Engineering Council

The UK Standard for Professional Engineering Competence and Commitment Contextualised for Higher-Risk Buildings UK-SPEC HRB

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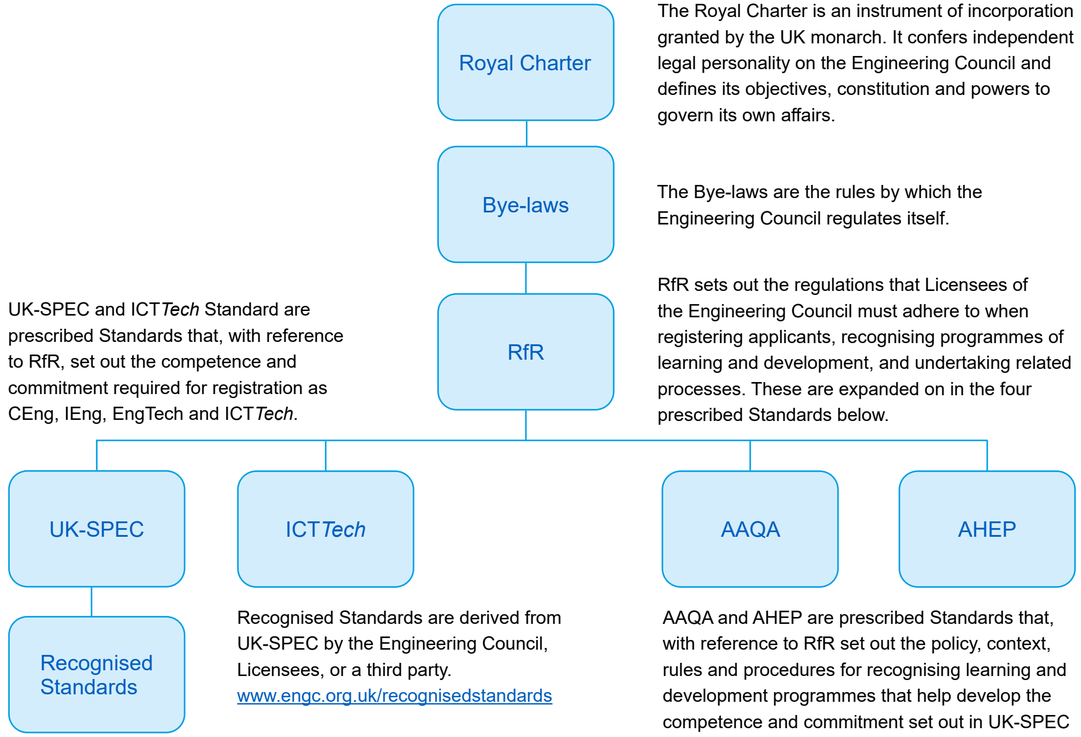
Hierarchy of regulations and standards

The Engineering Council is the UK's regulatory body for the engineering profession. It operates under a Royal Charter and is governed by a Board that represents UK Licensees as well as individuals from industries and sectors with an interest in the regulation of the profession.

This document is one in a series of closely related publications:

- **Regulations for Registration (RfR)**
- **Regulations for Licensing (RfL)**
- **The UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)**
- **Information and Communications Technology Technician Standard (ICT*Tech* Standard)**
- **Approval and Accreditation of Qualifications and Apprenticeships (AAQA)**
- **Accreditation of Higher Education Programmes (AHEP)**

The Engineering Council publishes these documents on behalf of the UK engineering profession, with whom they were developed and are kept under review. The relationship between these publications is:



The Engineering Council also publishes policy statements, guidance for institutions and guidance for individuals. These, along with all the publications listed above, are available on the Engineering Council website: www.engc.org.uk

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Foreword

Following the Grenfell Tower tragedy in 2017, Dame Judith Hackitt, commissioned by the UK Government, undertook an independent review of UK building regulations and fire safety: 'Building a Safer Future' . This report identified inconsistency in the processes and standards for assuring the skills, knowledge, experience and behaviours of those working on higher-risk buildings (HRBs), constituting a major flaw in the current regulatory system.

In response, a Competence Steering Group was set up under the auspices of the Industry Response Group and subsequently published two reports – Raising the Bar (2018) and Setting the Bar (2020). These reports led to development of the BSI 8670. This code of practice sets core building safety criteria for bodies that assess the competence of designers, contractors, fire risk assessors, building managers and specialist technical or corporate roles including engineers/technicians working on higher-risk buildings.Dame Judith's report informed drafting of building safety legislation which led to the Building Safety Act 2022. The intention is to ensure that everyone undertaking design work or building work is competent to do their work in a way that ensures compliance with building regulations.

In response to these reports, the Engineering Council developed UK-SPEC HRB as a Proprietary Standard designed to assess the competence and commitment of individual engineers and technicians working on higher-risk buildings in the UK. UK-SPEC HRB incorporates the criteria from BSI 8670 and sets out a sector-specific competence framework consisting of a core document and discipline annexes. Demonstrating competence could involve registration against the core framework only, or a combination of the discipline annexes: Fire Engineering, Structural Engineering and Building Services Engineering.

The Engineering Technician (EngTech) Standard

Engineering Technicians apply proven techniques and procedures to the solution of practical engineering problems.

Engineering Technicians shall demonstrate:

- Engineering knowledge and understanding to apply technical and practical skills
- Evidence of their contribution to the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services
- Supervisory or technical responsibility
- Effective interpersonal skills in communicating technical matters
- The ability to operate in accordance with safe systems of work and to demonstrate appropriate understanding of the principles of sustainability
- Commitment to professional engineering values

An Engineering Technician will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the context, nature and requirements of their role. They will demonstrate a level of competence and commitment in each area, (AA1–EE5), at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in those areas of limited experience as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they will demonstrate an appropriate balance of competences to perform their role effectively at Engineering Technician level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Engineering Technician registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.

† It is not expected that applicants will necessarily meet all the listed criteria, but they will be expected to demonstrate competence against a substantial proportion of the scope, using a variety of sources and types of evidence, wherever this is relevant to their role. As part of their continuing professional development (CPD), successful applicants have an obligation to remain alert to any changes in their role or responsibilities and ensure the appropriate underpinning knowledge and understanding are updated accordingly. This is applicable throughout the document where "wherever relevant, applicants shall demonstrate the ability to:" is mentioned.

Applicants shall provide evidence from the HRB-specific criteria when developing their portfolio across the AA1-EE5 competences. Licensees' Professional Review assessors may request further evidence across any or all of the criteria.

Competence		Scope	
AA. Knowledge and understanding **Engineering Technicians shall use engineering knowledge and understanding to apply technical and practical skills.** This competence is about having knowledge of fire, structural and life safety, legislation, technologies, standards and practices relevant to higher-risk buildings (HRBs) and having evidence of maintaining and applying this knowledge.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Review and select appropriate fire, structural and building life safety systems and principles, throughout the building life cycle of HRBs*.	**Fire Science** • Principles of heat transfer • Properties of materials • Principles of fire chemistry • Principles of fire dynamics **Human Behaviour and Evacuation** • Human behaviour and physiological response to fire • Life safety design concepts and practice **Fire Safety Design and Specification** • Fire protection systems • Passive fire protection systems • Active fire protection systems • Fire detection and alarm systems • Fire suppression systems **Fire Prevention** • Fire performance of materials • Compartmentation and spread of flame • Principles of structural fire protection design • Commissioning and interrogation of specialist analysis by others	• Access and facilities for fire and emergency services **Structural Safety** • Structural design / fixing of cladding / facade at height • Secondary fixings specification and design • Disproportionate collapse **Protection from Falling or Collision** • Stair safety • Guarding / balustrades • Balconies **Public Health** • Air quality / ventilation • Above ground drainage • Water storage • Combustion appliances **Building Services** • Gas appliances and services • Electrical safety • Mechanical services • Fire integrities **Building Fabric** • Interstitial condensation / corrosion • Maintenance • Glazing and glazing systems

Examples of evidence	HRB specific criteria
• Evaluating potential methods of carrying out an engineering task and selecting the most appropriate solution • Recognising a difficulty and then identifying an approach to resolve it • Identifying an improvement in a technique, procedure, process or method • Interpreting and carrying out test procedures	Applicants shall demonstrate underpinning knowledge and understanding of: • The building as a system and how the technical interfaces contribute to the functionality and safety of the building and its occupants / residents • The interrelationship of design and specification with fire performance • Key features and principles of passive and active protection (including suppression systems) Wherever relevant, applicants shall demonstrate the ability† to: • Apply relevant fire safety principles and practices in the engineering of HRBs • Apply fundamental knowledge of fire science, (including key aspects of the fire performance of materials) in the engineering and specification of HRBs • Integrate key principles of human behaviour and fire escape design into the engineering and arrangement of escape provision in HRBs • Integrate and coordinate relevant passive and active fire protection systems into the engineering components of HRBs • Integrate and coordinate compartmentation and structural fire protection into the engineering of HRBs, with particular reference to measures which prevent the spread of flame and smoke • Integrate and coordinate fire-fighting access requirements and provision of fire-fighting facilities into the engineering design and layout of HRBs • Integrate new engineering approaches, theories or techniques into engineering practice while ensuring safe outcomes * See Glossary: ‘building life cycle’ † See p5

Competence		Scope	
AA. Knowledge and understanding	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2. Use appropriate scientific, technical, engineering and information management principles to integrate fire, structural and building life safety systems throughout the building life cycle of HRBs.	**Fire Science** • Principles of heat transfer • Properties of materials • Principles of fire chemistry • Principles of fire dynamics **Human Behaviour and Evacuation** • Human behaviour and physiological response to fire • Life safety design concepts and practice **Fire Safety Design and Specification** • Fire protection systems • Passive fire protection systems • Active fire protection systems • Fire detection and alarm systems • Fire suppression systems **Fire Prevention** • Fire performance of materials • Compartmentation and spread of flame • Principles of structural fire protection design • Commissioning and interrogation of specialist analysis by others • Collaboration and system integration	• Access and facilities for fire and emergency services **Structural Safety** • Structural design / fixing of cladding / facade at height • Secondary fixings specification and design • Disproportionate collapse **Protection from Falling or Collision** • Stair safety • Guarding / balustrades • Balconies **Public Health** • Air quality / ventilation • Above ground drainage • Water storage • Combustion appliances **Building Services** • Gas appliances and services • Electrical safety • Mechanical services • Fire integrities **Building Fabric** • Interstitial condensation / corrosion • Maintenance • Glazing and glazing systems

Examples of evidence	HRB specific criteria

• Conducting technical research and development across all aspects of development / design / application / integration of HRB fire safety, structural and building life safety systems
• Developing systems and processes for the design / application / integration of HRB fire safety, structural and building life safety systems and considering new or evolving technology
• Conducting complex and / or non-standard technical analyses on the development / design / application / integration of HRB fire safety, structural and building life safety systems.
• Developing solutions involving complex or multidisciplinary technology in relation to HRB fire safety, structural and building life safety systems
• Developing and evaluating continuous improvement systems on HRB fire safety, structural and building life safety systems, including any related life critical sub-systems
	Applicants shall demonstrate underpinning knowledge and understanding of:
	• The process by which different aspects of building safety should be successfully integrated for all life safety components during the life cycle of the HRB
	• The critical safety engineering principles relevant to structure, public health and building services
	• Fire, building services, life safety and structural engineering principles relevant to maintaining the integrity of the building fire strategy
	• The benefits of multi-disciplinary and multi-organisational collaboration in achieving a well performing and safe HRB
	
