Built environment – Overarching framework for competence of individuals – Specification

September 2020 Version 1

BSI Flex 8670: v1.0 2020-09

Ministry of Housing, Communities & Local Government

bsi.

About BSI

BSI is the national standards body for the UK. Almost every country in the world has a national standards body (NSB). NSBs work with industry, academia, government, worker representatives and many others to develop standards. Most NSBs are also a member of ISO, the International Standards Organization, and work with experts from all over the world to write global guidelines and requirements like ISO 9001 on Quality Management.

BSI is independent: it does not have shareholders and is not part of government. Anyone can come to BSI for independent information on standards and related services.

This document will be updated to reflect the dynamic situation. To comment on the document, to check for and download the latest version, and access supplementary information, go to

https://www.bsigroup.com/en-GB/industries-and-sectors/construction-and-the-built-environment/built-environment-competence-standards/

For any other enquiries, please contact: cservices@bsigroup.com

This BSi Flex

Publishing and copyright information

Version history

First published September 2020

Contents

Foreword iii

0 Introduction v

Section 1: Preliminaries 1

1 Scope 1

2 Normative references 1

3 Terms and definitions 3

Section 2: Core requirements 4

4 Requirements for sector-specific competence frameworks 4

5 Behavioural and ethical competence for sector-specific frameworks 7

Section 3: Requirements for higher-risk buildings 9

6 Core competence for building safety in higher-risk buildings 9

Annexes

Annex A (informative) Ethical standards 16

Annex B (informative) Fire Safety in higher-risk buildings 18

Annex C (informative) Structural Safety in higher-risk buildings 26

Annex D (informative) Public health and public safety in higher-risk buildings 31

Annex E (informative) Common definitions for sector-specific frameworks 40

List of Figures

Figure 1 – Competence is a combination of Skills knowledge, Experience and Behaviours (SKEB) vii

Figure 2 – European Qualifications Framework levels with knowledge descriptors – these are linked to skill and descriptions of responsibility and autonomy at each level (https://europa.eu/europass/en/description-eight-eqf-levels) x

Figure 3 – Levels of Bloom's taxonomy showing how knowledge at one level builds upon previous levels xi

Figure 4 – Example of Bloom's taxonomy used to develop a four level descriptor of competence expectations xi

Figure 5 – Industry culture is a combination of technical competence, behavioural competence and ethical standards xiv

Figure 6 – Hudson's safety ladder showing evolutionary stages of safety culture xv

Figure 7 – The ABC model of behaviour xv

Figure 8 – Core components of the Built environment safety culture xvii

Figure 9 – Core competence requirements 9

List of Tables

Table 1 – Ethical Principles, Standards and conduct 7
Table 2 – Fire and life safety competences 10
Table 3 – Managing safety 12
Table 4 – Knowledge management and communication 14
Table 5 – Buildings as systems, construction products and materials 15
Table B.1 – Reference materials for fire safety in higher risk buildings 25
Table C.1 – Reference material for structural safety in higher risk buildings 30
Table D.1 – Reference materials for Public health and public safety in higher risk buildings 38

Foreword

This BSI Flex was sponsored by MHCLG. Its development was facilitated by BSI Standards Limited and it was released under licence from The British Standards Institution.

Acknowledgement is given to Richard Harral (Technical Director CABE), member of Competence Steering Group (CSG) and involved with Working Group 0, WG1 – Engineers, Working Group 6- Building Control and Working Group 7 – Building Designers (including architects), as the technical author, and to the following organizations and their representatives as well as individuals who contributed as members of the Advisory Group:

- BECS Group
- Build UK
- Chartered Institute of Architectural Technologists
- Chartered Institute of Building
- Construction Industry Training Board
- Construction Products Association
- Electrical Contractors' Association
- Engineering Council
- Fire Sector Federation
- Health and Safety Executive
- Institute of Workplace and Facilities Management
- Local Authority Building Control
- Ministry of Housing, Communities and Local Government
- National Fire Chiefs Council
- Royal Institution of British Architects
- United Kingdom Accreditation Service

Acknowledgement is also given to the members of Working Group 0 and CSG who have supported the development of this standard in earlier form and to all those who contributed to the Raising the Bar and Setting the Bar reports on which this standard draws.

The agile BSI Flex development process enables a specification to be rapidly developed, and on an iterative basis, in order to fulfil an immediate need in industry. This BSI Flex can be considered for further development as a PAS, British Standard, or constitute part of the UK input into the development of a European or International Standard.

Use of this document

The provisions of this BSI Flex are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. "organization" rather than "organisation").

Please note that the content in this release is part of an iterative process and changes from time to time with subsequent iterations.

It has been assumed in the preparation of this BSI Flex that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Contractual and legal considerations

Inclusion of items in this release does not mean BSI endorses them or agrees with their content. The release provides general guidance only and should not be treated as advice. Professional advice should be obtained before applying the information included to particular circumstances.

This BSI Flex does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

This BSI Flex is not to be regarded as a British Standard or PAS. It will be withdrawn upon publication of its content in, or as, a British Standard or PAS.

Compliance with a BSI Flex cannot confer immunity from legal obligations.

0 Introduction

0.1 Background

This BSI Flex has been produced in response to Dame Judith Hackitt's Independent Review of Building Regulations and Fire Safety. The review published two reports:

- Building a Safer Future, Independent Review of Building Regulations and Fire Safety: Final Report[1]
- Building a Safer Future, Independent Review of Building Regulations and Fire Safety: Interim Report[2]

Both the interim and final reports identified serious shortfalls in the competence of individuals involved in the delivery of buildings where residents might be considered at higher-risk. The review concluded that a number of actions were needed to improve, sustain and assure building safety competence, including:

- That the construction and fire safety sector should develop leadership in delivering building safety; work with and learn from other sector good practice; and develop continuous improvement approaches to competence levels.
- Professional and accreditation bodies within the construction and fire sector should develop proposals for the role and remit of an overarching body to provide oversight of competence requirements and support the delivery of competent people working on higher-risk buildings.

In response to these recommendations, the Industry Response Group (IRG) established the Competence Steering Group (CSG) to develop proposals in relation to building safety competence. This work resulted in publication of *Raising the Bar – Interim Report*[3] in August 2019.

Recommendation 20 of *Raising the Bar* stated: *"R20: Industry should lead the creation of a benchmark competence framework for higher-risk buildings covering the core knowledge, skills and behaviour required to work on higher-risk buildings as part of a suite of national standards under the governance of the national standards body against which professional and trade bodies are expected to develop their individual sector or discipline-specific competence frameworks."*

This BSI Flex is only one part of a broader framework for competence of individuals in the built environment established in response to this recommendation. The new system in England will be overseen by the Building Safety Regulator and a committee on industry competence. This BSI Flex is intended for use as a benchmark for the structure and content of all built environment competence frameworks, including those relating specifically to higher-risk buildings.

Clause 0 provides background and context for built environment competence frameworks and behavioural competence.

Clause 1 defines the scope of this BSI Flex.

Clause 2 defines normative references.

Clause 3 defines key terms used in this BSI Flex.

Clause 4 sets out requirements for the structure and content of built environment competence frameworks.

Clause 5 sets out behavioural and ethical competences expected of all built environment competence frameworks.

Clause 6 sets core competences for building safety expected of individuals working on higher-risk buildings and includes informative appendices on fire safety, structural safety, public health and common terms used in sector-specific competence frameworks.

[1] Report available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707785/Building_a_Safer_Future_-_web.pdf
[2] Report available from: 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
[3] http://cic.org.uk/admin/resources/raising-the-barinterimfinal-1.pdf

Compliance may be required with all or any part of this BSI Flex but in general all built environment competence frameworks will be able to comply with Clauses **4** and **5**; with any sector-specific competence frameworks for higher-risk buildings also complying with Clause **6**.

This BSI Flex sets requirements for competence frameworks for individuals. Organizational competence is discussed as the context within which individual competence needs to be assured but is itself out of scope of this BSI Flex.

Sector-specific competence frameworks developed in accordance with this BSI Flex may also be relevant evidence in meeting the competence requirements for skills, knowledge and experience required under the Construction Design and Management (CDM) Regulations 2015.

NOTE *While the primary objective of this framework is to ensure competence in the safety of building work and buildings, the competence requirements under CDM Regulations relate primarily to legal standards of safety required in design, planning and execution of the work itself, including maintenance and demolition.*

0.2 Objectives

This BSI Flex is intended to complement existing training, development and competence frameworks for individuals working in the built environment. It is not intended to replace or contain all of the competences required for a particular role or discipline.

Over time, it is anticipated that built environment competence frameworks will be required to demonstrate how they meet these core requirements. This is intended to achieve three overarching objectives:

- To drive adoption of more consistent good practice in development and use of competence testing across the built environment;
- To enable consistent and objective assessment of different sector-specific competence frameworks against common criteria by regulators, clients and employers; and
- To enable requirements to be set for behavioural competence and building safety to drive improvements in culture and competence for all those working in the built environment.

These core requirements include:

- core requirements for the information, structure and procedural components of competence frameworks and how they are applied.
- a set of core behavioural competences against which sector-specific frameworks can be benchmarked to ensure consistency across different roles in the built environment, and to support sharing of good practice in developing a strong safety culture and improving productivity.
- core competence requirements against which compliance can also be required, specifically Section 3: Requirements for higher-risk buildings.

The specific objectives in the development and application of this benchmark competence framework are to:

- support development of a robust oversight and feedback process to ensure the aims of sector-specific competence frameworks are both delivered consistently and maintained for the life of this standard;
- identify core building safety competences that should be considered common to all relevant sector-specific competence frameworks;
- support good practice in the development of sector-specific building safety competence frameworks;
- identify requirements and good practice in the structure and application of sector-specific competence frameworks;
- enable sector-specific committees and oversight bodies to compare sector-specific benchmarks and assure their adequacy;
- support commonality and consistency across sector-specific frameworks;
- establish as far as possible common language and terminology across sector-specific frameworks;
- support development of competence frameworks for key duty-holding roles including Principal Designer, Principal Contractor and Building Safety Manager;
- ensure individuals are competent in their understanding and application of rules, regulations, guidance and standards; and
- support individuals and organizations working in the built environment to move away from a "qualify once/practice for life" approach to competence, by adopting an approach based on validation and periodic revalidation.

0.3 Competence and competence frameworks

0.3.1 General

Competence and competency-based assessment are widely understood and adopted across most industries. Competence is used as a key tool in describing job roles, job specifications, interviewing candidates for employment or promotion and in managing performance. It is also commonly used to assess eligibility for qualification, membership, registration, certification or licensing in specific disciplines or roles.

Legislation such as the Construction Design and Management Regulations 2015 require that duty-holders ensure competence of persons they appoint to undertake works where there are implications for safety of those undertaking that work. The Government has stated its intention to expand requirements in England for competence to include safety of buildings with the aim of protecting residents and building users once the building is occupied.

This BSI Flex sets out standardized criteria for the built environment against which sector-specific competence frameworks may be developed or assessed.

0.3.2 What is competence?

Competence is defined in many different ways across different industries. This is necessary to reflect the specific circumstances and meet the specific needs of the individuals and organizations that employ individuals, operating in those industries.

The work undertaken by individuals in the built environment is particularly diverse and encapsulates a wide range of roles including installers, skilled and unskilled trades, managers, construction professionals, finance, administration and manufacturing disciplines.

In order to promote consistent development and use of competence frameworks this BSI Flex uses a definition of competence derived from the CDM Regulations 2015 modified to reflect proposals to introduce requirement for competence into the Building Act in England.

Regulation 8 (1) of the CDM 2015 regulations states:

> ***"8.**—(1) A designer (including a principal designer) or contractor (including a principal contractor) appointed to work on a project must have the skills, knowledge and experience, and, if they are an organisation, the organisational capability, necessary to fulfil the role that they are appointed to undertake, in a manner that secures the health and safety of any person affected by the project."*

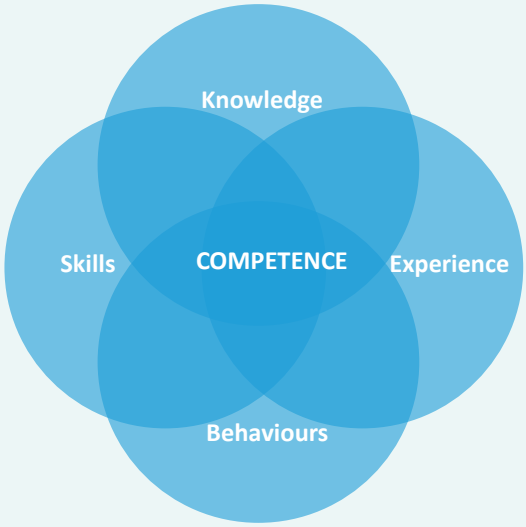
***NOTE 1** This BSI Flex deals with frameworks for individual competence, and primarily refers to "individuals" rather than "persons" which in legal terms can be either an individual person or a legal entity such as a company or organization.*

However, skills, knowledge and experience are no longer considered sufficient on their own in ensuring the right outcomes. Behavioural competence is also considered necessary.

***NOTE 2** See Figure 1.*

For an individual to be considered competent, sector-specific competence frameworks should therefore require that individuals have the appropriate skills, knowledge and experience, combined with appropriate behaviours, to be able to fulfil their defined role, function or activity and carry out appropriate tasks. This is sometimes referred to in shorthand as SKEB.

Figure 1 – Competence is a combination of Skills knowledge, Experience and Behaviours (SKEB)



***NOTE** An assessment of competence typically ensures that an individual has the general competences relating to the role and tasks they undertake – it cannot ensure that every decision or action they take will be correct.*

It is important that built environment sector-specific competence frameworks reflect this broad range of technical, behavioural and interpersonal competence.

While the general competences required in any given role will vary, this BSI Flex sets out common behavioural competencies to be included in all competence development programmes and frameworks. Behavioural competence in this context is intended to promote a strong safety culture across the built environment and support improved productivity.

This BSI Flex also sets out requirements for common core competences that may be required in relation to particular types of work, role or tasks. For instance, Clause **6** sets out core competences relating to building safety in higher-risk buildings.

0.3.3 Skills knowledge and experience

Competence is primarily derived from an accumulation of learning and experience which help in the development of skills. This includes both formal and informal activities such as education and training combined with practical experience. Gaining practical experience is often best undertaken under supervision until such time as an individual is proven to be competent to work independently.

Because competence is an assessment of the total accumulation of learning and experience there is no prescribed order in which those activities take place.

Knowledge, which can be gained as formal or personal knowledge, is considered an essential building block of competence leading to the development of skills.

- **Formal knowledge**, also referred to as codified knowledge, is subject to quality control by editors, peer review and debate and is given status by incorporation into educational programmes, technical qualifications, examinations and knowledge-based courses. It does not include skills or know-how. A degree course or technical certificate are examples of codified knowledge.
- **Personal knowledge** has been defined as the cognitive resource which an individual brings to a situation that enables them to think and perform. Personal knowledge is largely acquired through a combination of formal and non-formal learning and workplace experience.
- **Skills** refer to the techniques and approaches that are employed in order to implement the knowledge that has been acquired and allow competence to be demonstrated and developed. As knowledge is applied, understanding develops. Understanding has been defined as being able to apply the right knowledge appropriately in a variety of contexts.

Competence is not limited to technical matters. Individuals working in the built environment are frequently involved in highly complex, multi and cross-disciplinary teams or within complex supply chains. This requires good team working, communication, digital and interpersonal skills at all levels of operation. Even when working independently these are necessary attributes to ensure that work is undertaken safely and that individuals can communicate effectively with clients, building users and residents.

In assessing competence, it is expected that a candidate would be able to demonstrate how knowledge and understanding developed from experience are put to practical use through the application of skills.

0.3.4 Competence framework structure

Assessment of competence is usually measured against standardized criteria set out in what is known as a competence framework. Because competence is relevant to the work that an individual undertakes it is necessary to produce a wide range of frameworks relating to role specific competences.

0.3.5 Sector-specific competence frameworks

0.3.5.1 General

Competence frameworks developed to enable assessment for particular roles, functions, activities or tasks are referred to as sector-specific competence frameworks. There are no limits to the number of competence frameworks that can be developed.

For most competence frameworks:

- elements of competence overlap and are interdependent;
- elements can be assessed separately or together; and
- it is recognized that development of competence is not necessarily a linear or formally structured path, but can be reported, recorded and assessed.

Competence frameworks typically include the following elements to ensure that they deliver the right outcomes and provide a suitable framework for assessment:

- a clear description of their purpose, principles and objectives;
- an explanation as to which aspects of the built environment and what roles the framework applies to;
- an explanation as to what types of built environment activity are relevant to those roles;
- requirements for prior learning or experience in relation to specific roles;

- the competence standards to be met in demonstrating necessary skills, knowledge, experience and behaviours;
- any levels of competence referenced;
- requirements relating to validation and revalidation;
- requirements for maintaining competence; and.
- requirements relating to understanding limits of competence.

These elements are discussed in more detail below.

0.3.5.2 Purpose, principles and objectives

Sector-specific competence frameworks should provide necessary context for their use including any specific reasons for their development and application.

0.3.5.3 Scope of roles, activities and built environment sectors

Competence frameworks are more effective where they clearly define the nature of the roles that they cover, including what kind of activity in the built environment they apply to. Where a competence framework relates to specific types of buildings or types of work this has to be clearly expressed.

0.3.5.4 Prior learning and experience

For some people working in the built environment the route to developing competence will include formal education, training and qualifications combined with work experience. For others, on the job experience will form the main part of their competence development.

Candidates should be able to demonstrate competence using a wide range of evidence to reflect the diversity of ways that people can enter the built environment workforce.

This is best achieved by setting out clear expectations for the required level of knowledge and understanding by reference to recognized qualification frameworks and necessary experiential requirements. These are referred to as prior learning requirements and can be used as a benchmark or baseline against which wider experience and learning can be compared.

The process of comparing an individual's skills, knowledge experience and behaviours against these baseline prior learning expectations is known as assessing recognition of prior learning.

It is good practice for competence frameworks to clearly set out prior learning requirements in relation to specific job roles or grades and describe the process by which prior learning can be demonstrated.

0.3.5.5 Competence standards to be met

Competence frameworks work well where they clearly describe the attributes that candidates are expected to demonstrate. There are many ways to structure and describe the specific competencies that are required. It is usual for competence frameworks to be built around key competence themes with increasing levels of detail as to the specific skills, knowledge, experience and behaviours needed to undertake tasks effectively.

0.3.5.6 Levels of competence

Most sector-specific competence frameworks will cover a range of roles. It is likely that the required level of competence against any specific competence (a high-level descriptor of ability) or competency (a more detailed task level descriptor of ability) within the framework will vary from one role to another. This variation in levels of competence is reflected in a well-defined structure so that the necessary attributes candidates are able to demonstrate are clearly understood and are measurable.

For instance, while a team member and a manager are both expected to be competent in relation to managing risk, the manager may be expected to have a higher level of competence in terms of the complexity and impact of the decisions they make.

Regardless of the basis used for determining and describing levels of competence it is important that sector-specific competence frameworks have a robust rationale for the levels that are adopted which can be clearly explained and justified.

There are many alternative frameworks which can be referenced or used as a starting point to describe or develop levels of competence. This includes, for example, the European Qualification Framework (EQF) which sets out eight levels of learning outcomes, skills and associated levels of autonomy.

