the HRRB.		The responsible Chartered engineer(s)/consultants inspect and check the as-built condition of HRRBs comply with the approved design and formally state their acceptance for future record.	R/S	A/I	Y

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable and effective fire safety system				
Element No.	Current Condition	Prevailing practice indicative of the current condition	New Condition	Operating principles of an equitable fire safety system	Primary System Level Change Targeted Structural (S) Relational (R) Transformational (T)	Safety culture primary anticipated impact Trust (Tr) Informed (I) Accountability (A)	Intended to Improve / Mitigate regulatory vulnerabilities. (Y)
4 (contd.)	Unregulated fire safety profession of variable competence and accountability (Contd.)	There is limited independent checking (i.e. building control or Client representatives) that the as-built final condition at handover complies with the fire safety strategy for the HRRB.	Regulating the fire safety profession: with entry requirements, regular audits of competence, and consequences for malpractice. (Contd.)	Building control (i.e. the BSR) check the as-built condition complies with the fire safety strategy and that the responsible Chartered engineer(s)/consultants have accepted the completed works as compliant with the approved design/fire safety strategy and recorded the same. Noting the fire safety strategy must demonstrate compliance with all relevant requirements.	R/S	A/I	Y
		Fire risk assessors of existing buildings are not regulated and are at best listing limited defects against a check list. They do not consistently assess and then document for the responsible person the residual risks and the consequential impact on the risk to life for all building occupants.		Fire risk assessors are registered/licensed to undertake fire risk assessment on HRRBs and have the competency to provide the responsible person with a clear evaluation of the impact of residual risks on the overall fire safety of the HRRB (for all occupants and the fire and rescue service) if a fire were to occur while the defects are in place.	S	Tr/A	Y
5	Increasing fire safety risk inequity for existing HRRBs compared to new HRRBs	Culture of relying on the "grandfathering principle" leading to a lower standard of fire safety solution in existing HRRBs.	Reducing fire safety risk inequity for existing HRRBs when compared to new HRRBs over time.	A culture of proactively improving fire safety of existing housing stock over time based on a holistic view of fire safety risks and vulnerabilities.	T	Tr	Y
		There is no requirement to consider residual fire safety risk in Fire Risk Assessments of existing buildings. Defective fire safety measures (e.g. damaged fire door) are recorded as needing repair or replacement but the impact of this defect on the fire safety of the occupants or fire and rescue service in the event of a fire is not explained to the responsible person. Hence residual fire safety risk is not understood, and therefore neither accepted nor mitigated.		A shared understanding of residual fire safety risk by all parties including residents, with appropriate mitigations put in place that are co-created.	R/S	I/A	Y
		The holistic fire safety strategy for an existing HRRB is not understood or considered important before building works are undertaken.		A fire safety strategy is in place for existing HRRBs, is confirmed by inspections of the as-built condition and updated before any new work commences.	S	I/A	Y
6	Inequitable risk levels for vulnerable people in new high rise residential buildings is overlooked/tolerated	Buildings have equality of access, but not equality of emergency egress. Emergency planning is dealt with through an oversimplistic fire action notice based on the false assurance that HRRB's are "simple buildings".	Improving fire risk equity in new HRRBs over time: Fire safety provisions are equitable for a reasonable range of vulnerabilities	Accessible buildings with arrangements in place to enable inclusive emergency egress in the event of a fire, such as including evacuation lifts that can be used by residents alone or to provide the fire and rescue service with the means to assist with evacuation. Emergency planning communication and engagement between building management/housing associations and the fire and rescue service such that all parties are aware of the needs of vulnerable residents and therefore how to support them in a fire emergency. Appropriate written and verbal communication, to enable ongoing understanding for all building occupants of what arrangements are in place in the event of a fire, are considered important, and full accountability taken for them by the relevant duty holders.	T/R	Tr/I	Y
		Demographics are overlooked or selected on an unreasonable basis when formulating the occupancy profile for the purposes of formulating adequate fire safety solutions		Occupancy profiles representative of a reasonable range of vulnerabilities form the basis of design, and fire safety management arrangements.	R/S	I	