	Wherever relevant, applicants shall demonstrate the ability to:
	• Evaluate and integrate new technology safely into the engineering design of HRBs, considering:
	  ▸ Building life cycle
	  ▸ Buildability
	  ▸ Maintenance and refurbishment
	• Map out and execute the interfaces of all life safety components throughout the life cycle of the HRB
	• Recognise when advice from others including specialist professionals is needed, obtain this, and ensure it is integrated effectively into the engineering design of the HRB
	• Co-ordinate the engineering, specification and assessment of building fabric including where necessary commissioning, collaborating with, and integrating the work of other specialist building professionals to achieve safe performance throughout the building life cycle
	• Integrate new engineering approaches, theories or techniques into engineering practice while ensuring safe outcomes
	• Undertake statistically sound appraisal of data to underpin safe engineering outcomes
	• Understand original design intent and principles and maintain these when making minor or major modifications to an HRB

Competence		Scope
BB. Design, development and solving engineering problems **Engineering Technicians shall contribute to the design, development, manufacture, construction, commissioning, decommissioning, operation or maintenance of products, equipment, processes, systems or services in relation to HRBs.** This competence is about the ability to apply engineering knowledge effectively and efficiently to the individual tasks which need to be undertaken in the applicant's role.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Identify problems and apply appropriate theoretical and practical methods to design, construct, commission, operate, maintain, decommission and recycle building engineering processes, systems, services and product, in order to comply with relevant legislation, regulations, statutory guidance and standards of performance applicable to HRBs.	Construction legislation relevant to higher-risk buildings (HRBs) including: **Construction Legislation** • The Building Act 1984 • The Building Safety Act 2022 and Regulations • Building regulations • Approved documents • Approved Document 7: Materials and Workmanship • Building regulations (procedural) • Local acts / enactments • Government communications / circular letters • Sustainable and Secure Buildings Act 2004 • Regulatory Reform (Fire Safety) Order 2005 • Construction (Design and Management) Regulations 2007 • Management of Health and Safety at Work Regulations • Health and Safety at Work Act 1974 • Gas Safety (Installation and Use) Regulations 1998 • Relevant case law • Contract law **Related Guidance** Authoritative guidance as typically published by institutions, industry bodies and individuals including Collaborative Reporting for Safer Structures UK (CROSS-UK). • Royal Institute of British Architects (RIBA) plan of work • Building Services Research and Information Association (BSRIA) plan of work • Civil, criminal, and case law • Contract law • Law of agency • Employment law • The Housing Acts 1985,1988, 1996, 2004 • Housing Health and Safety Rating System • Equalities Act 2010 • Town and Country Planning Act 1990 • Housing and Regeneration Act 2008 • Licensing legislation

Examples of evidence	HRB specific criteria
• Identifying projects (for technical improvements to products, processes, or systems that are needed to undertake an engineering task within the development / design / application / integration) in regard to HRB fire safety, structural and building life safety systems • Preparing specifications on the development / design / application / integration of HRB fire safety, structural and building life safety system, and taking account of functional and other requirements • Establishing user requirements for improvements in HRB fire safety, structural and building life safety systems • Reviewing specifications and tenders to identify technical issues and potential improvements, with specific focus on elements concerning the development / design / application / integration of HRB fire safety, structural and building life safety systems. These reviews must also consider, contribute, and innovate towards the continuation of the golden thread of information • Conducting technical risk analysis on HRB fire safety, structural and building life safety systems, and identifying mitigation measures • Considering and implementing new and emerging technologies within the development / design / application / integration of HRB fire safety, structural and building life safety systems	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • The respective responsibilities of roles specified in the regulations and the relationship of their own role to that of the duty holder and other professions, trades or engineering disciplines Wherever relevant, applicants shall demonstrate the ability to: • Meet or exceed requirements set out in relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • Recognise how the statutory or legal requirements of other roles relate to the role of the engineer where these could impact on building safety • Advise others on what needs to be done to comply with relevant statutory requirements

Competence		Scope
BB. Design, development and solving engineering problems	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2. Identify, organise and apply relevant standards, testing, assessment, site inspection and maintenance procedures for building materials, products, components, assemblies and systems effectively throughout the building life cycle of HRBs.	• British and international product standards • Testing standards, procedures, and interpretation of results • Good practice specification • Product characteristics and performance • System, component or assembly testing and performance • Prototyping / sample panel and testing • Maintenance requirements • Maintenance testing and commissioning of building systems and services

Examples of evidence	HRB specific criteria
• Ensuring that the application of the design within HRB fire safety, structural and building life safety systems, results in the appropriate practical outcome • Implementing design solutions and taking account of critical constraints. This includes due concern for safety, sustainability, and disposal or decommissioning, within HRB fire safety, structural and building life safety systems • Identifying and implementing lessons learned • Evaluating existing designs or processes within the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then identifying faults or potential improvements including risk and life cycle considerations • Actively learning from feedback to improve future design solutions and establish best practice within the development / design / application / integration of HRB fire safety, structural and building life safety systems	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant standards, testing, assessment and maintenance procedures for building materials, products, components, assemblies and systems • Methods and practice of building maintenance Wherever relevant, applicants shall demonstrate the ability to: • Apply this underpinning knowledge and understanding effectively as part of the engineering process to ensure safety throughout the building life cycle of HRBs • Apply this underpinning knowledge and understanding, ensuring the building performs safely as a system • Conduct testing and verify quality and suitability of delivered / procured products and materials

Competence		Scope	
CC. Responsibility, management and leadership **Engineering Technicians shall accept and exercise personal responsibility.** This competence is about the ability to plan and manage the applicant's own work effectively and efficiently. It is also about the ability to consider and identify improvements to maintain quality in their HRB work.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1a. Work reliably and effectively without close supervision, to contribute to or fulfil roles, responsibilities and duties relating to HRBs.	• Duties and responsibilities of key roles / duty holders including client, contractor, building owner / manager, building safety manager, occupant / resident • Joint Competent Authority (JCA) / Regulator • Overarching competence body • Local authority • Relevant statutory regulators • Profession / trade regulators • Fire and rescue services • Through-life management and maintenance **Understanding of** • Golden thread of building information • Safety management systems • Safety cases • Health and safety files • Fire and Emergency Files • Design / construction, as-built / as-maintained information • Building safety strategies • Building maintenance information and scheduling	• Testing and commissioning information • Life cycle and replacement data • Building installer / constructor / maintainer competence requirements • Regulation 38 of the Building Control requirements • HRB records and certificates • As-built information • Building Information Modelling (BIM)

Examples of evidence	HRB specific criteria
• Completing challenging tasks successfully within your area of work • Identifying issues which fall outside of your current knowledge and seeking advice • Identifying standards and codes of practice relevant to a new task	Wherever relevant, applicants shall demonstrate underpinning knowledge and understanding of: • How to explain and comply with the duties of an engineer in relation to HRBs • How to explain the roles and responsibilities of other key duty holders and their interactions with the role of an engineer working on HRBs • How to work effectively with other key duty holders • How to act as, or engage effectively with, the Principal Designer or Principal Contractor of an HRB • Integration of management and maintenance criteria in regards to engineering activities to ensure safe outcomes throughout the building life cycle of HRBs • Challenging others where duties are not being effectively met Wherever relevant, applicants shall demonstrate the ability to: • Create, maintain or use all documents (and their content) to ensure HRB safety • Competence and needs of building safety managers and owners

Competence		Scope	Examples of evidence	HRB specific criteria
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1b. Use appropriate information management principles to manage, distribute and maintain information which is critical to ensuring that HRBs are built, operated and maintained to be safe throughout the building life cycle.	• As 1a	• As 1a	Applicants shall demonstrate underpinning knowledge and understanding of: • How to develop, manage, distribute and maintain information about the engineering of HRBs which is critical to ensuring that they are engineered to be safe, built to be safe, operated safely and maintained to be safe throughout the building life cycle • How to develop and communicate clearly expressed engineering strategies to meet building safety requirements • How to comply with requirements to prepare and submit relevant documentation as part of the safety management system, safety case, Fire and Emergency File or Health and Safety plan • How to utilise suitable information management tools to ensure accurate design and as-built information are developed and issued • How to manage changes to engineering information in order to ensure an accurate set of as-built information is available at key gateway stages • How to identify what information is needed from other parties and understand and apply that information where relevant to the role of the engineer, including operation and management documents required to operate the building safely
	2. Challenge unacceptable behaviour or practice or where duties are not being effectively met. Raise, report, escalate or flag risks to safety with managers and duty holders.	• Whistleblowing policies • Public Interest Disclosure Act 1998 • Public duty to report • Public liabilities • Company or organisational reporting and escalation policies and procedures	• Fully understanding drawings, permits to work, instructions or other similar documents after appropriate checking, and identifying issues • Inspecting work carried out by others • Checking the status of equipment, the work environment and facilities and taking appropriate actions before commencing work	Wherever relevant, applicants shall demonstrate the ability to: • Explain and comply with professional and ethical duties to raise concerns relating to public safety • Effectively raise safety concerns with colleagues and where necessary escalate these concerns through management chains • Identify if and when it is necessary to utilise whistleblowing procedures under the Public Interest Disclosure Act and how to do so • Explain and act on any other duties to raise concerns about life safety within an HRB

Competence		Scope
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3a. Effectively supervise or work within competent project teams which include duty holders, to ensure safe outcomes. Maintain appropriate project and control documentation.	• Project management and control • Sequencing of work • Assembling and appointing teams • Effective management practice / procedures for engineering of HRBs

Examples of evidence	HRB specific criteria
• Ensuring that the scope of a task is clear before accepting and/or allocating it to others • Querying any aspect of a task which is not clear and/or providing an explanation if a query is raised by others • Learning from your own experience and/ or providing constructive feedback when supervising or working with others	Applicants shall demonstrate underpinning knowledge and understanding of: • What competence frameworks and qualifications exist • Change management and change control techniques • Quality management techniques Wherever relevant, applicants shall demonstrate the ability to: • Integrate requirements for building safety into project planning and management activities • Assess the additional competence required within engineering or project teams and ensure suitable expertise is procured • Apply quality management, control or audit procedures in order verify that building safety measures have been carried out • Explain and comply with relevant procedural requirements, submissions and processes • Create and maintain appropriate project and control documentation • Establish quality criteria for engineering work and objectively evaluate outcomes against those criteria • Complete competence self-assessment records and learn from that process; show examples of quality assurance or management procedures to ensure competence of self / staff / specialists or other organisations • Use competence scoring or assessment techniques; involving competence assessment of individuals

Competence		Scope
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3b. Recognise the limits of competence of self and others. Identify when to seek advice from more competent people and use appropriate evidence and experience in the management of soft hazards	**People** • Competence and resource **Process** • Understanding, validation and communication of assumptions • Flow-through of information • Specialist, Analysis and Software tool validation and verification • Conceptual design review, checking and peer review • Responsibility for the design when split between more than one designer • Single point of responsibility • Change control • Site inspection / monitoring **Product** • Checks on product origin, certification and compliance

Examples of evidence	HRB specific criteria
• As 3a	Wherever relevant, applicants shall demonstrate the ability to: • Identify limits of competence of individuals or organisations involved in the engineering, construction or maintenance of HRBs • Identify suitable mitigating actions to manage risk • Explain what competence is and how this relates to building safety • Identify when and how to assess, or request evidence of competence from, other project team members • Explain and comply with duties to ensure competence relating to the engineering of HRBs • Identify the need to seek advice from others with specialist competences and how to procure that advice • Effectively raise concerns about the competence of individuals or organisations if this is of concern • Mitigate any residual risk relating to competence