NOTE *National Qualifications frameworks in the UK include:*

- *Regulated Qualifications Framework (RQF) – England and N. Ireland;*
- *Credit and Qualifications Framework Wales (CQFW) – Wales; and*
- *Scottish Credit and Qualifications Framework (SCQF) – Scotland.*

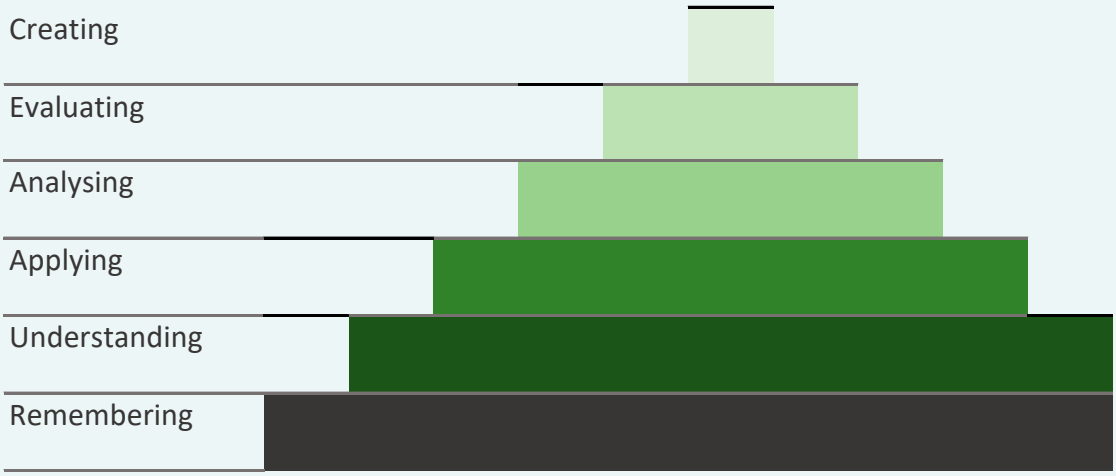
Figure 2 – European Qualifications Framework levels with knowledge descriptors – these are linked to skill and descriptions of responsibility and autonomy at each level (https://europa.eu/europass/en/description-eight-eqf-levels)

Level	Knowledge
Level 1	Basic general knowledge
Level 2	Basic factual knowledge of a field of work or study
Level 3	Knowledge of facts, principles, processes and general concepts, in a field of work or study
Level 4	Factual and theoretical knowledge in broad contexts within a field of work or study
Level 5	Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge
Level 6	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles
Level 7	Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research
Level 8	Knowledge at the most advanced frontier of a field of work or study and at the interface between fields

An alternative example is Bloom's taxonomy; an educational and learning framework which can be used as a starting point for developing competence frameworks. The taxonomy describes skills and abilities which build progressively from one level to the next. These are:

- Remembering – the ability to recall facts and basic concepts;
- Understanding – the ability to explain ideas or concepts;
- Applying – using information in specific situations including performing tasks;
- Analyzing – making connection and drawing conclusions;
- Evaluating – appraising and justifying decisions; and
- Creating – developing and applying new approaches.

Figure 3 – Levels of Bloom's taxonomy showing how knowledge at one level builds upon previous levels



Bloom's taxonomy can be used as the basis for more tailored descriptors that help to identify more clearly where a candidate sits within overall expectations in relation to a specific role.

For example, Figure 4 shows how Bloom's Taxonomy can be used to create a four-level framework with more detailed descriptors for use in assessment and development processes. While using Bloom's Taxonomy is not mandatory as the basis for describing levels of competence, it is important to have a logical explanation as to how those levels have been decided.

Successful competence frameworks also translate levels of competence and set out clear descriptors that can be recognized in candidates during development, training, and assessment.

Figure 4 – Example of Bloom's taxonomy used to develop a four level descriptor of competence expectations.

Creating	4	Detailed Application or expert profficiency	Advanced experience in particular competence. Applies creative solutions to difficult problems. Represents the organization internally and externally on critical issues. Sets standards within the organisation. Recognised as a subject matter expert.
Evaluating	3	Complex Application or proficiency	Independent contributor. Integrates work with other disciplines. Assess and compares options and makes key decisions. Often mentors, coaches or manages others.
Analysing Applying	2	Basic Application or Proficiency	Performs fundamental and routine tasks. Requires occasional supervision in their execution. Increased functional expertise and ability. Works with others.
Understanding Remembering	1	Awareness	Has knowledge of construction technology and understands key concepts. Able to engage in discussions regarding specific competence. Performs routine tasks typically with significant supervision. Learns how to do things.
	0	n/a	

A third example of a recognized qualifications framework would be by reference or adoption of National Vocational Qualifications (in Scotland, Scottish Vocational Qualifications) more commonly known as NVQ or SVQ.

0.3.6 Validation and revalidation

One of the main problems identified within the built environment is that historically professionals and tradespeople have "qualified once" and then been permitted to practice for life without any form of ongoing or periodic assessment of competence.

Competence-based systems recognize that competence is not a constant and tends to decline over time unless actively maintained. To address this, competence systems typically adopt approaches incorporating validation and revalidation.

In this context, validation is the process by which an individual is first assessed as being competent to fulfil a specific role. This may give access to registration, a license to practice or the ability to work in a given role and will typically follow a period of monitored and supervised development.

Revalidation is a periodic re-assessment of competence to ensure that the necessary skills, knowledge, experience and behaviours have been maintained and that the individual remains competent to fulfil the specified role.

The time period between revalidations will vary depending on a number of factors including (but not exclusively):

- an assessment of risk relating to the role being undertaken – the higher the risks, the more frequent revalidation may need to be;
- the adequacy or otherwise of measures available to sustain and maintain competence; or
- the rate of change of skills and knowledge relevant to the role – if good practice is changing quickly, more frequent revalidation may be necessary.

Effective revalidation processes ensure that competence is maintained to the same level as the initial validation process but may also use a wider range of experiential evidence including training, learning and development activities undertaken in the intervening period.

0.3.7 Maintaining competence

Competence is perishable over time and requires positive action to maintain. This includes building on and refreshing skills, knowledge and understanding, and keeping abreast of changes in context such as regulation or technology.

Amongst professional organizations maintaining competence is commonly referred to as Continuing Professional Development (CPD) and includes informal and formal activities. For others working in built environment trades, contracting or manufacturing roles, competence is more likely to be maintained through training and refresher courses, tool-box talks and mentoring or supervision.

To aid in consistency, it is beneficial for competence frameworks to set out expectations for maintaining competence for the different roles and grades of activity to which they apply. Common approaches to achieve this include the following:

a) Self-assessment

It is important that all individuals working within the remit of sector-specific competence framework are encouraged or required to undertake self-assessment of their own competence on a regular basis. Even where competence assessment is primarily a management activity, individuals are engaged in assessing the limits of their own competence as part of that process.

Self-assessment involves reflecting on the work that people undertake (or will be expected to undertake) and comparing this with the skills knowledge and experience that they need to have to undertake those tasks competently. This includes considering the type, scale and complexity of work being undertaken.

b) Personal development planning

The self-assessment process should re-enforce individuals understanding of the limits of their competence and identify any development needs. These needs should be used to prepare a personal development plan for training over the period leading up to revalidation as a minimum but preferably as part of an annual review process.

Personal development plans can involve the full range of knowledge and skill buildings activities including formal qualifications, training, general contextual CPD and mentoring or shadowing programmes.

c) Recording and monitoring

Maintenance of competence should be an audited and auditable activity. Individuals and organizations should keep records, review them regularly and take those records into account in identifying any further actions required to remain competent.

Maintaining competence is a key part of an active and positive safety culture. Management teams should ensure adequate time and resources are provided to support staff, those working under supervision and even subcontractors or subconsultants to do so.

0.3.8 Limits of competence

It is important that people do not act beyond the limits of their competence. In doing so, it is possible that they will expose themselves and potentially others to a wide range of risks. This includes risk of death or injury, litigation, prosecution and breach of contract (amongst others).

Competence frameworks and training and development regimes establish the right conditions to ensure that limits of competence are managed. This includes:

- ensuring people are aware of the limits of their competence – knowing when they have been tasked with or are about to undertake something that exceeds their ability;
- enabling a culture where it is seen as the right thing to do to flag concerns about limits of competence;
- ensuring competence in managing limits of competence including taking mitigating actions (such as providing additional training) or managing risks (i.e. by reallocating work to suitably competent people); and
- ensuring those who appoint, procure or contract others are capable of assessing that those individuals have suitable competence and appropriate tools and resources to do so.

A positive culture of disclosure and trust are both required to ensure that people and organizations are willing to acknowledge and manage the limits of their competence.

0.4 Behavioural competence

0.4.1 Behaviours, safety culture and ethics

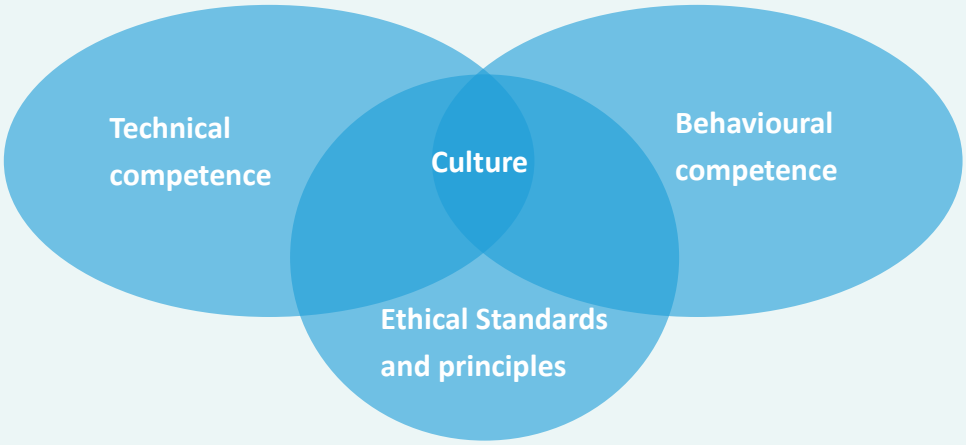
People and organizations working in the design, construction, maintenance and management of buildings (including the manufacture of their components and systems) are often subject to high levels of competition and intense cost and time pressures. It is recognized that these pressures can, if unchecked, lead to the development of business models, customs and practices which increase risk to co-workers and to the public and can incentivise unethical or undesirable behaviours.

As a result, there is an accepted need for improvement in the culture of individuals and organizations working in the built environment to ensure safe outcomes and to improve productivity. Criticisms following the Grenfell Tower fire included that the industry had a culture of indifference which promoted a "race to the bottom" where price and profit were placed ahead of safety.

***NOTE** This BSI Flex relates to frameworks for individual competence, not organizational competence. However, it is important that sector-specific frameworks are drafted taking into account organizational and inter-organizational context within which competence will be developed and assessed.*

Culture in this context is generally understood to mean the organizational, commercial and individual behaviours and norms found in the construction industry. Culture tends to be derived from a combination of technical competence (primarily having the appropriate skills and knowledge) combined with behavioural competence (how people act and conduct themselves) and with reference to accepted ethical standards and principles (what is adjudged to be right).

Figure 5 – Industry culture is a combination of technical competence, behavioural competence and ethical standards



Behaviours are typically described as "The way in which one acts or conducts oneself, especially towards other people". In many respects how people or organizations behave is the most tangible and visible representation of industry and organizational culture. Culture can vary considerably both within and between organizations and recognizable groups, roles or functions.

The safety culture of an organization is understood to be the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organizations health and safety management.

Different types of organizational safety cultures can be understood by reference to Hudson's *Safety Culture Ladder* (see Figure 6) which maps out recognizable characteristics associated with different levels of likely safety outcome. It is important to note that organizations which have a strong internal safety culture may behave differently to external organizations e.g. a main contractor may be 'generative' internally but behave pathologically to subcontractors.

Organizations on the lowest rung of Hudson's *Safety Culture Ladder are considered "pathological" and tend to focus on minimum requirements, regulation and avoiding getting caught – there is little focus on ensuring safe outcomes.*

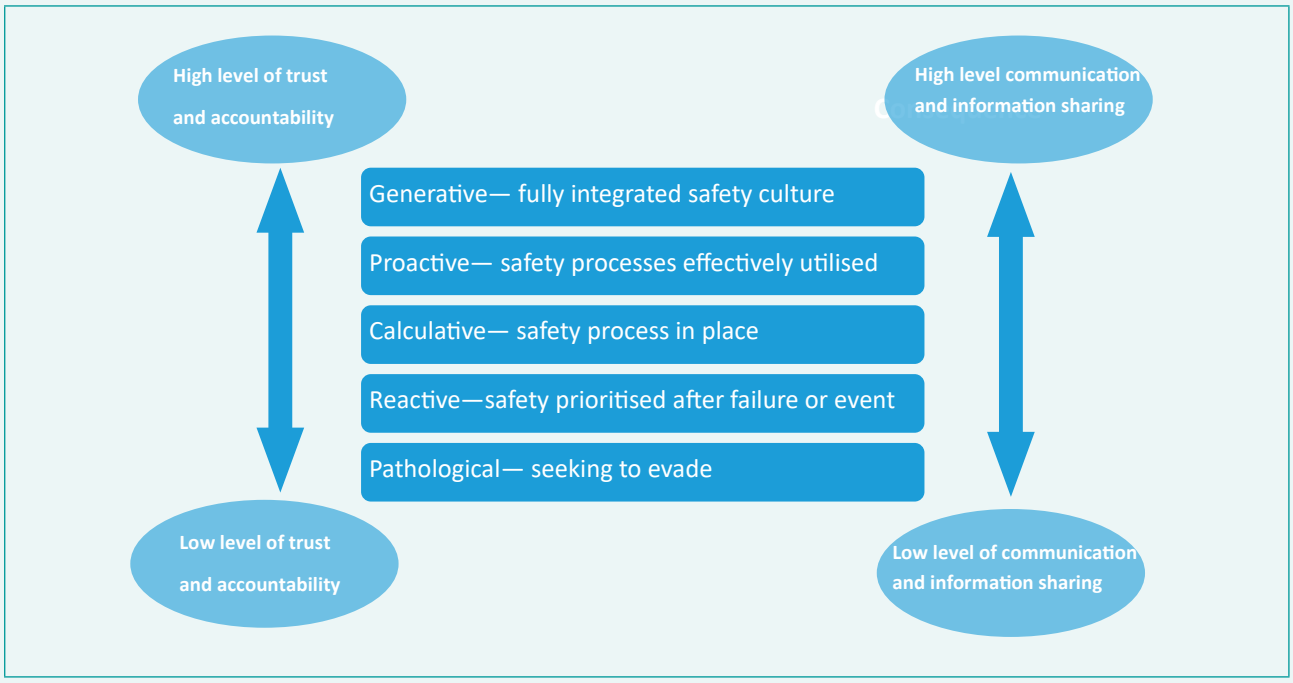
The next level is considered "Reactive" and reflects organizations which tend to address safety issues only when prompted by an event such as an accident or failure.

"Calculative" organizations on the next rung of the ladder build on reactive behaviour and put in place policies and procedures to manage safety risks.

"Proactive" organizations effectively manage and promote behaviours to ensure that policies and procedures are genuinely impactful. Proactive behaviour also enables risks to be anticipated and managed.

The most effective organizations on the top rung are considered "Generative" where safety culture is fully integrated from strategic to operational levels of activity and where every aspect of a strong safety culture is working well.

Figure 6 – Hudson's safety ladder showing evolutionary stages of safety culture

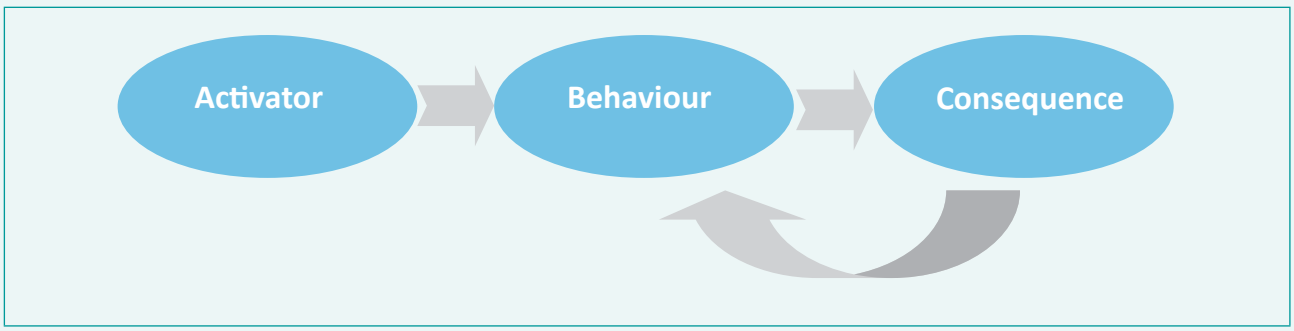


It is important that competence frameworks developed in line with this BSI Flex consider how to integrate behaviours that promote proactive or generative safety cultures. Effective safety cultures are underpinned by improving trust and accountability within the supply chain and workforce and ensuring high levels of information sharing and communication. The behavioural competences set out in Clause **5** of this BSI Flex reflect typical attributes of strong safety cultures.

0.4.2 Safety behaviour

The actions of organizations and individuals involved in ensuring safe outcomes has been subject to extensive study. Behaviours are primarily understood to be influenced by activators (triggering events) and consequences. Activators precede and direct behaviour, while consequences result from the behaviour and can inform subsequent behaviour. This is understood as the ABC model of behaviour (see Figure 7).

Figure 7 – The ABC model of behaviour



The consequence of a behaviour tends to feedback into subsequent behaviour. Negative and undesirable behaviours are likely to be reinforced and repeated where they are positively rewarded or go unchallenged. For instance, rewarding people for reducing the time needed to undertake building work by using materials that perform to a lower standard of safety is likely to encourage the same behaviour to occur more frequently.

Correcting negative behaviours before they result in safety failure is therefore critical to supporting a positive safety culture.

There are several factors which correlate with risky behaviour including (but not exclusively):

- preference for saving time, reducing cost and convenience over managing risk;
- overconfidence and overfamiliarity with tasks and risks; and.
- inadequacy of training and working environment.

There are also several common factors which help to change behaviour by creating positive activators including (but not exclusively):

- establishing positive engagement and feedback as part of a safety culture within the workforce (rather than simply imposing requirements);
- demonstrating safety leadership at all levels within organizations;
- ensuring management lines are committed and competent to support a strong safety culture;
- ensuring good communication in both directions;
- resilience in predicting, monitoring learning and reacting to challenges;
- safety capability – the capability to maintain safety of complex systems operating in uncertain and interdependent environments.

The behavioural competences set out in this BSI Flex represent core measures to promote positive actuators, challenge risky or unsafe behaviours and ensure that consequences reward behaviours which support a strong safety culture.

It is important that sector-specific competence frameworks consider how the relevant activators, behaviours and consequences can be addressed by setting more specific behavioural competences directly related to the roles and activities covered by that sector-specific framework.

0.4.3 Behaviour change

Changing behaviours is not a simple or easily measurable process. Behaviours stem from multiple influences. Embedded behaviours typically result from the social environment, background and culture that people grow up in prior to joining the workforce. These behaviours are then modified by influences in the working environment, organizational culture and industry custom and practice, often referred to as nurtured behaviours.

However, the combination of embedded and nurtured behaviours has an important impact on safe outcomes – it is estimated that 70% to 80% of workplace safety incidents involve human error in some form.

The Keil Centre at Edinburgh[4] has developed a "safety culture maturity model" which identifies five levels of maturity – emerging, managing, involving, cooperating and continually improving and which are useful in gauging where an organization is on the pathway to embedding a positive safety culture.

The Keil Centre has also identified ten elements in enabling a safety culture as:

- visible management commitment;
- safety communication;
- productivity versus safety;
- learning organization;
- health and safety resources
- participation in safety;
- shared perceptions about safety;
- trust between managements and frontline staff;
- industrial relations and job satisfaction; and
- safety training.

The development of a stronger safety culture is facilitated by including the core behavioural competencies in all sector-specific frameworks to promote safety and productivity.

0.4.4 Behavioural competencies

Behavioural competencies provide checks and balances to ensure that good conduct and ethical behaviour are promoted, while poor conduct and risky behaviours are not tolerated and are challenged.

The outcome is a positive safety culture throughout the supply chain and at all stages of design, construction, development and occupation. This relates to all aspects of quality and safety of products, workmanship, completed building work and subsequent maintenance and management.

[4] Keil Centre http://www.keilcentre.co.uk/

Ethical principles, standards and conduct are central to all behavioural competences and it is important that they are emphasized in sector-specific competence frameworks, formal education, training and activities relating to maintenance of competence.

There are four other key behaviour sets necessary to demonstrate suitable behavioural competence:

- leadership, teamwork and communication;
- individual and organizational competence;
- personal responsibility and accountability; and
- duty of care to others including building occupants.