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable and effective fire safety system				
Element No.	Current Condition	Prevailing practice indicative of the current condition	New Condition	Operating principles of an equitable fire safety system	Primary System Level Change Targeted Structural (S) Relational (R) Transformational (T)	Safety culture primary anticipated impact Trust (Tr) Informed (I) Accountability (A)	Intended to Improve / Mitigate regulatory vulnerabilities. (Y)
6 (contd.)	Inequitable risk levels for vulnerable people in new high rise residential buildings is overlooked/tolerated (contd.)	Policy, regulations and guidance focus on fire safety statistics based on overall fire deaths and overlook statistics that relate to vulnerable people in the event of fire.	Improving fire risk equity in new HRRBs over time: Fire safety provisions are equitable for a reasonable range of vulnerabilities (contd.)	Fire safety statistics relevant to any disability (mobility, sensory and cognitive impairment) gathered in order to be relied upon to drive improved equity in fire safety policy, regulations and guidance.	R/S	I	
		Guidance documents that perpetuate the reliance on fire safety provisions which cause inequitable risk levels for vulnerable persons are tolerated mostly without question.		Mandatory statutory guidance documents that provide fire safety solutions which enable equitable fire safety provisions for a reasonable range of vulnerabilities.	R/S	A	Y

7. Recommendations to create an equitable and effective fire safety system

7.1 Introduction

7.1.1 It is proposed that to create an equitable and effective fire safety system it will require systems level change at all levels (structural, relational and transformative) in order to shift the conditions holding the current inequitable system in place.

7.1.2 The recommendations I have proposed are intended to frame a holistic approach and methodology to shift the existing conditions of a deeply complex system towards creating a system that consistently produces fire safe buildings and also improves risk exposure for vulnerable people.

7.1.3 As such the recommendations should be viewed in the round rather than in isolation.

7.1.4 The set of recommendations I have made, should not be treated as exclusive, and with other recommendations could enable new operating principles to prevail.

7.1.5 The representative conditions of an equitable fire safety system include:

- Adopting a systems approach to fire safety.
- Effectively causing a strong (generative) fire safety culture throughout the Built Environment industry
- Setting fire safety standards through unambiguous regulations and reliable, detailed prescriptive guidance, supported by a mandatory performance-based design framework, sufficient scrutiny of fire safety information including accessible material and assembly fire performance test data, up to date fire statistics, proportionate levels of inspection, and proven as-built performance standards.
- Regulating the fire safety profession: with entry requirements, regular audits of competence, and consequences for malpractice.
- Reducing fire safety risk inequity for existing HRRBs when compared to new HRRBs over time.
- Improving fire risk equity in new HRRBs over time: Fire safety provisions are equitable for a reasonable range of vulnerabilities

7.1.6 Table 7-1 below provides a total of 53 recommendations within the change framework for the Inquiry to consider.

7.2 Recommendations

Table 7-1 Change framework towards an effective and equitable fire safety system - recommendations