Competence		Scope
DD. Communication and interpersonal skills **Engineering Technicians shall use effective communication and interpersonal skills.** This is the ability to work with all stakeholders appropriately and constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Communicate effectively with occupants / residents, the public and with others, orally and in writing.	• Requirements / obligations to communicate, consult with and respond to occupants / residents or people otherwise affected by buildings / building work • Communication through media relevant to role (orally, written text or drawn) • Communication of technical complex information to non-technical audiences • Effective communication within project and client teams
	2. Work effectively with colleagues, clients, suppliers or the public.	• Effective working applicable across the building life cycle of HRBs
	3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.	• Personal and social skills applicable across the building life cycle of HRBs

Examples of evidence	HRB specific criteria
• Contributing to meetings and discussions • Preparing communications, documents and reports on technical matters • Exchanging information and providing advice to technical and non-technical colleagues	Wherever relevant, applicants shall demonstrate the ability to: • Explain and comply with duties to communicate with clients, occupants / residents and other people or organisations involved in, or affected by, projects on HRBs • Write reports, letters, email or give presentations in a manner which can be clearly understood by non-technical people • Clearly identify and effectively communicate responsibilities and issues relating to HRB safety within design, engineering or project teams • Explain complex technical issues to non-technical audiences • Promote and actively engage in collaborative working across disciplines • Understand challenges and requirements of other disciplines • Read and understand technical documents / drawings and convey details to others • Be inclusive, promote and welcome diversity of thought / ideas • Write clear guidance for end users
• Contributing constructively as part of a team • Successfully resolving issues in discussions with team members, suppliers, clients and/or others • Persuading others to accept suggestions or recommendations • Identifying, agreeing and working towards collective goals	Applicants shall demonstrate underpinning knowledge and understanding of: • Principles and value of competence • Competence assessment techniques • Roles and responsibilities for advising on and ensuring competence • Procurement and management of specialist competence • Managing residual risk
• Knowing and managing own emotions, strengths and weaknesses • Being confident and flexible in dealing with new and changing interpersonal situations • Creating, maintaining and enhancing productive working relationships, and resolving conflicts • Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion	

Competence		Scope	Examples of evidence	HRB specific criteria
EE. Personal and professional commitment **Engineering Technicians shall demonstrate commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment.** This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with all stakeholders. An Engineering Technician should set a standard and example to others with regard to professionalism.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Demonstrate understanding of ethical considerations relating to the occupants / residents of HRBs and apply these to self and others in practice.	• Obligation to consult / listen to the occupant / resident's voice • Duty of care to occupants / residents • Consideration of diversity and inclusion including differential needs eg emergency egress • Adhering to codes of conduct	• Demonstrating compliance with your Licensee's Code of Professional Conduct • Working within all relevant legislative and regulatory frameworks, including social and employment legislation	Applicants shall demonstrate underpinning knowledge and understanding of: • Specific ethical principles in engineering practice • How to act with honesty, accuracy, respect, integrity, responsibility, and within the limits of their capability in order to build trust • Respect concerns and issues raised by occupants / residents and respond appropriately • Apply duty of care to occupants / residents and people living or working in and around buildings • Take account of the different needs of older and disabled people in accessing, and ability to escape from, HRBs • Act in accordance with professional or company Code of Conduct • Act in accordance with the Royal Academy of Engineering and the Engineering Council's joint Statement of Ethical Principles, available on the Engineering Council website: https://www.engc.org.uk/ethics
	2a. Demonstrate understanding of ethical considerations relating to the occupants / residents of HRBs and apply these to self and others in practice.	• Legislation and guidance that applies to HRBs (referencing examples in the scope of BB1) • Demonstration of the principles underpinning the Setting the Bar report to improve competence and drive culture change	• Providing evidence of applying current safety requirements, such as risk assessment and other examples of good practice you adopt in your work • A sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • The respective responsibilities of roles specified in regulations and the relationship of their own role to that of the duty holder and other professions, trades or engineering disciplines Wherever relevant, applicants shall demonstrate the ability to: • Meet or exceed requirements set out in relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • Recognise how the statutory or legal requirements of other roles relate to the role of the engineer where these could impact on building safety • Advise others on what needs to be done to comply with relevant statutory requirements

Competence		Scope	Examples of evidence	HRB specific criteria
EE. Personal and professional commitment	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2b. Understand the risks relevant to HRBs and contribute to risk management frameworks and safe systems of work.	• Definition of HRB • Critical risk factors in HRBs • Safety case development • Safety case review • Fire risk strategy • Construction (Design and Management) Regulations 2015 • Health and safety file • Harmful materials • Control of Substances Hazardous to Health (COSHH) regulations • Building management and maintenance for building and occupant / resident safety	• As 2a	Applicants shall demonstrate underpinning knowledge and understanding of: • How and why HRBs are defined and the relevance to engineering activities • The importance and purposes of safety management systems • Hazard identification and risk assessment methodologies • The specific engineering risks relevant to each type of HRB, including typical critical modes of failure and consideration of maintenance and replacement cycles • How these risks should be managed through the design process, including through commissioning or undertaking of work by other specialist people Wherever relevant, applicants shall demonstrate the ability to: • Contribute to, and work with, safety management systems for HRBs • Lead or contribute to the development, modification and management of the safety case • Lead, carry out or contribute to hazard identification and risk assessment • Execute their duties and responsibilities in accordance with the safety case
	2c. Understand statutory processes and procedures applicable to HRBs.	• Gateway process and stages for HRBs • Role of the Joint Competent Authority (JCA) • Listening to the occupant / resident's voice and associated engagement	• As 2a	Applicants shall demonstrate underpinning knowledge and understanding of: • Statutory processes and procedures • Occupant / resident engagement channels Wherever relevant, applicants shall demonstrate the ability to: • Advise clients, project team members and others on duties and procedural requirements relating to the engineering of an HRB • Comply with relevant engineering development activities in order to demonstrate compliance with building safety requirements to the JCA at differing gateway stages • Engage positively with the JCA and its constituent bodies • Engage and communicate with occupants / residents and the public

Competence		Scope	Examples of evidence	HRB specific criteria
EE. Personal and professional commitment	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3. Understand the principles of sustainable development and apply them in their work.	• Sustainable development considerations applicable across the building life cycle of HRBs	• Recognising how sustainability principles, as described in the Guidance on Sustainability, can be applied in your day-to-day work. This is available on the Engineering Council website: www.engc.org.uk/sustainability • Identifying actions that you can and have taken to improve sustainability	
	4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in HRBs.	• CPD applicable across the building life cycle of all HRBs	• Undertaking reviews of your own development needs • Planning how to meet personal and organisational objectives • Carrying out and recording planned and unplanned CPD activities • Maintaining evidence of competence development • Evaluating CPD outcomes against any plans made • Assisting others with their own CPD	Wherever relevant, applicants shall demonstrate the ability to: • Assess the limits of their own competence in relation to the work being undertaken • Identify their own personal development needs and put in place a suitable personal development plan including CPD relevant to HRBs • Engage with a peer review / assessment and feedback process to obtain an external perspective on competence and areas for improvement • Identify the limit of competence of colleagues and take action to assess and manage the development of team members and support improvement where necessary
	5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	• Ethical considerations applicable across the building life cycle of HRBs	• Understanding the ethical issues that you may encounter in your role • Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles available on the Engineering Council website: www.engc.org.uk/ethics • Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company	

The Incorporated Engineer (IEng) Standard

Incorporated Engineers maintain and manage applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation.

Incorporated Engineers shall demonstrate:

- The theoretical knowledge to solve problems in established technologies using well proven analytical techniques
- Successful application of the knowledge to deliver engineering tasks or services using established technologies and methods
- Contribution to the financial and planning aspects of projects or tasks and contribution to leading and developing other professional staff
- Effective interpersonal skills in communicating technical matters
- The ability to specify and operate to safe systems of work and to demonstrate appropriate consideration of the principles of sustainability
- Commitment to professional engineering values

An Incorporated Engineer will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the nature and requirements of their role. They will demonstrate a level of competence and commitment in each area (AA1–EE5) at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in all areas as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they must demonstrate an appropriate balance of competences to perform their role effectively at Incorporated Engineer level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Incorporated Engineer registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.

† It is not expected that applicants will necessarily meet all the listed criteria, but they will be expected to demonstrate competence against a substantial proportion of the scope, using a variety of sources and types of evidence, wherever this is relevant to their role. As part of their continuing professional development (CPD), successful applicants have an obligation to remain alert to any changes in their role or responsibilities and ensure the appropriate underpinning knowledge and understanding are updated accordingly. This is applicable throughout the document where “wherever relevant, applicants shall demonstrate the ability to:” is mentioned.

Applicants shall provide evidence from the HRB-specific criteria when developing their portfolio across the AA1-EE5 competences. Licensees’ Professional Review assessors may request further evidence across any or all of the criteria.

Competence		Scope		Examples of evidence	HRB specific criteria
AA. Knowledge and understanding **Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.** This competence is about having knowledge of the technologies, standards and practices relevant to HRBs and the applicant's area of practice and having evidence of maintaining and applying this knowledge.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Maintain and extend a sound theoretical approach to the application of relevant fire, structural and building life safety systems, principles, and practices throughout the building life cycle of HRBs*.	**Fire Science** • Principles of heat transfer • Properties of materials • Principles of fire chemistry • Principles of fire dynamics **Human Behaviour and Evacuation** • Human behaviour and physiological response to fire • Life safety design concepts and practice **Fire Safety Design and Specification** • Fire protection systems • Passive fire protection systems • Active fire protection systems • Fire detection and alarm systems • Fire suppression systems **Fire Prevention** • Fire performance of materials • Compartmentation and spread of flame • Principles of structural fire protection design • Commissioning and interrogation of specialist analysis by others	• Access and facilities for fire and emergency services **Structural Safety** • Structural design / fixing of cladding / facade at height • Secondary fixings specification and design • Disproportionate collapse **Protection from Falling or Collision** • Stair safety • Guarding / balustrades • Balconies **Public Health** • Air quality / ventilation • Above ground drainage • Water storage • Combustion appliances **Building Services** • Gas appliances and services • Electrical safety • Mechanical services • Fire integrities **Building Fabric** • Interstitial condensation / corrosion • Maintenance • Glazing and glazing systems	• Formal training related to your role in the application of relevant fire, structural and building life safety systems, as well as the principles and practices that are important throughout the building life cycle of HRBs • Learning and developing the engineering knowledge needed to work in an industry area or discipline where the application of relevant fire, structural and building life safety systems, principles and practices are required • Understanding the current and emerging technology and technical best practice, principles and practices throughout the building life cycle of HRBs in the relevant fire, structural and building life safety systems • Developing a broader and deeper knowledge base through research and experimentation in the relevant fire, structural and building life safety systems, principles and practices that are important throughout the building life cycle of HRBs • Learning and developing new engineering theories and techniques on the relevant fire, structural and building life safety systems, principles and practices that are important throughout the building life cycle of HRBs • Recognising, consulting with, updating and applying the golden thread of information on any development / design / application / integration for HRB fire safety, structural and building life safety systems. This will include any related life critical sub-systems	Applicants shall demonstrate underpinning knowledge and understanding of: • The building as a system and how the technical interfaces contribute to the functionality and safety of the building and its occupants / residents • The interrelationship of design and specification with fire performance • Key features and principles of passive and active fire protection (including suppression systems) Wherever relevant, applicants shall demonstrate the ability† to: • Apply relevant fire safety principles and practices in the engineering of HRBs • Apply fundamental knowledge of fire science, (including key aspects of the fire performance of materials) in the engineering and specification of HRBs • Integrate key principles of human behaviour and fire escape design into the engineering and arrangement of escape provision in HRBs • Integrate and coordinate relevant passive and active fire protection systems into the engineering components of HRBs • Integrate and coordinate compartmentation and structural fire protection into the engineering of HRBs with particular reference to measures which prevent the spread of flame and smoke • Integrate and coordinate fire-fighting access requirements and provision of fire-fighting facilities into the engineering design and layout of HRBs • Integrate new engineering approaches, theories or techniques into engineering practice while ensuring safe outcomes * See Glossary: 'building life cycle' † See p30

