

ICE submission to MHCLG: call for evidence on the strategy for the built environment professions, trades and occupations

August 2026

Introduction

The Institution of Civil Engineers (ICE) welcomes the opportunity to contribute to the government's call for evidence on the strategy for the built environment professions, trades and occupations.

As a professional engineering institution with over 95,000 members worldwide, the ICE's purpose is to improve lives through infrastructure. Through professional qualification, accreditation, continuing professional development, professional conduct arrangements, and knowledge-sharing activities, the ICE plays a central role in promoting competence, ethical behaviour and public trust within the civil engineering profession.

The ICE strongly supports the government's focus on the three interdependent pillars of skills, knowledge and experience; behaviour, conduct and culture, and accountability and personal responsibility.

Our view is that lasting improvement across the built environment will only be achieved when all three are addressed together. Technical competence alone is insufficient if individuals operate within cultures that discourage challenge or prioritise short-term commercial objectives over long-term public benefit. Likewise, accountability mechanisms are unlikely to succeed unless supported by clear competence standards and professional norms. The government's proposed approach therefore reflects the realities of professional practice across the built environment sector.

While this call for evidence is framed around the built environment, we emphasise that competence, behaviour and accountability requirements should be proportionate to the risks and consequences of failure. These principles are equally relevant to wider infrastructure assets such as bridges, tunnels, dams, reservoirs, flood defences and temporary works, and as such, we recommend that infrastructure is included in the scope of future reforms.

The evidence in this submission draws primarily on the ICE's role in assessing competence, accrediting education and training pathways, supporting lifelong learning, setting professional standards, and maintaining professional conduct arrangements.

Pre-design (questions 1-17)

1. What types of skills, knowledge and experience are needed to carry out pre-design work?

Pre-design is arguably the most influential phase of the asset lifecycle because key decisions made at this stage shape safety, cost, sustainability, resilience and operational performance for decades.

Practitioners undertaking pre-design work require a combination of technical competence, professional judgement and leadership capability. This includes:

- systems thinking and the ability to understand infrastructure in its wider social, environmental and economic context
- risk identification and management
- understanding of relevant legislation, standards and regulatory requirements
- climate resilience, adaptation and decarbonisation knowledge
- stakeholder engagement and communication skills
- procurement and delivery expertise
- ethical decision-making and professional judgement
- experience of translating strategic objectives into deliverable infrastructure solutions

These capabilities extend beyond academic qualifications alone. The ICE's attributes for professionally qualified membership set out that professionals must be capable across seven broad areas:

- engineering knowledge and application
- management and leadership
- commercial awareness
- health, safety and welfare
- sustainable development
- communication and interpersonal skills
- professional commitment and ethics.

These capabilities are reflected in the ICE's Professional Review process, through which candidates must demonstrate competence in engineering application, risk management, leadership, communication, commercial awareness, sustainability and professional commitment. Professional qualification therefore assesses the ability to apply knowledge and judgement in practice, rather than simply the possession of technical knowledge.

The ICE's competence framework reflects internationally recognised standards and assesses capability across engineering application, leadership and management, commercial awareness, health and safety, sustainable development, communication and professional commitment. These areas collectively provide the skills, knowledge, experience and behaviours required to undertake complex professional responsibilities

The growing complexity of infrastructure systems, climate risks, digital technologies and stakeholder expectations means multidisciplinary competence is increasingly important at the pre-design stage.

2. Where are the most material gaps in skills, knowledge and experience in the pre-design phase?

The most significant gaps are often not in core engineering design capability but in the wider competencies and knowledge of the processes required to make effective upstream decisions.

This includes client capability; procurement, commercial and contractual skills; whole-life asset management; systems engineering and interdisciplinary integration; whole-life carbon assessment and decarbonisation, and knowledge relating to climate resilience and adaptation outside of specialist roles.

There is also evidence that parts of the wider engineering profession face wider workforce capacity constraints in terms of demographic and succession challenges. Professional registration data from Engineering Council shows an ageing registered population, with more than one-third of registrants aged over 60. The ICE supports around 12,000 early-career professionals through approved training schemes and works with approximately 4,500 apprentices across the UK, demonstrating the scale of ongoing skills demand.

A further challenge is ensuring that competence keeps pace with change. New technologies, changing environmental conditions and evolving building safety requirements mean skills and knowledge can become outdated if not continually maintained through professional development.

3. How consistently are the necessary skills, knowledge and experience demonstrated in practice?

The ICE does not collect sector-wide data that enable the quantification of consistency across the built environment. However, our experience through professional qualification, employer engagement and competence assessment suggests performance is fairly consistent.

Within the population of professionally qualified ICE members, competence is assessed against a nationally recognised framework through a structured Professional Review conducted by trained peer reviewers. This provides a consistent and independently verified benchmark for professional competence

Many organisations demonstrate high levels of competence and invest heavily in professional development, structured training and professional registration. However, competency expectations are not applied consistently across the built environment.

Professional registration provides one mechanism for consistent assurance. The Engineering Council's UK-SPEC framework provides a common standard for assessing competence and commitment, while accredited degree programmes create recognised educational foundations. The ICE's professional qualification process additionally requires demonstration of practical competence, commitment and continuing professional development. During 2025 alone, 2,143 individuals achieved professional qualification through ICE routes, demonstrating the continuing importance of independently assessed competence.

Consistency is strongest where organisations support structured development, recognised competence frameworks and professional registration. It is generally weaker where competence is assessed primarily through experience or organisational position without independent validation. Larger and more complex projects also tend to have stronger governance arrangements and more systematic competence assurance than smaller projects.

The lessons from Grenfell and other major failures demonstrate that even where technical knowledge exists, competence may not always be effectively applied within organisational decision-making processes. Skills, behaviours and accountability must therefore be considered together rather than separately.

4. What most influences behaviour and decision-making during pre-design work?

ICE members are required through the Code of Conduct to have full regard for the public interest, particularly health and safety, to act within the limits of their competence and to maintain professional standards. These obligations help shape decision-making alongside commercial and organisational considerations.

Pre-design decisions are influenced by a combination of technical, commercial, organisational and cultural factors, including:

- client requirements
- procurement models
- programme and budget pressures
- regulatory obligations
- organisational culture
- leadership behaviours
- professional standards
- availability of specialist expertise

The strongest outcomes generally occur where long-term value, safety, resilience and public benefit are prioritised alongside short-term commercial considerations. This is most notable through enterprise-based delivery models, such as Project 13.

Professional standards and ethical obligations provide an important counterbalance to commercial pressures. Professional engineers are expected to act in the public interest, exercise independent judgement and raise concerns where necessary.

Procurement and contracting arrangements have a significant influence. Where delivery models incentivise lowest cost over long-term outcomes, there is a risk that safety and quality considerations become secondary.

5. How consistently are the positive behaviours and decision-making necessary in pre-design demonstrated?

Technical competence is generally well understood and valued. However, behaviours such as challenging assumptions, identifying risk, acting ethically and prioritising long-term public outcomes can be more variable, notably for those who are not members of a professional body.

ICE's professional qualification framework explicitly assesses ethical practice, communication, leadership and professional commitment alongside technical competence because these behaviours are essential to good engineering judgement.

Positive behaviours are reinforced through professional obligations rather than being treated as optional attributes. ICE members are required to work competently, act ethically, maintain their professional capability and support the development of others. These expectations are embedded within the ICE's Code of Conduct.

Evidence from the ICE's most recent member survey in 2023 suggests members continue to place significant value on professional qualifications, standards and the role of the ICE in supporting professional development and good practice. This showed that access to professional qualifications is the single most cited source of pride in membership (59%).

However, behavioural consistency depends heavily on organisational culture and leadership. Individuals are more likely to act appropriately where challenge is encouraged and professional judgement is respected.

6. What benefits arise when roles, responsibilities and accountability are clearly defined and applied in pre-design?

There are many benefits, notably better decision-making, improved safety outcomes, stronger risk management, greater transparency, improved collaboration, and clearer accountability and lessons learned from where failures occur.