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable fire safety system		
Element No.	**Current Condition**	**Prevailing practice indicative of the current condition**	**New Condition**	**Operating principles of an equitable fire safety system**	**Recommendations To create an equitable fire safety system**
1	A piecemeal approach to fire safety	Lack of consideration of and response to systemic issues and vulnerabilities of the fire safety ecosystem.	Adopting a systems approach to fire safety	Independent oversight of the fire safety system to proactively monitor, consider and address systemic issues and vulnerabilities..	**RECOMMENDATION 1.1**: Establish an independent oversight body reporting directly to the Cabinet/Secretary of State to be the single point of accountability to holistically track, monitor, view systemically and advise government both on progress and recommend new or revised interventions - when considering the creation of an equitable fire safety system. **RECOMMENDATION 1.2**: Adopt an equitable fire safety system framework to manage fire safety in England. This will require a totally different perspective on managing complexity, a recognition that we are dealing with a complex system. **RECOMMENDATION 1.3**: The Government should commission an independent and multi-disciplinary (e.g. bi-annual) review of the effectiveness of an equitable fire safety system. This should include considering progress on the conditions and levels of systems change (structural, relational, and transformational). **RECOMMENDATION 1.4**: Conduct an analysis of the fire safety system in order to map it and understand the implications of current and future changes on causing an equitable fire safety system. This mapping needs to include consideration of the conditions and levels needed for systems level change, for e.g., it should map power imbalances and the complex relationships across the complex stakeholders and industry bodies that may lead to conflicts of interest that could drive agendas not in service of equitable fire safety. There are innovative mapping techniques to do this. **RECOMMENDATION 1.5**: Develop an approach to effectively educate the Built Environment industry about the vision for an equitable fire safety system. This would need to include education about the complexity of the built environment and the need therefore to adopt a systems approach. This needs to be accessible, practical, and educational. **RECOMMENDATION 1.6:** Articulate the role of the key stakeholders and supply chains regarding their impact on the equitable fire safety system and provide training, guidance and tools for stakeholders and key professionals to understand, assess, manage, and mitigate risks and vulnerabilities regarding fire safety from a holistic integrated perspective. **RECOMMENDATION 1.7:** The capabilities and competencies needed to operate effectively in a complex system and cause an equitable fire safety system should be articulated and embedded in new or existing competency frameworks for key roles. **RECOMMENDATION 1.8**: Create guidance (and where necessary training) for critical roles impacting fire safety in HRRBs to enable a full understanding of their responsibility for the impact of their discrete work or activities on the fire safety system.
		Key stakeholders affecting fire safety operating in silos with no rigorous consideration or understanding of the system they are operating in.		The Built Environment industry is viewed and managed as an ecosystem.	
		Stakeholders and supply chains do not understand or consider the impact of their discrete work on the performance standard of a building; nor the impact on building users, the emergency services etc.		Building fire safety is understood and managed as a complex system and there is cross trade and cross discipline competence and the regulatory framework and tools to enable this.	
		Improvements and changes do not adequately consider the complexity of the built environment and are not designed to enable systems level change.		Proposed changes intended to create an equitable fire safety system are (a) Rigorously considered against their effectiveness in creating systems change (shifting the conditions holding the problem in place and impacting all change levels – structural, relational and transformational); and (b) Rigorously mapped to understand the impact of any changes on the system accompanied by assessment and monitoring of impact across all levels of systems change (Structural, relational, and transformational).	
2	Tolerance of a weak (pathological) fire safety culture	Little awareness as an industry of what safety culture is or how to build a mature safety culture as an industry.	Effectively causing a strong (generative) fire safety culture throughout the Built Environment industry	An industry wide evidence-based evolutionary approach to causing a strong (generative safety culture) is created, adopted, and implemented.	**RECOMMENDATION 2.1**: Conduct analysis in order to provide an evidence base about the current culture and barriers to learning and change. This should include: • An industry wide perception-based safety culture survey that considers all levels of culture (artefacts, espoused values and assumptions). This approach to understanding the culture has been adopted by several fire services and hence the methodology for doing so exists. • Consideration of the effectiveness and role of professional bodies and other key institutions in driving change and ensuring competence and learning. **RECOMMENDATION 2.2**: Based on the findings, develop an evidence-based evolutionary approach, guidance, and tools to support the fire industry to effectively build a strong (generative) fire safety culture. Consideration of how to ensure intrinsic motivation for change will be critical. **RECOMMENDATION 2.3**: To improve the fire safety professions safety culture by being increasingly 'informed', research being commissioned by Government should be published in a timely fashion and in a way that is easy to find. Interim findings should also be published, when appropriate, where they would be of benefit to industry and research. **RECOMMENDATION 2.4**: Require that the industry demonstrate the steps they are taking to improve safety culture, provide evidence of their approach to learning from what goes wrong and what goes right and provide details of their approach to dealing effectively with bad practice, from an organisational and/or project level perspective, certainly from the perspective that will be most effective given the complex delivery mechanisms and supply chains involved.
		Tolerance of bad practices and a lack of compliance		Intolerance of bad practice and intolerance of a lack of compliance with all relevant requirements.	
		A systemic failure to learn and change.		Intrinsic motivation to change and to learn - including from other industries and professions.	
		Fire risk strategies and risk assessments created without sufficient evidence base or understanding the full intent of the relevant legislation, regulation, and guidance.		Fire safety documentation, including fire safety strategy reports and fire risk assessment reports delivered on the basis of agreed minimum acceptable operating standards, conducted based on transparent and freely available information, with the express intent of complying with all relevant requirements.	