Competence		Scope	
AA. Knowledge and understanding	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2. Use a sound evidence-based approach to problem solving to apply relevant principles and technical standards for fire, structural and building life safety systems throughout the building life cycle of HRBs, and support continuous improvement in building safety	**Fire Science** • Principles of heat transfer • Properties of materials • Principles of fire chemistry • Principles of fire dynamics **Human Behaviour and Evacuation** • Human behaviour and physiological response to fire • Life safety design concepts and practice **Fire Safety Design and Specification** • Fire protection systems • Passive fire protection systems • Active fire protection systems • Fire detection and alarm systems • Fire suppression systems **Fire Prevention** • Fire performance of materials • Compartmentation and spread of flame • Principles of structural fire protection design • Commissioning and interrogation of specialist analysis by others • Access and facilities for fire and emergency services	• Collaboration and system integration **Structural Safety** • Structural design / fixing of cladding / facade at height • Secondary fixings specification and design • Disproportionate collapse **Protection from Falling or Collision** • Stair safety • Guarding / balustrades • Balconies **Public Health** • Air quality / ventilation • Above ground drainage • Water storage • Combustion appliances **Building Services** • Gas appliances and services • Electrical safety • Mechanical services • Fire integrities **Building Fabric** • Interstitial condensation / corrosion • Maintenance • Glazing and glazing systems

Examples of evidence	HRB specific criteria

• Conducting technical research and development across all aspects of development / design / application / integration of HRB fire safety, structural and building life safety systems
• Developing systems and processes for the design / application / integration of HRB fire safety, structural and building life safety systems and considering new or evolving technology
• Conducting complex and / or non-standard technical analyses on the development / design / application / integration of HRB fire safety, structural and building life safety systems.
• Developing solutions involving complex or multidisciplinary technology in relation to HRB fire safety, structural and building life safety systems
• Developing and evaluating continuous improvement systems on HRB fire safety, structural and building life safety systems, including any related life critical sub-systems
	Applicants shall demonstrate underpinning knowledge and understanding of:
	• The process by which different aspects of building safety should be successfully integrated for all life safety components during the life cycle of the HRB
	• The critical safety engineering principles relevant to structure, public health and building services
	• Fire, building services, life safety and structural engineering principles relevant to maintaining the integrity of the building fire strategy
	• The benefits of multi-disciplinary and multi-organisational collaboration in achieving a well performing and safe HRB
	
	Wherever relevant, applicants shall demonstrate the ability to:
	• Evaluate and integrate new technology safely into the engineering design of HRBs taking into account:.
	  ▸ Building life cycle
	  ▸ Buildability
	  ▸ Maintenance and refurbishment
	• Map out and execute the interfaces of all life safety components throughout the life cycle of the HRB
	• Recognise when advice from others including specialist professionals is needed, obtain this and ensure it is integrated effectively into the engineering design of the HRB
	• Co-ordinate the engineering, specification and assessment of building fabric including where necessary commissioning, collaborating with, and integrating the work of other specialist building professionals to achieve safe performance throughout the building life cycle
	• Integrate new engineering approaches, theories or techniques into engineering practice while ensuring safe outcomes.
	• Undertake statistically sound appraisal of data to underpin safe engineering outcomes
	• Understand original design intent and principles and maintain these when making minor or major modifications to an HRB

Competence		Scope	
BB. Design, development and solving engineering problems **Incorporated Engineers shall apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products.** This competence is about the ability to identify appropriate methods and approaches to use to undertake a task within their area of practice and to make a significant contribution to the development of a design or process or the maintenance of operations in relation to HRBs.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1.Identify, review and select appropriate techniques, procedures, and methods to design, construct, commission, operate, maintain, decommission and recycle building engineering processes, systems, services and products, in order to comply with relevant legislation, regulations, statutory guidance and standards of performance applicable to HRBs.	Construction legislation relevant to higher-risk buildings (HRBs) including: **Construction Legislation** • The Building Act 1984 • The Building Safety Act 2022 and Regulations • Building regulations • Approved documents • Approved Document 7: Materials and Workmanship • Building regulations (procedural) • Local acts / enactments • Government communications / circular letters • Sustainable and Secure Buildings Act 2004 • Regulatory Reform (Fire Safety) Order 2005 • Construction (Design and Management) Regulations 2007 • Management of Health and Safety at Work Regulations • Health and Safety at Work Act 1974 • Gas Safety (Installation and Use) Regulations 1998 • Relevant case law • Contract law **Related Guidance** Authoritative guidance as typically published by institutions, industry bodies and individuals including Collaborative Reporting for Safer Structures UK (CROSS-UK). • Royal Institute of British Architects (RIBA) plan of work • Building Services Research and Information Association (BSRIA) plan of work • Civil, criminal, and case law • Contract law • Law of agency • Employment law • The Housing Acts 1985,1988, 1996, 2004 • Housing Health and Safety Rating System • Equalities Act 2010 • Town and Country Planning Act 1990 • Housing and Regeneration Act 2008 • Licensing legislation	

Examples of evidence	HRB specific criteria
• Identifying projects (or technical improvements to products, processes, or systems that are needed to undertake an engineering task within the development / design / application / integration) in regard to HRB fire safety, structural and building life safety systems • Preparing specifications on the development / design / application / integration of HRB fire safety, structural and building life safety systems and taking account of functional and other requirements • Establishing user requirements for improvements in HRB fire safety, structural and building life safety systems • Reviewing specifications and tenders to identify technical issues and potential improvements, with specific focus on elements concerning the development / design / application / integration of HRB fire safety, structural and building life safety systems. These reviews must also consider, contribute, and innovate towards the continuation of the golden thread of information • Conducting technical risk analysis on HRB fire safety, structural and building life safety systems. and identifying mitigation measures • Considering and implementing new and emerging technologies within the development / design / application / integration of HRB fire safety, structural and building life safety systems	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • The respective responsibilities of roles specified in the regulations and the relationship of their own role to that of the duty holder and other professions, trades or engineering disciplines Wherever relevant, applicants shall demonstrate the ability to: • Identify, review and select techniques, procedures and methods to undertake engineering tasks • Contribute to the design and development of engineering solutions within an HRB • Implement design solutions and contribute to their evaluation • Establish the static and dynamic life safety systems and their design interfaces • Review the test and commissioning plan • Ensure a co-ordinated life safety solution is achieved

Competence		Scope
BB. Design, development and solving engineering problems	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2. Contribute to the design and development of engineering solutions through application of relevant standards, testing, site inspection, assessment and maintenance procedures for building materials, products, components, assemblies and systems effectively throughout the building life cycle of HRBs.	• British and international product standards • Testing standards, procedures, and interpretation of results • Good practice specification • Product characteristics and performance • System, component or assembly testing and performance • Prototyping / sample panel and testing • Maintenance requirements • Maintenance testing and commissioning of building systems and services

Examples of evidence	HRB specific criteria
• Identifying and agreeing appropriate research methodologies on the development / design / application / integration of HRB fire safety, structural and building life safety systems • Investigating a technical issue within the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then identifying potential solutions, and determining the factors needed to compare them • Identifying and conducting physical tests or trials on HRB fire safety, structural and building life safety systems • Conducting technical simulations or analysis with regards to the development / design / application / integration of HRB fire safety, structural and building life safety systems • Preparing, presenting, and agreeing design recommendations, with appropriate analysis of risk on the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then taking account of quality, safety, reliability, accessibility, appearance, fitness for purpose, cost, security (including cyber security), intellectual property constraints and opportunities, as well as environmental impact	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant standards, testing, assessment and maintenance procedures for building materials, products, components, assemblies and systems • Methods and practice of building maintenance Wherever relevant, applicants shall demonstrate the ability to: • Apply this underpinning knowledge and understanding effectively as part of the engineering process to ensure safety throughout the building life cycle of HRBs • Apply this underpinning knowledge and understanding to ensure the building performs safely as a system • Conduct testing and verify quality and suitability of delivered / procured products and materials

Competence		Scope
BB. Design, development and solving engineering problems	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3. Implement design solutions for equipment or processes and contribute to their evaluation.	• Design solutions applicable across the life cycle of HRBs

Examples of evidence	HRB specific criteria
• Ensuring that the application of the design within HRB fire safety, structural and building life safety systems, results in the appropriate practical outcome • Implementing design solutions and taking account of critical constraints. This includes due concern for safety, sustainability, and disposal or decommissioning, within HRB fire safety, structural and building life safety systems • Identifying and implementing lessons learned • Evaluating existing designs or processes within the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then identifying faults or potential improvements including risk and life cycle considerations • Actively learning from feedback to improve future design solutions and establish best practice within the development / design / application / integration of HRB fire safety, structural and building life safety systems	Applicants shall demonstrate underpinning knowledge and understanding of: • Identifying the resources required for implementation • Implementing design solutions and taking account of critical constraints including due concern for safety and sustainability • Identifying problems during implementation and taking corrective action • Contributing to recommendations for improvement and actively learning from feedback

Competence		Scope	
CC. Responsibility, management and leadership **Incorporated Engineers shall provide technical and commercial management.** This competence is about the ability to plan the applicant's own work and manage or specify the work of others effectively, efficiently and in a way which provides leadership at an appropriate level, whether technical or commercial. Leadership is not necessarily about having a formal line management role. In matrix management and other types of organisational structure, where Incorporated Engineers are working within complex and varied working relationships, they will provide leadership to achieve objectives. This competence is also about the ability to consider and identify improvements to quality in relation to HRBs.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1a. Plan the work and resources needed to enable effective implementation of significant engineering tasks or projects in association with, or to fulfil, key roles, responsibilities and duties relating to HRBs.	• Duties and responsibilities of key roles / duty holders including client, contractor, building owner / manager, building safety manager, occupant / resident • Joint Competent Authority (JCA) / Regulator • Overarching competence body • Local authority • Relevant statutory regulators • Profession / trade regulators • Fire and rescue services • Through-life management and maintenance **Understanding of** • Golden thread of building information • Safety management systems • Safety cases • Health and safety files • Fire and Emergency Files • Design / construction, as-built / as-maintained information • Building safety strategies • Building maintenance information and scheduling	• Testing and commissioning information • Life cycle and replacement data • Building installer / constructor / maintainer competence requirements • Regulation 38 of the Building Control requirements • HRB records and certificates • As-built information • Building Information Modelling (BIM)

