BEFA
Built Environment Futures Assembly

University of the Built Environment
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AI Workforce Transitions: Sustaining Professional Judgement

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CLC Construction Leadership Council



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Acknowledgements

The Built Environment Futures Assembly (BEFA) is a powerful leadership forum for the built environment sector to build future-facing capacity, capability and competency through shared knowledge, learning and innovation. Supported by the University of the Built Environment, BEFA serves as a centre of excellence – a partnership focused on facilitating knowledge exchange, thought leadership, innovative projects and initiatives. It recognises and aggregates best practice for the built environment.

The University of the Built Environment has over 106 years' experience in providing the sector with the highest quality learning opportunities. At any one time, we have more than 4,000 students from more than 100 countries benefiting from our qualifications taught by lecturers who are specialists in their field. We provide accessible and relevant learning that fits your life and career goals and will enable you to contribute to a sustainable built environment that's shaped with people in mind.

Harlow Consulting designs and delivers research, evaluation and insight that turn complex questions into clear, practical recommendations. We build strong relationships with clients, delivering outputs that go beyond weighty reports to create clear insight, practical recommendations and lasting value. We work across sectors, including the built environment, AI and innovation, finance, healthcare, arts, culture and heritage. Our work supports policy, strategy, service improvement and decision-making to achieve immediate and longer-term change for public, private and third-sector organisations.

Acknowledgements

The **Construction Industry Council** is the representative forum for professional bodies, research organisations and specialist business associations in the construction industry. CIC uses expertise to shape a built environment that delivers a better society and a better world, bringing built environment professionals together - sharing a collective interest in enhancing the industry for a greater positive impact and contribution to society.

The **Construction Leadership Council** works in partnership with government and organisations of all sizes across the industry to ensure the construction sector has the voice, support and resilience needed to grow, improve productivity, attract and retain talent and successfully transition to net zero. Our vision is to lead a new era of delivery in the built environment.

Foreword

Many tasks that artificial intelligence (AI) can take on in the built environment are also the tasks through which people learn their profession. A trainee quantity surveyor measuring from drawings learns how an overlooked detail can affect a cost estimate. If AI produces the quantities, where will that trainee gain the experience to challenge them? Every employer redesigning a workflow needs to ask what people learn from today's work and how else they might gain that experience in the future.

In July 2026, BEFA's **'Mapping the AI Landscape in the Built Environment'** report found that individual use of AI was often moving ahead of organisational policy and professional guidance. This new 'Workforce Transitions' report takes that work forward by examining what adoption means for career development and education. The research draws on the experiences of students and early-career professionals as well as those of established practitioners and educators. As AI takes on more drafting and analysis, professionals will increasingly need to interpret evidence, test assumptions and explain the basis for their decisions, especially when AI has been utilised in the underlying work.

This should allow us to improve the quality of our work. The time saved on producing a report or on exploring design options can be put towards further investigating an uncertain finding, getting specialist advice earlier or simply talking through a difficult decision with a client. The professional remains ultimately responsible for the work they approve. To exercise that responsibility, particularly where safety or statutory duties are concerned, they need the time and the authority to challenge what the AI has produced.

> **Employers should therefore increasingly plan for supervised practice as they adopt AI.**

That means giving experienced staff time to explain decisions to junior staff and comparing their conclusions with AI-assisted outputs, to help early-career professionals learn.

Education providers can embed responsible AI use into the teaching of each subject and assess how students arrive at and justify their conclusions. Professional and regulatory bodies can similarly define what competence looks like at various stages of career progression, including for more experienced practitioners who will be asked to review and approve AI-assisted work.

As a sector, we should welcome AI's productivity gains, but we should also consider whether today's efficiency might become tomorrow's expertise gap, as overreliance on such tools could mean that we fail to develop the future workforce. There is also a less widely discussed risk for senior professionals. As AI systems become more capable, senior staff may have fewer opportunities to exercise and maintain their judgement.

BEFA thanks Harlow Consulting for their support in developing this report, as well as all the employers, students, early-career professionals, professional and regulatory bodies alongside other industry stakeholders who contributed. We hope this report helps the sector make better use of AI while giving the next generation of built environment professionals the experience they need to earn the confidence of clients and the public, ultimately assuring their ongoing professional judgement.



Mark Farmer
Chair, BEFA



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1

Executive Summary

AI is changing how built environment professionals produce, examine and take responsibility for their work. The immediate effect is not the disappearance of whole professions, but the redistribution of tasks within them. Drafting, research, document review, analysis and reporting can increasingly be supported or automated, while professional input shifts towards defining requirements, interpreting evidence, resolving uncertainty and deciding whether outputs can be relied upon.

This creates a fundamental workforce challenge.

Many of the activities most readily undertaken by AI also provide the experience through which people learn their profession. If these activities diminish without credible alternatives, entrants may be expected to review and defend sophisticated outputs before they have developed sufficient understanding of the work behind them. Decisions about AI adoption therefore cannot be separated from decisions about professional development.

This research builds on **BEFA's Mapping the AI Landscape in the Built Environment**, published in July 2026. It examines how AI may affect professional skills and knowledge, early-career development, and the education and training needed to sustain competent practice. The research drew on interviews with 24 experts and 10 early-career professionals and students, alongside two roundtables attended by 21 people. Seven roundtable participants had also taken part in the expert interviews. The findings highlight both the changing nature of professional work and the need to reconsider how professional competence is developed and maintained.