Where responsibilities are clearly allocated, organisations can identify who is responsible for key decisions and demonstrate that those individuals possess the necessary competence.

The experience of professional registration demonstrates the value of associating competence and accountability with identifiable individuals who have met recognised standards. Registered engineers are assessed against independently verified competence requirements and remain subject to ongoing professional obligations.

Clear accountability also helps build public confidence, particularly where infrastructure projects involve significant safety or societal risks.

Among professionally qualified ICE members, competence maintenance is supported through mandatory CPD requirements and audit processes. In 2025, the ICE audited 1,401 professionally qualified members, achieving a compliance rate of 98.3%. Members who failed to provide evidence of CPD or a valid exemption were removed from membership and Engineering Council registration.

7. What challenges arise in defining, understanding or delivering those roles, responsibilities and accountability?

A common challenge is that responsibilities often span multiple organisations, disciplines and contractual arrangements. This can create unclear interfaces between parties, duplicated responsibilities, gaps in ownership, uncertainty about who has authority to challenge decisions, and difficulty identifying accountable decision-makers.

The increasing complexity of infrastructure projects compounds these challenges.

Another issue is that formal responsibility does not always align with actual influence over decisions. Individuals may hold legal responsibilities but have limited authority, resources or organisational support to discharge them effectively.

Accountability is most effective when responsibilities are clearly defined, competence expectations are explicit, and individuals are empowered to exercise professional judgement. Effective accountability requires more than assigning responsibility. Individuals must understand their professional obligations, including those established through codes of conduct and professional standards, and possess sufficient authority and organisational support to discharge them effectively.

8. How consistently are roles, responsibilities and accountabilities clearly defined, understood and applied in pre-design?

The ICE does not hold evidence enabling a sector-wide assessment of consistency. Based on our engagement with members, employers and clients, consistency appears greater in large organisations and complex regulated environments than elsewhere.

Major infrastructure clients and larger organisations typically have well-developed governance structures and clearly defined roles. Smaller organisations and more fragmented delivery arrangements may demonstrate less clarity.

The introduction of dutyholder responsibilities through recent building safety reforms has improved focus on accountability. However, understanding and implementation remain variable across different parts of the built environment.

Greater use of recognised competence frameworks, professional registration and clearer client expectations could improve consistency across the sector.

9. How well do clients understand their responsibilities under the dutyholder regime?

The ICE does not collect evidence that would allow a quantified assessment of how well clients understand or discharge their responsibilities across the sector. This question and questions 10 and 11 principally concern client organisations rather than the professional engineers assessed by the ICE. We therefore offer views based on our experience of infrastructure delivery rather than direct evidence.

Sophisticated and experienced clients generally demonstrate a stronger understanding of their obligations. However, capability varies, particularly among infrequent clients and organisations with limited internal technical expertise.

Clients play a critical role because they establish project objectives, allocate resources, appoint dutyholders and influence organisational behaviours throughout delivery.

Informed clients are essential to good infrastructure outcomes. Technical competence among dutyholders cannot fully compensate for unclear client expectations or weak governance arrangements.

Further support for client capability, awareness and understanding should therefore form part of any future competence strategy.

10. How well do clients deliver those responsibilities?

Many clients successfully establish governance frameworks, appoint competent professionals and support effective challenge and assurance processes. The strongest outcomes are achieved where clients understand their obligations, seek appropriate professional advice, understand trade-offs, prioritise competence in appointments, encourage challenge and transparency, and focus on whole-life outcomes rather than lowest initial cost.

Delivery could be strengthened further by greater recognition of independently assessed professional competence, wider use of professional registration and stronger expectations regarding ongoing competence and development among those carrying significant responsibilities.

Ultimately, effective client leadership is one of the most important determinants of successful pre-design outcomes. When clients set clear expectations around competence, behaviour and accountability, those expectations tend to be reflected throughout the entire project lifecycle.

11. How consistently do clients understand and deliver their responsibilities?

The ICE does not collect evidence enabling a quantified assessment. However, based on our experience, consistency varies significantly depending on organisational maturity, governance arrangements and access to technical expertise. Client capability should be treated as a priority issue within the wider competence agenda.

12. Does the current system of education/training, competence standards/frameworks, and regulation/oversight effectively support good outcomes at pre-design stage?

The UK benefits from a mature competence system that supports professional development throughout an individual's career. This system comprises accredited educational pathways, structured employer training, professional qualification, registration, continuing professional development and professional oversight. Together these provide a strong foundation for safe and effective practice.

The ICE's approach is based on the principle that competence is not demonstrated solely through academic attainment or attendance on training courses. Professional qualification involves independent assessment against recognised competence requirements covering engineering knowledge, practical application, leadership, communication, health and safety, sustainable development, ethical practice and professional commitment. A key strength of the current system is that competence is independently assessed rather than self-declared. ICE's Professional Review process requires candidates to demonstrate competence through documented evidence, professional discussion and peer assessment before professional qualification is awarded.

Importantly, competence is not treated as something achieved once and assumed indefinitely. Professionally qualified members are required to maintain competence through CPD, are subject to audit and may face removal from membership and Engineering Council registration where competence maintenance obligations are not met. In 2025, the ICE achieved a CPD audit compliance rate of 98.3% amongst audited professionally qualified members.

The principal challenge is not the absence of competence frameworks. Rather, it is ensuring that competence requirements are consistently applied and translated into capability in practice across the whole built environment sector.

13. How effective is the current system infrastructure for skills, competence and oversight at pre-design stage?

Based on the ICE's role in qualification, registration, CPD and professional standards, the engineering competence system is generally effective. However, we are not able to provide a comprehensive assessment of arrangements outside those areas.

The UK possesses well-established institutions, professional bodies, regulators and competence frameworks that support the development and maintenance of professional capability. Professional registration systems, including Engineering Technician, Incorporated Engineer and Chartered Engineer registration, provide recognised and independently assessed benchmarks of competence.

Recent reforms have further strengthened arrangements in areas such as building safety. For example, the Higher-Risk Buildings Register was established by the ICE and the Institution of Structural Engineers to provide assurance that professionals involved in higher-risk buildings possess the required skills, knowledge, experience and behaviours. Mandatory CPD topics relating to safety, ethics and risk management further reinforce competence expectations.

The ICE's Approved Employer Schemes also support structured development, supervision and training within organisations, reflecting the importance of organisational capability in achieving competent outcomes.

Despite these strengths, there remains inconsistency in adoption and application. The effectiveness of the system ultimately depends on whether organisations actively engage with competence frameworks and invest in professional development rather than treating competence as a compliance exercise.

14. Which pre-design actions, behaviours and decisions most influence later lifecycle stages?

The decisions made during pre-design frequently have the greatest influence over outcomes throughout the asset lifecycle.

Particularly important activities include:

- defining project objectives and desired outcomes
- establishing governance and accountability arrangements

- identifying and managing safety risks
- determining resilience and adaptation requirements
- embedding whole-life carbon considerations
- considering maintainability and operational requirements
- selecting procurement and delivery approaches
- allocating responsibilities between parties

Behavioural factors are equally important. The willingness to challenge assumptions, engage constructively with stakeholders, identify emerging risks and prioritise long-term public benefit often determines whether projects deliver successful outcomes.

The ICE's work on systems approaches, resilience, adaptation and safety reflects the increasing recognition that infrastructure decisions must account for whole-life impacts rather than simply immediate project requirements.

15. How significant is the impact of key factors (skills, behaviour, accountability, training, competence frameworks, regulation) on outcomes at pre-design stage?

All of these factors are highly significant and mutually reinforcing.

Competence provides the foundation for good decision-making, but technical skills alone are insufficient. Individuals must also demonstrate appropriate behaviours, professional judgement and ethical awareness. These behaviours are most effective when supported by clear accountability arrangements and robust competence frameworks.

The ICE's competence framework demonstrates that skills, behaviours and accountability cannot readily be separated. Professional qualification assesses competence through Professional Review, while ongoing obligations relating to ethics, public interest, competence maintenance and professional conduct are reinforced through the Code of Conduct. Together these mechanisms provide assurance across all three pillars identified in the consultation.