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable fire safety system		
Element No.	**Current Condition**	**Prevailing practice indicative of the current condition**	**New Condition**	**Operating principles of an equitable fire safety system**	**Recommendations To create an equitable fire safety system**
2(Contd.)	Tolerance of a weak (pathological) fire safety culture (Contd.)		Effectively causing a strong (generative) fire safety culture throughout the Built Environment industry (Contd.)		**RECOMMENDATION 2.5:** Consider ways to reward organisations demonstrating an intrinsic motivation to learn and change i.e., that go beyond the requirements laid out and genuinely provide leadership at an industry level. This could for example for part of the government procurement process. **RECOMMENDATION 2.6**: Professional institutions in the fire industry should be required to produce a publicly available annual report that articulates their strategy for proactively improving fire safety culture both internally and within the industry and articulate their approach to eliminating bad practice. **RECOMMENDATION 2.7**: The role and responsibilities of the fire safety engineer including accountabilities and contractual duties should be clearly defined in legislation with examples of good practice given in guidance on their role in meeting all relevant requirements. **RECOMMENDATION 2.8**: The registered Chartered fire safety engineer should be responsible from a fire safety perspective for making sure the *fire and emergency file* and emergency information for occupants is complete and available at handover, is consistent with the fire safety strategy report and that they have briefed the responsible/accountable person(s) on the details of the fire safety plan and their responsibilities within it e.g. to inform the occupants of actions to be taken in a fire. **RECOMMENDATION 2.9**: The role and responsibilities of the fire safety risk assessor including accountabilities to the responsible person and contractual duties under the RR(FS)O should be clearly defined in legislation with examples of good practice given in guidance. **RECOMMENDATION 2.10**: The fire safety strategy should inform the safety case required by the BSA 2022 and should be presented to the principal accountable person and their future fire risk assessor by the fire safety engineer at handover so the process of ongoing risk assessment and operation is based on a fundamental understanding of the condition at handover and the fire safety measures relied upon. **RECOMMENDATION 2.11**: Set out in statutory guidance minimum standards and the level of detail expected for fire safety information necessary at handover so that the responsible person can perform their role under the RR(FS)O. **RECOMMENDATION 2.12** Section 9 of the FSER to be amended as required to enable a single consistent standard to be applied across all HRRBs.
3	Unclear regulations and non-mandatory inadequate statutory guidance relating to fire safety in design, construction and occupation of buildings	The statutory guidance document AD B is not fit for purpose as a prescriptive guidance document as it is too high level, contains multiple errors and substantially insufficient information regarding the performance requirements for multiple active and passive systems. It provides no basis for its prescription, preventing a clear understanding of when the bounds of the guidance are exceeded. There are too many non-statutory guidance documents requiring differing levels of fire safety and conflicting fire safety solutions.	Setting fire safety standards through unambiguous regulations and reliable, detailed prescriptive guidance, supported by a mandatory performance based design framework, with sufficient data and scrutiny in support of construction and occupation.	There is one reliable detailed source of prescriptive fire safety guidance to enable consistent compliance with the full intent of all relevant requirements.	**RECOMMENDATION 3.1**: Transition to a clear, unambiguous approach for future regulations and mandatory prescriptive standards that govern fire safety in HRRBs in the long term. **RECOMMENDATION 3.2**: Consolidate AD B and BS 9991 into one primary prescriptive mandatory statutory guidance document to remove multiple routes for an HRRB to comply with the Building Regulations Part B. The basis for this prescriptive mandatory guidance must be clearly described and in sufficient detail to ensure a common and consistent approach to compliance; and clearly communicating when the bounds of the mandatory guidance are exceeded. **RECOMMENDATION 3.3**: Update consolidated statutory guidance in a regular and consistent approach, address feedback from users, new technologies and methods of construction, learning from real fires and research, and other developments in the industry. **RECOMMENDATION 3.4:** Create a mandatory performance based design framework, for undertaking design that deviates from the prescriptive mandatory guidance. The intention of the framework is to increase the level of rigour and evidence required to demonstrate a fire safety solution can meet all relevant requirements. Standard design basis operational fire scenarios should be prescribed. **RECOMMENDATION 3.5**: Abolish the Building Control Alliance Guidance notes as this information should be in regular updates to the consolidated statutory guidance. **RECOMMENDATION 3.6**: The method by which industry guidance is adopted into Statutory Guidance is reformed to ensure a minimum standard of quality assurance checking and technical review both at initial implementation and at regular intervals afterward to ensure the guidance stays relevant. **RECOMMENDATION 3.7**: Create a process to ensure the statutory prescriptive guidance is kept up to date through frequent periodic reviews, with input from industry, research, residents and the wider public **RECOMMENDATION 3.8**: Create an assurance framework such that evidence of the fire performance of materials, products assemblies and systems is third party certified; all bench scale and full scale test data and certification information are accessible and transparent; a range of performance evidence on large scale testing for typical building products is available; there is mandatory testing for new products or unique project specific assemblies. Third party certification bodies should maintain freely accessible digital repositories of 'listed' products and systems that have been tested and certified. All fire test reports should be available for review including fire tests of systems that have passed or failed and any ad-hoc tests undertaken by suppliers.
		AD B does not provide prescriptive guidance that sets out how to meet performance-based requirements when undertaking design that deviates from the guidance within AD B. This causes designs being set out that claim a level of rigour and evidence that is unwarranted and do not consistently meet all relevant requirements.		The basis for this prescriptive mandatory guidance is clearly communicated and described in sufficient detail to ensure a common understanding of application, and when the bounds of the mandatory guidance are exceeded.	
		Fire safety guidance does not explicitly address operational fire scenarios required to form the basis of design e.g., the impact of doors opening when the fire and rescue service enter the area of the fire.		Standard operational fire scenarios as a basis for design, are clearly described in the statutory prescriptive guidance and can be relied upon and referred to when utilising a performance based design methodology - in order to meet all relevant requirements.	