AI is reshaping work unevenly

AI is more likely to reshape built environment professions than replace them wholesale. Professional roles combine technical production with physical investigation, contextual interpretation, relationships and accountability. AI can support significant parts of this work, but its relevance and consequences vary according to the task, the information available and the risks attached to error. Structured analysis and document-based work are more readily automated. Physical inspection, contextual interpretation and decisions involving safety, statutory responsibilities or competing interests continue to place greater demands on direct professional involvement. Even here, however, AI may influence how evidence is assembled, risks are identified and decisions are documented.

The transition is uneven. Organisations with reliable information, secure tools, practical governance and opportunities for staff to experiment are better placed to integrate AI into their work. In others, use remains limited, informal or dependent on individual initiative. Blanket restrictions may suppress visible adoption without preventing use, leaving organisations with less oversight of the information entered into systems or the checks applied to their outputs.

These differences do not equate to a simple division between large and small organisations. Larger employers may have greater investment capacity but could face constraints from legacy systems, fragmented information and complex approval processes. Smaller firms may be more agile and provide broader professional experience, but have less capacity to assess products, provide specialist training or establish secure systems. In turn, 'AI native' start-ups have perhaps the most unfettered opportunity to rewire workflows and business models but may lack data. Uneven readiness across supply chains also creates risks where information moves between organisations with different controls, expectations and levels of capability.

Professional judgement becomes more important, not less

AI can produce polished and convincing material while at the same time leaving out relevant evidence, relying on unsuitable assumptions or reaching conclusions that do not hold in practice. Effective oversight therefore requires more than simply checking whether an output appears reasonable. Professionals need enough technical and contextual understanding to examine its basis, identify what is missing and recognise when further investigation is needed.

Knowing how to operate an AI tool is only one part of competence. Professionals must also understand when its use is appropriate, what evidence should inform it, how its limitations affect the task and when specialist advice or an independent method is required. As AI undertakes more production work, the ability to question, interpret and explain becomes increasingly important.

Practical knowledge remains critical. Experienced professionals recognise unusual combinations of problems, understand local conditions and can notice information that has not been recorded. This knowledge and ability to form defensible judgements is developed through direct experience, observation, discussion, correction and repeated exposure to professional decisions. It cannot always be captured or replicated by providing access to a larger body of digital information.

AI may enable professionals to explore a wider range of evidence and contribute to activities beyond their immediate area of expertise. This could support more integrated working, but it does not remove professional boundaries. Realising the opportunity will depend on collaboration, communication and the ability to recognise where another form of expertise is required.

AI risks disrupting the route to professional competence and ability to maintain it

The most significant workforce risk is that entry-level tasks may decline, weakening the route through which people learn to exercise judgement.

Measurement, research, document review, report preparation, meeting participation and project coordination are often treated as routine activities. They also show entrants how evidence is assembled, how technical methods are applied and why apparently similar situations may require different responses. Through practice, feedback and correction, people move from following a process to understanding its purpose and limitations.

If AI undertakes more of this work, entrants may be aware of the finished output without seeing how it was produced. They may then be expected to verify work they have had limited opportunity to undertake themselves. Commercial pressures could reinforce the problem if faster production leads to smaller teams, reduced recruitment, wider spans of responsibility or less time for supervision.

Implications of this differ across disciplines. Quantity surveying, property and valuation, planning and project management are likely to see significant changes to documentary and analytical activities that currently support early-career learning. Architecture must preserve design reasoning and technical understanding alongside rapid image generation, visualisation and option development. In civil and structural engineering, building surveying and facilities management, learners must continue to connect calculations, models, images and operational information with physical conditions and practical investigation.

Not every existing activity needs to be preserved. Employers will need to distinguish between repetition that adds little further learning and independent practice that will remain essential to competence.

Revised pathways may combine foundational work that is undertaken independently, comparisons drawn between independent and AI-supported outputs, supervised use on live projects, site experience, case review and progressive responsibility. Progression should depend on demonstrated understanding and judgement, not familiarity with a tool or the ability to produce a convincing document.

AI can itself support learning. It can help entrants navigate complex material, prepare for professional discussions, explore unfamiliar concepts and critique draft outputs. These benefits depend on people's ability to critically challenge.

Used uncritically, the same tools may allow learners to bypass the reasoning they need to develop.

Supervision and knowledge transfer will therefore require greater attention, not less. Employers will need to provide experienced staff with the time and recognition needed to explain decisions, review work and expose colleagues to difficult or unusual cases. This is particularly important as experienced practitioners leave organisations and opportunities for informal learning become less consistent. In turn, if AI models demonstrate increased ability in handling complexity and ambiguity, even the 'moat' around senior professional input gets reduced and professional competence can become 'unlearned' over time. This becomes a double-edged sword, threatening the establishment and then ongoing maintenance of professional competence.



Oversight must work in practice

Human oversight is often presented as the safeguard for AI-supported professional work. However, this offers little protection if the person providing it cannot examine the underlying information, understand the method, challenge the result or require changes. Dependable use requires reliable and traceable information, clear responsibilities and controls that are fully reflective of both the task and the consequences of errors. Staff need practical guidance on approved tools, permitted information, confidentiality, intellectual property, client requirements, checking, record-keeping and escalation. Furthermore, such controls must cover AI functionality added to software already in use, not only separately procured AI systems.

Where AI undertakes several connected stages of a workflow, checking only the final output might not be sufficient. Review may be needed at different points – for example, when the task is defined, while information is retrieved or analysed, and when the result is accepted. An audit trail should then clearly distinguish what the system did from the professional reasoning used to accept, amend or reject its output. Routine administrative uses may need only relatively light controls. However, work affecting safety, statutory decisions, contracts, valuation or significant financial commitments needs stronger assurance and clearly assigned professional responsibility.