Figure 8 – Core components of the Built environment safety culture

These headings have been used to develop core behavioural competences set out in Clause **5** of this BSI Flex. In combination these core behavioural competences will tend to mitigate risks from bad practice and incentivise good behaviours and are discussed in more detail below.

0.4.5 Ethical principles, standards and conduct

It is important that behavioural competence frameworks are supported by clearly defined ethical principles and standards relevant to the roles, functions, activities and tasks they cover.

Ethics are defined as the moral principles and standards which underpin sound judgement and provide people with the moral authority to take responsibility for their actions and the actions of others. Ethics enable complex judgements to be made about what is right and what is wrong and help balance commercial considerations with wider duties to society and other people.

Critically, ethical standards and principles help to guide people to make the right decision when guidance, regulations or experience cannot do so. In this way ethics help people where there is ambiguity, lack of clarity, or decisions need to be made without reference to others.

In practice, ethical principles are most commonly found in codes of conduct, particularly within professional bodies. These often take the form of standards of conduct which reflect positive behaviours. These include:

- respect for life, law, the environment and public good;
- honesty and integrity;
- accuracy and rigour; and
- responsibility for direction, conduct and communication.

***NOTE** Further detail on the core components of the four ethical competence groups above can be found in Annex A: Ethical Standards.*

0.5 Leadership, teamwork and communication

Strong and visible commitment to behavioural competence is required from senior management to develop and sustain an effective safety culture within organizations. This requires leadership at the top, but also at every level throughout the organization.

Safety culture also requires a workplace where collaboration and teamwork are encouraged. People have to be empowered to take action where they have concerns and there has to be a safety positive culture where those concerns are listened to and acted upon.

In addition, communication has to be effective in all directions within and between organizations to identify and manage safety risks.

0.6 Individual and organizational competence

To act safely, people have to clearly understand the limits of their personal and organizational competence and act responsibly in ensuring they undertake activities within these limits. This includes regularly undertaking self-assessment activities to identify areas where improvement is required and for these to be translated into personal development plans and activities to maintain or develop competence.

It is also important that competence frameworks support a learning culture which constantly monitors, analyses and acts to improve competence and safety outcomes. This can be supported by ensuring people are equipped with the right competence to make sound decisions which includes:

- understanding when decisions have to be made and how to exercise authority in making those decisions;
- the ability to analyse likely problems that will be encountered in a logical, structured manner in order to identify necessary actions;
- the ability to identify risks, the consequences of action or inaction, and factor these into decisions;
- the ability to make timely and appropriate decisions and judgements even in the face of ambiguity or uncertainty;
- the ability to identify risks from action or inaction and factor this into their considerations; and
- knowing what is needed to escalate matters where they are unable to make decisions or judgements themselves.

0.7 Individual responsibility and accountability

It is important that competent individuals clearly understand how their actions can impact on others and what is expected of them in taking responsibility for those actions. This includes potential impacts on work colleagues and the general public both during and after they have fulfilled their role.

Competence assessment processes are structured so that candidates can demonstrate how they take personal responsibility, which includes:

- taking responsibility for their own actions and the actions of those under their supervision or direction;
- understanding their role and responsibilities in keeping others safe;
- knowledge and understanding of legal duties and responsibilities relevant to their role; and
- the ability to identify where boundaries of responsibility lie and communicate this effectively to/with others.

0.8 Duty of care to others including building occupants

A positive safety culture ensures that everyone in the built environment supply chain understands that buildings have the potential to cause harm to others throughout the building's lifecycle. It is important that individuals and organizations recognize where they have a duty of care to protect people's safety and act accordingly. This includes:

- ensuring competence to design, construct, maintain and manage buildings safely;
- understanding the importance of effective consultation and communication with clients, residents, and others likely to be affected by buildings or building work; and
- consideration of factors affecting diversity and inclusion for individuals who will occupy or be affected by the building or building work.

0.9 Mapping and benchmarking against this framework

It is recognized that many existing competence frameworks have been developed in a format which is not compliant with this BSI Flex.

Compliance with this BSI Flex may be demonstrated through a process of mapping or benchmarking rather than through direct adoption of the structure and terminology of this BSI Flex. However, it is anticipated that as frameworks are reviewed and updated over time, they will align with this BSI Flex as far as possible in terms of structure, content and language.

Mapping and benchmarking can also be used in the development of new sector-specific competence frameworks to help ensure alignment with the requirements of this BSI Flex.

The recommended approach to mapping and benchmarking against this framework involves the following:

a) Clearly identifying the scope of the sector-specific framework including the roles, tasks, sector and context.

b) Creating a mapping template listing the requirements set out in Clause **4** and Clause **5** of this BSI Flex and any applicable annex.

c) Reviewing the sector-specific framework to ensure that all of the information described in Clause **4** of this BSI Flex has been met and recording how and where this is set out in the sector-specific framework; clearly justifying any exemptions or divergence.

d) Reviewing the sector-specific framework to ensure that all of the information described in Clause **5** of this BSI Flex has been met and recording how and where this is set out in the sector-specific framework; clearly justifying any exemptions or divergence.

e) Reviewing the sector-specific framework to ensure that all of the information described in any applicable annex to this BSI Flex has been met and recording how and where this is set out in the sector-specific framework; clearly justifying any exemptions or divergence.

When reviewing compliance with this BSI Flex, it is important to consider how the structural requirements, behavioural competence and core competences set out in any relevant annex are relevant to the scope, roles and tasks covered by the sector-specific framework.

This includes carefully assessing how each sector-specific framework interacts with other individuals or organizations in a way which could affect safety or quality.

0.10 Assessing individual competence

Competence in this context is understood to be the ability to apply skills, knowledge, experience and behaviours sufficient to achieve intended results. This includes undertaking specified tasks effectively and to an acceptable standard.

Competence testing is widely recognized in most industries and represents a more comprehensive assessment of an individual's capability than education or training alone, including soft skills as well as technical capability.

How competence is assessed will vary from role to role. This BSI Flex is not intended to replace existing professional, technical or vocational training or competence frameworks. However, where individuals are being assessed for competence to work on higher-risk buildings it is expected that the sector-specific frameworks against which they are assessed will comply with the competences set out in this BSI Flex.

In particular, the expectation is that individuals required to demonstrate competence against any sector-specific competence framework should be aware of:

a) the competences expected of them to fulfil their role and the limits of their own competence;

b) the need to be able to demonstrate what to do and how to report deficiencies that might affect their ability to fulfil their role;

c) the need to maintain their competence and how to do so; and

d) the importance of not working beyond the limits of their own competence.

NOTE *In England the Building Safety Regulator will establish a committee on industry competence to provide oversight of built environment competence. It is intended that the role of this committee will include reviewing sector-specific frameworks and their assessment processes for adequacy, particularly in relation to higher-risk buildings.*

0.11 Consistency of competence assessment

When developing sector-specific frameworks it is important to consider how to achieve consistency between assessment of individuals where that assessment may be undertaken by various different bodies or organizations. This is important to ensure that consumers of attested competence can have confidence that the same level of competence is attained by all individuals covered by any given sector-specific competence framework.

This could be achieved through, for example:

- setting and/or referring to standard criteria for assessment where a sector-specific framework is used;
- third party assessment by independent bodies which have been assured or accredited as competent to undertake that assessment; or
- setting criteria for management of the competence of individuals where assessment is undertaken within organizations.

It is recognized that third party assessment can provide enhanced assurance of the independence and robustness of competence of individuals. It is also recognized that it may not be practicable or proportionate for every role to be subject to external assessment. It is considered good practice to use third party assessment

- where roles are critical to delivery or safety;
- where individuals undertake work under entirely under their own supervision; and
- where individuals supervise the work of others

It is a requirement of this BSI Flex that sector-specific competence frameworks provide information on organizations considered competent to undertake third party assessment as per Clause **4.10** d) and Clause **4.11** d).

Where assessment of the competence of individuals is facilitated within organizations (rather than by third parties) through use of competence management systems, it is preferable for sector-specific frameworks to set expectations as to how the competence of the individuals carrying out the work should be assessed and how they should be managed and supervised.

NOTE *National regulators might also set requirements for organizations' undertaking assessment and re-assessment to be subject to oversight by third parties.*

0.12 Construction (Design and Management) Regulations 2015

In the UK, health and safety at work in the built environment is primarily regulated through the Construction (Design and Management) Regulations 2015. Historically this legislation has related to protecting the safety of people working on buildings throughout the building lifecycle from inception, through design, construction, occupation, maintenance and demolition.

The CDM regulations define a number of key duty-holding roles including Client, Principal Designer, Principal Contractor, Designer and Contractor.

The Government has stated its intention to introduce similar duty-holding roles and other regulated functions in England in order to improve the safety of building and building work for persons in or around buildings, with a particular focus on higher-risk buildings. This will include extending existing duty-holding responsibilities through legislative measures in the Building Safety Bill which is progressing through development and scrutiny in parliament at the time of publication of this BSI Flex.

This BSI Flex can still be used without reference to these new requirements. This BSI Flex will be updated as necessary if there is need to provide further clarification in relation to duty-holding or regulated roles.

Section 1: Preliminaries

1 Scope

This BSI Flex specifies requirements for competence frameworks for individuals working in the built environment. It is intended to support the development of an overarching framework for oversight of competence of individuals working on higher-risk buildings as defined within relevant legislation.

NOTE *The scope of higher-risk buildings is likely to change over time which will modify application of this BSI Flex.*

It is broadly relevant to any role in the assessing, procuring, designing, constructing, inspection, maintenance, management or operation of higher-risk buildings. This includes technical and non-technical roles, and individuals working under their own authority as well as under the supervision of other competent individuals. It is also intended to span a wide range of levels of competence from basic awareness to very detailed application by subject specialists.

This BSI Flex is of particular relevance to professional groups such as:

- engineers;
- fire engineers;
- fire risk assessors;
- fire safety officers;
- building standards professionals;
- building designers including architects;
- building safety managers;
- construction managers;
- site supervisors/independent construction assessors;
- project managers; and
- procurement professionals.

Technical groups such as:

- estimators;
- buyers and purchasing specialists;
- building technicians;
- civil engineering technicians;
- plant technicians;
- site inspectors; and
- design technicians.

Craft groups such as:

- installers;
- site operative in general;
- site joiners, carpenters, shop fitters and wood machinists;
- bricklayers, concrete workers, steel workers, framers;
- electricians, plant and systems engineers and installers;
- roofing contractors; and
- plasterers, decorators and interior contractors.

This BSI Flex is also relevant to regulated or duty-holding roles established by government as being subject to the following specific responsibilities:

- principal designers;
- principal contractors;
- designers;
- contractors;
- building safety managers; and
- building control professionals.

NOTE *Responsibility for ensuring that sector-specific frameworks are kept up to date rests with the authors of those framework given that the scope of regulation and duty-holding roles for higher-risk buildings is likely to change over time.*

This BSI Flex does not set out all of the specific requirements for any given sector-specific framework but does specify core characteristics to be included.

This BSI Flex is intended to be used by professional groups, trade associations, trades or any other group from relevant built environment actors looking to develop or achieve recognition for a relevant competence framework. It is anticipated that those frameworks will then be subject to review by a committee on industry competence working under the aegis of the Building Safety Regulator.

This BSI Flex will be of specific interest to assessment bodies who might be tasked with assessment of competence of individuals against any sector-specific competence framework.

2 Normative references

There are no normative references in this BSI Flex.

3 Terms and definitions

For the purposes of this BSI Flex, the following terms and definitions apply.

3.1 competence/competences

combination of skills, knowledge, experience and behaviour that enable an individual to make informed decisions and carry out def0ned functions effectively.

3.2 competence framework

set of agreed skills, knowledge, experience and behaviours required for an individual undertaking a role, function, activity or task in order to perform their work to predetermined standards and expectations and maintain or improve their performance over time.

3.3 competence maintenance

activities undertaken to ensure skills, knowledge and behaviours remain adequate for an individual to be considered competent

3.4 competence management

process of audited, recorded and disclosable assessment of competence undertaken by a business or organization

3.5 competency/competencies

task level description of skills, knowledge, experience and behaviours required to undertake a defined task effectively

3.6 continuing professional development (CPD)

recorded activities undertaken by individuals to maintain competence including formal and informal learning

3.7 higher-risk buildings

buildings subject to enhanced regulatory requirements in scope of the new more stringent regulatory regime, as defined in legislation and including those previously referred to as Higher-Risk Residential Buildings or HRRBs.

3.8 prior learning

academic qualification or formal training used as a reference point for the likely knowledge and skills required to competently undertake a specific role

3.9 recognition of prior learning

process by which formal and informal learning and experience gained through work are assessed as an alternative to requirements for prior learning

3.10 revalidation

formal process of re-assessing an individual's competence on a periodic basis to ensure that competence has been maintained

3.11 sector-specific competence framework

competence framework developed to enable assessment of competence in a specific role, trade or discipline or relevant to execution of a specific task.

3.12 validation

process of assessing an individual for the first time against a sector-specific competence framework

Section 2: Core requirements

4 Requirements for sector-specific competence frameworks

*COMMENTARY ON **CLAUSE 4***

Each professional, trade or skills body determines how the assessment and recognition of competence is carried out in the sector for which it is responsible. These are referred to as sector-specific frameworks.

It is recognized that these sector-specific frameworks will differ in structure and content, but all frameworks should incorporate common core elements as set out in this BSI Flex.

4.1 Competence frameworks for building safety

All sector-specific frameworks shall:

a) meet all of the requirements relating to the framework and its application as set out in Clauses **4.2** to **4.13**;

b) demonstrate how the behavioural competence and ethical standards set out in Clause **5** have been met; and

c) ensure that competence at an appropriate level can be measured against all of the core competencies as set out in this BSI Flex.

4.2 Overview

Sector-specific competence frameworks shall:

a) set out clearly their intended purpose;

b) explain the background to the development of the framework;

c) explain relevant principles and concepts relating to competence, competence management, validation and revalidation;

d) provide an overview of the use and application of the framework;

e) state how, when and by whom the sector-specific competence framework has been assessed and approved; and

f) state how and when the framework will be reviewed.

4.3 Relevant sectors in scope

Sector-specific competence frameworks shall:

a) define the industrial sector/s to which they apply;

b) identify any specific types of organization within that sector to which they apply; and

c) state any exclusions to a) and b).

4.4 Roles in scope

Sector-specific competence frameworks shall:

a) define the specific roles, functions, activities and tasks against which the framework can be used to assess competence;

b) signpost where further information on statutory roles and duty-holding responsibilities can be found; and

c) state any exclusions to a).

4.5 Types of building operations and building work in scope

Sector-specific competence frameworks shall:

a) define the types of building or sectors relevant to the competences required by the framework;

b) define the types of activity to which the framework is relevant; and

   ***NOTE** For instance, any or all of building work, manufacturing, design, construction, maintenance or operation.*

c) state any exclusions to a) or b).

4.6 Relevant regulatory or legislative regimes

Sector-specific competence frameworks shall:

a) identify and explain regulatory or statutory regimes relevant to the need for competence of individuals to be assessed against the framework; and

   ***NOTE** This relates to legal requirements for individuals to have their competence assessed, not regulatory or statutory regimes relevant to the individual's role.*

b) signpost where further information on these regulatory or statutory regimes can be found.

4.7 Specific roles against which the framework enables assessment

Sector-specific competence frameworks shall:

a) define the different grades of competence relevant to any specific role which are relevant to the competence framework; and

b) set out any specific or differing requirements for competence assessment against each grade including levels of competence.

4.8 Prior learning

Sector-specific competence frameworks shall set out any requirements for prior learning required as part of the competence assessment process. They shall:

a) set out any requirement for prior learning including but not limited to:

   1) training;

   2) formal qualification;

   3) education; and

   4) experience.

b) define the procedure for assessing equivalence to prior learning requirements where applicants do not possess the formal qualification or learning required; and

c) map prior learning requirements to learning levels in the relevant national qualification framework.

4.9 Competence levels and standards

Sector-specific competence frameworks shall set out:

a) the level of competence which shall be met for each role, function, activity or task covered by the framework; and

b) how levels of competence (or competence levels) have been developed and defined.

   NOTE *Levels of competence can be expressed in various ways, but sector-specific frameworks should explain how these levels relate to measurable characteristics. It is good practice to use reference to a relevant recognized national or international qualification framework in developing and defining levels of competence. For example this might include the European Qualifications Framework https://www.cedefop.europa.eu/en/events-and-projects/projects/european-qualifications-framework-eqf or national competence standards.*

4.10 Validation

Sector-specific competence frameworks shall set out, as informative text:

a) how candidates are expected to achieve validation against the framework;

b) the process for appeal against the outcome of a validation process;

c) requirements for organizations undertaking assessment of individual competence for validation purposes; and

d) where lists can be found of organizations, schemes or bodies which have been approved to undertake validation.

4.11 Revalidation

NOTE 1 *It is considered good practice that revalidation should occur at least once within every five-year period and more frequently for roles where competence requires regular re-enforcement.*

Sector-specific competence frameworks shall set out, as informative text:

a) defined time periods for revalidation;

   NOTE 2 *This may vary in relation to different roles covered by a single framework.*

b) how candidates are expected to achieve revalidation;

c) the process for appeal against the outcome of a revalidation process; and

d) where lists can be found of organizations, schemes or bodies which have been approved to undertake revalidation.

NOTE 3 *Sector-specific frameworks should indicate where to find lists of organizations, schemes or bodies which have been reviewed in line with guidance issued by the Building Safety Regulator to undertake validation or revalidation.*

4.12 Requirements for maintaining competence

Sector-specific competence frameworks shall:

a) set out the aims, objectives and intended outcomes of the competence maintenance regime relevant to building safety issues;

b) define expectations in terms of the activity required to maintain competence including but not limited to:

   1) time periods;

   2) learning levels;

   3) types of learning (e.g. formal or informal); and

   4) subject area.

c) set out procedures for monitoring of competence.

NOTE *Sector-specific competence frameworks should set out how failure to maintain competence will be sanctioned.*

4.13 Ability to check the competence of individuals validated against the framework

Sector-specific competence frameworks shall set out:

a) how and where information on the validation, revalidation or assessment of individuals working on higher-risk buildings shall be held;

b) what information on individuals determined competent under this framework should be held;

c) which of the information held should be publicly accessible; and

d) details of how duty-holders or members of the public should be able to check the competence of an individual validated in accordance with the sector-specific competence framework.

5 Behavioural and ethical competence for sector-specific frameworks

All sector-specific frameworks shall incorporate or be able to demonstrate alignment with the core behavioural and ethical competences set out in Table 1.

Table 1 – Ethical Principles, Standards and conduct

Core competence;	Sub-competence
a) Act ethically and contribute to safe outcomes	1) Awareness of ethical principles and their importance in ensuring safe outcomes including: i) Respect for life, the law, environment and public good ii) Honesty and integrity iii) Accuracy and rigour iv) Responsibility for direction conduct and communication 2) Ability to incorporate ethical principles and standards into day to day work to improve outcomes. 3) Awareness of and ability to comply with relevant code or standards of conduct
b) Leadership, teamwork and communication: • demonstrate commitment to strong safety culture • act effectively as part of team • communicate effectively	1) Leadership and visible commitment to strong safety culture 2) Contribute at all levels to develop and sustain strong safety culture 3) Act collaboratively with others and demonstrate effective team working skills 4) Identify risk and communicate this effectively with others to enable mitigating action 5) Communicate effectively within and between teams, organisations and individuals 6) Listen and provide effective feedback

Table 1 – Ethical Principles, Standards and conduct (continued)

Core competence;	Sub-competence
c) Individual and organisational competence: • manage own competence • manage competence of others • maintain competence and contribute to learning culture	1) Identify limits of own competence and competence of others (including organizations) particularly in relation to building safety. 2) Act to maintain own (and contribute to organisational) competence including undertaking self-assessment and personal development activities. 3) Act to manage competence of others (when required) including fulfilling duty-holder obligations, seeking specialist advice as necessary, and managing competence in making appointments or allocating tasks within teams. 4) Demonstrate sound judgement including identifying, analysing and solving problems to ensure safe and effective outcomes. 5) Contribute to and support a learning culture including recording, monitoring, analysing and acting to improve outcomes.
d) Personal responsibilities and accountability: • understand personal role and responsibilities with particular reference to safety • accept and ensure accountability for individual and organisational actions	1) Awareness of need for personal accountability and take responsibility for own actions and actions of those under supervision or direction 2) Identify where boundaries of responsibility lie and communicate these effectively with others 3) Identify and challenge unsafe or inappropriate behaviours including acting to escalate concerns 4) Identify and provide feedback on poor process, equipment, procedures or quality.
e) Duty of care to others including building occupants: • duty of care to co-workers • duty of care to public and building occupants • duty to communicate with persons outside the project team and respond to concerns	1) Awareness of legal and moral duties and obligations to act in protecting safety of self and colleagues whilst undertaking work. 2) Awareness of duty of care to residents, building occupants and people in the vicinity of buildings and act to meet or exceed those obligations 3) Awareness obligations to consult, listen and respond to occupants or others who are or could be affected by work and act to meet or exceed expectations 4) communicate effectively and responsibly with residents or members of the public on matters of safety and risk.