The ICE's experience assessing engineers for professional qualification demonstrates that competence requires a combination of knowledge, experience, leadership, communication skills, risk awareness and commitment to professional standards. This reflects the reality that infrastructure outcomes depend on people being able not only to understand technical issues but also to make sound decisions in complex and uncertain environments.

UK-SPEC does not separate technical competence from professional behaviour. Rather, it recognises that competent practice requires technical knowledge, communication, leadership, ethical conduct, risk management and commitment to ongoing development.

Professional registration, CPD requirements, codes of conduct and disciplinary arrangements all contribute to this wider system of assurance. Together, they help support public confidence and improve the likelihood of good outcomes.

16. What practical changes/actions would make the biggest difference to pre-design work?

Greater emphasis should be placed on independently assured competence, including through professional qualification, professional registration, continuing professional development and ongoing competence assurance mechanisms.

Second, professional bodies should continue to encourage stronger expectations around continuing professional development. Competence should be viewed as something that must be maintained and evidenced throughout a career rather than achieved once and assumed indefinitely. The pace of change in areas such as digital technology, artificial intelligence, adaptation, resilience and net zero reinforces this need.

Third, client capability should be strengthened through improved guidance, training and support. Competent dutyholders remain essential, but clients exert a fundamental influence over project outcomes and should be recognised accordingly.

Finally, procurement approaches should place greater emphasis on competence, quality, and long-term value rather than lowest initial cost. The mandatory use of the Construction Playbook on central government projects, something the ICE and Competition and Markets Authority have recommended, would go some way to support better decision-making throughout project development and delivery.

17. Which single action would you prioritise?

The single most important action would be to place greater emphasis on independently assessed professional competence throughout the built environment sector.

The reason for prioritising this action is that independent competence assurance addresses all three pillars of the Government's framework for the professions work (skills, knowledge and experience; behaviour, conduct and culture; accountability and personal responsibility) simultaneously. Independent competence assurance is particularly valuable because it assesses demonstrated capability rather than inputs alone. Professional Review considers not only technical knowledge but whether an individual can exercise judgement, manage risk, communicate effectively, understand professional obligations and recognise the limits of their competence.

Professional qualification does not simply confirm technical knowledge. ICE's competence framework assesses engineering application, risk management, health and safety, leadership, communication, commercial awareness, sustainability, professional judgement and ethical behaviour. Candidates must also demonstrate an understanding of the limits of their competence and a commitment to continuing professional development.

Crucially, assurance continues after qualification. Professionally qualified members are required to maintain competence through CPD, are subject to audit and may have membership and professional registration removed where obligations are not met. This approach provides assurance not simply at entry to the profession but throughout an individual's career.

Independently assured competence provides one of the most practical and effective means of strengthening competence, behaviours and accountability across the sector while supporting public confidence in those undertaking critical professional functions.

Design and specification (questions 18-34)

18. What types of skills, knowledge and experience are needed to carry out design and specification work?

Design and specification require a combination of technical competence, practical experience and professional judgement, including:

- engineering design competence
- application of standards, codes and regulations
- risk and safety management
- digital engineering and information management
- climate resilience and adaptation
- whole-life carbon assessment
- systems thinking
- stakeholder engagement and communication
- ethical decision-making and professional judgement

For higher-risk and safety-critical projects, competence must extend beyond producing technically compliant designs to understanding how decisions affect construction, operation, maintenance and public safety throughout the asset lifecycle. These capabilities extend beyond academic qualifications alone. The ICE's attributes for professionally qualified membership set out that professionals must be capable across seven broad areas:

- engineering knowledge and application
- management and leadership
- commercial awareness
- health, safety and welfare
- sustainable development
- communication and interpersonal skills
- professional commitment and ethics.

These capabilities are reflected in ICE's Professional Review process, through which candidates must demonstrate competence in engineering application, risk management, leadership, communication, commercial awareness, sustainability and professional commitment. Professional qualification therefore assesses the ability to apply knowledge and judgement in practice, rather than simply the possession of technical knowledge.

The ICE's competence framework reflects internationally recognised standards and assesses capability across engineering application, leadership and management, commercial awareness, health and safety, sustainable development, communication and professional commitment. These areas collectively provide the skills, knowledge, experience and behaviours required to undertake complex professional responsibilities.

19. Where are the most material gaps in skills, knowledge and experience in design and specification?

The ICE does not hold sector-wide quantitative evidence that allows it to rank these gaps across the entire built environment. These observations are based on professional experience, member engagement and competence development activity rather than comprehensive sector measurement.

The most significant gaps appear to be in climate adaptation and resilience, whole-life carbon management, systems-based design approaches, digital and data-enabled engineering, building safety competence, integration of operational and maintenance considerations during design.

The ICE has developed guidance and professional development relating to PAS 2080, climate adaptation, resilience and systems approaches, reflecting growing demand in these areas.

The ICE's view is that the most significant challenge is not necessarily the absence of competence frameworks, qualifications or guidance. The UK has developed a sophisticated system of training, standards, registers and professional oversight. The greater challenge is ensuring that these mechanisms translate into demonstrable competence in practice. There is a risk that demonstrating compliance becomes confused with demonstrating capability. Competence should be evidenced through the ability to apply knowledge, skills, experience and behaviours effectively in real-world circumstances, including recognising limitations and seeking appropriate support.

20. How consistently are the necessary skills, knowledge and experience demonstrated?

The ICE does not collect sector-wide data enabling a robust assessment of how consistently competence is demonstrated across all design professions and organisations.

However, based on our experience of professional qualification, employer engagement, CPD and competence assessment, capability appears strongest where organisations actively support professional registration, structured development and lifelong learning. Consistency is likely to be weaker where competence is assessed primarily through organisational position or experience without independent validation.

ICE's Approved Employer Schemes, employer engagement activity and structured training arrangements have consistently highlighted the importance of organisational capability in developing and sustaining professional competence

Within the population of professionally qualified ICE members, competence is assessed against a nationally recognised framework through a structured Professional Review conducted by trained peer reviewers. This provides a consistent and independently verified benchmark for professional competence

Professional registration remains an important mechanism for assuring consistently assessed standards of competence. In 2025, 2,143 individuals achieved professional qualification through ICE routes, demonstrating the continuing demand for independent competence assessment.

For professionally qualified ICE members, competence maintenance is subject to audit. ICE's 2025 CPD audit achieved 98.3% compliance among audited members.

21. What most influences behaviour and decision-making during design and specification?

ICE members are required through the Code of Conduct to have full regard for the public interest, particularly health and safety, to act within the limits of their competence and to maintain professional standards. These obligations help shape decision-making alongside commercial and organisational considerations.

Behaviour and decision-making are influenced by:

- client requirements
- regulatory obligations
- programme and budget pressures
- procurement arrangements
- organisational culture
- professional standards
- ethical obligations
- leadership behaviours

The ICE's experience is that behaviour and decision-making are influenced as much by organisational culture and leadership as by technical competence. Individuals must be willing and able to challenge assumptions, identify risks and prioritise long-term public benefit. However, competent individuals may struggle to do so where organisational structures discourage challenge, limit authority or prioritise short-term commercial objectives above safety, quality and resilience.

Competence should therefore be considered in organisational as well as individual terms.

22. How consistently are positive behaviours and decision-making demonstrated?

The ICE is not aware of comprehensive evidence measuring behavioural consistency across the built environment.

However, our experience suggests that many organisations and professionals demonstrate strong commitment to ethical practice, public safety and professional standards. At the same time, lessons from Grenfell and other failures demonstrate that technical competence alone does not guarantee good outcomes.

Positive behaviours are reinforced through professional obligations rather than being treated as optional attributes. ICE members are required to work competently, act ethically, maintain their professional capability and support the development of others. These expectations are embedded within the ICE's Code of Conduct.

Positive behaviours depend not only on individual professionalism but on whether organisations create environments in which challenge is supported and acted upon. Many failures occur not because risks are unidentified, but because concerns are not escalated, heard or addressed effectively.