Education and professional standards must become more specific

Education providers are being asked to prepare students for professional practices that are changing faster than conventional curriculum and accreditation cycles. Provision is developing but is uneven. Staff capability, institutional policy, access to suitable tools and links with current professional practice all affect what students experience.

Generic requests for "AI-ready" graduates give providers only limited insight as to what industry is actually looking for. Education providers need clearer accounts of the work that is changing, the underlying knowledge that should be retained and the capabilities new entrants will be expected to demonstrate.

Responsible AI use should be integrated across programmes rather than confined to a standalone module. Students will need a common foundation covering AI capabilities and limitations, information quality, privacy, confidentiality, intellectual property, verification and accountability. They must also be able to apply these principles through the evidence, methods, standards and responsibilities relating specifically to their own disciplines.

Assessment will need to demonstrate where the understanding is, rather than relying principally on a finished output. A polished final report, design or analysis may provide limited evidence of individual competence where AI has made a substantial contribution. Staged submissions, oral questioning, practical observation, comparison of independent and AI-assisted work, and critical examination of generated material would help to make students' reasoning more visible. Assessment should establish what learners understand, how they reached their conclusions and whether and how they can respond when evidence or circumstances change.

Professional bodies have an important role to play in reducing the current ambiguity. Broad expectations about ethical or appropriate AI use provide a strong and valuable foundation but may

leave scope for interpretation. Practical requirements are needed for different professions, career stages and levels of responsibility, supported by worked examples of the knowledge, experience and checks required.

This is not only for new entrants to a career in the built environment sector. Established practitioners and supervisors may be asked to approve AI-supported work despite having limited experience of the systems involved. Continuing professional development must therefore address how to evaluate and take responsibility for AI-supported work, not just how to use particular products or systems. It should also be alive to the maturity and changing capability of expert AI models and decide what the protected minimum level of judgement related competence should be (even if it overlaps with automated outputs).

Productivity choices will shape future capability

Faster production does not automatically improve professional services. Time released through AI could support stronger assurance, mentoring, creativity, client engagement and closer attention to the needs of building users and communities. But it could instead be absorbed through lower fees, smaller teams, shorter deadlines and greater work intensity.

Productivity should therefore be judged through the quality and value of the work, alongside impacts on workloads, learning and future capability. The costs of investigation, verification, supervision and professional responsibility will not disappear because an initial output can be produced more quickly.

This creates a collective risk. If individual organisations reduce entry-level recruitment and development because they expect others to train the next generation, the sector could gradually weaken the professional competence on which employers, clients and the public depend.

Priorities for action

This report recommends action across four groups. Each has a different role to help ensure that AI adoption strengthens professional practice without weakening the routes through which people develop competence:

- **Employers** should consider the effect on learning whenever they automate or redesign professional work. They should identify the experience people may lose, adapt early-career pathways to provide it in other ways, and plan and fund the supervision, feedback and knowledge transfer required. They should also ensure that anyone responsible for reviewing or approving AI-supported work has the competence, evidence, authority and time to do so properly. This requires maintaining ongoing professional competence even if AI models gradually replicate human judgement.

- **Professional bodies** should define what AI competence means within each profession and at different career stages and levels of responsibility. They should use these expectations to review qualification routes, professional assessment and continuing development, providing practical guidance on the knowledge, experience and checks needed to take responsibility for AI-supported work. This will increasingly need to be done against a backdrop of increased government scrutiny and wider regulatory oversight.
- **Education providers** should make responsible AI use a planned part of learning across each programme. Students need to retain the disciplinary knowledge and practical experience needed to question AI outputs, while assessment should establish what they understand, how they have reasoned and whether they can apply their knowledge when evidence or circumstances change. Providers also need to support industry and the professions with suitable digital CPD learning content.
- **Sector partners** should address the challenges that individual organisations cannot resolve alone. This can include testing practical ways to retain or replace learning affected by automation, giving education providers a clearer account of how professional work is changing, and developing shared resources that smaller employers can use. Sector-wide discussions about AI-related productivity should also consider its effects on supervision, workloads, early-career opportunities and the future supply of competent professionals.

BEFA can support by convening partners to test revised approaches to professional development and maintaining a regularly updated account of changing work and its implications for education. Delivery will require participating employers, professional bodies and education providers to commit resources and take responsibility for implementation.

There is a clear opportunity to improve the quality and value of professional practice, while concurrently ensuring that people continue to develop and maintain the knowledge, experience and judgement the work requires.

Making the most of this opportunity means building professional development into decisions about AI from the outset, so that changes intended to improve how work is done do not weaken the sector's ability to develop the people who will be responsible for it in future.

2

Key findings

Changing professional roles

1 AI is changing the balance of professional work rather than replacing whole professions

Change is emerging first within particular tasks and workflows. As AI supports more drafting, research, analysis and information handling, professional roles are likely to place greater emphasis on defining requirements, interpreting evidence, managing exceptions and taking responsibility for decisions.

2 Professional roles will change in different ways across the built environment

Quantity surveyors and cost consultants may spend less time producing initial measurements and cost information and more time testing assumptions and advising on risk and value. Architects may generate options more quickly, increasing the importance of design reasoning and technical integration. Planners, property professionals and project managers may shift from assembling information towards interpreting evidence, balancing competing considerations and explaining decisions.