Examples of evidence	HRB specific criteria
• Identifying factors affecting the project implementation • Carrying out holistic and systematic risk identification, assessment and management • Preparing and agreeing implementation plans and method statements • Securing the necessary resources and confirming roles in a project team • Applying the necessary contractual arrangements with other stakeholders (clients, subcontractors, suppliers, etc)	Wherever relevant, applicants shall demonstrate the ability to: • Explain and comply with the duties of an engineer in relation to HRBs • Explain the roles and responsibilities of other key duty holders and their interactions with the role of an engineer on HRBs • Work effectively with other key duty holders • Act as, or engage effectively with, the Principal Designer or Principal Contractor of an HRB • Integrate understanding of through-life management and maintenance criteria in engineering activities to ensure safe outcomes • Challenge others where duties are not being effectively met Applicants shall demonstrate underpinning knowledge and understanding of: • All documents (and their content) which the engineer must create, maintain or use to ensure HRB safety • Competence and needs of building safety managers and owners

Competence		Scope	Examples of evidence	HRB specific criteria
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1b. Contribute to continuous improvement and use appropriate information management principles to manage, distribute and maintain information which is critical to ensuring that HRBs are built, operated and maintained to be safe throughout the building life cycle.	• As 1a	• As 1a	Wherever relevant, applicants shall demonstrate the ability to: • Develop, manage, distribute and maintain information about the engineering of HRBs which is critical to ensuring that they are engineered to be safe, built to be safe, operated safely and maintained to be safe throughout the building life cycle • Develop and communicate clearly expressed engineering strategies to meet building safety requirements • Comply with requirements to prepare and submit relevant documentation as part of the safety management system, safety case, Fire and Emergency File or Health and Safety plan • Utilise suitable information management tools to ensure accurate design and as-built information are developed and issued • Manage changes to engineering information in order to ensure an accurate set of as-built information is available at key gateway stages • Identify what information is needed from other parties and understand and apply that information where relevant to the role of the engineer, including operation and management documents required to operate the building safely
	2. Manage and use procedures to challenge unacceptable behaviour or practice where duties are not being effectively met. Raise, report, escalate or flag risks to safety with managers, duty holders and regulators.	• Whistleblowing policies • Public Interest Disclosure Act 1998 • Public duty to report • Public liabilities • Company or organisational reporting and escalation policies and procedures	• Operating appropriate management systems • Working to the agreed quality standards, programme and budget, within legal and statutory requirements • Managing work teams, coordinating project activities • Identifying variations from quality standards, programme and budgets, and taking corrective action • Evaluating performance and recommending improvements	Wherever relevant, applicants shall demonstrate the ability to: • Explain and comply with professional and ethical duties to raise concerns relating to public safety • Effectively raise safety concerns with colleagues and where necessary escalate these concerns through management chains • Identify if and when it is necessary to utilise whistleblowing procedures under the Public Information Disclosure Act 1998 and how to do so • Explain and act on any other duties to raise concerns about life safety within an HRB

Competence		Scope
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3a. Manage competent teams which include duty holders, or the input of others into own work and assist others to meet changing requirements for technical and procedural compliance for safe outcomes.	• Project management and control • Sequencing of work • Assembling and appointing teams • Effective management practice / procedures for engineering of HRBs

Examples of evidence	HRB specific criteria
• Agreeing objectives and work plans with teams and individuals • Reinforcing team commitment to professional standards • Leading and supporting team and individual development • Assessing team and individual performance, and providing feedback • Seeking input from other teams or specialists where needed and managing the relationship	Applicants shall demonstrate underpinning knowledge and understanding of: • What competence frameworks and qualifications exist • Change management and change control techniques • Quality management techniques Wherever relevant, applicants shall demonstrate the ability to: • Integrate requirements for building safety into project planning and management activities • Assess examples of evidence required within engineering or project teams and ensure suitable expertise is procured • Apply quality management, control or audit procedures in order verify that building safety measures have been carried out • Explain and comply with relevant procedural requirements, submissions and processes • Create and maintain appropriate project and control documentation • Establish quality criteria for engineering work and objectively evaluate outcomes against those criteria • Complete competence self-assessment records and learn from that process; show examples of quality assurance or management procedures • Ensure competence of self / staff / specialists or other organisations; • Use competence scoring or assessment techniques; involving competence assessment of individuals

Competence		Scope	Examples of evidence	HRB specific criteria
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3b. Identify and manage the limits of competence of self and others and undertake appropriate mitigating actions to manage risk, including how and when to procure specialist advice. Use appropriate evidence and experience in the management of soft hazards.	**People** • Competence and resource **Process** • Understanding, validation and communication of assumptions • Flow-through of information • Specialist, Analysis and Software tool validation and verification • Conceptual design review, checking and peer review • Responsibility for the design when split between more than one designer • Single point of responsibility • Change control • Site inspection / monitoring **Product** • Checks on product origin, certification and compliance	• As 3a	Wherever relevant, applicants shall demonstrate the ability to: • Identify limits of competence of individuals or organisations involved in the engineering, construction or maintenance of HRBs • Identify suitable mitigating actions to manage risk • Explain what competence is and how this relates to building safety • Identify when and how to assess, or request evidence of competence from, other project team members • Explain and comply with duties to ensure competence relating to the engineering of HRBs • Identify the need to seek advice from others with specialist competences and how to procure that advice • Effectively raise concerns about the competence of individuals or organisations if this is of concern • Mitigate any residual risk relating to competence
	4. Take an active role in continuous quality improvement.	• Quality improvement applicable across the building life cycle of HRBs	• Ensuring the application of quality management principles by team members and colleagues • Managing operations to maintain quality standards eg ISO 9000, EQFM • Evaluating projects and making recommendations for improvement • Implementing and sharing the results of lessons learned	

Competence		Scope	Examples of evidence	HRB specific criteria
DD. Communication and interpersonal skills **Incorporated Engineers shall demonstrate effective communication and interpersonal skills.** This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Maintain effective and clear communication with occupants / residents, the public and with others, orally and in writing.	• Requirements / obligations to communicate, consult with and respond to occupants / residents or people otherwise affected by buildings / building work • Communication through media relevant to role (orally, written text or drawn) • Communication of technical complex information to non-technical audiences • Effective communication within project and client teams	• Contributing to, chairing and recording meetings and discussions • Preparing communications, documents and reports on technical matters • Exchanging information and providing advice to technical and non-technical colleagues • Engaging or interacting with professional networks	Wherever relevant, applicants shall demonstrate the ability to: • Explain and comply with duties to communicate with clients, occupants / residents and other people or organisations involved in or affected by projects on HRBs • Write reports, letters, emails or give presentations in a manner which can be clearly understood by non-technical people • Clearly identify and effectively communicate responsibilities and issues relating to HRB safety within design, engineering or project teams • Explain complex technical issues to non-technical audiences • Promote and actively engage in collaborative working across disciplines • Understand challenges and requirements of other disciplines • Read and understand technical documents / drawings and convey details to others • Be inclusive, promote and welcome diversity of thought / ideas • Write clear guidance for end users
	2. Clearly present and discuss proposals, justifications and conclusions.	• Effective communication applicable across the building life cycle of HRBs	• Preparing and delivering appropriate presentations • Managing debates with audiences • Feeding the results back to improve the proposals • Contributing to the awareness of risk	Applicants shall demonstrate underpinning knowledge and understanding of: • Principles and value of competence • Competence assessment techniques • Roles and responsibilities for advising on and ensuring competence • Procurement and management of specialist competence • Managing residual risk

Competence		Scope	Examples of evidence	HRB specific criteria
DD. Communication and interpersonal skills	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.	• Personal and social skills applicable across the building life cycle of HRBs	• Knowing and managing own emotions, strengths and weaknesses • Being confident and flexible in dealing with new and changing interpersonal situations • Identifying, agreeing and working towards collective goals • Creating, maintaining and enhancing productive working relationships, and resolving conflicts • Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion	

Competence		Scope	Examples of evidence	HRB specific criteria
EE. Personal and professional commitment **Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.** This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. An Incorporated Engineer should set a standard and example to others with regard to professionalism.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Demonstrate understanding of, and the ability to manage, ethical considerations relating to the occupants / residents of HRBs and apply these s in practice.	• Obligation to consult / listen to the occupant / resident's voice • Duty of care to occupants / residents • Consideration of diversity and inclusion including differential needs eg emergency egress • Adhering to codes of conduct	• Demonstrating compliance with your Licensee's Code of Professional Conduct • Identifying aspects of the Code particularly relevant to your role • Managing work within all relevant legislative and regulatory frameworks, including social and employment legislation	Wherever relevant, applicants shall demonstrate the ability to: • Apply understanding of specific ethical principles in engineering practice • Act with honesty, accuracy, respect, integrity, responsibility, and within the limits of their capability in order to build trust • Respect concerns and issues raised by occupants / residents and respond appropriately • Apply duty of care to occupants / residents and people living or working in and around HRB buildings • Take account of differential needs of older and disabled people in accessing, and ability to escape from, HRBs • Act in accordance with professional or company Code of Conduct • Act in accordance with the Royal Academy of Engineering and the Engineering Council's joint Statement of Ethical Principles, available on the Engineering Council website https://www.engc.org.uk/ethics
	2a. Review and comply with relevant legislation, regulations, statutory guidance and standards of performance applicable to HRBs.	• Legislation and guidance that applies to HRBs (referencing examples in the scope of BB1) • Demonstration of the principles underpinning the Setting the Bar report to improve competence and drive culture change	• Identifying and taking responsibility for your own obligations for health, safety and welfare issues • Managing systems that satisfy health, safety and welfare requirements • Developing and implementing appropriate hazard identification and risk management systems and culture • Managing, evaluating and improving these systems • Applying a sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • The respective responsibilities of roles specified in regulations and the relationship of their own role to that of the duty holder and other professions, trades or engineering disciplines Wherever relevant, applicants shall demonstrate the ability to: • Meet or exceed requirements set out in relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • Recognise how the statutory or legal requirements of other roles relate to the role of the engineer where these could impact on building safety • Advise others on what needs to be done to comply with relevant statutory requirements

Competence		Scope	Examples of evidence	HRB specific criteria
EE. Personal and professional commitment	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2b. Understand the risks relevant to HRBs and contribute to risk management frameworks and safe systems of work.	• Definition of HRB • Critical risk factors in HRBs • Safety case development • Safety case review • Fire risk strategy • Construction (Design and Management) Regulations 2015 • Health and safety file • Harmful materials • Control of Substances Hazardous to Health (COSHH) regulations • Building management and maintenance for building and occupant / resident safety	• As 2a	Applicants shall demonstrate underpinning knowledge and understanding of: • How and why HRBs are defined and the relevance to engineering activities • The importance and purposes of safety management systems • Hazard identification and risk assessment methodologies • The specific engineering risks relevant to each type of HRB, including typical critical modes of failure and consideration of maintenance and replacement cycles • How these risks should be managed through the design process, including through commissioning or undertaking of work by other specialist people Wherever relevant, applicants shall demonstrate the ability to: • Contribute to, and work with, safety management systems for HRBs • Lead or contribute to the development, modification and management of the safety case • Lead, carry out or contribute to hazard identification and risk assessment • Execute their duties and responsibilities in accordance with the safety case
	2c. Understand statutory processes and procedures applicable to HRBs.	• Gateway process and stages for HRBs • Role of the Joint Competent Authority (JCA) • Listening to the occupant / resident's voice and associated engagement	• As 2a	Applicants shall demonstrate underpinning knowledge and understanding of: • Statutory processes and procedures • Occupant / resident engagement channels Wherever relevant, applicants shall demonstrate the ability to: • Advise clients, project team members and others on duties and procedural requirements relating to the engineering of an HRB • Comply with relevant engineering development activities in order to demonstrate compliance with building safety requirements to the JCA at differing gateway stages • Engage positively with the JCA and its constituent bodies • Engage and communicate with occupant / resident and the public