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable fire safety system		
Element No.	**Current Condition**	**Prevailing practice indicative of the current condition**	**New Condition**	**Operating principles of an equitable fire safety system**	**Recommendations To create an equitable fire safety system**
3 (Contd.)	Unclear regulations and non-mandatory inadequate statutory guidance relating to fire safety in design, construction and occupation of buildings (Contd.)	Fire safety guidance and regulations lag the evolving needs of industry and society as they are updated in a reactive, sporadic, piecemeal fashion, and are ambiguous, especially for the trades upon which fit for purpose construction relies	Setting fire safety standards through unambiguous regulations and reliable, detailed prescriptive guidance, supported by a mandatory performance based design framework, with sufficient data and scrutiny in support of construction and occupation. (Contd.)	Statutory prescriptive guidance is kept up to date through frequent periodic reviews, with input from industry, research, residents and the wider public.	**RECOMMENDATION 3.9**: Create a framework that sets out proportionate levels of inspection and oversight to provide assurance that the required fire protection measures are installed effectively; ensure sufficient scrutiny of the handover process regarding fire safety information but also proven integrated fire safety systems (active and passive) performance along with a test of the relevant fire safety management arrangements.
		Proof of fire performance of materials, products, assemblies and systems is a nice-to-have; misleading safety information is rewarded with market advantage; it is based on “bench scale” fire tests that bear little resemble to full scale assembly arrangements or fire scenarios.		Evidence of the fire performance of materials, products assemblies and systems is third party certified; all bench scale and full scale test data and certification information are accessible and transparent; a range of performance evidence on large scale testing for typical building products is available; there is mandatory testing for new products or unique project specific assemblies.	
		No mandated oversight during construction to ensure that the required fire safety provisions are installed adequately. There is no incentive for scrutiny as it prolongs construction and adds cost, and non-compliance has limited consequence.		A framework that sets out proportionate levels of inspection and oversight to provide assurance that the required protection measures are installed effectively. Taking account of the complexity of the design proposal and the consequences of failure on the expected occupants. Robust penalties are applied after a fair and proportionate investigation.	
		Handover process set out in Regulation is ineffective and is considered irrelevant in relation to demonstrating the building fire safety features meet the functional requirements.		Sufficient scrutiny and attention given to the handover process to ensure that the relevant fire safety information is given to the correct recipient. The required fire safety performance is proven as being achieved in the as-built condition via a post occupancy review with the principal designer.	
4	Unregulated fire safety profession of variable competence and accountability	Anyone can claim to be a fire safety professional. When things go wrong, no one is responsible or taken to account.	Regulating the fire safety profession: with entry requirements, regular audits of competence, and consequences for malpractice.	Only those who can evidence appropriate competence are allowed to do work that impacts fire safety. Roles, responsibilities and accountability are clear across the full set of design and contractor teams including the role requirements, responsibilities and accountability of fire safety engineers and fire risk assessors and those roles are regulated for and thus mandatory.	**RECOMMENDATION 4.1**: Make formal accreditation or licensing mandatory for engineers, architects, consultants and fire risk assessors undertaking work impacting fire safety. **RECOMMENDATION 4.2**: Set specific competency requirements (e.g. technical, behavioural and ethical) for those involved in fire safety work as appropriate for the role and responsibilities. These will vary across the profession, ranging from Chartered Engineer (CEng), Incorporated Engineer (Ieng) and Engineering Technician (EngTech) to fire risk assessors and building safety managers. Define minimum qualifications, training and years of experience for these particular roles and then regulate. **RECOMMENDATION 4.3**: A registered Chartered fire safety engineer should be required for design and construction of new HRRBs or new works in existing HRRBs. This is to take responsibility for providing a holistic fire safety strategy for HRRBs, including existing buildings, checks of the as-built condition in all areas and the impact of the new works in collaboration with the fire risk assessor and responsible person. The registered Chartered fire safety engineer should also make considered recommendations for upgrades based on risk if the fire safety measures of the existing HRRB do not meet current statutory fire safety guidance. **RECOMMENDATION 4.4**: Activate Paragraph (4) of Section 156 of the BSA 2022 making changes to the RR(FS)O to define competence requirements for fire risk assessors. **RECOMMENDATION 4.5**: Professional Institutions should collaborate to create one guidance document that integrates fire safety at all RIBA stages of a project (for new HRRBs and works on existing HRRBs) and clarifies roles and responsibilities, and key deliverables. Professional Institutions need to hold all professionals to account for their duty to take responsibility for the substantial influence they have on the fire safety features selected for a building during design and the way they are installed during construction and the condition of the fire safety standards at handover.
		Professional and industry bodies do not effectively uphold standards, drive good practice, or enable change.		Professional and industry bodies drive change and competence across the built environment and housing sectors. Ethics are prioritised and malpractice is dealt with fairly and transparently.	
		Fire safety professionals are not required to sign-off or take accountability for their designs/works as part of the approvals process.		Design documentation is formally approved by the responsible Chartered engineer/consultant (signed and/or stamped) when submitted to the authorities for approval.	