3 Physical and safety-critical professions will also change, but direct investigation will remain essential

AI can support calculations, modelling, image analysis, monitoring and reporting in engineering, building surveying and facilities management. However, professionals will still need to connect digital information with physical conditions, recognise where records are incomplete and decide when direct inspection or further investigation is required.

4 Professional work may become broader and more collaborative

AI may allow professionals to explore a wider range of evidence and contribute to activities beyond their immediate specialism. This could support more integrated working, but it will also increase the importance of professional boundaries, communication and knowing when another form of expertise is required.

Developing professional competence

5 Routine tasks often play an important part in developing professional competence

Measurement, research, document review, report preparation and project coordination introduce early-career professionals to evidence, methods, terminology and standards. These activities should not be assessed solely in terms of efficiency, because they may also provide important opportunities to learn.

6 New entrants may be expected to exercise judgement earlier, with less experience of the underlying work

AI can place sophisticated outputs in front of people much earlier in their careers. Without sufficient foundational practice, early-career professionals may be asked to identify omissions, challenge assumptions and defend conclusions in work they have had little opportunity to produce themselves.

7 Different professions will need different ways of protecting essential experience

Documentary and analytical learning is particularly important in quantity surveying, property and valuation, planning and project management. Architecture must retain opportunities to develop design reasoning. Engineering, building surveying and facilities management must continue to connect technical information with sites, buildings, assets and operational conditions.

8 AI can support learning, but it can also allow learners to bypass it

AI can help people navigate unfamiliar material, prepare for discussions and critically examine draft work. These benefits depend on active questioning and revision. Used without the right type of challenge, the same tools may produce an answer without developing the reasoning required to assess it.

9 Employers will need to protect time for supervision and knowledge transfer

Learning alongside experienced professionals will be vitally important for recognising when circumstances call for a different response, understanding the local context and knowing when standard methods are not enough. Employers will need to plan and fund this activity as workflows change and informal opportunities to learn become less consistent.

Competence, education and professional standards

10 General AI literacy is not enough for professional practice

All professionals need a common understanding of AI capabilities and limitations, information quality, confidentiality, intellectual property, verification and accountability. These shared foundations must be applied through the methods, standards, risks and responsibilities of each discipline.

11 Education must balance AI use with independent learning

Students need opportunities to use AI within their discipline without losing the technical knowledge and practical experience required to question it. Assessment must increasingly show how learners reached their conclusions, used evidence, checked outputs and responded when circumstances changed.

12 Professional expectations need to become more specific

Broad requirements for appropriate or ethical AI use provide a foundation but leave a lot of room for interpretation. Employers, educators and practitioners need clearer descriptions of the knowledge, experience and checks required at different career stages and levels of responsibility.

Oversight and future capability

13 Human involvement does not automatically provide effective oversight

A professional sign-off gives only limited assurance if the person responsible cannot comprehensively evaluate and assess the underlying information, understand the method, challenge the result or have the authority to implement changes. Oversight must be supported by sufficient competence, evidence, authority and time.

14 The value of AI depends on what organisations do with the time it saves

AI could create more time for assurance, mentoring, creativity, collaboration and engagement with clients and users. It could also result in smaller teams, reduced entry-level recruitment, wider responsibilities and greater work intensity. Its long-term value will depend partly on whether productivity gains are used to strengthen professional practice and future capability.

3

Introduction

3.1 Background and purpose

In July 2026, the Built Environment Futures Assembly (**BEFA**) – Chaired by Mark Farmer – published **Mapping the AI Landscape in the Built Environment**, supported by the University of the Built Environment in partnership with **Harlow Consulting**. The research was based on interviews with senior figures across industry, professional bodies, academia and government to provide perspectives on current AI adoption, opportunities and barriers, implications for professional competence and education, as well as governance and ethical considerations.

This current research – Phase 2 – builds on those findings with the intention of supporting the sector in the practical implementation of AI by building a deeper understanding of: the key skills and knowledge areas that may be at risk from AI, those that will be supported, and the implications for professional judgement and competence across a range of professions.

In this document, mentions of the 'Built Environment' refer to the widest interpretation of design, construction, operation and management of human-made structures and the natural environment. As such, the term incorporates the real estate, property and construction industries as well as referring to the Built Environment workplace more generally.

3.2 Research approach and report structure

This research explored a number of topics related to skills acquisition and learning pathways. It involved qualitative, in-depth interviews (including one-to-one and group interviews) with 24 experts across industry, professional bodies, academia and government. The interviews sought to answer the following questions:

- How entry-level and junior professionals currently build technical knowledge, professional judgement and practical experience
- Which areas could be lost, weakened, delayed or enhanced if AI increasingly performs tasks
- What these changes could mean for professional judgement and competence
- What employers, professional bodies, education providers and sector stakeholders are already doing, or planning, in response to the impacts of AI
- What new approaches may be needed to protect learning and progression

The interviews covered the following sub-sectors of the built environment: architecture, cost-consulting, engineering, advisory, planning, project management, surveying and facilities management.

Emerging findings were then discussed via two roundtables, involving 21 individuals from across industry, professional bodies and academia. Seven of those who attended also took part in an interview.