23. What benefits arise from clear roles, responsibilities and accountability?

Clear allocation of responsibilities improves safety outcomes, strengthens risk management, improves transparency, reduces ambiguity, supports effective decision-making, and strengthens public confidence.

Professional registration supports accountability by linking responsibilities to identifiable individuals who have demonstrated competence against recognised standards and remain subject to ongoing professional obligations.

Accountability is most effective when responsibility is accompanied by competence, authority, resources and organisational support. Simply assigning responsibility does not guarantee good outcomes if individuals or organisations cannot influence decisions or implement necessary actions.

24. What challenges arise in defining, understanding or delivering them?

The principal challenges arise from multiple factors, including fragmented project delivery models, multiple organisations contributing to design, complex procurement arrangements, unclear interfaces between disciplines, competing commercial incentives, and uncertainty regarding decision ownership.

Complex procurement arrangements and the proliferation of advisory and coordination roles can sometimes obscure who genuinely owns decisions and risks. A common challenge is that responsibility, authority and accountability do not always sit with the same individual or organisation.

Effective accountability requires more than assigning responsibility. Individuals must understand their professional obligations, including those established through codes of conduct and professional standards, and possess sufficient authority and organisational support to discharge them effectively.

25. How consistently are these clearly defined and applied?

The ICE does not possess sector-wide evidence enabling a quantified assessment.

Based on our experience, consistency appears strongest in highly regulated environments and larger organisations with mature governance arrangements. Consistency is likely to be lower where project structures are fragmented, or responsibilities cross multiple organisational boundaries.

Even where formal responsibilities are clearly documented, practical accountability may be less clear. The existence of an assigned role does not necessarily mean there is shared understanding of decision-making authority, ownership of risk or escalation routes. Practical implementation is therefore at least as important as formal role definition.

26. How well do principal designers understand their dutyholder responsibilities?

N/A

27. How well do principal designers deliver those responsibilities?

N/A

28. How consistently do principal designers understand and deliver those responsibilities?

N/A

29. Does the current system of training, competence frameworks and oversight support good outcomes?

The current system provides a strong foundation.

A key strength of the current system is that competence is independently assessed rather than self-declared. ICE's Professional Review process requires candidates to demonstrate competence through documented evidence, professional discussion and peer assessment before professional qualification is awarded.

The built environment sector already possesses a substantial competence infrastructure. This includes accredited qualifications, employer-supported training schemes, professional qualification processes, Engineering Council registration, professional codes of conduct, CPD requirements and professional oversight arrangements.

The more important question is therefore not whether additional frameworks are required, but whether existing arrangements successfully produce competent professionals able to exercise judgement in practice.

The ICE's competence system is designed around a lifecycle model of assurance:

- accredited education;
- structured development;
- independent professional review;
- professional registration;
- continuing professional development;
- CPD audit;
- professional conduct and disciplinary arrangements.

This model recognises that competence incorporates technical capability, leadership, communication, ethics, safety and professional judgement rather than technical knowledge alone.

Future reforms should focus on improving capability and consistency of application rather than expanding the number of competence frameworks operating across the sector.

30. How effective is the current system infrastructure?

From the perspective of professional engineering competence, the system is broadly effective and internationally respected. Professional institutions, regulators and employers collectively provide robust routes into competent practice.

The ICE is not well placed to assess every profession, occupation and regulatory framework across the wider built environment and therefore cannot provide a comprehensive system-wide evaluation.

Greater attention should also be given to organisational capability. Current policy discussions often focus on individual competence, but organisations themselves must possess the governance, leadership, resources and culture necessary to support competent decision-making. Competent individuals operating within incapable organisations may still be unable to deliver good outcomes.

31. Which design-stage actions and decisions most influence later stages and transition to construction?

Key influences include:

- safety-related design decisions
- specification choices
- resilience requirements
- carbon reduction strategies
- maintenance considerations
- information management requirements
- constructability considerations
- risk allocation arrangements

Design-stage decisions frequently determine future safety, cost, carbon and operational outcomes. The quality of design information and communication between parties is also critical to successful construction delivery.

One of the most important influences on later performance is the management of transitions between lifecycle stages. Risks, design intent, safety information and accountability should not be lost or effectively reset as projects move from pre-design to design, construction and operation. Strong continuity of information and responsibility across these transitions is essential.

32. How significant is the impact of the key factors on outcomes at design/specification stage?

Skills, competence, behaviour, accountability, oversight and organisational capability are all highly significant.

Design decisions often lock in future costs, resilience characteristics, operational performance and safety outcomes. The competence of those making these decisions therefore has a profound influence on project success.

The ICE's experience suggests that organisational capability is equally important. Competence frameworks, training and professional standards are necessary but do not automatically produce good outcomes. Outcomes depend upon whether individuals and organisations are capable of applying requirements effectively in practice.

33. What practical changes/actions would make the biggest difference?

Greatest value is likely to come from improving the capability of clients, organisations and professionals to discharge the responsibilities they already hold, rather than create additional competence frameworks,

guidance documents or organisational roles; the built environment already possesses a substantial competence system.

Priorities should include:

- greater use of independently assessed professional competence
- stronger emphasis on lifelong learning and CPD
- improved client capability
- stronger organisational governance
- clearer accountability arrangements
- procurement arrangements that support quality and long-term value
- wider adoption of systems thinking, resilience and whole-life approaches to design

The ICE's recent work on mandatory CPD themes, higher-risk buildings, resilience and adaptation demonstrates the importance of maintaining competence throughout a professional career.

34. Which single action would you prioritise?

Greater use of independently assured professional competence, supported by capable client organisations and effective organisational governance.

Professional competence should not be viewed as the possession of a qualification or the completion of a training programme. It is the ability to apply knowledge, skills, experience and behaviours effectively and responsibly in practice. The ICE's professional qualification framework assesses this broader capability through requirements covering engineering knowledge, risk management, leadership, safety, sustainability, communication, ethics and professional commitment.

Independent competence assurance provides confidence not only that an individual has met a recognised standard, but that competence continues to be maintained. ICE members are required to undertake CPD, plan future development, maintain records and participate in audit processes. Failure to comply can result in removal of membership and professional registration.

Independent competence assurance is particularly valuable because it assesses demonstrated capability rather than inputs alone. Professional Review considers not only technical knowledge but whether an individual can exercise judgement, manage risk, communicate effectively, understand professional obligations and recognise the limits of their competence

This model is valuable because it addresses skills, behaviour and accountability simultaneously. It provides clients, regulators and the public with greater confidence that those making important design decisions possess demonstrable capability and remain committed to maintaining it throughout their careers.

Construction (questions 35-52)

35. What types of skills, knowledge and experience are needed to carry out construction work?

Construction requires a combination of technical competence, practical experience, professional judgement and behavioural competence. The specific requirements vary by role, but critical capabilities include:

- understanding of construction methods and sequencing
- health, safety and risk management
- temporary works awareness
- quality assurance and quality control
- contractual and commercial awareness
- leadership and supervision
- communication and coordination across multiple organisations
- digital and information management capability
- environmental management
- understanding of regulatory requirements and dutyholder obligations
- professional judgement and ethical decision-making

Construction competence should not be viewed solely as a technical issue. Many construction decisions involve balancing competing commercial, safety, programme and operational considerations. The ability to exercise sound judgement in those circumstances is as important as technical knowledge itself.

The ICE's attributes for professionally qualified membership set out that professionals must be capable across seven broad areas:

- engineering knowledge and application
- management and leadership
- commercial awareness
- health, safety and welfare
- sustainable development
- communication and interpersonal skills
- professional commitment and ethics.

These capabilities are reflected in ICE's Professional Review process, through which candidates must demonstrate competence in engineering application, risk management, leadership, communication, commercial awareness, sustainability and professional commitment. Professional qualification therefore assesses the ability to apply knowledge and judgement in practice, rather than simply the possession of technical knowledge.