Competence		Scope	Examples of evidence	HRB specific criteria
EE. Personal and professional commitment	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3. Understand the principles of sustainable development and apply them in their work.	• Sustainable development considerations applicable across the building life cycle of HRBs	• Operating and acting responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously • Recognising how sustainability principles, as described in the Guidance on Sustainability, can be applied in your day-to-day work. This is available on the Engineering Council website: www.engc.org.uk/sustainability • Providing products and services which maintain and enhance the quality of the environment and community, and meet financial objectives • Understanding and encouraging stakeholder involvement in sustainable development • Using resources efficiently and effectively • Taking action to minimise environmental impact in your area of responsibility	
	4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in HRBs.	• CPD applicable across the building life cycle of all HRBs	• Undertaking reviews of your own development needs • Planning how to meet personal and organisational objectives • Carrying out and recording planned and unplanned CPD activities • Maintaining evidence of competence development • Evaluating CPD outcomes against any plans made • Assisting others with their own CPD	Wherever relevant, applicants shall demonstrate the ability to: Assess the limits of their own competence in relation to the work being undertaken Identify their own personal development needs and put in place a suitable personal development plan including CPD relevant to HRBs Engage with a peer review / assessment and feedback process to obtain an external perspective on competence and areas for improvement Identify the limit of competence of colleagues and take action to assess and manage the development of team members and support improvement where necessary

Competence		Scope
EE. Personal and professional commitment	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 5.Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	• Ethical considerations applicable across the building life cycle of HRBs

Examples of evidence	HRB specific criteria
• Understanding the ethical issues that you may encounter in your role • Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles . available on the Engineering Council website: www.engc.org.uk/sustainability • Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company	

The Chartered Engineer (CEng) Standard

Chartered Engineers develop solutions to complex engineering problems using new or existing technologies, and through innovation, creativity and technical analysis.

Chartered Engineers shall demonstrate:

- The theoretical knowledge to solve problems in new and established technologies and to develop new analytical techniques
- Successful application of the knowledge to deliver innovative products and services or taking technical responsibility for complex engineering systems
- Responsibility for the financial and planning aspects of projects, sub-projects or tasks
- Leadership and development of other professional staff through management, mentoring or coaching
- Effective interpersonal skills in communicating technical matters
- Understanding of the safety and sustainability implications of their work, seeking to improve aspects where feasible
- Commitment to professional engineering values

A Chartered Engineer will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the nature and requirements of their role. They will demonstrate a level of competence and commitment in each area, (AA1–EE5), at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in all areas as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they will demonstrate an appropriate balance of competences to perform their role effectively at Chartered Engineer level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Chartered Engineer registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.

† It is not expected that applicants will necessarily meet all the listed criteria, but they will be expected to demonstrate competence against a substantial proportion of the scope, using a variety of sources and types of evidence, wherever this is relevant to their role. As part of their continuing professional development (CPD), successful applicants have an obligation to remain alert to any changes in their role or responsibilities and ensure the appropriate underpinning knowledge and understanding are updated accordingly. This is applicable throughout the document where “wherever relevant, applicants shall demonstrate the ability to:” is mentioned.

Applicants shall provide evidence from the HRB-specific criteria when developing their portfolio across the AA1-EE5 competences. Licensees’ Professional Review assessors may request further evidence across any or all of the criteria.

Competence

AA. Knowledge and understanding

Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems.

This competence is about the ability to understand underpinning technical principles in fire, structural and life safety relevant to the applicant's area of practice and applying them to develop technical solutions. This could involve technical solutions for novel problems or dealing with significant technical complexity. This may involve the integration of a range of technologies and consideration of other factors. This competence requires that an applicant is maintaining and developing their knowledge in their field of practice and not just that required for specific tasks.

To the extent that it is relevant to their role, the applicant shall demonstrate that they:

1. Maintain, extend and develop a sound theoretical approach to application of relevant fire, structural and building life safety systems, principles and practices throughout the building life cycle of HRBs*.

Scope

Fire Science
- Principles of heat transfer
- Properties of materials
- Principles of fire chemistry
- Principles of fire dynamics

Human Behaviour and Evacuation
- Human behaviour and physiological response to fire
- Life safety design concepts and practice

Fire Safety Design and Specification
- Fire protection systems
- Passive fire protection systems
- Active fire protection systems
- Fire detection and alarm systems
- Fire suppression systems

Fire Prevention
- Fire performance of materials
- Compartmentation and spread of flame
- Principles of structural fire protection design
- Commissioning and interrogation of specialist analysis by others
- Access and facilities for fire and emergency services

Structural Safety
- Structural design / fixing of cladding / facade at height
- Secondary fixings specification and design
- Disproportionate collapse

Protection from Falling or Collision
- Stair safety
- Guarding / balustrades
- Balconies

Public Health
- Air quality / ventilation
- Above ground drainage
- Water storage
- Combustion appliances

Building Services
- Gas appliances and services
- Electrical safety
- Mechanical services
- Fire integrities

Building Fabric
- Interstitial condensation / corrosion
- Maintenance
- Glazing and glazing systems

Examples of evidence

- Formal training related to your role in the application of relevant fire, structural and building life safety systems, as well as the principles and practices that are important throughout the building life cycle of HRBs
- Learning and developing the engineering knowledge needed to work in an industry area or discipline where the application of relevant fire, structural and building life safety systems, principles and practices are required
- Understanding the current and emerging technology and technical best practice, principles and practices throughout the building life cycle of HRBs, in the relevant fire, structural and building life safety systems
- Developing a broader and deeper knowledge base through research and experimentation in the relevant fire, structural and building life safety systems, principles and practices that are important throughout the building life cycle of HRBs
- Learning and developing new engineering theories and techniques on the relevant fire, structural and building life safety systems, principles and practices that are important throughout the building life cycle of HRBs
- Recognising, consulting with, updating and applying the golden thread of information on any development / design / application / integration for HRB fire safety, structural and building life safety systems. This will include any related life critical sub-systems

HRB specific criteria

Applicants shall demonstrate underpinning knowledge and understanding of:

- The building as a system and how the technical interfaces contribute to the functionality and safety of the building and its occupants / residents
- The interrelationship of design and specification with fire performance
- Key features and principles of passive and active fire protection (including suppression systems)

Wherever relevant, applicants shall demonstrate the ability† to:

- Apply relevant fire safety principles and practices in the engineering of HRBs
- Apply fundamental knowledge of fire science, (including key aspects of the fire performance of materials) in the engineering and specification of HRBs
- Integrate key principles of human behaviour and fire escape design into the engineering and arrangement of escape provision in HRBs
- Integrate and coordinate relevant passive and active fire protection systems into the engineering components of HRBs
- Integrate and coordinate compartmentation and structural fire protection into the engineering of HRBs with particular reference to measures which prevent the spread of flame and smoke
- Integrate and coordinate fire-fighting access requirements and provision of fire-fighting facilities into the engineering design and layout of HRBs
- Integrate new engineering approaches, theories or techniques into engineering practice while ensuring safe outcomes

* See Glossary: 'building life cycle'

† See p63

Competence		Scope	
AA. Knowledge and understanding	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2. Address and develop solutions to complex or challenging building safety problems with significant levels of risk. Apply knowledge and understanding of relevant principles and technical standards to co-ordinate and integrate these into the building design.	**Fire Science** • Principles of heat transfer • Properties of materials • Principles of fire chemistry • Principles of fire dynamics **Human Behaviour and Evacuation** • Human behaviour and physiological response to fire • Life safety design concepts and practice **Fire Safety Design and Specification** • Fire protection systems • Passive fire protection systems • Active fire protection systems • Fire detection and alarm systems • Fire suppression systems **Fire Prevention** • Fire performance of materials • Compartmentation and spread of flame • Principles of structural fire protection design • Commissioning and interrogation of specialist analysis by others • Access and facilities for fire and emergency services	• Collaboration and system integration **Structural Safety** • Structural design / fixing of cladding / facade at height • Secondary fixings specification and design • Disproportionate collapse **Protection from Falling or Collision** • Stair safety • Guarding / balustrades • Balconies **Public Health** • Air quality / ventilation • Above ground drainage • Water storage • Combustion appliances **Building Services** • Gas appliances and services • Electrical safety • Mechanical services • Fire integrities **Building Fabric** • Interstitial condensation / corrosion • Maintenance • Glazing and glazing systems

Examples of evidence	HRB specific criteria

• Conducting technical research and development across all aspects of development / design / application / integration of HRB fire safety, structural and building life safety systems
• Developing systems and processes for the design / application / integration of HRB fire safety, structural and building life safety systems and considering new or evolving technology
• Conducting complex and / or non-standard technical analyses on the development / design / application / integration of HRB fire safety, structural and building life safety systems
• Developing solutions involving complex or multidisciplinary technology in relation to HRB fire safety, structural and building life safety systems
• Developing and evaluating continuous improvement systems on HRB fire safety, structural and building life safety systems, including any related life critical sub-systems
	Applicants shall demonstrate underpinning knowledge and understanding of:
	• The process by which different aspects of building safety should be successfully integrated for all life safety components during the life cycle of the HRB
	• The critical safety engineering principles relevant to structure, public health and building services
	• Fire, building services, life safety and structural engineering principles relevant to maintaining the integrity of the building fire strategy
	• The benefits of multi-disciplinary and multi-organisational collaboration in achieving a well performing and safe HRB
	
	Wherever relevant, applicants shall demonstrate the ability to:
	• Evaluate and integrate new technology safely into the engineering design of HRBs taking into account:.
	  ▸ Building life cycle
	  ▸ Buildability
	  ▸ Maintenance and refurbishment
	• Map out and execute the interfaces of all life safety components throughout the building life cycle of HRBs
	• Recognise when advice from others including specialist professionals is needed, obtain this and ensure it is integrated effectively into the engineering design of the HRB
	• Co-ordinate the engineering, specification and assessment of building fabric including where necessary commissioning, collaborating with and integrating the work of other specialist building professionals to achieve safe performance throughout the building life cycle
	• Integrate new engineering approaches, theories or techniques into engineering practice while ensuring safe outcomes
	• Undertake statistically sound appraisal of data to underpin safe engineering outcomes
	• Understand original design intent and principles and maintain these when making minor or major modifications to an HRB

Competence		Scope	
BB. Design, development and solving engineering problems **Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.** This competence is about the ability to apply engineering knowledge effectively and efficiently to the individual tasks which need to be undertaken in the applicant's role in relation to HRBs.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1.Take an active role in the identification and definition of project requirements, problems, and opportunities throughout the building life cycle of HRBs.	Construction legislation relevant to higher-risk buildings (HRBs) including: **Construction Legislation** • The Building Act 1984 • The Building Safety Act 2022 and Regulations • Building regulations • Approved documents • Approved Document 7: Materials and Workmanship • Building regulations (procedural) • Local acts / enactments • Government communications / circular letters • Sustainable and Secure Buildings Act 2004 • Regulatory Reform (Fire Safety) Order 2005 • Construction (Design and Management) Regulations 2007 • Management of Health and Safety at Work Regulations • Health and Safety at Work Act 1974 • Gas Safety (Installation and Use) Regulations 1998 • Relevant case law • Contract law **Related Guidance** Authoritative guidance as typically published by institutions, industry bodies and individuals including Collaborative Reporting for Safer Structures UK (CROSS-UK). • Royal Institute of British Architects (RIBA) plan of work • Building Services Research and Information Association (BSRIA) plan of work • Civil, criminal, and case law • Contract law • Law of agency • Employment law • The Housing Acts 1985,1988, 1996, 2004 • Housing Health and Safety Rating System • Equalities Act 2010 • Town and Country Planning Act 1990 • Housing and Regeneration Act 2008 • Licensing legislation	