In addition, we interviewed early-career professionals (including graduates and apprentices) and students to understand their experiences and expectations regarding the use of AI. We engaged with 10 individuals in one-to-one and group interviews, focused on:

- Use of AI, including tasks that are wholly or partly completed by AI
- Tasks that would help them learn, but to which they no longer have access
- How they decide whether an output is accurate and appropriate
- What they have learnt through completing routine or repetitive tasks
- How well their education/training helped them to use AI responsibly
- How AI is affecting their professional confidence, judgement and sense of responsibility

Fieldwork strand	Participants	Purpose
Expert interviews	24	Sector adoption, professional practice, workforce and education implications
Early-career interviews	10	Current AI use, changing learning experiences and expectations
Roundtables (x2)	21 (7 of whom took part in interviews)	Testing, challenging and extending emerging findings
Session with Construction Industry Council (Education and Future Skills Committee)	15	Testing, challenging and extending emerging findings
Total	**70**	

Interviews were analysed manually using content analysis to identify the treatment of concepts, which were then used to highlight themes for structuring the report. Emerging findings and key themes were then presented to the BEFA Strategic Advisory Board for verification and calibration.

This report examines the changing pattern and the prerequisites of AI adoption, before then considering how AI may alter professional work and different built environment disciplines.

The analysis subsequently focuses on the implications for entry-level roles and workplace learning, before considering how education, training, assessment and professional standards should respond.

The report concludes with recommendations for employers, professional bodies, education providers and sector partners.

4

The pace of transformation is accelerating

4.1 AI adoption is increasing, but remains highly uneven

4.1.1 Generative AI use is accelerating and becoming more embedded

Our previous report, Mapping the AI Landscape in the Built Environment, found that AI was being used day-to-day in professional practice, but that adoption was highly uneven. Uneven adoption continues to be the case; however, patterns of use appear to be clearer and, where AI has been adopted, it is starting to become embedded and formalised.

Recent professional research supports this picture. The RIBA AI Report 2026 found that the proportion of architectural practices reporting AI use increased from 59% in 2025 to 74% in 2026[1]. Research by RICS found that regular AI use increased from 12% to 19%, while fewer than 1% of respondents reported that AI was fully integrated across their organisation[2]. Research produced in partnership with Skills England also indicates that most organisations remain at an early or intermediate stage of adoption and that workforce capability is often being developed informally[3]. These findings show that increasing use by individuals and on particular projects continues to coexist with limited organisation-wide integration.

Large language models (LLMs) and generative AI

Whilst the previous research identified two main types of AI in use today – generative AI and analytical or deterministic AI – evidence collected for this current project strongly suggests that generative AI, specifically the use of large language models (LLMs), appears to be accelerating, with specific uses becoming apparent and widely commonplace. For example:

- Drafting and summarising documents
- Writing emails, bids and reports
- Producing or refining visualisations
- Searching internal information
- Collating project information
- Supporting administrative workflows
- Analysing large volumes of text or data

1. Royal Institute of British Architects (2026), RIBA AI Report 2026
2. Royal Institution of Chartered Surveyors (2026), AI in Commercial Property and Construction Report 2026
3. Ameen, N. (2026), What Works for AI Upskilling in the UK: Employer Guide, British Academy Policy-Led Innovation Fellowship in partnership with Skills England

The general trend is to shift away from spending time on content creation, such as basic research and producing reports, toward managing those tasks and checking outputs. The near-term pattern is one of:

- **Task substitution and workflow reconfiguration,** whereby AI produces a first draft, initial analysis or suggested output
- Then the professional **checks, interprets, contextualises** and, critically, **takes responsibility** for it

In summary, therefore, the likely direction of travel is away from direct production of outputs towards greater review, quality assurance, exception handling and decision-making.



- Examining and validating outputs
- Managing expectations and non-standard cases
- Assuring risk and compliance
- Interpreting information in context
- Communicating findings
- Advising clients



- Producing content

Transformation at a sector level is not likely to be uniform, varying according to various factors, such as organisations' buy-in, appetite for change, business strategy and planning, available funds for investment, risk appetite etc. This raises the possibility that existing differences in digital maturity will widen.

4.1.2 What is coming

As generative AI becomes more widely used, advances in agentic AI[4] are changing what a machine can do once it is given a goal, and, advances are exponential: for example, between 2019 and 2025, the length of software tasks that leading agents could complete with a 50% chance of success doubled roughly every seven months, measured by the time a human expert needed.[5]

AI is becoming capable of undertaking more complex work. Reasoning language models are able to **"operate computers and graphical interfaces, collaborate with people and each other, and carry out research projects"**. We are nearing, if not already at, a moment where machine intelligence is exceeding that of humans.[6] Their involvement in research could accelerate technological progress, as one generation of AI helps develop the next. This could become a self-reinforcing process, with increasingly capable systems contributing to further advances and shortening the time between successive generations of AI.

Ray Kurzweil, an American computer scientist, argued that technological progress can accelerate when each generation of tools improves the means of creating the next. Google DeepMind's AlphaEvolve is an early illustration: powered by Gemini, the agent discovered a way to reduce the time needed to train Gemini models[7]. OpenAI's Chief Scientist, Jakub Pachocki, suggests that future systems could play a growing part in the research that produces their own successors.[8]

4. An agent can write code, test it and revise its approach in light of the results
5. Kwa et al. (2025) Measuring AI Ability to Complete Long Software Tasks, NeurIPS Proceedings
6. Pachocki, J. (2026) An Alien Mind, OpenAI
7. Novikov et al. (2025), AlphaEvolve: A coding agent for scientific and algorithmic discovery
8. Pachocki, J. (2026) An Alien Mind, OpenAI

Looking ahead to 2030, the 'International AI Safety Report 2026'[9] considers that both a plateau and a sharp acceleration in AI capabilities are plausible. One reason the next few years are difficult to foresee is that the pace of discovery itself may change, but commentators are predicting that increasingly capable machines can shorten the research needed to build the next generation, thus reducing the interval between advances. One of the future scenarios is the advent of increasingly expert-level autonomous AI models that demonstrate real or apparent ability to reason and exercise judgement (against a complex and ambiguous backdrop). This is potentially the real threat to long-term retention of human skills that can truly take accountability for AI outputs.