Section 3: Requirements for higher-risk buildings

6 Core competence for building safety in higher-risk buildings

*COMMENTARY ON CLAUSE **6***

The core competences represent the shared understanding necessary to ensure that all individuals working on higher-risk buildings are able to act responsibly and contribute to safe outcomes.

These core competences are considered relevant to all sector-specific frameworks used to assess or develop competence of individuals to work on higher-risk buildings. They are grouped under five key headings:

- *Ethics.*
- *Fire and life safety.*
- *Managing safety.*
- *Knowledge management and communication.*

Building systems, construction products and materials.

6.1 General

All sector-specific competence frameworks for higher-risk buildings shall assess how each of the core competences (See Figure 9) relates to the particular roles, functions, activities and tasks covered by that framework. The objective shall be to ensure that sector-specific frameworks:

- require, as a minimum, awareness of all relevant competences; and
- require higher levels of competence where necessary.

***NOTE** The tables in this clause are expressed in terms of core competence and sub-competence. As defined in Clause **3**, competences and sub-competences are descriptors of capability at a role or function level – it is for sector-specific frameworks to set out more specific requirements at an activity or task level (referred to as competency or competencies).*

Figure 9 – Core competence requirements

Sector-specific competence frameworks shall:

a) demonstrate how the ethical standards set out in Annex A have been met.

b) demonstrate how all of the core competence requirements in Tables **2-5** have been addressed.

c) ensure all individuals working on higher-risk buildings have as a minimum, awareness (remembering key facts and understanding core concepts) of all core competences, and how they relate to their individual or sectoral role, function or activity; and

d) ensure that where individuals working on higher-risk buildings require higher levels of competence these are identified and assessed.

6.2 Fire and life safety

All sector-specific competence frameworks shall stipulate requirements for competence that meet or exceed the threshold set out in Table 2 relevant to role, function, activity or task.

***NOTE** Reference should be made to the following informative appendices:*

- *Annex B (Informative) Fire safety in higher-risk buildings*
- *Annex C (informative) Structural Safety in higher-risk buildings*
- *Annex D (informative) Public health standards in higher-risk buildings*

Table 2 – Ethical Principles, Standards and conduct

Core competence;	Sub-competence
a) Contribute to establishing fire safety strategies, practices and technological systems in higher-risk buildings	1) Understand the foundation principles of fire safety including; principles of fire chemistry including ignition and heat transfer; the impact of structure and materials; human behaviour and escape requirements; methods of suppression, limitation of fire growth and fire spread. 2) Use practices of design concepts, fire strategies, training and safety case functions that assist safe use and occupancy of a building. 3) Recognize and apply the mitigation and control functionalities of fire protection technologies and systems that detect, alert, confine fire growth and effluents, suppress ignition and fire, ventilate and secure escape or reduce fire spread and support firefighting and rescue.
b) Demonstrate awareness and contribute to managing fire safety in higher-risk buildings through legislative controls	Demonstrate knowledge of the purpose and application of regulatory and legal frameworks to protect people and property from fire through fire safety requirements to protect occupants and buildings from fire including; Statutes, Regulations and advisory documentation; relevant building regulations and advisory documents; definitions and approaches to aid warning, escape containment and support extinction; and exchange of fire safety information.
c) Contribute to the maintenance of fire safety in higher-risk buildings	Awareness of functional requirements to be managed by audits, inspections, and risk assessments that ensure buildings escape and fire protection systems (including physical and technological means), remain available and appropriate to occupancy, use, construction and level of fire risk throughout a building's whole life.
d) Contribute to establishing and maintaining structural safety in higher-risk buildings	1) Awareness of the Key principles of structural design and construction including characteristics of typical systems, and typical behaviours under load and in the event of fire. 2) Awareness of the purpose and application of requirements of building regulations, codes and standards in relation to structural stability of primary structure, secondary structure and fixings and contribute to compliance when acting as designer or contractor. 3) Awareness of functional maintenance requirements for structural safety and contribute to commissioning or undertaking of assessment, inspection, or maintenance tasks. 4) Awareness of appropriate techniques to manage structural safety including contributing to use of the safety case; provision of information relating to design, installation or maintenance of structure; how and when to respond to events which can affect structural safety; undertake procurement of competent specialist advice when necessary.

Table 2 – Ethical Principles, Standards and conduct (continued)

Core competence;	Sub-competence
e) Contribute to managing public health and public safety risks in higher-risk buildings	1) Awareness of and contribute to compliance with all relevant requirements of building regulations for public health and public safety. ***NOTE*** *This includes but are not limited to regulatory requirements covering:* • *Radon, methane and site contamination* • *Waste and grey water drainage* • *Electrical safety including* • *Gas supply and combustion appliance safety including carbon monoxide safety* • *Ventilation* • *Moisture, damp and condensation risk* • *Water supply and storage including hot water safety and public health risks, such as legionella* • *Overheating and heating failure* • *Stairs, glazing, guarding and balustrading* 2) Awareness of and contribute to compliance with other legislative requirements relevant to public health and public safety in higher-risk buildings. ***NOTE*** *Current examples include, but are not limited to:* • *CDM Regulation 2015* • *Health and Safety at work act 1974* • *The Housing Act 1985, 1988, 1996, 2004* • *Housing health and safety rating system* • *Equalities Act 2010* • *Town and Country Planning Acts* • *Housing and Regeneration Act* • *Dangerous Substances and Explosive Atmospheres Regulations 2002* 3) awareness of need for maintenance or replacement of building fabric or systems to protect public health and public and contribute as necessary to provision or exchange of information; inspection; and maintenance activities.

6.3 Managing safety

All sector-specific competence frameworks shall stipulate requirements for competence that meet or exceed the threshold as per Table 3 relevant to role, function, activity or task.

Table 3 – Managing safety

Core competence;	Sub-competence
a) Awareness of and ability to engage with or fulfil roles, responsibilities and duties in relation to higher-risk buildings.	1) Awareness of specific duty-holding or regulated roles and responsibilities, and where applicable act in that capacity, including: • Client • Accountable person • Principal Designer • Principal Contractor • Designer • Contractor • Building Safety Manager 2) Awareness of obligations to raise, escalate or flag risks to life safety during the design, construction, maintenance or management process including whistleblowing, mandatory reporting regimes and Public Interest Disclosure Act. 3) Awareness of boundaries of jurisdiction and the scope of the specific building safety responsibilities or systems under own control.
b) Awareness of relevant risk assessment process and contribute or participate effectively in risk assessment activities, including: • Fire risk assessment; • Safety case development, management or use; • Assessing risk of using different products and systems.	1) Assess, and where required, develop and implement control measures to mitigate risk posed by threats to life safety: i) Identify risk and safety issues ii) Gather, analyze, use and share data to inform risk assessment iii) Use risk assessment to guide actions, decisions and activities and where required develop and implement control measures to mitigate risks posed to life safety 2) Contribute to or undertake Fire Risk Assessment. 3) Contribute to or use safety case to identify and manage risks arising from design, specification, construction, occupation, operation or installation and/or maintenance and: take mitigating actions.
c) Awareness of actions necessary to ensure safety is not compromised in the course of routine occupation, operation, installation and maintenance and where relevant, take appropriate actions to manage building safety.	1) Awareness of and where relevant act to support and encourage good housekeeping and fire safety practices amongst residents 2) Promote, contribute to or provide effective training and education on fire safety matters to community and residents as required 3) Apply, coordinate and control factors affecting building fabric or systems to maintain compartmentation and prevent fire spread 4) Awareness of links between actions of building users/residents and building safety taking into account human factors.

Table 3 – Managing safety (continued)

Core competence;	Sub-competence
d) Contribute to procurement cost management and commissioning activity (including pricing, purchasing and other commercial activities) to ensure that building safety is not compromised including managing the balance of cost and safety, and ensuring competence of others.	1) Awareness of safety implications of procurement pathways, cost management, pricing, purchasing, change control and product selection sufficient to: i) Identify where decisions impact on holistic life safety building performance ii) Identify where use of alternative products, solutions or systems has potential to affect holistic life safety building performance; and iii) Take mitigating actions to ensure life safety is not adversely affected by cost management, specification or commercial decisions. 2) In procuring services or supply of goods check and assure competence of any person undertaking activities linked to safety during design, construction, occupation, operation, installation, and maintenance and to take mitigating actions where necessary.
e) Understand routes of recourse to address life safety defects.	Awareness of legal and ethical requirements to ensure routes of recourse to address life safety defects and where relevant act or contribute to obtaining: 1) public, professional, property and business insurance; 2) warranties on building products systems or work.

6.4 Knowledge management and communication

All sector-specific competence frameworks shall stipulate requirements for competence that meet or exceed the threshold as set out in Table 4 relevant to role, function, activity or task.

Table 4 – Knowledge management and communication

Core competence;	Sub-competence
a) Use, manage, distribute, maintain and contribute to Safety Case and Golden Thread of information critical to ensuring that buildings are designed, built and/or operated to be safe throughout the building life cycle including: • Obtain information • Share information • Record information	1) Awareness of the importance of and requirements for documented building safety information at a project, premises and organizational level. 2) Capture, issue and maintain life safety information; and/or awareness of what records should be kept; and how to obtain or access that information when needed. 3) Awareness and take appropriate actions in relation to: • Golden thread of information • Utilizing Building Information Modelling (BIM) standards and systems, Building Management systems and digital records • Safety management systems • Safety case • Health and safety file • Fire and emergency file • As designed/as built information • Building safety strategies • Building maintenance information and scheduling • Testing and commissioning information • Lifecyle and replacement data • HRB records and certificates
b) Effectively communicate issues relating to risk or safety with residents, clients and members of project or management teams.	1) Awareness of requirements/obligations and duties to communicate, consult and respond to: i) residents or persons otherwise affected by building and building work; and ii) duty-holders, clients and project team members. 2) Communicate effectively with a wide range of stakeholders through use of verbal, written and drawn information. 3) Where necessary communicate technical information to non-technical audiences. 4) Explain in balanced and proportionate manner where risks to life safety have been identified, the potential consequences and communicate necessary mitigating actions.

6.5 Building as systems, construction products and materials

All sector-specific competence frameworks shall stipulate requirements for competence that meet or exceed the threshold as set out in Table 5 relevant to role, function, activity or task.

Table 5 – Buildings as systems, construction products and materials

Core competence;	Sub-competence
a) Coordinate building design, management or construction activities to ensure holistic building safety.	1) Awareness of the building as a system and recognize how the component parts work together to ensure and maintain holistic safety including consideration of performance and characteristics of products. 2) Awareness and act to take into account impact of installation quality on product and system performance. 3) Awareness and act to set appropriate requirements for product durability over time taking use into account. 4) Integrate consideration of location and context in product performance and selection e.g. proximity to boundary, boundary conditions (fire resistance, water resistance) size, distance, exposure to wind and rain, geometry. 5) Identify linked requirements for installation to enable products and components to work effectively and safely as part of a system e.g. structural support, cavity barrier, acoustic insulation, water-tightness.
b) Awareness of product and system characteristics and act as necessary to apply standards, testing, assessment and maintenance procedures for building materials, products, components, assemblies and systems to ensure safety throughout the building lifecycle.	1) Use testing, certification and product information alongside as-built design and construction data to inform design, construction and management decisions which impact on building safety including making appropriate selections for intended use. 2) Understanding of maintenance requirements for products and systems, and where relevant, act to plan, procure or manage maintenance of building fabric, fire protection or life safety systems through building life cycle. 3) Awareness of need for replacement of products and systems at the end of their life cycle and act to manage procurement or undertake work in a way which maintains building safety.

Annex A (informative) Ethical standards

*COMMENTARY ON **Annex A***

Industry has adopted a common set of ethical standards which all sector-specific competence frameworks should comply with in relation to higher-risk buildings. The four key ethical themes are:

- *Respect for life, law, the environment and public good;*
- *Honesty and integrity;*
- *Accuracy and rigour; and*
- *Responsibility for direction, conduct and communication.*

Each theme is supported by a series of ethical standards expected of persons working on higher-risk buildings.

The core ethical competencies in this annex are intended as additional to existing competence required to undertake any given role or task and should be integrated into existing competence training and development frameworks where identified as lacking

A.1 General

All sector-specific competence frameworks for building safety should be able to demonstrate how the ethical principles as set out in **A.2** to **A.5** have been adopted.

***NOTE** These ethical standards are based on the Engineering Statement of ethical principles produced by the SOEP.*

A.2 Respect for life, law, the environment and public good.

All those involved in the procurement, design, delivery, assessment, commissioning, management and maintenance of higher-risk buildings have a duty to obey all applicable laws and regulations and give due weight to facts, published standards and guidance and the wider public interest. They should:

a) hold paramount the health and safety of others and draw attention to hazards;

b) ensure their work is lawful, ethical and justified;

c) recognize the importance of physical and cyber security and data protection;

d) respect and protect personal information and intellectual property;

e) protect, and aim to improve, the quality of built and natural environments;

f) maximize the public good and minimize both actual and potential adverse effects for their own and succeeding generations; and

g) take due account of the limited availability of natural resources.

A.3 Honesty and integrity

All those involved in the procurement, design, delivery, assessment, commissioning, management and maintenance of higher-risk buildings have a duty to uphold the highest standards of personal and professional conduct including openness, honesty and integrity. They should:

a) act in a reliable and trustworthy manner and treat others with equality and fairness;

b) be alert to the ways in which their work and behaviour might affect others and respect the privacy, rights and reputations of other parties and individuals;

c) respect confidentiality;

d) declare and manage conflicts of interest;

e) avoid deception and take steps to prevent or report corrupt practices or professional misconduct; and

f) reject bribery and improper influence.

A.4 Accuracy and rigour

All those involved in the procurement, design, delivery, commissioning, management and maintenance of higher-risk buildings have a duty to acquire and use wisely the understanding, knowledge and skills needed to perform their role or task. They should:

a) always act with care;

b) perform services only in areas in which they are currently competent or under competent supervision;

c) keep their knowledge and skills up to date;

d) assist the development of knowledge and skills in others;

e) present and review theory, evidence and interpretation honestly, accurately, objectively and without bias, while respecting reasoned alternative views;

f) identify, evaluate, quantify, mitigate and manage risks; and

g) not knowingly mislead or allow others to be misled.

A.5 Responsibility for direction, conduct and communication.

All those involved in the commissioning, design, delivery, management and maintenance of higher-risk buildings have a duty to abide by and promote high standards of personal conduct, communicate clearly and provide direction as appropriate, setting the example for others to follow. They should:

a) be aware of and seek to effectively communicate the issues that the built environment raises for society;

b) communicate as unambiguously and openly as possible to avoid misinterpretation;

c) promote equality, diversity and inclusion, and respect the views of others;

d) promote public awareness and understanding of the impact and benefits of new areas of learning, achievements and innovation in industry;

e) be objective and truthful in any statement made in their personal or professional capacity; and

f) challenge statements or policies that cause them personal or professional concern.

Annex B (informative) Fire Safety in higher-risk buildings

*COMMENTARY ON **ANNEX B***

This annex provides an overview of fire safety considerations in higher-risk buildings which are relevant to the development or review of sector-specific competence frameworks. It offers an overview of fire safety considerations and should not be seen as comprehensive but be used as a starting to point to develop an understanding of how fire safety considerations are relevant to any given discipline, role or task.

The aim for all sector-specific competence frameworks should be to ensure a common shared minimum level of understanding of fire risk. This should lead to a minimum level of fire safety competence for all individuals involved in the development and management of higher-risk buildings.

B.1 Expectations in terms of fire safety competence

B.1.1 There are many specialized roles relating to fire safety which require high levels of competence. However, it is equally important to recognize that most roles have the potential to impact on fire safety. To ensure that fire safety risks are managed across the building's life cycle it is critical to identify the varying levels of awareness and competence for which all individuals involved in work on higher-risk buildings have responsibility. This includes:

B.1.2 any individual involved in the manufacture, distribution, procurement or specification of products or systems;

a) designers including sub-contracted designers;
b) contractors including installers and subcontractors;
c) accountable and responsible persons, building managers, operatives, administrators, and
d) those involved in the audit, inspection, maintenance or upkeep of higher-risk buildings.

B.1.3 Fire safety risks tend to be cumulative – that is, small elements of risk can add up to become a more major hazard if left unmanaged. To ensure that buildings are safe, it is necessary for all participants to clearly understand:

a) the specific responsibilities for fire safety associated with their role or task;
b) how their role interfaces with other fire safety considerations and other disciplines; and
c) how to communicate and manage risk within and between building owners, users organizations and teams.

B.1.4 It is expected that all sector-specific competence frameworks should identify where fire safety considerations are relevant to that competence framework and as a minimum require awareness (knowledge and ability to apply key concepts) of relevant fire safety principles and competences (but at the very least those fire safety competences specified in Annex A).

B.2 Interaction with other key fire safety roles

B.2.1 Sector-specific competence frameworks should consider how their discipline, role or tasks interact with the other key fire safety actors at different stages of development and management activity.

B.2.2 The aim should be to ensure that the roles and responsibilities of these actors are clearly understood and competence assessment criteria set to ensure that interfaces are managed. A good starting point would be to map interactions with the list of key actors set out below:

a) residents;
b) residents' associations;
c) ombudsmen;
d) individual residents and households;
e) tenants; and
f) leaseholders.

B.2.2.1 Regulation:

a) building safety regulator;
b) building control bodies;
c) Health and Safety Executive; and
d) building control inspectors.

B.2.2.2 Fire safety specialisms:

a) fire engineers;
b) fire risk assessors;
c) fire safety advisor;
d) fire safety inspector;
e) fire and rescue service; and

f) fire safety specialists e.g. passive fire protection, active fire safety systems.

B.2.2.3 Dutyholders:

a) clients and property owners;
b) accountable person;
c) responsible person;
d) Principal Designer;
e) Principal Contractor;
f) Designers;
g) Contractors; and
h) Building Safety managers.

B.2.2.4 Consultants and representatives:

a) architects and designers;
b) engineers;
c) cost consultants and project managers;
d) construction managers and advisors; and
e) freeholder or building owner/managing agent.

B.2.2.5 Construction, contractors and subcontractors:

a) main contractors;
b) subcontractors;
c) contractors and subcontractors with design responsibility; and
d) specialist installers of fire safety products, materials or systems.

B.2.3 Many of the above roles are defined in the Clause **3** of this BSI Flex or in the Glossary in Annex E. Consideration should also be given to the reference documents list at the end of this Annex in ascertaining overall scope of interactions and in defining legislative responsibilities

NOTE *This is not an exhaustive list and may change over time.*

B.3 Characteristics of higher-risk buildings

B.3.1 General

B.3.1.1 The definition of higher-risk buildings will be set out in legislation but is likely to change over time. From a regulatory perspective, fire safety is primarily interested in the protection of life from death or serious injury from fire rather than vulnerability of the building to loss from fire spread. Buildings presenting the highest fire risk to life or loss of property are not necessarily the most complex types of buildings but are premises where life safety risks are considered to be elevated.

B.3.1.2 While sector-specific competence frameworks should ensure awareness of the definition of higher-risk buildings in law, it is also important to ensure understanding of the characteristics that make any building a higher-risk in terms of occupant safety. These characteristics are fundamental to establishing effective fire safety strategies which influence the design of a building, and subsequently determine the way in which the building needs to be managed to remain safe in occupation.