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable fire safety system		
Element No.	**Current Condition**	**Prevailing practice indicative of the current condition**	**New Condition**	**Operating principles of an equitable fire safety system**	**Recommendations To create an equitable fire safety system**
4 (Contd.)	Unregulated fire safety profession of variable competence and accountability (Contd.)	Engineers and consultants, including fire safety professionals, are not involved enough during construction and handover to check that fire safety measures (passive and active) are fully integrated and comply with the fire safety strategy for the HRRB.	Regulating the fire safety profession: with entry requirements, regular audits of competence, and consequences for malpractice (Contd.)	The responsible Chartered engineer(s)/consultants inspect and check the as-built condition of HRRBs comply with the approved design and formally state their acceptance for future record.	**RECOMMENDATION 4.6**: Make complaints procedures about registered professionals transparent and consistent, and share outcomes such that professionals are held accountable. Procedures should allow for complaints about both ethical behaviour as well as performance issues. **RECOMMENDATION 4.7**: Make it a requirement that registered Chartered engineers/consultants responsible for fire safety must sign-off design information before it is submitted to building control for approval. **RECOMMENDATION 4.8**: Make it a requirement that registered Chartered engineers/consultants responsible for fire safety have formal involvement and oversight of construction and commissioning of HRRBs including formal sign-off and recording of their acceptance that the as-built meets the fire safety strategy/design intent. **RECOMMENDATION 4.9**: Make it a requirement that building control have formal involvement and oversight of design, construction and commissioning of HRRBs including formal sign-off and recording of approvals for the future. They must also check that the Chartered engineers/consultants are licensed/registered. I acknowledge the progress in this area made by the recent new Building Regulations process relating to HRBs. **RECOMMENDATION 4.10**: Clarify in the BSA2022 that any fire safety professional giving advice during the design and construction stage of projects is a "designer" under CDM and now also the new dutyholder roles under the Building Regulations.
		There is limited independent checking (i.e. building control or Client representatives) that the as-built final condition at handover complies with the fire safety strategy for the HRRB.		Building control (i.e. the BSR) check the as-built condition complies with the fire safety strategy and that the responsible Chartered engineer(s)/consultants have accepted the completed works as compliant with the approved design/fire safety strategy and recorded the same. Noting the fire safety strategy must demonstrate compliance with all relevant requirements.	
		Fire risk assessors of existing buildings are not regulated and are at best listing limited defects against a check list. They do not consistently assess and then document for the responsible person the residual risks and the consequential impact on the risk to life for all building occupants.		Fire risk assessors are registered/licensed to undertake fire risk assessment on HRRBs and have the competency to provide the responsible person with a clear evaluation of the impact of residual risks on the overall fire safety of the HRRB (for all occupants and the fire and rescue service) if a fire were to occur while the defects are in place.	
5	Increasing fire safety risk inequity for existing HRRBs compared to new HRRBs	Culture of relying on the "grandfathering principle" leading to a lower standard of fire safety solution in existing HRRBs.	Reducing fire safety risk inequity for existing HRRBs when compared to new HRRBs over time.	A culture of proactively improving fire safety of existing housing stock over time based on a holistic view of fire safety risks and vulnerabilities.	**RECOMMENDATION 5.1**: Make compliance with the functional requirements of B1 Means of warning and escape a requirement for all building work in existing HRRBs. **RECOMMENDATION 5.2**: Abolish Regulations 3 and 4 of the Building Regulations 2010 and replace them with a requirement that expects improvements, i.e. compliance with current building regulations, as far as reasonably practicable. **RECOMMENDATION 5.3**: Introduce clear requirements in statutory fire safety guidance setting out the minimum fire safety measures that must be put in place (permanently added as part of upgrade) when working in existing buildings. **RECOMMENDATION 5.4**: Fire risk assessments must not only list the non-compliance but also explain and record the impact if a fire were to occur while the residual risk is still in place. All credible fire scenarios should be considered as part of the risk assessment. **RECOMMENDATION 5.5**: Legislate that all HRRBs must have a fire safety strategy in place (retrospectively if required) which has been prepared by a professional which has met certain defined standards. and that this is updated to reflect planned new works and approved by building control before the new works are undertaken. **RECOMMENDATION 5.6:** Confirm the meaning in practice of taking all reasonable steps whilst also in the context of the current Regulation 3 and 4 removing any ambiguity in interpretation.
		There is no requirement to consider residual fire safety risk in Fire Risk Assessments of existing buildings. Defective fire safety measures (e.g. damaged fire door) are recorded as needing repair or replacement but the impact of this defect on the fire safety of the occupants or fire and rescue service in the event of a fire is not explained to the responsible person.		A shared understanding of residual fire safety risk by all parties including residents, with appropriate mitigations put in place that are co-created.	
		Hence residual fire safety risk is not understood, and therefore neither accepted nor mitigated.		A fire safety strategy is in place for existing HRRBs, is confirmed by inspections of the as-built condition and updated before any new work commences.	