Examples of evidence	HRB specific criteria
• Identifying projects (or technical improvements to products, processes, or systems needed to undertake an engineering task within the development / design / application / integration) in regard to HRB fire safety, structural and building life safety systems. • Preparing specifications on the development / design / application / integration of HRB fire safety, structural and building life safety systems, and taking account of functional and other requirements. • Establishing user requirements for improvements in HRB fire safety, structural and building life safety systems. • Reviewing specifications and tenders to identify technical issues and potential improvements, with specific focus on elements concerning the development / design / application / integration of HRB fire safety, structural and building life safety systems. These reviews must also consider, contribute, and innovate towards the continuation of the golden thread of information. • Conducting technical risk analysis on HRB fire safety, structural and building life safety systems, and identifying mitigation measures. • Considering and implementing new and emerging technologies within the development / design / application / integration of HRB fire safety, structural and building life safety systems	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • The respective responsibilities of roles specified in the regulations and the relationship of their own role to that of the duty holder and other professions, trades or engineering disciplines Wherever relevant, applicants shall demonstrate the ability to: • Identify, review and select techniques, procedures and methods to undertake engineering tasks • Contribute to the design and development of engineering solutions within an HRB • Implement design solutions and contribute to their evaluation. • Establish the static and dynamic life safety systems and their design interfaces • Review the test and commissioning plan • Ensure a co-ordinated life safety solution is achieved

Competence		Scope
BB. Design, development and solving engineering problems	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2. Undertake research, analysis and development to define, refine and apply relevant standards, testing, assessment, site inspection and maintenance procedures for building materials, products, components, assemblies and systems effectively throughout the building life cycle.	• British and international product standards • Testing standards, procedures, and interpretation of results • Good practice specification • Product characteristics and performance • System, component or assembly testing and performance • Prototyping / sample panel and testing • Maintenance requirements • Maintenance testing and commissioning of building systems and services

Examples of evidence	HRB specific criteria
• Identifying and agreeing appropriate research methodologies on the development / design / application / integration of HRB fire safety, structural and building life safety systems • Investigating a technical issue within the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then identifying potential solutions, and determining the factors needed to compare them • Identifying and conducting physical tests or trials on HRB fire safety, structural and building life safety systems • Conducting technical simulations or analysis with regards to the development / design / application / integration of HRB fire safety, structural and building life safety systems • Preparing, presenting, and agreeing design recommendations, with appropriate analysis of risk on the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then taking account of, quality, safety, reliability, accessibility, appearance, fitness for purpose, cost, security (including cyber security), intellectual property constraints and opportunities, as well as environmental impact	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant standards, testing, assessment and maintenance procedures for building materials, products, components, assemblies and systems • Methods and practice of building maintenance Wherever relevant, applicants shall demonstrate the ability to: • Apply this underpinning knowledge and understanding effectively as part of the engineering process to ensure safety throughout the life cycle of the building • Apply this underpinning knowledge and understanding to ensure the building performs safely as a system • Conduct testing and verify quality and suitability of delivered / procured products and materials

Competence		Scope
BB. Design, development and solving engineering problems	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3. Can implement engineering tasks and evaluate the effectiveness of engineering solutions.	• Engineering solutions applicable across the building life cycle of HRBs

Examples of evidence	HRB specific criteria
• Ensuring that the application of the design within HRB fire safety, structural and building life safety systems, results in the appropriate practical outcome • Implementing design solutions and taking account of critical constraints. This includes due concern for safety, sustainability, and disposal or decommissioning, within HRB fire safety, structural and building life safety systems • Identifying and implementing lessons learned • Evaluating existing designs or processes within the development / design / application / integration of HRB fire safety, structural and building life safety systems. Then identifying faults or potential improvements including risk and life cycle considerations • Actively learning from feedback to improve future design solutions and establish best practice within the development / design / application / integration of HRB fire safety, structural and building life safety systems.	Applicants shall demonstrate underpinning knowledge and understanding of: • Identifying the resources required for implementation • Implementing design solutions and taking account of critical constraints including due concern for safety and sustainability • Identifying problems during implementation and taking corrective action • Contributing to recommendations for improvement and actively learning from feedback

Competence		Scope	
CC. Responsibility, management and leadership **Chartered Engineers shall demonstrate technical and commercial leadership.** This competence is about the ability to plan the applicant's own work and manage or specify the work of others effectively, efficiently, and in a way which provides leadership at an appropriate level, whether technical or commercial. Leadership is not necessarily about having a formal line management role. In matrix management and other types of organisational structure, where Chartered Engineers are working within complex and varied working relationships, they will provide leadership to achieve objectives. This competence is also, about the ability to consider and identify improvements to quality.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1a. Plan the work and resources needed to enable effective implementation of significant engineering tasks or projects in association with or to fulfil key roles, responsibilities and duties relating to HRBs.	• Duties and responsibilities of key roles / duty holders including client, contractor, building owner / manager, building safety manager, occupant / resident • Joint Competent Authority (JCA) / Regulator • Overarching competence body • Local authority • Relevant statutory regulators • Profession / trade regulators • Fire and rescue services • Through-life management and maintenance **Understanding of** • Golden thread of building information • Safety management systems • Safety cases • Health and safety files • Fire and Emergency Files • Design / construction, as-built / as-maintained information • Building safety strategies • Building maintenance information and scheduling	• Testing and commissioning information • Life cycle and replacement data • Building installer / constructor / maintainer competence requirements • Regulation 38 of the Building Control requirements • HRB records and certificates • As-built information • Building Information Modelling (BIM)

Examples of evidence	HRB specific criteria
• Preparing budgets and associated work programmes for projects or tasks • Systematically reviewing the factors affecting the project implementation including safety, sustainability and disposal or decommissioning considerations • Carrying out a task or project risk assessment and identifying mitigation measures • Leading on preparing and agreeing implementation plans and method statements • Negotiating and agreeing arrangements with customers, colleagues, contractors and other stakeholders, including regulatory bodies • Ensuring that information flow is appropriate and effective	Wherever relevant, applicants shall demonstrate the ability to: • Explain and comply with the duties of an engineer in relation to HRBs • Explain the roles and responsibilities of other key duty holders and their interactions with the role of an engineer on HRBs • Work effectively with other key duty holders • Act as, or engage effectively with, the Principal Designer or Principal Contractor of an HRB • Integrate understanding of through-life management and maintenance criteria in engineering activities to ensure safe outcomes • Challenge others where duties are not being effectively met Applicants shall demonstrate underpinning knowledge and understanding of: • All documents (and their content) which the engineer must create, maintain or use to ensure HRB safety • Competence and needs of building safety managers and owners

Competence		Scope	Examples of evidence	HRB specific criteria
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1b. Develop effective approaches and use appropriate information management principles to manage, distribute and maintain information which is critical to ensuring that HRBs are built, operated and maintained to be safe throughout the building life cycle.	• As 1a	• As 1a	Wherever relevant, applicants shall demonstrate the ability to: • Develop, manage, distribute and maintain information about the engineering of HRBs which is critical to ensuring that they are engineered to be safe, built to be safe, operated safely and maintained to be safe throughout the building life cycle • Develop and communicate clearly expressed engineering strategies to meet building safety requirements • Comply with requirements to prepare and submit relevant documentation as part of the safety management system, safety case, Fire and Emergency File or Health and Safety plan • Utilise suitable information management tools to ensure accurate design and as-built information are developed and issued • Manage changes to engineering information in order to ensure an accurate set of as-built information is available at key gateway stages • Identify what information is needed from other parties and understand and apply that information where relevant to the role of the HRB engineer, including operation and management documents required to operate the building safely
	2. Develop, manage, maintain and use procedures to challenge unacceptable behaviour or practice where duties are not being effectively met. Raise, report, escalate or flag risks to safety with clients, managers, duty holders and regulators.	• Whistleblowing policies • Public Interest Disclosure Act 1998 • Public duty to report • Public liabilities • Company or organisational reporting and escalation policies and procedures	• Operating appropriate management systems • Working to the agreed quality standards, programme and budget, within legal and statutory requirements • Managing work teams, coordinating project activities • Identifying variations from quality standards, programme and budgets, and taking corrective action • Evaluating performance and recommending improvements	Wherever relevant, applicants shall demonstrate the ability to: • Explain and comply with professional and ethical duties to raise concerns relating to public safety • Effectively raise safety concerns with colleagues and where necessary escalate these concerns through management chains • Identify if and when it is necessary to utilise whistleblowing provisions under the Public Interest Disclosure Act 1998 and how to do so. • Explain and act on any other duties to raise concerns about life safety within an HRB

Competence		Scope	Examples of evidence	HRB specific criteria
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3a. Lead teams or technical specialisms and assist others, including duty holders and regulators, to meet changing requirements for technical and procedural requirements for safe outcomes.	• Project management and control • Sequencing of work • Assembling and appointing teams • Effective management practice / procedures for engineering of HRBs	• Agreeing objectives and work plans with teams and individuals • Reinforcing team commitment to professional standards • Leading and supporting team and individual development • Assessing team and individual performance, and providing feedback • Seeking input from other teams or specialists where needed and managing the relationship • Providing specialist knowledge, guidance and input in your specialism to engineering teams, engineers, customers, management and relevant stakeholders	Applicants shall demonstrate underpinning knowledge and understanding of: • What competence frameworks and qualifications exist • Change management and change control techniques • Quality management techniques Wherever relevant, applicants shall demonstrate the ability to: • Integrate requirements for building safety into project planning and management activities • Assess sub competences required within engineering or project teams and ensure suitable expertise is procured • Apply quality management, control or audit procedures in order to verify that building safety measures have been carried out • Explain and comply with relevant procedural requirements, submissions and processes • Create and maintain appropriate project and control documentation • Establish quality criteria for engineering work and objectively evaluate outcomes against those criteria • Complete competence self-assessment records and learn from that process; show examples of quality assurance or management procedures to ensure competence of self / staff / specialists or other organisations; use competence scoring or assessment techniques; involving in competence assessment of individuals

Competence		Scope	Examples of evidence	HRB specific criteria
CC. Responsibility, management and leadership	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3b. Define requirements for competence. Identify and manage the limits of competence of self and others. Undertake appropriate mitigating actions to manage risk including developing procedures to procure more specialist advice when necessary. Use appropriate evidence in the management of soft hazards.	**People** • Competence and resource **Process** • Understanding, validation and communication of assumptions • Flow-through of information • Specialist, Analysis and Software tool validation and verification • Conceptual design review, checking and peer review • Responsibility for the design when split between more than one designer • Single point of responsibility • Change control • Site inspection / monitoring **Product** • Checks on product origin, certification and compliance	• As 3a	Wherever relevant, applicants shall demonstrate the ability to: • Identify limits of competence of individuals or organisations involved in the engineering, construction or maintenance of HRBs • Identify suitable mitigating actions to manage risk • Explain what competence is and how this relates to building safety • Identify when and how to assess, or request evidence of competence from, other project team members • Explain and comply with duties to ensure competence relating to the engineering of HRBs • Identify the need to seek advice from others with specialist competences and how to procure that advice • Effectively raise concerns about the competence of individuals or organisations if this is of concern • Mitigate any residual risk relating to competence
	4. Bring about continuous quality improvement and promote best practice.	• Quality improvement applicable across the building life cycle of HRBs	• Promoting quality throughout the organisation as well as its customer and supplier networks • Developing and maintaining operations to meet quality standards eg ISO 9000, EQFM • Supporting or directing project evaluation and proposing recommendations for improvement • Implementing and sharing the results of lessons learned	