B.3.1.3 Currently the definition of higher-risk buildings includes:

a) Blocks of flats or houses with multiple dwellings (two or more dwellings);
b) Student accommodation;
c) Residential care homes;
d) Secure residential institutions (e.g. prison or detention centre); and
e) Temporary accommodation (e.g. a hotel, hostel, guest house, hospital, hospice).

The common factors in these buildings are:

1) premises primarily used for residential purposes;
2) premises where people sleep, are less alert or less mobile; and
3) premises over 18 m or more than six storeys i.e. tall buildings where escape is more protracted or difficult.

B.3.2 Key characteristics of higher-risk buildings

B.3.2.1 General

Key characteristics that influence whether a building is considered higher-risk are listed in **B.3.2.2** to **B.3.2.5**.

NOTE *This list is not exhaustive.*

While there are many other factors that can affect life safety risk, sector-specific frameworks should consider how the reasons for buildings being classified as higher-risk are understood and taken into account in setting specific competence requirements.

B.3.2.2 Height and physical construction constraints

Higher buildings require more time if they have to evacuate in the event of an emergency and are more difficult logistically for the emergency services to operate within i.e. to fight a fire especially if the fire involves external wall or other features or has limited internal access and egress routes, making it difficult to, assist in evacuation or provide medical assistance.

Taller buildings are also often more difficult to maintain and inspect; may have been altered, adapted and changed over periods for different uses, contain inherently weak but difficult to identify construction and materials; which may impact on control of fire spread.

Other physical constraints that can impact on fire safety include restricted or limited access for emergency services, waste management arrangements, internal circulation arrangements (e.g. corridors without natural light), staircase and lift provision.

High buildings may also have fire-engineered control systems like integrated suppression and smoke control which require higher levels of operating expertise, maintenance and management.

B.3.2.3 Occupancy and use

Buildings where people are likely to sleep are generally considered to be higher-risk because of the additional time it takes for sleeping people to become aware of and react to a fire, and because there is often a longer period between a fire starting, being detected and the emergency services being made aware of the need to intervene.

Who occupies a building, remembering a building with residential premises may be part of a larger multi-use complex, and how they manage or are supported to manage their occupancy which may have health, behavioural or personal constraints, also has a significant impact on life safety risk. More vulnerable individuals including older and disabled people many need physical assistance, or individuals who require supervision to react to a fire such as children or visitors, are likely to present higher-risk. Many human factors such as these, present difficulties requiring personal emergency evacuation plans to facilitate and manage and manage safe escape from the premises.

B.3.2.4 Familiarity

Where people are regular users or permanent residents of a building they should have access to information and, where appropriate, receive training in how to stay safe and manage fire safety risks. They should be familiar with their own responsibility, and procedures for evacuation in the event of a fire.

Buildings where people are temporary residents (hotels, hostels) or occasional users require different strategies for fire safety to account for lack of familiarity with how to stay safe in the event of a fire. Typically, this involves trained staff or other assistance, enhanced communication systems and signage to support adequate means for escape.

B.3.2.5 Fire strategy

Having a fire strategy in place is key to successfully managing building fire safety. In some cases, reducing the economic loss may add a dimension of fire control beyond life safety and this will be part of the strategy. The safety case and fire strategy are usually integrated and may in the case of a new purpose designed building be planned from the concept through the whole life use of a building.

B.4 Key Fire Safety Risk factors

The key factors that affect fire safety and which need to be considered in developing or assessing sector-specific frameworks for higher-risk buildings vary at different stages of the development process.

Sector-specific frameworks should ensure that people assessed against the framework are competent to manage fire safety risks related to their discipline, role or task at these different stages. Even where individuals are only involved for a short period or discrete part of a building's development or management, it is important that they understand how their personal activity relates to safety throughout the building lifecycle. This includes awareness of how fire safety forms part of a holistic approach to building safety.

Clauses **B.5**, **B.6** and **B.7** set out common fire safety risks which need to be considered in order to help inform the development of specific competencies within frameworks or their supporting assessment criteria. These should be considered in a cross-cutting manner as design strategies are just as important to the building manager, as operational management strategies are to the building designer.

B.5 Design, specification and product selection for fire safety

B.5.1 The design of a building is critical to fire safety in two primary ways:

a) For new buildings, the design process enables a holistic approach to fire safety to be integrated throughout all aspects of the building's fabric and services – this requires competent designers acting collaboratively to achieve safe standards of performance that can be sustained across the building's lifecycle

b) For existing buildings, understanding of design relates to comprehending how the existing building needs to work to be safe, how that safe design needs to be maintained and how any changes to the building design can affect safety.

B.5.2 Design includes the selection, specification and coordinated integration of building products to form systems contributing to the overall safety of the building. All aspects of the building design need to be evaluated with respect to their impact on fire safety including:

a) Means of escape – the physical arrangement of staircases, waiting areas, preventing smoke and fire spread, etc to ensure people can escape the building, aided or unaided, quickly and safely to a safe place in the event of fire.

b) Shape, size and layout – particularly in relation to ensuring ease of access and support for firefighting services.

c) Materials, products and systems – performance in relation to fire needs to be clearly understood; appropriate products need to be used in the right place; assemblies need to work safely as systems; and product changes carefully monitored for system compatibility.

d) Passive fire protection and compartmentation – buildings should be designed so that the materials and construction selected help to contain a fire and prevent its spread both on the outside and within the building by ensuring effective compartmentation.

e) Active fire protection systems – need to be designed to detect and warn people of fire, suppress fires and deal with smoke produced by the fire so that people can escape and fire fighters can tackle the fire.

f) Human factors relating to fire safety including causation of fires and behaviour in the event of fire.

B.5.3 Designs should consider exceeding the requirements set out in building regulations where possible. Alternative approaches to delivering fire safety other than those set out in statutory guidance are acceptable but are usually considered fire-engineered solutions and require high levels of competence to assess and integrate into the building design. Other commonly adopted building standards include BS 9991 for residential buildings, BS 9999 for non-residential buildings and BB 100 for schools.

B.5.4 Design work is undertaken by a wide range of individuals and businesses all of which need to be competent in ensuring their design delivers fire safety taking into account the performance of any other connected or interrelated part of the building. This includes architects, engineers, interior designers, quantity surveyors and specialist consultants, contractors or subcontractors undertaking design activities. Design work should be considered in line with the CDM Regulations 2015 which states that:

"A designer is an organisation or individual whose business involves preparing or modifying designs for construction projects, or arranging for, or instructing, others to do this. Designs include drawings, design details, specifications, bills of quantity and design calculations."

B.5.5 There are number of key fire safety risks recognized during the design stage which need to be managed including:

a) Individuals undertaking design work without realising they have the responsibilities of a designer.

b) Designers exceeding limits of their own competence by undertaking work for which they are not qualified.

c) Failure to adequately address regulatory requirements and take into account good practice recommendations for fire safety.

d) Designers relying on assumptions of performance rather than using evidence to assure performance.

e) Designers relying overly on the competence of others to identify and resolve fire safety issues in the buildings design.

f) Failure to accurately record fire safety strategies and key decision affecting the fire performance of the buildings.

g) Failure to properly coordinate design with other designers and to assess holistic performance.

h) Failure to properly manage waste and storage needs in a way which avoids fire safety being compromised.

B.5.6 Consideration should therefore be given as to what competence is required for any given discipline, role or task to manage the following key aspects of fire safety design:

a) Ability to comply with or exceed minimum technical requirements for fire safety.

b) Ability to understand the fire performance of materials, products and systems and make effective choices to ensure holistic fire safety in the resultant design.

c) Ability to coordinate activities with other designers to ensure holistic building safety.

d) The need to manage and maintain records and distribute drawings, schedules, specifications etc to maintain the golden thread of information through the building life cycle.

B.5.7 These considerations are just as critical when undertaking design work for minor alterations or major refurbishment of existing higher-risk buildings. Designers undertaking this type of work should also be competent to audit how those changes may affect the building's safety taking into account the original design intent and any other changes which have taken place in the interim.

B.5.8 Designers should also be competent in assessing and managing fire safety risks which arise from interactions at the construction stage, particularly where changes to the design are proposed for cost management purposes.

B.6 Construction

B.6.1 Construction work is highly complex and involves a large number of suppliers, trades, disciplines and organizations to coordinate their activities in order to deliver the intent set out in the design.

B.6.2 The construction phase involves a wide range of actors including designers, cost consultants, contractors, subcontractors and regulators all of whom need to understand their role in maintain fire safety standard through the building process.

B.6.3 It is recognized that there are many opportunities for fire safety standards to be compromised during the construction process. Key risks include:

a) Products being incorrectly installed reducing fire safety performance e.g. cavity barriers upside down or fire doors being incorrectly installed with the wrong frames or furniture.
b) Products being poorly installed e.g. inadequate seals around frames or inadequate number of fixings.
c) Products being substituted for poorer performing alternatives which compromise fire safety performance.
d) Products being substituted without reviewing impact on holistic fire safety performance, or performance of adjacent, connected or dependent systems.
e) Incorrect or inadequate commissioning of fire safety systems.
f) Inadequate or poor management of interfaces between follow on trades impacting on fire safety performance.
g) Damage to compartmentation, e.g. holes made for services without adequate fire stopping or systems prior to occupation compromising fire safety performance.
h) Cost cutting or value engineering exercises being undertaken without adequate re-assessment of impacts on fire safety design intent and performance.
i) Design work undertaken by individuals who are not competent as designers.
j) Re-design or specification being undertaken without proper understanding of original fire safety design intent.
k) Inadequate quality management and oversight of work quality.
l) Multiple levels of sub-contracting affecting ability to effectively communicate requirements.
m) Fragmented supply chains impacting on ability to manage the golden thread of information through the project lifecycle to completion of work.

B.6.4 In isolation or combination these risks can significantly affect overall building safety outcomes. If repeated multiple times over a building life cycle, fire safety can become severely compromised.

B.6.5 To mitigate these risks there need to be strong links and effective communication between the design and construction phase of projects. Design intent should be clearly recorded and passed on to the construction team. Wherever possible buildings should be constructed in line with the original design intent to avoid the risk of reduced fire safety performance involved in re-design during the construction phase.

B.6.6 Where changes do occur to layout, materials or systems, they should be subject to re-evaluation in terms of any potential impact on fire safety and where necessary additional mitigation should be provided. While changes during construction do not always result in a worse building and may be inconsequential as far as fire safety goes, the culture of doing this without proper recording or scrutiny allows for unsafe construction to occur.

B.6.7 Managing competence of site staff, subcontractors and operatives is also essential. Work should be undertaken by or under the direct supervision of competent individuals who take responsibility for the quality and safety of the work. While some defects in critical fire safety measures can be found during construction or during regulatory audits there are many elements that are hidden, difficult to check and could have catastrophic consequences if they do not perform as intended. Cavity barriers and fire stopping or sealing around breaches in compartmentation are all examples of this.

B.6.8 Sector-specific competence frameworks need to consider carefully what type and level of competence are required to address and mitigate these risks. This should include:

a) The ability to appoint, check, manage and assure competence of those involved in the construction process.
b) Suitable knowledge of construction technology, systems and products and their relevance to achieving the right level of fire safety performance.
c) Knowledge of and the ability to execute or manage work to comply with or exceed regulatory requirements.
d) Awareness and effective management practice to ensure that fire risks are controlled while work is being undertaken and when work is left in an incomplete state (e.g. overnight).
e) The ability to manage cost and time in a way which does not impact on safety.
f) The ability to effectively plan works to ensure that the right materials and products are available in the right place at the right time.
g) The ability to manage quality of work to ensure correct installation to the required standard.
h) The ability to identify any emerging fire safety risks and take action to correct underperformance.
i) The ability to manage changes in construction so that they do not compromise fire safety including knowing when to commission revaluation against design intent.
j) The need to handover fire safety information in a format useable by the client/building owner or operator.

B.7 Management, maintenance and alteration

B.7.1 The management of a building once in occupation is key to maintaining fire safety. At the time of occupation, there is a need for the management to understand their obligations under the Regulatory Reform (Fire Safety) Order 2005 (FSO). Preventing death or serious injury from fire is the cornerstone of the order and its articles form the key requirements and expectations of the management dutyholder. This includes:

a) duty to take general fire precautions;
b) risk assessment;
c) principles of prevention to be applied;
d) fire safety arrangements;
e) elimination or reduction of risks from dangerous substances;
f) firefighting and fire detection;
g) emergency routes and exits;
h) waste storage, management and disposal;
i) procedures for serious and imminent danger and for danger areas;
j) additional emergency measures in respect of dangerous substances;
k) maintenance;
l) safety assistance;
m) provision of information to employees;
n) provision of information to employers and the self-employed from outside undertakings;
o) training;
p) cooperation and coordination;
q) general duties of employees at work; and
r) power to make regulations about fire precautions.

B.7.2 The work of the fire service in the enforcement of the FSO is not to identify and rectify building deficiencies that may have occurred during the design and construction phases although it is common for these deficiencies to cause issues under the FSO which need to be dealt with. Instead the Fire Services primary role is to determine whether the building remains safe to be occupied taking these factors into account.

B.7.3 As well as complying with the requirements of the FSO, there are other regulatory considerations for management which include housing [and use of the Housing Health and Safety Rating System (HHSRS)], environmental health and others, some of which have some consideration for fire. It is important that the management function are aware of:

a) what elements of regulation and legislation apply to the building;
b) the extent to which they are legally responsible;
c) what actions they need to take in order to be compliant;
d) who else is legally responsible (in some cases they may be solely responsible or there may need to be an element of cooperation and coordination as specified in the FSO); and
e) putting plans in place to fulfil the actions identified above and then enact them.

B.7.4 Setting aside specific regulatory requirements, there are a number of key operations which need to be undertaken by competent individuals to ensure continued fire safety:

a) Regular inspection and maintenance of fire safety systems including (but not limited to):
   1) passive protection e.g. compartmentation, fire doors;
   2) active fire protection systems including sprinklers or other means of fire suppression, smoke control, alarm and evacuation alert systems;
   3) facilities for firefighting services e.g. wet and dry risers, firefighting lifts and access in area surrounding the building; and
   4) management of fire risk mitigation including waste management and inspection of individual dwellings.
b) Engagement with residents including (but not limited to):
   1) developing and managing resident engagement strategies;
   2) listening to and acting on concerns raised;
   3) ensuring competence of any individuals working on the buildings; and
   4) ensuring safety of maintenance and alteration works.
c) Managing safety information and process which includes:
   1) regular review and update of the safety case, building safety strategy and fire strategy;
   2) ensuring the Golden Thread of building information is maintained through the building life cycle; and
   3) Liaising with regulators and the Fire and Rescue Service as and when necessary.

B.7.5 In particular, competence requirements should ensure awareness (and where necessary higher levels of competence) in relation to the following fire safety risks which commonly arise during occupation and use:

a) compromise of access for firefighting services to the building e.g. due to the way in which the buildings immediate environment is used and manged;
b) compromise of fire compartmentation as a result of work undertaken to the building be residents, or tradesmen. This includes:
   1) breaching compartment walls to run new services such as cables or pipes;
   2) alterations to fire doors including their replacement or adjustment/interference with door closers.
c) failure to adequately maintain fire alarm and detection systems;
d) failure to inspect critical safety systems including smoke control systems, firefighting equipment, dry and wet risers and firefighting lifts;
e) failure to manage or control potential sources of fire including through poor waste management and storage, flammable materials left in corridors and on escape routes (e.g. mobility scooters); and
f) failure to ensure competence of consultants, designers, contractors and installers employed in maintenance and management of the building.

B.7.6 Management is often used as a tool to compensate for building deficiencies or as part of a risk mitigation programme. This is often because it is perceived to be cheaper and easier to introduce than physical risk controls such as compartmentation or fire doors and the like. Management should understand the limitations of such measures and that failures are more likely to occur where people are required to be part of fire safety solutions.

B.7.7 For the reasons outlined above, it is important that the management of buildings, at all levels, is undertaken by those who are competent to do so.

B.8 Reference materials

The following reference material in Table B.1 may be relevant and useful in developing or reviewing sector-specific competence frameworks in relation to fire safety competence:

Table B.1 – Reference materials for fire safety in higher risk buildings

Fire and Rescue Services Act 2004	https://www.legislation.gov.uk/ukpga/2004/21/contents
Regulatory Reform (Fire Safety) Order 2005	https://www.legislation.gov.uk/uksi/2005/1541/contents/made
Building Regulations 2010	https://www.legislation.gov.uk/uksi/2010/2214/contents/made
Approved Document B (Vol 1 and 2)	https://www.gov.uk/government/publications/fire-safety-approved-document-b
BS 9991, Fire safety in the design, management and use of residential buildings. Code of practice	https://shop.bsigroup.com/ProductDetail?pid=000000000030351309
BS 9997, Fire risk management systems. Requirements with guidance for use	https://shop.bsigroup.com/ProductDetail?pid=000000000030369483
BS 9999 Fire safety in the design, management and use of buildings. Code of practice	https://shop.bsigroup.com/ProductDetail?pid=000000000030357099
BS 7974 (Fire Engineering) [full tile needed]	https://shop.bsigroup.com/ProductDetail?pid=000000000030353758
BB 100 (Schools) [full tile needed]	https://www.gov.uk/government/publications/building-bulletin-100-design-for-fire-safety-in-schools
HTM Firecodes (Healthcare Technical Memorandums) [full tile needed]	https://www.gov.uk/government/collections/health-technical-memorandum-disinfection-and-sterilization
Construction (Design and Management) Regulations	https://www.hse.gov.uk/construction/cdm/2015/index.htm
Fire Safety Act	[to be added once passed into law]
Building Safety Act	[to be added once passed into law]
Housing Act 2004	https://www.legislation.gov.uk/ukpga/2004/34/contents
LACORS	https://www.cieh.org/media/1244/guidance-on-fire-safety-provisions-for-certain-types-of-existing-housing.pdf
Specialised Housing Guide	https://www.nationalfirechiefs.org.uk/write/MediaUploads/NFCC%20Guidance%20publications/NFCC_Specialised_Housing_Guidance_-_Copy.pdf
Do you have paying guests?	https://www.gov.uk/government/publications/do-you-have-paying-guests
CLG Risk Assessment Guides	https://www.gov.uk/workplace-fire-safety-your-responsibilities/fire-risk-assessments
Fire safety in purpose-built flats	https://www.local.gov.uk/fire-safety-purpose-built-flats
Building safety advice for building owners, including fire doors (also known as the Consolidated Advice Note)	https://www.gov.uk/government/publications/building-safety-advice-for-building-owners-including-fire-doors
Building Regulations and Fire Safety Procedural Guidance	https://www.labc.co.uk/sites/default/files/2020-07/LABC.Building-Regulations-and-Fire-Safety-Procedural-GuidanceV2.150720.pdf
Housing health and safety rating system: assessment of high-rise residential buildings with cladding systems	https://www.gov.uk/government/publications/housing-health-and-safety-rating-system-assessment-of-high-rise-residential-buildings-with-cladding-systems

Annex C (informative) Structural Safety in higher-risk buildings

C.1 General

C.1.1 This annex provides an overview of structural safety considerations in higher-risk buildings relevant to the development or review of sector-specific competence frameworks. It is not intended to be comprehensive but should be used as a starting to point to develop an understanding of how structural safety considerations are relevant to any given discipline, role or task.

C.1.2 The aim for all sector-specific competence frameworks should be to ensure a common shared minimum level of understanding of structural risk. This should lead to a minimum level of structural safety competence for all individuals involved in the development and management of higher-risk buildings. The design of such buildings should only be undertaken by someone who is suitably qualified and experienced; usually a chartered structural engineer.

C.2 Expectations in terms of structural safety competence

C.2.1 The primary aim for structural safety regimes is to avoid structural failure which can pose a significant threat to life safety both for people within a building and for those in the building's vicinity. While catastrophic structural failures are rare, their impacts can be severe including multiple loss of life.

C.2.2 Any structural failure can pose a threat to the safety of persons within and around the building. This includes localised collapse, the risk of parts of buildings falling off internally (e.g. ceilings) and externally (e.g. copings or elements of cladding systems) and failure of secondary structural elements such as guarding or balustrades which can put people at risk of falling.