All of this means that AI is here to stay – it is becoming more embedded in our everyday lives – and the case for AI adoption therefore becomes existential.

Built environment organisations will need to keep pace with developments in AI and judge which applications are useful and reliable enough for their work. Agentic systems may eventually be able to carry out several linked tasks, such as finding project information, checking it against standards or client requirements, identifying discrepancies and taking follow-up action. For this to work well, information will need to be accurate, accessible and usable across systems. Organisations will also need to set clear limits on what AI can do, when professional review is required and who is responsible for decisions.

There is considerable uncertainty about how quickly these capabilities will develop. However, organisations can begin preparing now by improving their information, putting practical controls in place and helping staff develop the skills to use and question AI. Waiting until the technology is fully established could leave them struggling to catch up. Professional judgement will remain essential, particularly where decisions involve incomplete evidence, local circumstances, competing interests or serious consequences if something goes wrong.

'Modernise or die': Mark Farmer's 2016 challenge to the sector[10] takes on new significance as AI changes the work of built environment professionals.

4.1.3 A possible polarisation between AI-enabled and AI-resistant organisations

The interview evidence points to a potential gap emerging between larger organisations and SMEs, particularly those within the supply chain. The gap is likely to be most pronounced at the extremes of the supply chain, between technology-enabled professional practices and contractors.

9. Clare, S., Prunkl, C. et al. (2026), International AI Safety Report 2026
10. Farmer, M. (2016), The Farmer Review of the UK Construction Labour Model: Modernise or Die

However, this is not a simple divide between large organisations and SMEs.

- Large firms may have greater investment capacity but can be constrained by legacy systems and multiple decision-making layers
- Smaller firms may be more agile

One roundtable participant described SMEs' **"agility and nimbleness to be able to experiment"** and characterised AI as **"a great leveller"** where it can be integrated into workflows effectively. Nevertheless, SMEs operating on narrow margins or further down the supply chain may lack secure systems or specialist support as well as the capacity to absorb the costs of training, data preparation, process redesign and assurance.

Wider sector research reflects this uneven pattern. Larger organisations generally have greater capacity to invest in technology platforms, governance and training, while SMEs are more likely to face constraints relating to cost, time and access to specialist capability. Adoption also varies by market segment and business model, and a persistent minority of organisations report no intention to invest in AI. This does not mean that the sector has already divided into two settled groups, but it does show how differences in organisational capacity and commitment could widen as adoption progresses[11].

Differences in maturity also create risks across fragmented supply chains as built-environment information passes between clients, consultants, contractors and suppliers with varying levels of capability. As one roundtable participant observed, **"The governance and the credibility of your data is only as good as the weakest link in that chain."** Strong controls within one organisation may therefore be undermined when information reaches partners relying on less secure tools or weaker governance.

The interviews suggest that, over time, AI adoption may produce a widening divide between organisations rather than an evening out, towards a uniform sector-wide transition. The most significant distinction may be between organisations that create the conditions for secure, purposeful adoption and those where use remains restricted, informal or disconnected from wider business processes. Evidence from the interviews points to pockets of resistance to AI, whereby some businesses and individuals regard AI as a threat to professional practice.

11. BEFA (2026), Mapping the AI Landscape in the Built Environment; Royal Institution of Chartered Surveyors (2026), AI in Commercial Property and Construction Report 2026

At one end are organisations and individuals that:	● Provide approved enterprise tools ● Develop internal systems ● Build AI into workflows ● Invest in training ● Recruit for AI literacy ● Redesign business processes This creates a self-reinforcing cycle: supported experimentation identifies useful applications, builds workforce confidence and generates evidence for further investment. Over time, these organisations may accumulate advantages through aspects such as better data, internal tools, more efficient processes and staff experienced in applying AI critically.
At the other are organisations that:	● Remain uncertain about where to begin ● Prohibit or discourage use ● Regard traditional practice as inherently preferable ● Lack time or resources to experiment ● Have leaders approaching retirement who see little personal benefit in change In these cases, AI may be perceived as diminishing professional expertise, instead of supporting it.

Restriction leads to shadow use

Restrictive policies may not actually prevent adoption but instead drive it underground. The interviews suggest that employees, particularly graduates accustomed to using AI, may continue using it without disclosure.

When staff use AI informally, organisations have less oversight of which tools they use, what information they enter, what checks they make and who takes responsibility for the outputs. This can create risks for data protection and confidentiality. As one respondent warned: **“Don’t make it be seen as something to hide.”**

Restriction unintentionally reduces capability

The risk of polarisation may be further reinforced through recruitment and retention. Graduates may increasingly expect access to appropriate AI tools, while digitally mature employers may recruit explicitly for AI literacy.[12] Organisations offering secure systems, practical learning and controlled experimentation could therefore attract the people best placed to advance adoption, while resistant organisations risk losing that capability. Without proportionate support, early differences could therefore become harder to close, as more advanced organisations accumulate experience, proprietary data and – critically – digitally confident and competent staff.

4.2 Prerequisites for responsible AI adoption are becoming clear

The interviews suggest that acquiring AI tools is not sufficient to produce useful or reliable change, but that organisations also need information that can support the intended application, as well as practical controls governing how the technology is used (and clear responsibility for the outputs).