The ICE's competence framework reflects internationally recognised standards and assesses capability across engineering application, leadership and management, commercial awareness, health and safety, sustainable development, communication and professional commitment. These areas collectively provide the skills, knowledge, experience and behaviours required to undertake complex professional responsibilities

36. Where are the most material gaps in construction skills, knowledge and experience?

The ICE does not possess sector-wide evidence enabling the ranking of skills shortages across all construction occupations and trades. These observations are based on professional experience, employer engagement, competence development activity and member feedback. We observe growing demand for competence in areas including:

- climate adaptation and resilience
- carbon management and decarbonisation
- digital engineering and information management
- building safety and risk management
- systems-based approaches to infrastructure delivery

These are areas in which the ICE has invested significantly through professional development, technical guidance and competence initiatives in recent years. The prominence of these activities reflects the increasing importance of these capabilities across the sector.

More broadly, the ICE continues to support significant numbers of early-career professionals and apprentices through its training and development activities, suggesting that workforce development remains a continuing priority for the industry.

37. How consistently are they demonstrated?

The ICE does not collect data that would allow a comprehensive assessment of how consistently competence is demonstrated across the construction sector.

Within the population of professionally qualified ICE members, competence is assessed against a nationally recognised framework through a structured Professional Review conducted by trained peer reviewers. This provides a consistent and independently verified benchmark for professional competence

Based on our experience, performance appears strongest where organisations support structured training, professional development, independent competence assessment and strong supervisory arrangements. Consistency is likely to be weaker where competence is assessed informally or where investment in development and assurance is limited.

The ICE's wider experience suggests that competence should not be measured solely through qualifications or training records. The true test is whether individuals can apply their knowledge, skills, experience and behaviours effectively in practice.

38. What most influences behaviour and decision-making during construction?

Numerous factors, including organisational culture, client expectations, leadership, programme and cost pressures, contracts, safety culture, regulatory obligations, and professional standards.

Construction environments can be characterised by significant commercial and programme pressures. The ICE's experience is that positive outcomes are most likely where organisations encourage challenge, prioritise safety and quality, and empower individuals to raise concerns without fear of adverse consequences.

ICE members are required through the Code of Conduct to have full regard for the public interest, particularly health and safety, to act within the limits of their competence and to maintain professional standards. These obligations help shape decision-making alongside commercial and organisational considerations.

Behaviour is therefore influenced not only by individual competence but also by the culture and capability of the organisations within which people operate.

39. How consistently are positive behaviours and decision-making demonstrated?

The ICE is not aware of robust sector-wide evidence measuring behavioural consistency across construction activities.

However, major project successes and failures demonstrate that behaviours are critical to outcomes. Technical competence alone does not guarantee appropriate decision-making. Effective challenge, transparency, ethical conduct and willingness to address emerging risks are all essential components of professional behaviour.

Positive behaviours are reinforced through professional obligations rather than being treated as optional attributes. ICE members are required to work competently, act ethically, maintain their professional capability and support the development of others. These expectations are embedded within the ICE's Code of Conduct.

Positive behaviours depend heavily on organisational culture. Individuals must be supported and empowered to exercise professional judgement if positive behaviours are to be consistently demonstrated.

40. What benefits arise from clear roles, responsibilities and accountability?

Clear responsibilities support safer construction delivery, stronger risk management, improved communication, better coordination between parties, more effective decision-making, clearer ownership of problems and solutions, and greater public confidence.

Professional registration and recognised competence frameworks help reinforce accountability by linking responsibilities to identified individuals who have demonstrated competence and committed to professional standards.

Accountability is most effective where responsibility is accompanied by competence, authority, resources and organisational support. At the ICE, accountability is strengthened through the Code of Conduct, which establishes enforceable obligations relating to competence, professional behaviour, ethics and the public interest. These obligations continue throughout a member's career and are supported by audit, disciplinary and conduct processes where necessary.

41. What challenges arise in defining, understanding or delivering them?

Construction projects often involve multiple organisations, complex contractual relationships and extensive supply chains. This comes with multiple challenges, include:

- fragmentation of responsibility
- unclear interfaces between organisations
- differing contractual incentives
- multiple layers of subcontracting
- uncertainty regarding ownership of risk
- disconnects between responsibility and authority

Formal assignment of responsibilities does not necessarily create effective accountability. Accountability requires individuals and organisations to possess the authority, competence and resources necessary to exercise their responsibilities effectively.

42. How consistently are roles, responsibilities and accountability clearly defined and applied?

The ICE does not hold sector-wide evidence enabling a quantified assessment.

Based on our experience, consistency appears highest in organisations with mature governance arrangements, clear assurance processes and strong leadership. Consistency may be lower where delivery structures are fragmented or where contractual arrangements create uncertainty regarding decision ownership and risk allocation.

The practical application of accountability is often more important than formal organisational charts or contractual provisions alone.

43. How well do principal contractors understand their dutyholder responsibilities?

The ICE does not collect evidence that would allow a robust sector-wide assessment of principal contractor understanding.

However, capability appears to have improved following recent building safety reforms and greater emphasis on competence requirements within the industry. Understanding is likely to vary according to organisational maturity, access to professional expertise, internal governance arrangements and project type.

Effective delivery depends not solely on principal contractors but also on capable clients, competent designers and organisations with effective governance.

44. How well do principal contractors deliver those responsibilities?

We do not have a quantified sector-wide assessment of delivery performance among principal contractors.

In our experience, effective delivery is most likely where principal contractors possess competent leadership, strong safety culture, effective assurance mechanisms, authority to make decisions, and access to appropriately skilled personnel.

Successful delivery depends not only on individual competence but also on organisational capability and culture.

45. How consistently do principal contractors understand and deliver them?

We do not hold sufficient evidence to quantify consistency across the sector.

Variability is likely to reflect differences in organisational capability, leadership, governance, client requirements and workforce competence. Independent competence assessment, strong professional standards and effective continuing development can help improve consistency over time.

46. Does the current system infrastructure effectively support good outcomes in construction?

The current competence system provides a strong foundation for construction professionals.

The existing system includes education standards, approved employer schemes, structured professional development, professional review, Engineering Council registration, CPD requirements and professional oversight. Together these provide mechanisms for developing, assessing and maintaining competence.

A key strength of the current system is that competence is independently assessed rather than self-declared. ICE's Professional Review process requires candidates to demonstrate competence through documented evidence, professional discussion and peer assessment before professional qualification is awarded. Another important strength is that competence is not treated as a one-off gateway. Professionally qualified members are expected to maintain and develop their competence throughout their careers. This is reinforced through CPD requirements, audit arrangements and professional conduct obligations. In 2025, the ICE achieved a CPD audit compliance rate of 98.3% amongst those selected for audit.

Future policy should focus less on creating additional frameworks and more on ensuring that existing standards are consistently applied and supported by capable organisations and clients.

47. How effective is that system infrastructure?

From the perspective of engineering competence, the current system is broadly effective and internationally respected.

Recent developments such as the Higher-Risk Buildings Register, mandatory CPD themes and strengthened focus on safety and risk management demonstrate continued improvement.

The ICE is not able to provide a comprehensive evaluation of all competence arrangements, professions and regulatory frameworks operating across the wider construction sector, but our view is that future improvements should concentrate on capability outcomes rather than the creation of additional frameworks.

48. Which construction-stage actions and decisions most influence later stages and transition to occupation/maintenance?

The most important influences include quality of work, compliance with design intent, management of construction risk, quality assurance and inspection processes, recording and transfer of information, management of change, asset information management, and commissioning and handover activities.

One of the most important issues is continuity across lifecycle stages. Information, risks, lessons and accountability should not be lost as projects move from construction into occupation, operation and maintenance. Strong information management and structured handover processes are critical to long-term performance and safety.

49. What issues or benefits are associated with licensing, regulation and registration of contractors/subcontractors?

Licensing, regulation and registration can provide important public assurance where they are linked to demonstrable competence and effective accountability.

Registration is not just a record of membership. Registered professionals must demonstrate competence against nationally recognised standards covering technical application, leadership, communication, professional judgement, ethical conduct and commitment to continuing competence.

The value of registration lies not in the existence of a register itself, but in the assurance mechanisms that underpin it. For ICE-qualified professionals, competence is independently assessed through Professional Review and subsequently maintained through obligations established in the Code of Conduct, including requirements relating to competence, ethical behaviour, CPD and acting in the public interest. Registration therefore forms part of a wider competence assurance system rather than a standalone credential.