C.2.3 Structural failure may also occur as a result of other events such as fire, extreme weather or vehicles colliding with the building. Buildings need to be designed and maintained so that the risk of structural failure from these events is recognized and minimized. Where such events do occur the likely performance of the building needs to be understood so that steps can be taken to mitigate subsequent risks. For instance;

a) knowing how long the structure of a building will remain stable in the event of a fire (which may require specialist advice from fire engineers) will enable fire and rescue services to gauge how safe it is for residents or fire fighters to remain within a building.
b) understanding that when the structure has been affected e.g. by a car colliding with a structural column in a car park the building manager should know to commission specialist assessment of the extent of any damage.

C.2.4 The design, manufacture, erection and assembly of structural systems, including checking and site supervision require high levels of competence, often in very specialised areas of activity. Given the many risks associated with structural failure the undertaking of structural fabrication, design and installation work should be reserved for individuals whose competence is assured.

C.2.5 However, there are many other roles in the design, construction and management of buildings which can impact on structural safety, including actions by residents and users of buildings. It is important that there is a common understanding amongst non-structural specialists of how their role relates to ensuring and maintaining structural safety.

C.2.6 It is also important that people are aware of how structural design, fabrication, installation or maintenance relate to other aspects of building safety including fire safety. It is particularly important to recognize that unauthorized modifications to a building either during construction or when in use can create severe risks. All modifications should be approved by the original designer.

C.2.7 It is expected that all sector-specific competence frameworks should identify where structural safety considerations are relevant to that competence framework and as a minimum require awareness (knowledge and ability to apply key concepts) of relevant structural safety competencies (but at the very least those structural safety competencies specified in Annex A) with higher levels of competence specified where necessary.

C.3 Key risks associated with structural safety in higher-risk buildings

C.3.1 Structural failures are generally well recorded, particularly where there has been a risk to life safety, actual harm or loss of life. Failures are subject to evaluation and review, and it is generally accepted that the main cause of structural failure fall into six main categories:

a) Where the structure is not robust enough or stable enough to withstand the loads that act on it – this can be as a result of design or fabrication failures, or both.

b) Where the quality of construction is inadequate including failure to adhere to structural design requirements, improper or erroneous use of materials or poor-quality workmanship and supervision.

c) Where the materials used are defective e.g. where an error in manufacturing quality or damage in transit affect structural performance.

d) Where inferior materials are substituted during the procurement or construction process.

e) Where possible but unlikely problems in use are not accounted for in the design of the structure resulting in lack of resilience in real world conditions – for instance impact by a vehicle, or explosion.

f) Where the structure is subject to failure due to fatigue or corrosion – this includes the structure being overstressed due to movement, and exposure to conditions (such as water penetration) which may cause decay.

C.3.2 Sector-specific competence frameworks should identify interactions with potential structural failure and require suitable competence to mitigate these risks. Particular attention should be given to:

a) Potential risk of explosion which can cause localised structural failure. This includes storage of fuel or explosive materials (such as LPG gas cannisters) as well as careful design, installation and maintenance of gas supplies.

b) Ensuring adequate fixing design for external cladding systems taking into account system requirements, height and exposure.

C.4 Structural characteristics of higher-risk buildings

C.4.1 In order to ensure that people act competently in relation to structural safety, it is important that they understand basic structural characteristics of higher-risk buildings.

C.4.2 The way in which higher-risk buildings have been defined is explained in **B.3.2**. Typically, these are taller or larger buildings, or buildings where occupancy or use increase risk to occupants. They will normally contain large numbers of people on a continual basis such as residential buildings, or an occasional basis such as stadia.

C.4.3 The structural characteristics of the building will largely depend on the:

a) location in which it is built including ground conditions (geology) and exposure (to wind and weather);

b) likely loads that will be applied to the building during the construction process and resulting from its use; or

c) technologies used in its construction taking context and use into account.

C.4.4 Structural characteristics include:

a) Foundations – the elements of structure which transfer load from the superstructure to the ground.

b) Superstructure or primary structure – the main frame, load-bearing wall system or other fundamental supports of the building.

c) Secondary structure – load-bearing elements connected to the superstructure supporting the remaining elements of building fabric.

d) Fixings – elements connecting primary and secondary structure and attaching other non-loadbearing elements of the building to the structure e.g. fixing for cladding systems, windows, guarding and balustrades.

C.4.5 There are many different technologies which can be used to fulfil these roles including (but not exclusively) in-situ concrete, pre-cast concrete, hot rolled steelwork, cold rolled steelwork, structural timber systems and masonry (brick or block) structures. Often a number of these different systems will be combined.

C.4.6 A building's structure will perform differently in the event of fire, under load e.g. from high winds and in terms of durability depending on which of these technologies are adopted. A competent designer will include combinations of these loads, and the associated risks, when devising the safety case.

C.4.7 Understanding how these different structural systems age, their vulnerability to deterioration over time (e.g. corrosion resulting from water ingress, concrete decay, reaction to fire) and how they need to be inspected and maintained are critical to maintaining building safety. The ability to inspect all parts of a structure which are subject to weather effects should be part of a good design.

C.4.8 Consideration therefore needs to be given to how the minimum levels of competence in the following respects are relevant to any sector-specific competence framework:

a) ability to identify different structural systems.
b) awareness of basic characteristics of different structural systems in terms of performance in response to fire, water penetration and decay.
c) awareness of how own role interacts or can impact on structural safety.
d) awareness of events which can affect structural safety and how to respond to those events.
e) how and when to commission and procure competent expert advice or assessment to maintain structural safety

C.5 Design and specification for structural safety

C.5.1 Higher-risk buildings should be designed in accordance with current design codes (or the design codes applicable at the time they were built). These design codes include a range of safety factors to ensure that there is sufficient redundancy in the design to deal with most likely events. However, this will only be the case where the design is undertaken by suitable competent people, and the construction work is undertaken in accordance with that design.

C.5.2 It should be recognized that compliance with codes and regulations are minimum requirements and there will be some case where these standards need to be exceeded to ensure satisfactory performance in extreme circumstances.

C.5.3 Since 1968 structural design requirements in England have included requirements to address the risk of major structural failure in the form of progressive or disproportionate collapse – in other words the failure of one part of a buildings structure should not lead to other parts of the structure collapsing. A structure properly designed and constructed in line with the codes of practice cited in building regulations and their supporting statutory guidance should be fundamentally safe at the point that work is complete.

C.5.4 Structural safety requires competence of the engineers who are designing and fabricating the structure. Structural design is becoming increasingly complex and frequently uses advanced analytical techniques to improve structural efficiency.

C.5.5 At the same time many elements of detailed structural design are undertaken by specialist subcontractors including connection details of foundations and structural frames, façade engineering and the design and specification of fixtures for safety critical elements such as guarding, balustrades and cladding systems. An important safety issue is for the Principal Contractor to ensure that there are clear responsibilities and lines of communication for all those in the supply chain.

C.5.6 While it is critical that major elements of structure are designed properly, a number of structural failures with life safety implications have been identified relating to secondary structural elements and even fixings for other elements of building systems. This includes:

a) use of incorrect glazing in glazed balustrade systems; and
b) failure to correctly design fixings for rendered and rainscreen cladding systems taking into account height and likely wind loads.

***NOTE** Further examples of deficiencies and failures can be found on the CROSS website (www.structural-safety.org).*

C.5.7 The structural design should be an integrated part of the building as a system and needs to be coordinated with:

a) Fire Escape strategies to ensure the structure has sufficient fire resistance and will remain stable long enough to allow emergency egress.
b) Passive fire protection measures (e.g. encasement) and compartmentation to enable the above.
c) Measures to avoid corrosion or decay – this includes assessing designs for interstitial condensation within the structural layer.
d) Service layouts to avoid buildability issues which may reduce margins of safety.

C.5.8 Sector-specific competence frameworks should carefully assess the level and type of competence required to directly undertake structural design tasks. For all sector-specific frameworks consideration should stress the need for competence in the following areas:

a) understanding limits of competence in undertaking structural design tasks or work; associated with structural safety;

b) ability to identify where specialist advice is needed;
c) ability to identify interfaces between structural design and other disciplines relevant to building safety e.g. fire safety, managing condensation risk; and
d) ability to procure and manage competence of others appointed to undertake structural design work.

C.6 Construction

C.6.1 The construction phase of work, whether new build, extension or maintenance should be focused on delivering structural solutions that perform in line with the structural design. As many elements of design are undertaken by specialist subcontractors during the construction period it is vital that:

a) Contracting organizations are capable of assessing and managing subcontractor's competence to undertake design work and that there is a clear chain of communications setting out responsibilities
b) Contracting organizations are competent to ensure that any changes to structural design are referenced back to the overall structural designer and the implications of those changes are properly evaluated for fire safety e.g. a change of specification for grade of steelwork may require a change in the level of fire protection required.

C.6.2 Managing quality of fabrication, installation and construction work is also critical. It is important contracting organizations and the people they employ are competent to:

a) review and coordinate structural design information developed during the construction phase;
b) review proposals for supervision on site;
c) check quality and suitability of materials (being wary of substitutions) arriving and being used on site to meet structural safety requirements;
d) establish, programme and manage a programme of site inspections to review quality of installation at critical phases e.g. compliance of reinforcement prior to pouring concrete;
e) undertake suitable quality testing as and when required e.g. of weld strengths or concrete strength to ensure compliance with specifications; and
f) manage variations in structural design or installation to ensure structural safety is not compromised.

C.6.3 Accurate records, including photographs, should be retained during construction to be passed onto building operators for management purposes.

C.7 Management, maintenance and alteration

C.7.1 Buildings have a potential long life and should certainly be expected to last at least 60 years. To ensure that buildings remain structurally safe over this time period requires:

a) periodic Inspection to understand the condition of the building structure and identify any works required;
b) maintenance and remedial work where necessary to address any issues which may lead to damage to the structure; and
c) careful management of change of use, alteration, extension or modifications to the building to ensure that structural integrity is not reduced over time.

C.7.2 Where significant alterations or extensions to a building are undertaken these need to be carried out with the same care in design and construction expected of new building work.

C.7.3 Care also needs to be taken with minor alterations, particularly those which involve creating holes or routes within the building (for instance installing new cables) or which could impact on fire protection or water tightness. Cumulative small changes can result in more serious damage to the building structure e.g. holes drilled through re-enforced concrete can allow water to enter leading to corrosion of reinforcement.

C.7.4 The buildings structure also needs to be understood as being subject to change over time. Structures can suffer fatigue (stress caused by repetitive movement for example) and many forms of structure are vulnerable to corrosion or decay, particularly if water (including interstitial condensation) is allowed to enter into the structural layers.

C.7.5 Periodic inspection of the building structure by a competent person is therefore critical. The frequency of inspection should be risk-based e.g. based on the condition of the structure, as well as in response to incidents which could affect structural safety. These include:

a) where a structural element fails which may indicate wider structural issues e.g. a piece of cladding detaching and falling from the building;
b) evidence of structural movement such as severe cracking or sagging of members;

c) collision or physical event which may cause damage to the building structure e.g. collision of a car with a column or structural wall;
d) here there is evidence of likely water penetration e.g. localised flooding, water from firefighting, evidence of failure in water tightness of cladding systems, evidence of extensive damp or mould; and
e) damage from an extreme environmental effect such as very high wind.

C.7.6 Structural inspection can be undertaken by a variety of means. Drone technology now enables extensive visual inspection of the exterior of buildings without the need for costly scaffolding or access equipment. This can be combined with the use of thermal imaging cameras to detect in gaps insulation which could cause condensation issues or indicate water ingress into cladding systems (for example).

C.7.7 Often it will be necessary to seek specialist advice on structural issues to understand whether there is material risk requiring mitigation. It is recommended that buildings owners and managers enter into flexible arrangements with suitably competent persons such that these inspection and advice can be obtained in a timely manner.

C.7.8 Sector-specific competence frameworks for those individuals managing or responsible for operating buildings should consider suitable competence in relation to:

a) knowledge and ability to discuss the fundamental nature of the building's structural design;
b) awareness and ability to respond and manage risks arising from building work being undertaken or events which could impact on structural integrity;
c) requirements for and ability to manage or obtain assurance of competence of individuals undertaking work which could impact on structural safety;
d) awareness and ability to plan and manage suitable inspection regimes to maintain structural integrity and safety; and
e) awareness and ability to respond to resident concerns relating to structural condition.

C.7.9 For those sector-specific frameworks covering individuals undertaking work on higher-risk buildings consideration should be given to:

a) ensuring competence to undertake design work including using competent persons such as chartered engineers for design of fixings to non-load-bearing elements;
b) awareness of potential interactions and impacts on structural integrity of work to be undertaken;
c) competence to manage quality of design, fabrication and installation; and
d) ability to identify risks, raise concerns and take mitigating actions in relation to structural safety.

C.8 Reference materials

The following reference material in Table C.1 may be relevant and useful in developing or reviewing sector-specific competence frameworks in relation to structural safety competence:

Table C.1 – Reference material for structural safety in higher risk buildings

Approved Document A – Structure	https://www.gov.uk/government/publications/structure-approved-document-a
Handbook or the structural assessment of large panel system (LPS) dwelling locks for accidental loading	https://www.brebookshop.com/details.jsp?id=326950
Confidential Reporting of Structural Safety (CROSS)	https://www.structural-safety.org/

Annex D (informative)
Public health and public safety in higher-risk buildings

D.1 Introduction

D.1.1 This annex provides an overview of public health and public safety considerations in higher-risk buildings relevant to the development or review of sector-specific competence frameworks. Public health considerations include the primary risks arising from the environment which people occupy which may give rise to ill health while public safety relates to risks that may give rise to injury.

D.1.2 It is not intended to be comprehensive but should be used as a starting point to develop an understanding of how public health and public safety considerations are relevant to any given discipline, role or task.

D.1.3 The aim for all sector-specific competence frameworks should be to ensure a common shared minimum level of understanding of public health and public safety risk. This should lead to a minimum level of competence for all individuals involved in the development and management of higher-risk buildings where their activities could interact with public safety considerations.

D.2 Expectations in terms of public health and public safety competence

D.2.1 Fire and structural safety risks are regarded as being the most likely types of risk to give rise to catastrophic failure where a single event can result in serious loss of life. However, fire and structural safety are not the only factors which need to be considered in ensuring buildings are safe. There are also a wider range of risks relevant to higher-risk buildings which need to be managed.

D.2.2 This is not to say that buildings classified as higher-risk are inherently more dangerous – this should not be the case where risks to public health and public safety are properly managed. It is important however to be aware of the way in which the nature of higher-risk buildings can make the impact of these risks more severe or indicate that a problem found in one location may be found in many other locations (due to the repetitive nature of design in multi-story buildings). In particular, higher-risk buildings tend to be tall and/or accommodate a significant number of people in a single location.

D.2.3 Relevant factors in higher-risk buildings include:

a) Height and scale – a problem in a taller or larger building is more likely to affect a significant number of people, and as height increases the risks from a number of public safety factors may also increase e.g. managing flue gas emission from combustion appliances (boilers) is much more complex in a tall building than in a two storey house.

b) Shared services – where multiple dwellings share building services and systems a single failure can affect many more people e.g. a shared water supply system can support the development of legionnaires disease if not properly managed, or shared flues can pass carbon monoxide from one dwelling to another.

c) Shared spaces – communal areas within higher-risk buildings can create different risks particularly where failure to maintain stairs, balustrades and guarding can lead to a trip or fall.

d) Shared occupancy - with a number of occupants accessing shared services and common areas there are more opportunities for the actions of one occupant to create increased risks for others.

D.2.4 The following sections set out common types of public health and public safety risk. Sector-specific frameworks should identify where activities relevant to any discipline, role or task could interface with these (or any other risks that are identified) and require suitable awareness of them as well as identifying what level of competence is required to mitigate those risks. This should include where relevant:

a) knowledge and ability to comply with or exceed requirements of the building regulations and supporting statutory guidance;

b) knowledge and ability to comply with other legislation and follow relevant guidance appropriately;

c) awareness of interface of activities with other potential sources of public safety risk and how to mitigate these; and

d) awareness of need to identify and escalate risks where necessary.

D.3 Key public health and public safety risks

D.3.1 Radon, methane and site contaminants

D.3.1.1 The ground on which a building stands can in itself be a source of risk which needs to be managed. There are a wide range of solid, liquid or gaseous contaminants typically resulting from:

a) contamination e.g. where a site has had previous industrial use including factories and land used for waste landfill; or in rural areas where land has been exposed to pesticides, fertilisers and oil spill.

b) geological factors including naturally occurring heavy metals such as cadmium and arsenic; and naturally occurring gases which can enter the building such as methane which poses a risk of explosion and fire, carbon dioxide or radon which poses a long-term life safety, and which may cause cancer.

D.3.1.2 For new works or extensions, suitable desktop and site surveys need to be undertaken to identify, develop risk management strategies and mitigate risks from contamination – this also usually involves engagement with a building control body, the local planning authority and the environment agency.

D.3.1.3 These risks need to be identified and where necessary remediation measures put in place which can include containment or removal of contaminated soil. Buildings may also need to be designed and built with barriers to prevent gas or liquids from entering the building in combination with creation of ventilation pathways with stack effect to remove ground gas; or in the case of radon use of active extraction systems such as sump pumps.

D.3.1.4 Extensive guidance on managing these risks is available to designers and contractors and anyone undertaking design or construction works should be competent to identify where action is required including seeking suitable specialist advice.

D.3.1.5 Building managers and owners should ensure that they are aware of these risks; how they relate to the buildings they manage and have in place the right inspection and maintenance requirements to ensure mitigation measures remain effective once the building is occupied.

D.3.2 Asbestos

D.3.2.1 The use of asbestos has been banned since 1999 but is frequently found in various forms in buildings erected or altered prior to that date. Management and removal of asbestos are carefully regulated to ensure that building users and workers are kept safe. Legal duties (under the 1974 HSW Act and the Control of Asbestos Regulations) on those persons in control of buildings and those working on premises are designed to ensure risks from asbestos in situ are minimised.

D.3.2.2 The location of all asbestos should be recorded and it may only remain in place if it is maintained in good condition, and not vulnerable to damage and is regularly inspected where accessible. It should be sealed off effectively if not accessible for inspection and the seals inspected. Any work connected with asbestos should be carried out by competent suitably trained persons. All contractors should be given the asbestos location information they need before work starts. Written to permits to work are recommended. In particular

a) Designers and building managers should be familiar with asbestos risks and how to identify and manage asbestos -containing material it is recommended that building managers attend a suitable training course on duty to manage asbestos at least once

b) Workers should know how to recognise suspect materials and the next steps to take to minimise risk to themselves and others

c) Specialists in higher risk work such as remediation or removal of asbestos should have the appropriate higher competence levels to remain legally compliant.

D.3.3 Ventilation, damp, and moisture

D.3.3.1 Buildings should be designed and built to ensure that:

a) there is adequate ventilation to maintain healthy indoor air quality;

b) there is provision to purge ventilate where there is an urgent need to remove noxious fumes or gases;

c) the habitable spaces are not subject to damp; and

d) moisture does not penetrate the building in a way which can damage the structure or fabric of the building or contribute to damp forming or unhealthy indoor air quality.

D.3.3.2 Poor ventilation and moisture ingress often lead to poor air quality or the formation of damp. Damp problems are often the result of condensation within the fabric of the building (interstitial condensation), resulting from poor design or construction practice or from poor installation of energy efficiency measures.

D.3.3.3 Poor indoor air quality and damp can have serious health implications including contributing to premature death. Treatment of ill health caused or exacerbated by poor indoor air quality and damp is a significant long-term burden and cost to the health service and welfare system. Ensuring that habitable accommodation has adequate air quality and is not subject to moisture ingress is therefore a key area of competence for designers; and an area where building managers need to be competent in understanding, identifying and responding appropriately to indications of air quality issues or damp.

D.3.3.4 Minimum standards to address these issues are set out in building regulations and associated statutory guidance but consideration needs to be given to environmental factors such as security (fear of opening windows) and pollution (proximity to busy roads) which can seriously affect ventilation and require additional mitigation.