4.2.1 AI adoption is fundamentally an information management challenge

The interviews indicate that organisations' ability to benefit from AI depends less on acquiring particular tools or systems, and more on the quality and accessibility of the information available to them. AI cannot compensate for poor information capture or fragmented systems, or unclear ownership. Instead, it may reproduce or amplify these weaknesses, generating apparently authoritative outputs from incomplete or unreliable evidence.

This finding is consistent with wider built environment research, which identifies fragmented data, poor interoperability, unclear ownership and weak provenance as continuing constraints on AI adoption. Recent research by RICS also found that data quality, integration and continuity remain significant barriers, while organisations with recurring portfolio-level information are better placed to develop more mature applications. Reliable AI use therefore depends not only on access to data, but on information that is structured, traceable, current and suitable for its intended purpose[13].

12. In an October 2026 RICS Modus article, AI was described as "increasingly an expectation rather than an adjustment" for the younger generation. The article also reports that new entrants arrive with greater AI literacy. Kivlehan, N. P. (2026), 'How AI is changing work for the next generation', Modus, RICS, 26 October
13. BEFA (2026), Mapping the AI Landscape in the Built Environment; Royal Institution of Chartered Surveyors (2026), AI in Commercial Property and Construction Report 2026; AI4QS Initiative (2026), AI for Quantity Surveying Report

Organisations should therefore assess AI readiness in terms of the following framework:

- What information they hold
- How consistently it is recorded
- Whether it is accurate and current
- Who owns data and can access it
- Whether the provenance of data can be traced
- Whether data can lawfully be used
- Whether datasets are sufficiently representative
- Whether outputs can be explained and audited

In the built environment, these requirements are particularly important because information is frequently distributed across multiple organisations and systems.

Attempts to develop applications can expose various risks, such as missing information, incompatible systems, inconsistent classifications and weaknesses in existing processes. However, this presents an opportunity to analyse these risks, thereby helping organisations clarify the problem they are seeking to address and, therefore, identify the information required to support it. In fact, in some cases, improving information capture as well as ownership and system architecture may be more important than investing in additional AI products.

Organisations that establish reliable information foundations will therefore be better placed to identify viable – and useful – applications, and evaluate their performance. However, those that proceed without addressing underlying weaknesses risk automating existing fragmentation and producing unreliable results more quickly.

4.2.2 Governance must be practical, consistent and embedded in workflows

The interviews indicate that high-level policies will not be sufficient to govern AI use effectively because professionals need clear, practical guidance to help them apply AI tools to their work. An acceptable use in one context may be inappropriate in another, depending on the sensitivity of the information or the intended output.

Effective governance therefore needs to make clear which tools are approved, what information may be entered into them and when client consent or disclosure is required.

It will also be important to address areas of underpinning knowledge around confidentiality, data protection, intellectual property and copyright and ensure these controls are embedded into processes.

Governance arrangements also need to cover AI functionality added to software that an organisation already uses. Existing products may acquire new capabilities without being subjected to the assessment that would apply to the procurement of a separate AI system. Organisations should therefore establish what the functionality does, what information it can access and whether its use remains consistent with contractual, confidentiality and client data requirements[14].

Emerging professional guidance supports this operational approach to governance. RICS requires organisations to identify material uses of AI, assess the systems and information involved, test the reliability of outputs, maintain appropriate records and communicate relevant limitations to clients[15]. Evidence from Skills England and the Department for Work and Pensions also indicates that governance is most effective when linked to specific roles, workflows and feedback arrangements, rather than treated as a standalone policy or generic training exercise[16].

Evidence from the interviews indicates that organisations will therefore need clear operational controls covering the following dimensions:

Governance area	Coverage
Tools and information	Approved tools and systems Information that must not be uploaded Confidentiality and data protection
Client and contractual obligations	Client consent and contractual restrictions Disclosure of where and how AI has been used Use of AI in bids and procurement
Quality and assurance	Checking and sign-off requirements and responsibilities Record-keeping and audit trails
Wider responsibilities	Intellectual property and copyright Responsibilities when outputs are wrong Consideration of environmental impacts of using AI

These sorts of controls define the circumstances in which AI can be used, but responsibility for the final work should be identifiable even when several people have contributed, or different AI tools have been used.

14. Litmus (2026), Faster Than We Can Explain: What Surveying Is Actually Doing with AI
15. Royal Institution of Chartered Surveyors (2025), Responsible Use of AI in Surveying Practice
16. Skills England and Department for Work and Pensions (2026), Skills for AI: Employer Guide

4.2.3 Accountability for AI-assisted work must rest with individuals

Interview respondents consistently reinforced the message that the use of AI does not transfer responsibility away from the professional or organisation. Where an AI-assisted output informs advice or data analysis, for example, responsibility has to remain with those who approve its use and who have ultimate responsibility for checking and verifying the outputs.

This principle is reflected in emerging professional requirements. RICS specifies that, where AI materially affects a professional service, a named and appropriately qualified surveyor must remain responsible for the work.

However, assigning responsibility to an individual does not, by itself, provide effective oversight. The responsible professional must have the competence, authority, information and time needed to examine the evidence, challenge the output and correct errors, supported by organisational systems that make these checks possible[17].

This distinction between AI assistance and human accountability becomes increasingly relevant in cases where AI-generated material appears credible, but it is inaccurate, or it's not clear how it has reached a particular conclusion. The person accepting responsibility therefore must be able to assess the underlying evidence to understand how the conclusion was reached and to judge whether the output is appropriate for its intended purpose.