The ICE has consistently argued that certain safety-critical activities should be undertaken only by suitably qualified and experienced persons whose competence has been independently assessed. This principle already underpins several existing arrangements, including statutory engineering panel roles and the Higher Risk Buildings Register developed jointly by the ICE and the Institution of Structural Engineers.

Professional registration provides assurance because competence is assessed against a broad range of attributes including engineering judgement, risk management, leadership, communication, ethics, safety and sustainable development rather than technical capability alone. Equally importantly, those obligations continue after qualification through CPD requirements, audit and professional conduct procedures.

We would therefore support registration or licensing arrangements where they are risk-based, proportionate, linked to independently assessed competence, supported by ongoing competence requirements, and accompanied by meaningful enforcement mechanisms.

We would be cautious about approaches that create additional administrative requirements without providing greater assurance of actual competence. The objective should be improved capability and accountability, not just increased compliance activity.

50. How significant is the impact of key factors on construction outcomes?

Skills, competence, behaviour, accountability and organisational capability are fundamental elements of construction outcomes.

Although individual factors can be considered separately, in practice they operate as an interconnected system.

For example, good technical competence without accountability may not result in effective decision-making. Accountability without authority may not enable risks to be managed effectively. Strong competence frameworks cannot compensate for poor organisational culture. Capable individuals may be unable to deliver good outcomes if organisations lack effective governance, leadership or resources.

Many significant failures cannot be attributed solely to technical deficiencies. They often arise from combinations of factors such as ineffective communication, weak challenge culture, poor coordination, unclear accountabilities, inadequate client capability or failures in organisational decision-making.

The ICE's competence framework demonstrates that skills, behaviours and accountability cannot readily be separated. Professional qualification assesses competence through Professional Review, while ongoing obligations relating to ethics, public interest, competence maintenance and professional conduct are reinforced through the Code of Conduct. Together these mechanisms provide assurance across all three pillars identified in the consultation.

This is an important distinction because discussions on competence sometimes focus narrowly on qualifications and training. While these are important, outcomes are ultimately determined by whether people and organisations can apply their knowledge, skills, experience and behaviours effectively in real situations.

Organisational capability deserves greater prominence within discussions of competence. Competence should not be viewed solely as an individual characteristic. Organisations themselves require appropriate governance, leadership, resources, decision-making processes and cultures if competence is to translate into successful outcomes.

The importance of these factors extends beyond buildings. Construction includes major infrastructure, highways, railways, flood defences, dams, bridges, excavations and temporary works. Failures within these sectors can have consequences that are every bit as significant as failures associated with buildings. Accordingly, competence, behaviour and accountability expectations should reflect the risks and consequences of failure rather than whether work falls inside or outside a particular regulatory regime.

51. What practical changes/actions would make the biggest difference?

The focus should be on improving capability rather than creating additional frameworks.

The built environment sector already benefits from professional registration systems, competence frameworks, qualifications and apprenticeships, industry guidance, codes of professional conduct, CPD requirements and regulatory oversight arrangements.

While these can undoubtedly be refined, the principal challenge is ensuring they are translated into competent behaviours and effective decision-making in practice.

We would prioritise five changes.

1. Strengthen independently assessed competence

Government, clients and employers should place greater weight on independently assessed professional competence when appointing individuals to roles carrying significant responsibility.

Independent assessment provides assurance not only of technical knowledge but also of judgement, communication, leadership, ethics and professional commitment.

2. Improve client capability

Many project outcomes are determined by the quality of client decision-making.

Competent designers and contractors cannot fully compensate for clients that lack the knowledge, experience, governance arrangements or organisational capability necessary to discharge their responsibilities effectively.

Client capability to be one of the most important and often overlooked aspects of the competence agenda.

3. Focus on organisational capability

Policy discussions frequently focus on individual competence.

However, organisations themselves must possess:

- effective governance;
- clear accountability structures;
- adequate resources;
- appropriate leadership;
- cultures that support challenge and learning.

Competent people operating within incapable organisations may still be unable to deliver good outcomes.

4. Improve lifecycle continuity

Information, risks and accountability should not be lost as projects move between pre-design, design, construction and operation.

Greater attention should be paid to ensuring continuity of information, design intent and accountability throughout the asset lifecycle.

5. Align competence requirements with risk

Expectations relating to competence, behaviour and accountability should reflect the consequences of failure.

Excessive focus on buildings may unintentionally obscure the risks associated with wider construction and infrastructure activities. A risk-based approach would better reflect the realities of the sector.

52. Which single action would you prioritise?

If a single intervention were prioritised, we would recommend greater use of independently assessed professional competence for individuals exercising significant responsibilities across the built environment.

This reflects that competence cannot be reduced to qualifications, experience or organisational position alone. Effective assurance requires evidence that individuals can apply knowledge, exercise professional judgement, manage risks, communicate effectively, act ethically and recognise the limits of their competence. The ICE's professional qualification system assesses all of these capabilities.

Independent competence assurance also extends beyond initial qualification. Members must undertake CPD, maintain records, participate in audit where requested, and comply with professional conduct requirements. Failure to do so can result in loss of membership and professional registration. In 2025, the ICE achieved a CPD audit compliance rate of 98.3%, demonstrating both strong engagement and effective oversight.

Independent competence assurance is particularly valuable because it assesses demonstrated capability rather than inputs alone. Professional Review considers not only technical knowledge but whether an individual can exercise judgement, manage risk, communicate effectively, understand professional obligations and recognise the limits of their competence

This model represents a practical way of strengthening competence, behaviour and accountability simultaneously. It moves the focus from qualifications and compliance processes towards demonstrable capability throughout a professional career.

While competence alone cannot compensate for weak organisational governance or poor client capability, independently assured competence provides the strongest single foundation on which safer, more resilient and more trusted construction outcomes can be built.

Occupation and maintenance (questions 53-70)

53. What types of skills, knowledge and experience are needed?

Occupation and maintenance require many of the same competencies as design and construction, but with a greater emphasis on operational performance, asset stewardship, safety management and long-term decision-making.

Key competencies include:

- asset management and lifecycle planning
- inspection, monitoring and maintenance techniques
- safety and risk management
- resilience and climate adaptation
- digital asset information management
- understanding of operational and regulatory requirements
- systems thinking
- communication and stakeholder engagement
- leadership and decision-making
- professional judgement and ethical conduct

The ICE's competence framework, aligned with UK-SPEC, recognises that competence extends beyond technical knowledge alone. Professional competence includes engineering application, leadership, health and safety, sustainability, communication and professional commitment. Occupation and maintenance therefore require practitioners who can exercise judgement in live operational environments as well as apply technical expertise.

54. Where are the most material gaps?

The ICE does not hold sector-wide evidence enabling a definitive assessment of the most significant competence gaps across all occupation and maintenance roles.

Based on our professional experience and competence activities, areas of growing importance include asset resilience and climate adaptation, management of ageing infrastructure and buildings, safety risk management, digital asset information and data management, systems-based asset management, and whole-life performance and sustainability.

ICE's Building Safeguards work identified growing risks arising from ageing assets, climate change impacts and constrained maintenance budgets, suggesting that competence in these areas is becoming increasingly important.

The greater challenge may not be the absence of competence frameworks but ensuring that competence is maintained throughout increasingly complex professional careers and translated effectively into operational decision-making.

55. How consistently are they demonstrated?

The ICE does not possess sector-wide data on competence across all occupations and maintenance professions.

However, professionally qualified engineers are assessed against recognised competence frameworks and remain subject to ongoing competence requirements. ICE's professional review process, CPD framework and audit arrangements provide consistent mechanisms for assessing and maintaining competence among registered professionals.

In 2025, ICE achieved a CPD audit compliance rate of 98.3% among audited professionally qualified members, demonstrating high levels of engagement with competence maintenance within the Institution's sphere of influence.

56. What most influences behaviour and decision-making?

Numerous factors, including organisational culture, client expectations, leadership, programme and cost pressures, contracts, safety culture, regulatory obligations, and professional standards.