D.3.3.5 Moisture within the fabric can be indicative of water penetration from failed cladding, failed or blocked gutters and downpipes or compromised building water-tightness due for example to failed parapets and copings or damaged membranes at foundation level allowing rising damp and can contribute not only to damp but damage to the buildings structure with the potential for more significant structural failure.

D.3.4 Overheating and heating failure

D.3.4.1 Buildings are also potentially very dangerous if they are prone to overheating, or if heating systems fail (or are unaffordable) in such a way as to expose people to long periods of unhealthy cold temperatures. In both cases more vulnerable people (the very young, older people and people with underlying health conditions) are likely to be more affected including at risk of premature death.

D.3.4.2 Overheating risk to health occurs where properties are subject to sustained periods where temperatures do not allow the human body to re-stabilise temperature. Overheating risk varies from occupant to occupant and dwelling to dwelling but most frequent causes include lack of or inadequate ventilation; excessive solar gain from windows on exposed elevations; excessive heat gain from building services; lack of thermal mass to absorb heat; inability to take advantage of overnight cooling.

D.3.4.3 Higher-risk building are potentially more vulnerable to overheating because they are often tall buildings with single aspect flats which do not benefit from cross ventilation, but which may be exposed to a lot of heat gain from the sun; in some cases, they are higher-risk due to their occupants being more vulnerable e.g. care homes.

D.3.4.4 Solutions to overheating at the design stage include undertaking suitable overheating analysis; introducing mitigating measures such as external solar shading (where that is permitted by current regulations) or heat reflective glazing; reducing glazed areas on exposed elevations; increasing ventilation rates and using stack effect; insulating internal building services to reduce heat gain.

D.3.4.5 Dealing with overheating in occupation may involve introducing control measures as above where this is possible; addressing barriers to use of ventilation; or provision of comfort cooling as a management procedure. Ultimately very vulnerable persons may need to be moved to alternative accommodation.

D.3.4.6 Where heating systems fail, are not working properly or are inadequate there is a serious risk to health form people spending extended periods of time living with internal temperatures below 13 degrees centigrade. This is recognized as leading to significantly increased risk of cardio vascular and respiratory illness and premature death.

D.3.4.7 Building designers, managers and maintainers need to have suitable competence in relation to avoiding overheating and excess cold where this relates to the activities they undertake.

D.3.5 Water supply, hot water storage, drainage systems and waste

D.3.5.1 Water supply and drainage systems in higher-risk buildings tend to be considerably more complex than systems in smaller or lower buildings. Because these services are shared, problems that occur can affect a large number of people, including risk of bacteriological infections such as Legionella. Design, installation and maintenance of these systems should be undertaken by suitably competent people. In high-rise buildings there are also significant risks arising from the pressures generated in hydraulic systems, requiring specific competences of designers, installers and those who maintain or work on those systems.

D.3.5.2 Fresh water supplies need to ensure that the water is healthy to drink and does not become contaminated. It is also important to ensure that water supply systems have adequate pressure to reach higher up parts of buildings, and that there are no leaks which could contribute to damp problems or damage the building structure and fabric.

D.3.5.3 Hot water systems are understood to pose a number of risk to safety including:

a) systems should be designed and maintained to avoid the risk of legionella bacteria forming in hot water storage tanks[5];
b) hot water cylinders should be maintained to be safe particularly where they are pressurised cylinders;
c) systems and distribution pipework should be able to withstand both the operating pressure and the temperature of hot water they carry to avoid deformation, leakage or failure;
d) hot water systems including cisterns and tanks within dwellings should be designed and installed to resist likely temperatures and pressures and should be adequately supported; and
e) hot water outlets (taps) in some locations should ensure temperature at delivery does not exceed 48 degree centigrade.

All of these factors need to be understood and managed at design, construction and occupation stages.

D.3.5.4 Drainage systems include grey water systems (from sinks and appliances) and foul water systems (from toilets etc) both of which need to ensure that waste water is disposed of safely. Grey water and foul water pose potentially serious public health risk including spreading serious disease if they are defective

D.3.5.5 Because drainage systems are shared within tall or larger residential buildings, if they become damaged or blocked they can affect a large number of people and put them at risk of living in unsanitary conditions.

D.3.5.6 Drainage systems need to be watertight and maintain air tightness in critical locations (typically referred to as traps) to prevent foul air re-entering dwellings -– this includes the potential for viruses to spread between dwellings. Drainage of foul and grey water is typically via vertical pipework referred to as 'stacks' which require air intake either at the top or by admittance valves adjacent to sanitary appliances to prevent suction in the pipework.

D.3.5.7 In taller buildings, care needs to be taken in avoiding too many bends or sweeps in vertical pipework, and consideration has to be given to much higher pressure and velocity of discharge into the pipe at height. It is advisable to introduce higher levels of acoustic protection around shared stack pipes, particularly at low levels within the building.

D.3.5.8 All waste and foul water systems should be designed with adequate access for cleaning, rodding and removal of blockages and should be subject to regular inspection and maintenance both above ground (within the building) and below ground (sewers) as required.

D.3.5.9 Storage and disposal of solid waste (rubbish) in higher-risk buildings also needs to be given serious consideration. A build-up of waste represents a potential source of ignition and can compromise both escape routes, compartmentation and access for firefighting services. Poor waste management can also create public health risks including promoting spread of disease and providing a habitat for vermin.

D.3.6 Gas supply, combustion devices and carbon monoxide

D.3.6.1 While some higher-risk buildings have communal heating systems, it is also common for individual flats or dwellings to have their own boilers, many of which are connected to gas supplies.

[5] Further information available at https://www.hse.gov.uk/pubns/indg458.pdf

D.3.6.2 Gas systems within higher-risk buildings need to be fitted in accordance with relevant gas fitting regulations to ensure that pipework is suitably robust (not easily damaged); located to avoid the risk of gas building up in voids (which can give rise to explosions if ignited) but also located outside of critical protected escape routes. Voids should have appropriate access points for inspection and maintenance. Pipework should also be suitably protected from frost and resistant to decay.

D.3.6.3 Boilers require regular maintenance and inspection to remain safe and the waste gas from combustion needs to be discharged safely. In some tall buildings this is by way of internal shared ducts, in other buildings direct to the outside. Care should be taken to ensure that combustions gases are not expelled in a location where they can re-enter the building; and in shared ducts there should be sufficient buoyancy for waste gases to rise to the outside. It is also essential that shared duct systems are properly commissioned and then regularly maintained to ensure that combustion gases cannot be transferred from one dwelling to another. This can lead to carbon monoxide and other toxic gases entering dwellings and can cause death by asphyxiation. Where such leakage occurs, it is generally an ongoing effect and not an isolated single occurrence and can therefore lead to longer term exposure to carbon monoxide with associated health impairment.

D.3.6.4 Care should be taken in specifying condensing boilers in buildings with internal flue ducts as the lower temperature of the flue gases may not enable them to rise out of the flue duct. Exemptions for lower efficiency replacement boilers exist where replacement is required in these circumstances.

D.3.6.5 Boilers and cookers also need sufficient oxygen supply to avoid partial combustion which can give rise to release of excessive carbon dioxide and highly toxic carbon monoxide. Detectors are required for carbon monoxide adjacent to boilers/combustion devices and need regular checking. It is critical that all boiler flues and inlets are installed by competent persons to ensure adequate oxygen supplies and avoid any risk of combustion gases leaking back into the property. It is also essential that all combustion appliances are regularly serviced and maintained by a competent person. Building safety managers will need to put in place management systems to ensure that these tasks are undertaken and that any remedial actions required are undertaken without delay.

D.3.6.6 Wherever gas installation takes place care should be taken to avoid breaching fire compartmentation with any penetrations of fire compartments made good using appropriate techniques and materials to meet the correct fire rating for that element.

D.3.7 Electrical safety

D.3.7.1 Electricity can kill or severely injure individuals and also poses a serious risk to building safety as a potential cause of fire. Electrical work in England should be carried out only by enterprises that are accredited as organizationally competent by an MHCLG and UKAS approved certification or registration body. To ensure safety, prior to occupation of a new building, the electrical installation should be inspected and tested by a fully qualified and competent electrician working for a duly accredited enterprise.

D.3.7.2 In existing buildings, electrical systems should be subject to regular inspection and testing by a fully qualified and competent electrician working for a duly accredited enterprise to ensure that any deterioration and faults are identified and rectified before serious problems can occur. Switch gear, distribution boards, cables and other parts of an installation should also be assessed and replaced as and when necessary.

D.3.7.3 Electrical work in individual dwellings or compartments should be undertaken by a fully qualified and competent electrician working for a duly accredited enterprise. Care should be taken not to compromise compartmentation when undertaking electrical work, with any penetrations of fire compartments made good to meet the correct fire rating for that element.

D.3.7.4 Higher risk buildings tend to contain vertical risers with high voltage and high amperage distribution boards. Access to these risers should be strictly controlled, and the fire compartmentation of the riser maintained to prevent it providing a vertical path for fire within the building.

D.3.7.5 Higher risk buildings also incorporate mixed use developments that often include complex life safety systems such as pressurisation, smoke ventilation and firefighting lifts, which require dual supplies, standby generator backup and changeover switchgear systems. These systems require a high level of specific electrotechnical knowledge, skills and experience to ensure correct operation in the event of an emergency, and as such should be installed, inspected, tested and/or maintained only by someone who is a fully qualified and competent electrician working for a duly accredited enterprise.

NOTE *Detailed information about registration/ certification requirements for accredited electrical enterprises and the qualifications and experience requirements for the individuals whom they employ is set out in the Electrotechnical Assessment Specification document, available from the IET website here.*

D.3.8 Guarding, balustrades, staircases and glazing safety

D.3.8.1 As with most buildings, slips, trips and falls represent the most frequent source of injury or serious injury in higher-risk buildings. Staircases are a particular source of risk, but in taller buildings any trip or fall can prove fatal if there is inadequate protection against fails.

D.3.8.2 Guidance on safe staircase design is provided in building regulations, *Approved Document K (Protection from falling, Collision and Impact)* and relevant British Standards codes of practice. The key features are:

a) adequate and even rise and going (tread) of the stair;
b) a reasonable pitch (steepness);
c) nosings at the front edge of stairs which prevent the foot from slipping;
d) Selection of suitable materials to minimise risk of slips[6];
e) adequate handrail to allow person to arrest a fall before it goes out of control;
f) adequate guarding to prevent falling over the side of a stair;
g) adequate headroom;
h) breaks in long flights of stairs to enable people to arrest their fall; and
i) lighting should enable people to see steps and landing clearly.

D.3.8.3 Staircases should be maintained and subject to periodic inspection. The risk of pedestrian slips, trips and falls should be considered when designing and refurbishing buildings, as well as when planning activities within existing buildings. The choice of floor surface, as well as the design of entrances, stairs, storage and lighting can have a significant influence on the risk of slips, trips and falls.

D.3.8.4 Wherever reasonably practicable floor surfaces should be free from defects, obstructions and substances that could pose a risk of slips, trips and falls. Suitable installation and maintenance of floor surfaces and the provision of adequate storage can help keep walkways clear of obstructions and other trip hazards. A pedestrian's toe clearance can be lower than 10 mm during normal walking gait and so even small obstructions and/or changes in level can present a trip hazard. Where reasonably practicable, trip hazards should be removed. However, in situations where it is not reasonably practicable to remove the trip hazard, measures should be taken to mitigate the risk that they pose. Mitigation measures may include redirecting pedestrian traffic to avoid the trip hazard or making the trip hazard easily noticeable by providing good lighting and using contrasting colours to highlight the trip hazard. When assessing the risk and deciding on the most appropriate interventions, it is important to consider the type of pedestrian activity within the area. For example, making the trip hazard more noticeable may not be sufficient if pedestrians are carrying objects that will obscure/block their view.

D.3.8.5 On stairs changes in level can not be avoided, but measures should still be taken to manage the risk. Inconsistent stair dimensions has been shown to increase the risk of falls and so it is very important to make sure the rise and going (height and depth) of each tread is consistent throughout the entire flight. Building Regulations (specifically *Approved documents K and M)* provide detailed specifications for good stair design. Good lighting and the installation of stair nosings in a colour that contrasts with the treads and adjacent floor surfaces will significantly reduce the risk of missteps and the provision of suitable and sufficient handrails will help to arrest any falls.

[6] Further information available at https://www.hse.gov.uk/slips/architects.htm

D.3.8.6 Floor surfaces don't tend to be slippery when they are clean and dry, but some floors can become very slippery in the presence of small amounts of surface contamination. The design of the building (e.g. the installation of canopies over entrances) and careful planning of the activities within the building can help to reduce the likelihood of floor surface contamination. However, in some environments it may not be reasonably practicable to keep the floor surface clean and dry at all times. It is therefore important to assess the likelihood of the surface becoming contaminated and in areas that are considered susceptible to contamination (e.g. at entrances and in washroom facilities, canteens and production areas) a suitable slip resistant floor surface should be installed. There are a number of tests available to assess the slip resistance of floor surfaces, but not all are reliable. HSE recommends that floor surfaces should be specified/assessed using the pendulum test and that floor surfaces should have a Pendulum Test Value (PTV) of at least 36 in conditions that reflect those expected in use (e.g. contaminated with water). Floor surfaces with higher PTVs are recommended on slopes or if activities that require higher level of friction than normal walking (e.g. pushing and pulling) are to take place.

D.3.8.7 Guarding and balustrades to balconies, walkways and external spaces are critical to safety particularly in taller buildings. Guidance on safe design of balustrades and guarding is provided in building regulations, ADK and relevant British Standard codes of practice.

D.3.8.8 Balustrades need to be capable of resisting considerable weight and so should be firmly fixed back to the building's structure, and strong enough to prevent failure. Balustrades and guarding should be high enough to prevent someone falling over them easily (with the top rail above the typical centre of gravity) and should be designed so as not to be easily climbable by children.

D.3.8.9 Where glazed balustrades are used care needs to be taken to ensure that if the glazing fails there is still adequate protection from falling. Replacement glazing should be carefully specified to ensure it is suitable in these locations.

D.3.8.10 Glazing throughout the building can also pose a danger, particularly in common parts where people congregate. The main risks are colliding with the glass causing it to break and cause injury. Requirements are set out in building regulations for areas of glazing which need to be resistant to breaking or break safely to help reduce the likelihood of injury. Any works to replace glazing should ensure the right specification and type of glass are used – this may include fire rated glazing critical to longer term fire safety and to comply with Regulation 7 of the Building Regulations.

D.3.9 Summary

D.3.9.1 Design and installation of many features of higher-risk buildings requires a high level of competency to ensure that the building is safe. The same level of competence is required in undertaking any work once the building is occupied, whether that is modification, maintenance or replacement.

D.3.9.2 It is critical that designers, contractors and building managers acknowledge the limits of their competence and seek specialist advice or assistance whenever necessary given the wide range of competence required to address all of the possible public health and public safety issues.

D.3.9.3 It is particularly important that building managers are diligent in ensuring the competence of those who carry out work to the building once it is occupied, taking into account how this affects safety over time. In doing so they also need to proactively consider the wider range of potential impacts on safety that any building work may have.

D.3.10 Reference materials

The following references in Table D.1 may be relevant and useful in developing or reviewing sector specific competence frameworks in relation to structural safety competence:

Table D.1 – Reference materials for Public health and public safety in higher risk buildings

Approved Document A - Structure	https://www.gov.uk/government/publications/structure-approved-document-a
Approved Document C – Site preparation and resistance to contaminants and site moisture	https://www.gov.uk/government/publications/site-preparation-and-resistance-to-contaminates-and-moisture-approved-document-c
Approved Document F – ventilation	https://www.gov.uk/government/publications/ventilation-approved-document-f
Approved Document G – Sanitation, hot water safety and water efficiency	https://www.gov.uk/government/publications/sanitation-hot-water-safety-and-water-efficiency-approved-document-g
Approved Document H – Drainage and waste disposal	https://www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h
Approved Document J – Combustion appliances	https://www.gov.uk/government/publications/combustion-appliances-and-fuel-storage-systems-approved-document-j
Approved Document K – protection from falling, collision and impact	https://www.gov.uk/government/publications/protection-from-falling-collision-and-impact-approved-document-k
Approved Document L – conservations of fuel and power	https://www.gov.uk/government/publications/conservation-of-fuel-and-power-approved-document-l
Approved Document P – Electrical safety	https://www.gov.uk/government/publications/electrical-safety-approved-document-p
Construction Design and Management Regulations 2015	https://www.hse.gov.uk/construction/cdm/2015/index.htm
Health and Safety at Work Act 1974	https://www.hse.gov.uk/legislation/hswa.htm
Housing Health and Safety Rating System (HHSRS)	https://www.gov.uk/government/publications/housing-health-and-safety-rating-system-guidance-for-landlords-and-property-related-professionals
Gas Safety (installation and use) Regulations 1998	https://www.hse.gov.uk/pubns/books/l56.htm
Water Supply (Water Fittings) Regulations	https://www.wras.co.uk/consumers/what_are_the_water_regulations_/
BS7671 – 18th Edition IET Wiring Regulations	https://electrical.theiet.org/bs-7671/18th-edition-resources/18th-edition-changes/
Dangerous Substances and Explosive Atmospheres Regulations 2002	https://www.hse.gov.uk/fireandexplosion/dsear.htm

Table D.1 – Reference materials for Public health and public safety in higher risk buildings (continued)

For building managers HSG 264 Asbestos: The Survey Guide	https://www.hse.gov.uk/pubns/books/hsg264.htm)
INDG 223 Managing Asbestos in Buildings. A brief guide	https://www.hse.gov.uk/pubns/indg223.pdf)
Managing and Working with Asbestos: Control of Asbestos regulations 2012. Approved Code of Practice and Guidance L143	https://www.hse.gov.uk/pubns/books/l143.htm)
For tradespeople HSG210 Asbestos Essentials Task manual	https://www.hse.gov.uk/pubns/books/hsg210.htm

Annex E (informative)
Common definitions for sector-specific frameworks

The following glossary of terms should be used in developing or reviewing sector-specific competence frameworks in order to ensure commonality of language and understanding across the built environment.

Term	Notes
Accountable Person	The dutyholder during a building's occupation.
Accreditation	Third party attestation related to a conformity assessment activity conveying formal demonstration of its competence, impartiality and consistent operation in performing specific conformity assessment activities such as certification, inspection, testing and calibration.
Active fire protection	Method(s) used to reduce or prevent the spread and effects of fire, heat or smoke by virtue of detection and/or suppression of the fire and which require a certain amount of motion and/or response to be activated.
Approved Documents	Guidance detailing ways to meet building regulations. These contain general guidance on the performance expected of materials and building work in order to comply with the building regulations and practical examples and solutions on how to achieve compliance for some of the more common building situations.
Approved Inspector	Old system name for a private sector building control body, in future to be called a registered building control approver.
Assessment/Audit	The formal process of obtaining relevant information and evaluating it objectively to determine the extent to which specified requirements have been fulfilled.
Bowtie analysis	A barrier-based risk evaluation method that can be used to analyse and demonstrate causal relationships in high risk scenarios.
Building	Any permanent or temporary building but not any other kind of structure or erection. A reference to a building includes a reference to part of a building.
Building Advisory Committee	Expert advisory committee set up by the Building Safety Regulator to provide advice and information to the Building Safety Regulator in relation to its functions.
Building Assurance Certificate	A certificate that an Accountable Person must apply for and the Building Safety Regulator will provide if it is satisfied that the Accountable Person is complying with meeting the statutory obligations placed on them.
Building control	A statutory process of ensuring that building work complies with building regulations' requirements including by assessing plans for building work and building work on site.