Change Framework	Fire safety is non-systemic and can cause inequity		Equitable fire safety system		
Element No.	**Current Condition**	**Prevailing practice indicative of the current condition**	**New Condition**	**Operating principles of an equitable fire safety system**	**Recommendations To create an equitable fire safety system**
6	Inequitable risk levels for vulnerable people in new high rise residential buildings is overlooked/ tolerated	Buildings have equality of access, but not equality of emergency egress. Emergency planning is dealt with through an oversimplistic fire action notice based on the false assurance that HRRB's are "simple buildings".	Improving fire risk equity in new HRRBs over time: Fire safety provisions are equitable for a reasonable range of vulnerabilities	Accessible buildings with arrangements in place to enable inclusive emergency egress in the event of a fire, such as including evacuation lifts that can be used by residents alone or to provide the fire and rescue service with the means to assist with evacuation. Emergency planning communication and engagement between building management/housing associations and the fire and rescue service such that all parties are aware of the needs of vulnerable residents and therefore how to support them in a fire emergency. Appropriate written and verbal communication, to enable ongoing understanding for all building occupants of what arrangements are in place in the event of a fire, are considered important, and full accountability taken for them by the relevant duty holders.	**RECOMMENDATION 6.1:**: Create mandatory guidance for the organisational management of fire risk using an Organisational Risk Management System. **RECOMMENDATION 6.2**: Set out in statutory guidance minimum standards and the level of detail expected for fire safety information necessary at handover so residents understand the actions they must take in event of a fire. Emergency information should be standardised in a graphical format and posted in common areas. **RECOMMENDATION 6.3**: Withdraw the LGA guide, PAS 79 and PAS 9980 as they continue to enable the false narrative that fire safety arrangements for general needs housing should consider physical disability only, and even then only if "predominantly occupied by people requiring assistance to escape in a fire" through which PAS 9980 incorrectly labels any other proportion as a "neutral risk factor". **RECOMMENDATION 6.4**: Change the RR(FS)O to require the responsible person to record as part of the prescribed information set out in Article 9(7)(b) "any person identified by the assessment as being especially at risk, giving particular consideration to disabled people" and confirm the required frequency of assessment in HRRBs. **RECOMMENDATION 6.5**: Conduct participatory research with end users, fire and rescue services, inclusivity consultants and organisations representing vulnerable people, to determine the demographics and needs of vulnerable people in a fire emergency and then the pragmatic solutions for new and existing HRRBs that would deliver these outcomes. **RECOMMENDATION 6.6**: Convene a multi-disciplinary group including end-user representation (e.g. residents and the fire and rescue service) dedicated to preparing a holistic approach to an updated AD M, AD B and fire risk assessment guide for existing HRRBs based on the outcomes of the above participatory research. **RECOMMENDATION 6.7**: Develop specific guidance (adapted from international guidance, as appropriate) on how to safely integrate lift evacuation capabilities retrospectively in existing HRRBs. **RECOMMENDATION 6.8**: Develop specific mandatory guidance setting out egress solutions for all residents of HRRBs. **RECOMMENDATION 6.9**: The Home Office should review and increase the data gathered about residents of HRRBs (within the boundaries of data protection guidelines), evacuation strategies of HRRBs and fire events to enable statistics reporting that monitors whether fire safety equity is improving over time. All information should be digital.
		Demographics are overlooked or selected on an unreasonable basis when formulating the occupancy profile for the purposes of formulating adequate fire safety solutions		Occupancy profiles representative of a reasonable range of vulnerabilities form the basis of design, and fire safety management arrangements.	
		Policy, regulations and guidance focus on fire safety statistics based on overall fire deaths and overlook statistics that relate to vulnerable people in the event of fire.		Fire safety statistics relevant to any disability (mobility, sensory and cognitive impairment) gathered in order to be relied upon to drive improved equity in fire safety policy, regulations and guidance.	
		Guidance documents that perpetuate the reliance on fire safety provisions which cause inequitable risk levels for vulnerable persons are tolerated mostly without question.		Mandatory statutory guidance documents that provide fire safety solutions which enable equitable fire safety provisions for a reasonable range of vulnerabilities.	