The ICE Code of Conduct requires members to act in the public interest, particularly regarding health and safety, undertake only work they are competent to perform and maintain professional competence throughout their careers. These obligations help shape decision-making beyond purely commercial considerations.

The ICE's experience is that behaviour is influenced as much by organisational environments as by individual capability. Competent individuals may struggle to make appropriate decisions where governance, leadership or incentives discourage challenge and learning

57. How consistently are positive behaviours and decision-making demonstrated?

The ICE is not aware of comprehensive evidence measuring behavioural consistency across the occupation and maintenance sector.

Positive behaviours are promoted through professional obligations including ethical conduct, public-interest responsibilities, competence maintenance and ongoing professional development. These expectations are embedded within professional standards and the ICE Code of Conduct.

A recurring theme from ICE member and practitioner input is that positive behaviours depend heavily on organisational capability, culture and leadership. Good outcomes often depend on whether individuals are empowered to challenge decisions, escalate concerns and learn from failures and near misses.

58. What benefits arise from clear roles, responsibilities and accountability?

Clear responsibilities support safer delivery, stronger risk management, improved communication, better coordination between parties, more effective decision-making, clearer ownership of problems and solutions, and greater public confidence.

In occupation and maintenance, accountability is particularly important because decisions often affect safety and operational performance over long periods.

Professional registration, codes of conduct, CPD obligations and disciplinary processes help strengthen accountability by linking responsibilities to individuals who have demonstrated competence and committed to professional standards.

59. What challenges arise in defining, understanding or delivering them?

Maintenance projects often involve multiple organisations, complex contractual relationships and extensive supply chains. This comes with multiple challenges, including:

- fragmentation of responsibility
- unclear interfaces between organisations, including contractors and service providers
- long asset lifecycles, sometimes including ‘sweating’ of the asset beyond its expected lifetime
- unclear interfaces between operational and maintenance responsibilities.

A common problem is that responsibility, authority and accountability do not always align. Individuals may be formally responsible for outcomes without possessing sufficient authority, resources or organisational support to discharge those responsibilities effectively.

60. How consistently are roles, responsibilities and accountability clearly defined and applied?

The ICE does not hold sector-wide evidence enabling a quantified assessment.

As outlined in previous questions, consistency appears strongest where organisations possess mature governance systems, competent leadership and effective assurance processes.

Formal assignment of roles alone is not sufficient. Practical understanding of risk ownership, decision making authority and escalation routes is equally important.

61. How well do accountable persons understand their responsibilities?

This is likely to vary according to professional background, organisational maturity and access to technical expertise.

Where accountable persons possess relevant professional qualifications, competence frameworks and ongoing professional development, there is likely to be stronger understanding of responsibilities and associated risks.

62. How well do accountable persons deliver those responsibilities?

Successful delivery typically depends on individual competence, organisational capability and culture, access to relevant expertise, effective governance, adequate resources, and clear accountability structures.

Competent professionals cannot fully compensate for organisations that lack the capability, governance or resources necessary to support effective decision-making.

63. How consistently do accountable persons understand and deliver them?

Based on our experience, consistency appears highest in organisations with mature governance arrangements, clear assurance processes and strong leadership. Consistency may be lower where delivery structures are fragmented or where contractual arrangements create uncertainty regarding decision ownership and risk allocation.

The practical application of accountability is often more important than formal organisational charts or contractual provisions alone.

64. Does the current system infrastructure effectively support good outcomes?

The current competence system provides a strong foundation for construction professionals.

The existing system includes education standards, approved employer schemes, structured professional development, professional review, Engineering Council registration, CPD requirements and professional oversight. Together these provide mechanisms for developing, assessing and maintaining competence.

A key strength of the current system is that competence is independently assessed rather than self-declared. ICE's Professional Review process requires candidates to demonstrate competence through documented evidence, professional discussion and peer assessment before professional qualification is awarded. Another important strength is that competence is not treated as a one-off gateway. Professionally qualified members are expected to maintain and develop their competence throughout their careers. This is reinforced through CPD requirements, audit arrangements and professional conduct obligations. In 2025, the ICE achieved a CPD audit compliance rate of 98.3% amongst those selected for audit.

Future policy should focus less on creating additional frameworks and more on ensuring that existing standards are consistently applied and supported by capable organisations and clients.

65. How effective is that system infrastructure?

From the perspective of professional engineering competence, the system is broadly effective.

A particular strength is that competence is treated as a lifecycle process rather than a one-off qualification event. The system combines professional review and independent assessment, professional registration, ongoing CPD obligations, audit and enforcement mechanisms, codes of conduct, and disciplinary arrangements.

This creates a system of independent competence assurance throughout a professional career.

66. Which actions and decisions most influence subsequent stages?

The most influential decisions include:

- maintenance prioritisation and investment decisions
- risk management decisions
- inspection and monitoring regimes
- management of deterioration
- information management and record keeping
- decisions regarding refurb, upgrade or replace
- management of operational changes

Strong lifecycle management depends upon continuity of information, competence and accountability. Risks, lessons learned and critical asset information should not be lost as assets move between design, construction, operation, refurbishment and eventual decommissioning. In the case of much older assets, it is important that institutional memory is retained also.

67. Is there evidence of issues relating to quality/workmanship, professionalism, or accountability/enforcement/redress in RMI works?

We do not hold evidence on this, but the broader lessons from Grenfell, building safety reforms and ICE's Building Safeguards work demonstrate the importance of competence, accountability, professional oversight and learning from failure throughout the asset lifecycle.

68. How significant is the impact of key factors on occupation and maintenance outcomes?

Competence, behaviour, accountability, leadership and organisational capability are highly significant determinants of occupation and maintenance outcomes.

Many safety, performance, reliability and resilience outcomes depend upon the quality of decisions taken throughout an asset's operational life.

UK-SPEC, the ICE competence framework and the ICE's professional review process all recognise that competent practice requires technical expertise, professional judgement, communication, leadership, ethics and commitment to continual improvement. These factors should be viewed as interdependent rather than separate influences.

69. What practical changes/actions would make the biggest difference?

The priority should be improving capability rather than creating additional frameworks.

These include:

- Greater use of independently assured professional competence.

- Stronger emphasis on lifelong learning and CPD.
- Improved organisational capability and governance.
- Stronger client and asset-owner capability.
- Better management of information and accountability across an asset's lifecycle.
- Wider adoption of risk-based approaches to competence.
- Greater focus on learning from failures, near misses and operational experience.

The UK already possesses extensive competence frameworks and standards. The greatest benefit is likely to come from ensuring that they are applied consistently and translated into effective capability in practice.

70. Which single action would you prioritise?

Learning from failure is one of the most underutilised opportunities for improving competence and safety outcomes.

A central finding of the ICE Building Safeguards Review was the need to strengthen the profession's ability to identify, share and act on lessons from failures, near misses and precursor events. This applies equally to buildings and infrastructure assets.

We have promoted wider use of Collaborative Reporting for Safer Structures UK (CROSS-UK), which provides a trusted reporting system through which practitioners can share safety concerns, incidents, near misses and lessons learned across the sector. The expansion of CROSS-UK to include fire safety issues has strengthened its ability to support learning across the wider built environment.

Stronger engagement with mechanisms such as CROSS-UK could help create a more open learning culture, improve understanding of recurring risks, support earlier intervention before failures occur and strengthen professional judgement throughout the asset lifecycle. A mature safety culture depends not only on competence and regulation, but also on the sector's ability to learn systematically from experience and disseminate those lessons widely.

The greatest gains are likely to come from strengthening the application of existing competence, learning and accountability mechanisms rather than creating additional frameworks or requirements.

Cross-cutting issues, themes and challenges (questions 71-79)

71. How well do directors, managers or senior officers meet their legal responsibilities when delivering dutyholder functions?

The ICE does not collect evidence on how consistently directors, managers or senior officers discharge legal responsibilities across the built environment sector.