Term	Notes
Building control authority	A generic name used for local authorities and the Building Safety Regulator in situations where either may be responsible for Building Act matters or checking compliance with building regulations' requirements.
Building control functions	Activities exercised by Building Control Bodies that ensure that the requirements of the building regulations are met in relation to building work. Examples include examining plans, specifications and other documents submitted for approval, and survey work as it proceeds.
Building Information Modelling (BIM)	A process for creating and managing information on a construction project across the project lifecycle.
Building Lifecycle/ Lifecycle of the building	The life of a building covering procurement, design, construction, occupation, maintenance and refurbishment and ultimately, demolition.
Building Regulations	Technical and procedural requirements which persons undertaking building work must meet.
Building Regulations Advisory Committee (BRAC)	Advisory committee established under (former) section 14 Building Act 1984 for the purpose of advising the Secretary of State on the exercise of the Secretary of State's power to make building regulations, and on other subjects connected with building regulations. This committee is set to be abolished under section 9 of the Building Safety Act and be replaced by the Building Advisory Committee.
Building Safety Manager	Named by the Accountable Person, the Building Safety Manager supports the Accountable Person by carrying out the day to day functions of ensuring that the building is safely managed and promote the openness, trust and collaboration with resident's fundamental to keeping buildings safe.
Building Safety Regulator	The Building Safety Regulator established to make buildings safer through the implementation and enforcement of the new more stringent regulatory regime for buildings in scope, stronger oversight of the safety and performance of all buildings and assisting and encouraging competence among the built environment industry, and registered building inspectors.
Building safety risks	A risk to the safety of persons in or about a building arising from the occurrence of fire, structural failure or any other matter prescribed in regulation.
Buildings in scope	Refers to those buildings (described in the Building Safety Bill as 'higher-risk buildings') which will be within the scope of the new regulatory regime provided for in Parts 3 or 4 of the Bill.
Building work	Work on buildings to which building regulations apply, principally the construction and extension of buildings, material changes of use and material alterations.

Term	Notes
Built Environment (sector)	Legislation, guidance, organisations and individuals who work to design, plan, construct and maintain buildings and the spaces between them.
Certification	Third party attestation related to products, processes, systems or persons.
Change Control Plan (CCP)	One of the core information products that dutyholders must produce in the design and construction phase. Produced by the Principal Contractor, it describes how design changes will be monitored and agreed during construction works to ensure the building complies with building regulations.
Client	Any person for whom a [construction] project is carried out as defined in CDM Regulations 2015.
Common parts	Those parts of in-scope buildings (such as a block of flats) which are used by the residents of more than one flat (such as the corridors and fire-escape routes) and includes the structure and exterior of the building.
Committee on Industry Competence	New industry-led, expert committee set up by the Building Safety Regulator to facilitate improvement in the competence of the built environment sector.
Compartment	The sub-division of a building into parts to prevent the spread of fire to or from another part of the same building or an adjoining building. For example, compartment walls and floors with a rated period of fire resistance are provided to separate individual flats.
Compartmentation	(fire) A building or part of a building, comprising one or more rooms, spaces or storeys, that is constructed to prevent the spread of fire to or from another part of the same building or an adjoining building. [definition from ADB]
Competence/ competences	The combination of skills, knowledge, experience and behaviour that enable an individual to make informed decisions and carry out defined tasks effectively.
Competence framework	A set of agreed skills, knowledge, experience and behaviours required for an individual undertaking a role, function, activity or task in order to perform their work to predetermined standards and expectations and maintain or improve their performance over time.
Competency/competencies	Task level description of skills, knowledge, experience and behaviours required to undertake a defined task effectively.
Competence maintenance	Activities undertaken to ensure skills, knowledge and behaviours remain adequate for an individual to be considered competent.
Competence management	A process of audited, recorded and disclosable assessment of competence undertaken by a business or organization.

Term	Notes
Competent person	A competent person is someone who has sufficient training and experience or knowledge and other qualities that allow them to assist you properly. The level of competence required will depend on the complexity of the situation and the particular help you need.
Competent Person Scheme	A scheme authorized under the Building Act 1984 by which registered installers are able to self-certify certain types of building work without the involvement of a building control body.
Complex Premises	Complex premises are generally those designed and built using more complex design guidance such as BS 9999: 'Fire safety in the design, management and use of buildings – Code of practice'. This allows a more transparent and flexible approach to fire safety design through use of a structured approach to risk-based design where designers can take account of varying physical and human factors. ***NOTE*** *Complex premises may range from low to high risk dependent upon the use, management and maintenance of the premises. Appropriately competent staff should be deployed accordingly.*
Conformity assessment	The process demonstrating that specified requirements relating to a product, process, service, system, person or body are fulfilled.
Conformity assessment body	A body that performs conformity assessment activities such as calibration, testing, certification and inspection.
Construction (Design and Management) Regulations 2015	The main set of regulations for managing the health, safety and welfare of construction projects.
Construction Phase	The period of time beginning when construction work in a project starts and ending when construction work in that project is completed.

Term	Notes
Construction work (CDM 2015 Reg 2)	The carrying out of any building, civil engineering or engineering construction work and includes: a) the construction, alteration, conversion, fitting out, commissioning, renovation, repair, upkeep, redecoration or other maintenance (including cleaning which involves the use of water or an abrasive at high pressure, or the use of corrosive or toxic substances), de-commissioning, demolition or dismantling of a structure; b) the preparation for an intended structure, including site clearance, exploration, investigation (but not site survey) and excavation (but not pre-construction archaeological investigations), and the clearance or preparation of the site or structure for use or occupation at its conclusion; c) the assembly on site of prefabricated elements to form a structure or the disassembly on site of the prefabricated elements which, immediately before such disassembly, formed a structure; d) the removal of a structure, or of any product or waste resulting from demolition or dismantling of a structure, or from disassembly of prefabricated elements which immediately before such disassembly formed such a structure; e) the installation, commissioning, maintenance, repair or removal of mechanical, electrical, gas, compressed air, hydraulic, telecommunications, computer or similar services which are normally fixed within or to a structure, but does not include the exploration for, or extraction of, mineral resources, or preparatory activities carried out at a place where such exploration or extraction is carried out.
Continuing Professional Development (CPD)	recorded activities undertaken by individuals to maintain competence including formal and informal learning.
Contract management	Contract management is the process of systematically and efficiently managing contracts with suppliers to make sure all the terms of the contract are met, maximizing operational and financial performance and minimizing risk.
Contractor (CDM 2015)	Any person who, in the course or furtherance of a business, carries out, manages or controls construction work.
Designer (CDM 2015)	An organization or individual whose work involves preparing or modifying designs, drawings, specifications, bills of quantity or design calculations.
Dutyholders	The key roles (whether fulfilled by individuals or organizations) that are assigned specific responsibilities at particular phases of the building life cycle.
Enforcement	Action which relates to securing compliance with a restriction, requirement or condition in the event of them being breached or action taken with a view to impose a sanction or to pursue a remedy in respect of an act or omission.

Term	Notes
Enforcing authority	Enforcing Authorities includes fire and rescue services and/or authorities, the Crown Premises Fire Safety Inspectorate, Defence Fire Safety Regulators and any other organization that employs Fire Safety Regulators under the Regulatory Reform Fire Order
Fire and Emergency File (FEF)	One of the core information products that dutyholders will be required to produce during the design and construction phase. This builds upon any fire statement produced at gateway one and sets out the key building fire safety information (design intent and strategy for compliance with building regulations). The file will be updated during the construction phase with as built information and to confirm compliance. The file will be passed to the client and will be used by the Accountable Person to manage fire safety during the occupation phase.
Fire and Rescue Authorities (FRA)	In England and Wales, a fire authority or fire and rescue authority is a statutory body, usually made up of a committee of local councillors which oversees the policy and service delivery of a fire and rescue services. There are some variations to this model in England, where the functions of four Fire and Rescue Authorities are delivered by the local Police and Crime Commissioner (in these areas the PCC is known as a Police, Fire and Crime Commissioner), the Mayor of Greater Manchester is responsible for FRA functions in that area, and there are separate provisions for London, which has a dedicated Fire Commissioner.
Fire and Rescue Services (FRS)	The Fire and Rescue Service is the operational fire brigade, delivering all the functions associated with that role, and headed by a Chief Fire Officer. FRS's are overseen by FRA's and cover the identical geographical area to the FRA.
Fire Engineer	A person with the ability to apply the principles of fire engineering (see Fire Engineering).
Fire Engineering	Fire Engineering is the application of scientific and engineering principles, rules [codes], and expert judgement, based on an understanding of the phenomena and effects of fire and of the reaction and behaviour of people to fire, to protect people, property and the environment from the destructive effects of fire.
Fire Hazard	Source, situation or act with potential to result in a fire (e.g. an ignition source or an accumulation of waste that could be subject to ignition).
Fire Hazard Identification	Process of recognizing that a fire hazard exists and defining its characteristics.
Fire Safety Inspector	A competent person qualified to a Level 4 Diploma in Fire Safety who can undertake regulatory activities where the FSO applies, commensurate with their authorization to do so.
Fire Risk	Combination of likelihood and consequence(s) of fire.

Term	Notes
Fire risk assessment	A fire risk assessment is an organized and methodical look at the premises, the activities carried on there and the likelihood that a fire could start and cause harm to those in and around the premises. Under the Fire Safety Order, the aims of fire risk assessments are to identify the fire hazards, to reduce the risk of those hazards causing harm to as low as reasonably practicable and to decide what physical fire precautions and management arrangements are necessary to ensure the safety of people in the premises if a fire does start.
Formal learning	Education or training which is tested and leads to formal recognition.
Fire risk assessor	A competent person who carries out, and documents, a fire risk assessment.
Fire Safety Regulator	A competent person who is authorised in writing by an Enforcing Authority or by the Secretary of State to regulate premises under the applicable fire safety legislation for those premises.
Fire Safety Training	Formal training provided to employees, with the objective of imparting sufficient information on the relevant fire risks, fire prevention measures, fire protection measures and fire procedures in the building to ensure the safety of employees from fire.
First-tier Tribunal	In England, the First-Tier Tribunal (Property Chamber) is the specialist forum which determines a range of disputes in relation to property and land. These include questions relating to leasehold service charges, enfranchisement, park homes and land registration. The First-Tier Tribunal is intended to be accessible to parties acting 'in person' i.e. without legal representation, and it does not generally award legal costs. Decisions made by the First-Tier Tribunal can be appealed against in the Upper Tribunal (Lands Chamber).
Gateway points/Gateway one, two and three	Three key stages in the building development where the duty-holder must demonstrate that they are managing building safety risks appropriately before they are permitted by the relevant regulator to continue to the next stage of development.
Golden thread of information	Fire and structural safety building information held digitally to specific standards [published by the Building Safety Regulator]. These standards will include requirements around robust information management and keeping the information up to date. The golden thread will ensure that those responsible for the building have the required information to manage building safety during throughout the lifecycle of the building.
Hazard	The potential an object or activity has to cause harm.
Hazard identification	Part of the process used to evaluate if any particular situation, item, thing, etc. may have the potential to cause harm.

Term	Notes
Health and safety file (CDM2015, reg 12(5))	A file appropriate to the characteristics of the project which must contain information relating to the project which is likely to be needed during any subsequent works to the project building to ensure the health and safety of any person.
Higher-risk buildings	Buildings subject to enhanced regulatory requirements in scope of the new more stringent regulatory regime, as defined in legislation and including those previously referred to as Higher-Risk Residential Buildings or HRRBs.
Historical and Heritage Buildings	Any structure providing significant cultural or heritage values or special qualities that requires protection to sustain those values or qualities for present and future generations.
Housing Health and Safety Rating System (England) Regulations 2005	[Definition TBC]
Housing Ombudsman	The Housing Ombudsman provides redress for social housing residents. The Ombudsman's scheme, approved by the Secretary of State under section 51 of, and Schedule 2 to, the Housing Act 1996. Membership of the Scheme is compulsory for social landlords (primarily housing associations who are or have been registered with the social housing regulator) and local authority landlords.
Informal learning	Experiential learning which takes place through life and work experiences.
In scope buildings/designated properties 'in scope'	Alternative term for buildings in scope of the new more stringent regulatory regime, as defined in the Bill.
Initial Professional Development (IPD)	The intentional workplace development of the skills, knowledge, experience and behaviours, including the commencement of the application of professional judgement, needed to acquire competence.
Installer	An operative or organization working, with the appropriate competencies, to place a specific product or system on site.
Key dataset	As part of the golden thread, dutyholders will create a key dataset which will be a sub-set of golden thread information that will be held in a specified format. The dataset will include general building information, information on safety-related features, outcomes of gateway points and safety case reviews as well as current and past dutyholders.
Key roles	The three key roles responsible for building safety during design, construction and occupation phases of the building lifecycle: Principal Designer, Principal Contractor, Building Safety Manager.
Lead Engineer	Advisor to the duty-holder to ensure all the engineering components of a building in scope are suitably coordinated and compatible with one another in terms of safety, functionality and future maintainability.

Term	Notes
Life Safety Systems	Any interior building element designed to protect and evacuate the building population in emergencies, including fires and earthquakes, and less critical events, such as power failures.
Likelihood	The chance or frequency an event will occur.
Mandatory Occurrence Reporting System	The Mandatory Occurrence Reporting System will require dutyholders across all stages of the building life cycle to report fire and structural safety occurrences to the Building Safety Regulator which could pose a significant risk to life. Dutyholders will also be required to establish an internal framework for the monitoring of occurrences which might arise.
Material Alteration / **Materially affect**	An alteration is material for the purposes of the Building Regulations 2010 if the work, or any part of it, would at any stage result— (a) in a building or controlled service or fitting not complying with a relevant requirement where previously it did; or (b) in a building or controlled service or fitting which before the work commenced did not comply with a relevant requirement, being more unsatisfactory in relation to such a requirement.
Mandatory occurrence reporting	Reporting of any safety-related event which, if not corrected or addressed, could endanger residents or employees.
Mitigation	Action taken to limit the consequences of a major accident to people and the environment.
Multi-disciplinary team	Refers to a team which may be put in place by the Building Safety Regulator when it regulates buildings in scope. The team would include a fire safety expert, typically from the relevant Fire and Rescue Service, and a building control specialist, typically from the relevant local authority.
New Homes Ombudsman	An independent third party to provide alternative dispute resolution service between developers and purchasers of new build homes, and to remedy complaints.
Non-formal learning	learning which takes place alongside the mainstream systems of education and training. It may be assessed but does not typically lead to formal certification.
Operational Standards Rules	Rules for local authorities and building control bodies setting out the performance requirements to be met in the exercise of their building control functions.

Term	Notes
Passive Fire Protection	Method used to reduce or prevent the spread and effects of fire, heat or smoke by means of design, and/or the appropriate use of materials and not requiring detection. Built into the structure to provide stability and into walls and floors to separate the building into areas of manageable risk known as compartments. These areas are designed to restrict the growth and spread of fire allowing occupants to escape and offering protection for firefighters.
Person	A 'person' in [health and safety legislation] may be an individual, a corporate body or a partnership.
Principal Contractor	Under the Construction (Design and Management) Regulations 2015 a Principal Contractor is a contractor appointed by the client to be in control of the construction phase of the project when there is more than one contractor working on the project. The principal designer can be an organization or an individual.
Principal Designer	Under the Construction (Design and Management) Regulations 2015, a principal designer is a designer appointed by the client to be in control of the pre-construction phase of the project, when there is more than one contractor working on the project. The principal designer can be an organization or an individual.
Prior learning	Academic qualification or formal training used as a reference point for the likely knowledge and skills required to competently undertake a specific role.
Professional Body	A Professional Body is an organization with individual members practicing a profession or occupation in which the organization maintains an oversight of the knowledge, skills, conduct and practice of that profession or occupation. For example, The Institution of Fire Engineers is a professional body.
Professional commitment	Commitment to abide by a code of conduct and professional behaviours that normally includes a requirement to practice ethically, and maintaining and acting within limits of competence.
Professional Registration	Registration with a professional body (see Professional Body above).
Project Manager	Generic term used to describe anyone who manages a project, but in the context of this WG, the primary focus is on someone who manages all aspects of a construction project for a Client, thus providing a single point of contact and responsibility for the rest of the design and construction team.
Public Interest Disclosure Act	Public Interest Disclosure Act 1998 protects workers from detrimental treatment or victimisation from their employer if, in the public interest, they make certain types of protected disclosures.
Recognized Prior Learning (RPL)	a process where learners can be recognized for the work or experience, they have gained in a variety of settings including formal and informal learning.

Term	Notes
Refurbishment	Construction, alteration, conversion, fitting out, commissioning, renovation, repair, upkeep, redecoration or other maintenance, de-commissioning, demolition or dismantling of a structure. Should be subject to consideration as to how any change affects or might affect the safety of people in the building with respect to building safety risks.
Registered building control approver(s)	Formerly known as an Approved Inspector or a building control body under the old regulatory system. Refers to private sector firms doing building control work.
Registered building inspector	Refers to individual inspectors that are registered by the Building Safety Regulator.
Resident	A "resident" of a dwelling is a person who lawfully resides there, regardless of tenure.
Residents' Engagement Strategy	The means by which those living in buildings covered by the new regulatory regime can get more involved in the decision-making in relation to the safety of their homes. Sets out the approach and the activities that the Accountable Person will undertake to deliver these opportunities for all residents to participate.
Residents' panel	A statutory committee to be set up by the Building Safety Regulator. The residents' panel will be made up of residents and representatives/advocates of residents, and advise the Building Safety Regulator on strategy, policy, systems and guidance which will be of particular interest to residents of higher-risk buildings.
Responsible Person	Under the Regulatory Reform (Fire Safety) Order 2005, a responsible person for a workplace is the employer or, in premises which are not a workplace, the person who has control of the premises in connection with carrying on of a trade, business or other undertaking (whether for profit or not) or the owner.
Revalidation (of competence)	process of re-assessing an individual's competence on a periodic basis to ensure that competence has been maintained.
Review	The process by which a fire risk assessment is examined and evaluated in order to determine its adequacy.
Risk	The chance, high or low, that somebody could be harmed by one or more hazards, together with an indication of how serious the harm could be.
Risk assessment methodology	Method by which risk of potential events that may negatively impact persons s, assets and/or the environment are identified and analyzed and judgements are made on the tolerability of the risk.
Safety Case (Report)	A structured argument, supported by a body of evidence that provides a compelling, comprehensible, evidenced and valid case as to how the Accountable Person is proactively managing fire and structural risks in order to prevent a major incident and limit the consequences to people in and around the building.

Term	Notes
Sector-specific competence framework	competence framework developed to enable assessment of competence in a specific role, trade task or discipline or relevant to execution of a specific task.
Significant risks	Not necessarily those that involve the greatest risks, but also those (including health risks) that are not likely to be obvious, are unusual, or likely to be difficult to manage effectively.
Smoke control	Technique used to control the movement of smoky gases within a building in order to protect the structure, the contents, the means of escape, or to assist firefighting operations.
Smoke control engineering	The design, manufacture, installation and maintenance of systems for the purpose of smoke control.
Sourcing Strategy	A process that will aim to continuously balance internal and external activities, services and know-how, to align business strategy, business process and product requirements and balance the results that must be achieved with future available options.
Special Measures Manager	A court appointed manager who has been put in place by the Building Safety Regulator in circumstances where there have been repeated breaches of the statutory obligations by the Accountable Person under the Building Safety Regime. The manager will manage the fire and structural safety of the building in accordance with measures as set out in an order made by the court.
Specialist/Other Premises	Premises with unique characteristics and fire safety challenges including hospitals, heritage, transport infrastructure, prisons, sports stadia, chemical plants, temporary structures, festival sites and premises where explosives or petroleum are stored. These premises may also include fire-engineered solutions.
Specification	A document specifying requirements, and which usually forms a part of a legally binding contract.
Systems integration	The process of bringing together component parts or sub-systems to function together as a system to achieve the intended outcomes.
Validation	process of assessing an individual for the first time against a sector-specific competence framework.
Worker	An individual who actually carries out the work involved in building, altering, maintaining or demolishing buildings or structures. Workers include: plumbers, electricians, scaffolders, painters, decorators, steel erectors and labourers, as well as supervisors like foremen and chargehands. Their duties include cooperating with their employer and other dutyholders, reporting anything they see that might endanger the health and safety of themselves or others. Workers must be consulted on matters affecting their health, safety and welfare.

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards-based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email cservices@bsigroup.com.

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Relations
Tel: +44 345 086 9001
Email: cservices@bsigroup.com

Subscription Support
Tel: +44 345 086 9001
Email: subscription.support@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

BSI, 389 Chiswick High Road
London W4 4AL
United Kingdom
www.bsigroup.com