8. Experts declaration

I, Barbara Lane declare that:

1. I understand that my duty in providing written reports and giving evidence is to help the Court, and that this duty overrides any obligation to the party by whom I am engaged or the person who has paid or is liable to pay me. I confirm that I have complied and will continue to comply with my duty.
2. I confirm that I have not entered into any arrangement where the amount or payment of my fees is in any way dependent on the outcome of the case.
3. I know of no conflict of interest of any kind, other than any which I have disclosed in my report.
4. I do not consider that any interest which I have disclosed affects my suitability as an expert witness on any issues on which I have given evidence.
5. I will advise the party by whom I am instructed if, there is any change in circumstances which affect my answers to points 3 and 4 above.
6. I have shown the sources of all information I have used.
7. I have exercised reasonable care and skill in order to be accurate and complete in preparing this report.
8. I have endeavoured to include in my report those matters, of which I have knowledge or of which I have been made aware, that might adversely affect the validity of my opinion. I have clearly stated any qualifications to my opinion.
9. I have not, without forming an independent view, included or excluded anything which has been suggested to me by others, including my instructing lawyers.
10. I will notify those instructing me immediately and confirm in writing if, for any reason, my existing report requires any correction or qualification.
11. I understand that;
    a. my report will form the evidence to be given under oath or affirmation;
    b. questions may be put to me in writing for the purposes of clarifying my report and that my answers will be treated as part of my report and covered by my statement of truth;
    c. the Court may at any stage direct a discussion to take place between experts for the purpose of identifying and discussing the expert issues in the proceedings, where possible reaching an agreed opinion on those issues and identifying what action, if any, may be taken to resolve any of the outstanding issues between the parties;
    d. the Court may direct that following a discussion between the experts that a statement should be prepared showing those issues which are agreed, and those issues which are not agreed, together with a summary of the reasons for disagreeing;
    e. I may be required to attend court to be cross-examined on my report by a cross-examiner assisted by an expert;
    f. I am likely to be the subject of public adverse criticism by the judge if the Court concludes that I have not taken reasonable care in trying to meet the standards set out above.
12. I have read Part 35 of the Civil Procedure Rules, the accompanying practice direction and the Guidance for the instruction of experts in civil claims and I have complied with their requirements.

13. I am aware of the practice direction on pre-action conduct. I have acted in accordance with the Code of Practice for Experts.

STATEMENT OF TRUTH

I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its true

Signature  Date 19th December 2023

Name in full Dr Barbara Ann Lane