However, our experience suggests that successful delivery of dutyholder responsibilities depends heavily on organisational capability, governance, leadership and access to competent advice. The appointment of competent professionals does not remove the need for senior leaders to understand the responsibilities they retain.

A recurring theme raised by practitioners is that accountability can become diluted when decision-making authority, technical expertise and formal responsibility sit in different parts of an organisation. Effective delivery is most likely where directors and senior leaders understand their legal responsibilities, obtain competent advice, provide adequate resources, support challenge and escalation, and promote safety and ethical decision-making.

72. Across the lifecycle, where are skills, behaviours, accountability and organisational capability enhanced or constrained by cross-cutting functions?

Several cross-cutting functions are particularly influential throughout the lifecycle.

Procurement

Procurement approaches can either support or undermine competence, collaboration and accountability. Approaches focused primarily on lowest cost can unintentionally discourage investment in competence, safety and long-term value. Conversely, procurement can be used as a lever for improving standards by rewarding quality, capability and the use of competent professionals. We would recommend the mandatory use of the Construction Playbook for central government departments, and for its principles to be cascaded down further into other levels of government.

Client capability

Client capability affects every lifecycle stage. Competent designers, contractors and operators cannot fully compensate for poorly informed client decisions. Client organisations require sufficient knowledge, governance and resources to define requirements, appoint competent professionals and exercise effective oversight.

Information management

The management of information across transitions between lifecycle stages is critical. Weak information management can result in the loss of design intent, safety information, lessons learned and accountability. Strong information management strengthens competence and accountability throughout the lifecycle.

Organisational culture

Culture influences whether individuals are willing and able to challenge assumptions, escalate risks and learn from mistakes. Competent people operating within organisations that discourage challenge may still struggle to achieve good outcomes.

Professional standards

Frameworks such as UK-SPEC, professional registration, CPD requirements and codes of conduct help provide consistent expectations across the lifecycle and across different employers and sectors.

73. What role do existing sector bodies and regulators play in supporting and assuring competence, behaviour and accountability?

Existing sector bodies and regulators play a critical role. Professional institutions contribute in several ways, notably accrediting educational programmes, supporting and auditing professional development, assessing competence through independent professional review, maintaining professional registers, defining professional standards, and enforcing professional conduct requirements.

The ICE's own approach combines professional qualification, competence assessment, CPD requirements, annual CPD audits, ICE Code of Conduct, disciplinary mechanisms, and specialist competence registers.

Regulators establish legal duties, oversee compliance and provide enforcement where required.

Effective systems require both. Regulators establish the framework and enforce legal obligations, while professional institutions develop, assess and maintain professional competence throughout careers.

A key lesson from recent reforms is that technical expertise remains essential. Regulators should possess sufficient in-house technical capability to support evidence-based decision-making and intelligent enforcement – it is positive, for example, that the new water sector regulator will have a Chief Engineer position on its board.

74. What are the greatest barriers to effective enforcement against individuals and organisations that fail to meet standards?

Enforcement is most effective where responsibilities are clearly assigned and linked to demonstrable competence.

This means that unclear accountability arrangements, fragmentation of responsibilities, difficulty identifying decision-makers, inconsistent competence requirements, lack of organisational capability, inadequate technical expertise within parts of the system, and weak learning and reporting cultures can all act as barriers to effective enforcement.

Enforcement alone is unlikely to drive improvement. Effective systems combine competence, accountability, learning and proportionate enforcement. This means good practice must be incentivised, as well as poor performance sanctioned.

A further challenge is ensuring that those who invest in competence and professionalism are not disadvantaged by organisations that do not. This point was highlighted in the ICE's response to the Single Construction Regulator consultation and should be reflected in future reforms.

75. How are emerging technologies and changing practices shaping work, and what are the barriers to adoption?

Emerging technologies are changing how the built environment is planned, designed, constructed, operated and maintained.

Important developments include digital engineering and BIM, AI-enabled analysis and decision support, digital twins, remote monitoring and sensing technologies, modern methods of construction (a.k.a. industrialised construction), and advanced asset management systems.

These technologies have the potential to improve productivity, safety, resilience and lifecycle performance.

However, adoption can be constrained by factors including unfamiliarity, organisational capability, resources, fragmented data systems, inconsistent standards, and a cultural resistance to change.

Technological adoption depends as much on organisational capability and leadership as it does on technical innovation itself. The benefits of technology are only realised where individuals possess the competence to use it effectively and organisations possess the governance and culture to support implementation.

76. To what extent can individuals and organisations access education, training and development to keep pace with technological change?

As outlined in previous questions, the UK benefits from a well-developed system of professional education and development.

The ICE alone supports approximately 12,000 early-career professionals through employer training schemes and works with around 4,500 apprentices, demonstrating the breadth of existing competence-development infrastructure.

Our CPD framework specifically recognises the need for lifelong learning and competence maintenance throughout professional careers. Members are expected to identify learning needs, maintain development plans and undertake appropriate professional development.

The challenge is in ensuring that individuals and organisations have the time, support, incentives and resources necessary to engage with them effectively, rather than a lack of available resources.

77. Are there examples of good practice from other sectors or countries that should be considered?

Independent competence assurance

Many high-risk sectors such as aviation and nuclear place strong emphasis on independent competence assessment, ongoing professional development and clear accountability for safety-critical roles. These principles are directly relevant to the built environment.

Learning from failure

Sectors such as aviation have demonstrated the benefits of systematic reporting and learning cultures. Greater use of mechanisms such as CROSS-UK can support similar learning within the built environment by encouraging the reporting of failures, near misses and precursor events and disseminating lessons across the profession.

Risk-based competence requirements

Competence requirements should be proportionate to the risks and consequences of failure. Infrastructure failures can have consequences every bit as serious as building failures and it is important for approaches to focus on risk rather than regulatory boundaries.

Reserved functions

Hong Kong requires chartered engineers to design, build and operate certain projects. Such approaches illustrate how safety-critical activities can be linked to independently assured competence.

78. What are the three most important insights for designing the new strategy?

1. Focus on capability, not just compliance

The built environment already possesses a substantial landscape of competence frameworks, qualifications, guidance and regulation. The challenge is ensuring that these arrangements create genuine capability and good judgement in practice rather than becoming compliance exercises.

2. Treat competence, behaviour and accountability as a single system

UK-SPEC, professional review processes and professional conduct frameworks demonstrate that competence, behaviour and accountability cannot be meaningfully separated. Good outcomes arise from the interaction of all three.

3. Ensure the scope is risk-based and goes beyond buildings

While this call for evidence is framed around the built environment, we emphasise that competence, behaviour and accountability requirements should be proportionate to the risks and consequences of failure. These principles are equally relevant to wider infrastructure assets such as bridges, tunnels, dams, reservoirs, flood defences and temporary works, and as such, we recommend that infrastructure is included in the scope of future reforms.

79. Are there any other final points not captured elsewhere in your response?

Competence requirements should reflect the risks and consequences of failure, rather than whether an activity happens to fall within a particular regulatory definition of a building. The strategy should recognise the importance of wider infrastructure, including bridges, tunnels, dams, reservoirs, temporary works, flood defences and other civil engineering assets whose failure may present significant risks to the public.

The UK already has many of the components of an effective competence system. These include UK-SPEC, professional qualification, professional registration, CPD requirements, professional conduct obligations, approved employer schemes and specialist registers. Future reform should build on these foundations rather than creating parallel systems.

Competence should be viewed as a lifelong process rather than a point-in-time achievement. The strongest assurance comes from a system that combines independent assessment, ongoing professional development, audit, ethical obligations, learning from failure and accountability throughout a professional career.



Strengthening this model offers the greatest opportunity to improve safety, resilience, professionalism and public confidence across the built environment.

About the ICE

The Institution of Civil Engineers (ICE) is a 95,000-strong global membership organisation with over 200 years of history.

As the home of infrastructure, the ICE is a centre of engineering excellence, qualifying engineers and helping them maintain lifelong competence, assuring society that the infrastructure they create is safe, dependable and well designed.

Its network of experts offers trusted, impartial advice to politicians and decision makers on how to build and adapt infrastructure to create a more sustainable world.

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