Competence		Scope
DD. Communication and interpersonal skills **Chartered Engineers shall demonstrate effective communication and interpersonal skills.** This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Develop procedures and approaches to enable effective and appropriate communications with occupants / residents, the public and with others, orally and in writing.	• Requirements / obligations to communicate, consult with and respond to occupants / residents or people otherwise affected by buildings / building work • Communication through media relevant to role (orally, written text or drawn) • Communication of technical complex information to non-technical audiences • Effective communication within project and client teams
	2. Clearly present and discuss proposals, justifications and conclusions.	• Effective communication applicable across the building life cycle of HRBs

Examples of evidence	HRB specific criteria
• Preparing reports, drawings, specifications and other documentation on complex matters • Leading, chairing, contributing to and recording meetings and discussions • Exchanging information and providing advice to technical and non-technical colleagues • Engaging or interacting with professional networks	Wherever relevant, applicants shall demonstrate the ability to: • Explain and comply with duties to communicate with clients, occupants / residents and other people or organisations involved in or affected by projects on HRBs • Write reports, letters, emails or give presentations in a manner which can be clearly understood by non-technical people. • Clearly identify and effectively communicate responsibilities and issues relating to HRB safety within design, engineering or project teams • Explain complex technical issues to non-technical audiences • Promote and actively engage in collaborative working across disciplines • Understand challenges and requirements of other disciplines. • Read and understand technical documents / drawings and convey details to others • Be inclusive, promote and welcome diversity of thought / ideas • Write clear guidance for end users
• Contributing to scientific papers or articles as an author • Preparing and delivering presentations on strategic matters • Preparing bids, proposals or studies • Identifying, agreeing and leading work towards collective goals	Applicants shall demonstrate underpinning knowledge and understanding of: • Principles and value of competence • Competence assessment techniques • Roles and responsibilities for advising on and ensuring competence • Procurement and management of specialist sub competences • Managing residual risk

Competence		Scope	Examples of evidence	HRB specific criteria
DD. Communication and interpersonal skills	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.	• Personal and social skills applicable across the building life cycle of HRBs	• Knowing and managing own emotions, strengths and weaknesses • Being confident and flexible in dealing with new and changing interpersonal situations • Identifying, agreeing and working towards collective goals • Creating, maintaining and enhancing productive working relationships, and resolving conflicts • Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion	

Competence		Scope
EE. Personal and professional commitment **Chartered Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.** This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. A Chartered Engineer should set a standard and example to others with regard to professionalism.	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 1. Demonstrate leadership in, understanding of, and the ability to manage, complex ethical considerations relating to the occupants / residents of HRBs and apply these in practice.	• Obligation to consult / listen to the occupant / resident's voice • Duty of care to occupants / residents • Consideration of diversity and inclusion including differential needs eg emergency egress • Adhering to codes of conduct
	2a. Maintain, extend and contribute to development of good practice in complying with relevant legislation, regulations, statutory guidance and standards of performance applicable to HRBs.	• Legislation and guidance that applies to HRBs (referencing examples in the scope of BB1) • Demonstration of the principles underpinning the Setting the Bar report to improve competence and drive culture change

Examples of evidence	HRB specific criteria
• Demonstrating compliance with your Licensee's Code of Professional Conduct • Identifying aspects of the Code which are particularly relevant to your role • Being aware of the legislative and regulatory frameworks relevant to your role and how they conform to them • Leading work within relevant legislation and regulatory frameworks, including social and employment legislation	Wherever relevant, applicants shall demonstrate the ability to: • Apply understanding of specific ethical principles in engineering practice • Act with honesty, accuracy, respect, integrity, responsibility, and within the limits of their capability in order to build trust • Respect concerns and issues raised by occupants / residents and respond appropriately • Apply duty of care to occupants / residents and people living or working in and around buildings • Take account of differential needs of older and disabled people in accessing, and ability to escape from, HRBs • Act in accordance with professional or company Code of Conduct • Act in accordance with the Royal Academy of Engineering and the Engineering Council's joint Statement of Ethical Principles, available on the Engineering Council website: www.engc.org.uk/ethics
• Identifying and taking responsibility for your own obligations and ensuring that others assume similar responsibility for health, safety and welfare issues • Ensuring that systems satisfy health, safety and welfare requirements • Developing and implementing appropriate hazard identification and risk management systems and culture • Managing, evaluating and improving these systems • Applying a sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies	Applicants shall demonstrate underpinning knowledge and understanding of: • Relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • The respective responsibilities of roles specified in regulations and the relationship of their own role to that of the duty holder and other professions, trades or engineering disciplines Wherever relevant, applicants shall demonstrate the ability to: • Meet or exceed requirements set out in relevant legislation, regulations, statutory guidance and standards of performance in the engineering of HRBs • Recognise how the statutory or legal requirements of other roles relate to the role of the engineer where these could impact on building safety • Advise others on what needs to be done to comply with relevant statutory requirements

Competence		Scope	Examples of evidence	HRB specific criteria
EE. Personal and professional commitment	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 2b.Develop effective approaches to risk management and apply knowledge and understanding of specific and complex risks relevant to HRBs to the development and application of risk management frameworks and safe systems of work.	• Definition of HRB • Critical risk factors in HRBs • Safety case development • Safety case review • Fire risk strategy • Construction (Design and Management) Regulations 2015 • Health and safety file • Harmful materials • Control of Substances Hazardous to Health (COSHH) regulations • Building management and maintenance for building and occupant / resident safety	• As 2a	Applicants shall demonstrate underpinning knowledge and understanding of: • How and why HRBs are defined and the relevance to engineering activities • The importance and purposes of safety management systems • Hazard identification and risk assessment methodologies • The specific engineering risks relevant to each type of HRB, including typical critical modes of failure and consideration of maintenance and replacement cycles • How these risks should be managed through the design process, including through commissioning or undertaking of work by other specialist people Wherever relevant, applicants shall demonstrate the ability to: • Contribute to, and work with, safety management systems for HRBs • Lead or contribute to the development, modification and management of the safety case • Lead, carry out or contribute to hazard identification and risk assessment • Execute their duties and responsibilities in accordance with the safety case
	2c. Apply statutory processes and procedures to HRBs.	• Gateway process and stages for HRBs • Role of the Joint Competent Authority (JCA) • Listening to the occupant / resident's voice and associated engagement	• As 2a	Applicants shall demonstrate underpinning knowledge and understanding of: • Statutory processes and procedures • Occupant / resident engagement channels Wherever relevant, applicants shall demonstrate the ability to: • Advise clients, project team members and others on duties and procedural requirements relating to the engineering of an HRB • Comply with relevant engineering development activities in order to demonstrate compliance with building safety requirements to the JCA at differing gateway stages • Engage positively with the JCA and its constituent bodies • Engage and communicate with occupants / residents and the public

Competence		Scope	Examples of evidence	HRB specific criteria
EE. Personal and professional commitment	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 3. Understand the principles of sustainable development and apply them in their work.	• Sustainable development considerations applicable across the building life cycle of HRBs	• Operating and acting responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously • Providing products and services which maintain and enhance the quality of the environment and community, and meet financial objectives • Recognising how sustainability principles, as described in the Guidance on Sustainability, can be applied in your day-to-day work. This is available on the Engineering Council website: www.engc.org.uk/sustainability • Understanding and securing stakeholder involvement in sustainable development • Using resources efficiently and effectively in all activities • Taking action to minimise environmental impact in your area of responsibility	
	4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in HRBs.	• CPD applicable across the building life cycle of all HRBs	• Undertaking reviews of your own development needs • Planning how to meet personal and organisational objectives • Carrying out planned and unplanned CPD activities • Maintaining evidence of competence development • Evaluating CPD outcomes against any plans made • Assisting others with their own CPD	Wherever relevant, applicants shall demonstrate the ability to: • Assess the limits of their own competence in relation to the work being undertaken • Identify their own personal development needs and put in place a suitable personal development plan including CPD relevant to HRBs • Engage with a peer review / assessment and feedback process to obtain an external perspective on competence and areas for improvement • Identify the limit of competence of colleagues and take action to assess and manage the development of team members and support improvement where necessary

Competence		Scope
EE. Personal and professional commitment	To the extent that it is relevant to their role, the applicant shall demonstrate that they: 5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	• Ethical considerations applicable across the building life cycle of HRBs

Examples of evidence	HRB specific criteria
• Understanding the ethical issues that you may encounter in your role • Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles available on the Engineering Council website: www.engc.org.uk/sustainability • Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company	

Glossary

BSI 8670	Relates to 'Built environment – Core criteria for building safety in competence frameworks – Code of practice' See: www.bsigroup.com
Building Safety Act 2022 (BSA)	Gives **residents** and **homeowners** more rights, powers, and protections resulting in safer homes. It overhauls existing regulations and makes clear how residential buildings should be constructed, maintained, and made safe. See: www.legislation.gov.uk
Building life cycle	This includes selecting appropriate techniques, procedures and methods to design, construct, commission, operate, maintain, refurbish / repurpose, decommission, demolish and recycle. These can apply to building engineering processes, systems, services and products. This ensures compliance with relevant legislation, regulations, statutory guidance and standards of performance applicable to HRBs.
Building Safety Regulator (BSR)	They oversee the safety and standards of all buildings, helping and encouraging the built environment industry and building control professionals to improve their competence. Leading implementation of the new regulatory framework for high-rise buildings. See: www.hse.gov.uk/building-safety/regulator.htm
CROSS	Collaborative Reporting for Safer Structures UK (CROSS-UK) is a confidential reporting system which allows professionals working in the built environment to report on fire and structural safety issues. These are published anonymously to share lessons learned, create positive change, and improve safety.
Higher-risk building (HRB)	For a building to qualify as a higher-risk building it will meet either the height (18 metres or higher) or storeys (seven storeys or more) threshold, and will contain at least two residential units, or be a care home or hospital, as specified in the regulations set out at: www.legislation.gov.uk
Joint Competent Authority (JCA)	Consists of local authority building standards, fire and rescue authorities, and the Health and Safety Executive. Proposed by Dame Judith Hackitt in her review of building regulations and fire safety.
Occupant	An individual who occupies a house, office, vehicle on a regular basis. The occupant does not extend to living in or use the space as their own.
Owner/ homeowner	The legal owner or leaseholder of a property or individual dwelling.
Resident	A person who lives somewhere permanently or on a long-term basis.
UK-SPEC HRB	The UK Standard for Professional Engineering Competence and Commitment Contextualised for Higher-Risk Buildings UK-SPEC HRB. The document sets out the competence and commitment requirements for registration as an EngTech, IEng or CEng. UK-SPEC HRB is one of the Standards the Engineering Council publishes, along with UK-SPEC, AAQA, AHEP, and the ICTTech Standard.