As AI systems take on more stages of a workflow, scrutiny cannot be confined to the final output. Errors may arise through retrieval of inappropriate evidence, the use of an unsuitable tool or an assumption introduced at an intermediate stage, while the final result remains plausible. Professional judgement may therefore be needed when the task and evidence boundaries are set, at defined points during the workflow and when the professional decides whether the result can be relied upon[18].

As well as ensuring that an appropriately qualified and competent individual signs off outputs, there should be a clear audit trail which records how AI was used and the checks that were undertaken. RICS guidance states that a useful record should distinguish between the system trail and the professional decision.

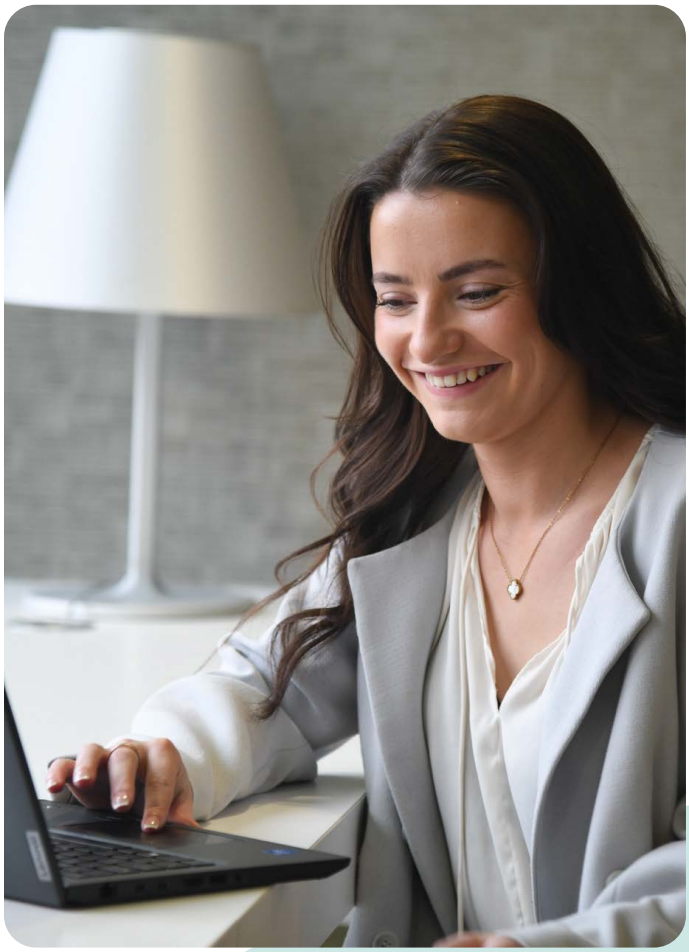
The system trail records what the AI system did, including the sources, tools, assumptions and intermediate steps involved. The professional decision record explains what the responsible professional relied upon, what they questioned or changed and why the result was accepted, changed or rejected. Recording that an output was checked is not sufficient if the record does not show how judgement was exercised[19].

17. Royal Institution of Chartered Surveyors (2025), Responsible Use of AI in Surveying Practice; Sawhney, A. de Gruben, C. Garner, J. Wong, D (2026) Insight Paper, How to build a judgement layer for AI use in surveying; Langer et al. (2025), Effective Human Oversight of AI-Based Systems: A Comprehensive Framework
18. Sawhney, A. de Gruben, C. Garner, J. Wong, D (2026) Insight Paper, How to build a judgement layer for AI use in surveying
19. Sawhney, A. de Gruben, C. Garner, J. Wong, D (2026) Insight Paper, How to build a judgement layer for AI use in surveying

Time is also an important consideration, as individuals must have sufficient time to conduct checks and challenge outputs where they have doubts about their accuracy. Taking a proportionate approach to scrutinising outputs is also necessary, such as:

- Stronger assurances for uses affecting safety or contractual issues
- Less stringent assurances for comparatively low-risk activities, such as administrative tasks

Clear accountability is therefore a prerequisite for responsible adoption. Organisations should define who is responsible for tasks such as: selecting the system, setting its parameters, checking its output and approving the final decision. Once these foundations are in place, this will prompt wider questions about how AI changes the work professionals do, and the ways in which organisations create value.



5

AI is beginning to reshape professional practice and the structure of the sector

The effects of AI are likely to operate at two, connected levels:

1. For professional practice, AI may alter how work is produced and checked, raising questions about competence and professional identity
2. At an organisational and sector level, the same changes may affect productivity and commercial models, as well as more integrated and creative practice

5.1 Professional roles and practices are starting to be reshaped

5.1.1 AI is more likely to reshape than replace professions wholesale

Despite the accelerating pace of adoption, interviewees generally did not expect AI to replace built environment professions wholesale, largely because professional roles comprise interconnected responsibilities, instead of a single set of tasks. AI may therefore alter how these responsibilities are fulfilled, but it does not remove the need for professional accountability.

Wider research supports the view that AI is changing work primarily by redistributing tasks rather than replacing whole occupations. Its effects are likely to vary according to the characteristics of the activity: structured and repeatable tasks are more readily automated or supported, while work involving physical context, ambiguity, professional relationships and accountability remains more dependent on human input. Professional roles are therefore likely to be reorganised around a changing combination of AI-supported production, human judgement and oversight[20].

Interviewees therefore anticipated a redistribution of activity between professionals and technology. As one respondent suggested:

> **"Everyone's sort of going to become a project manager, but it's going to be project managing a load of stuff that AI is doing rather than producing it themselves."**

This transition – from producer to supervisor – should not be interpreted as a reduction in the expertise required, as effective verification often requires more, not less, professional understanding.

20. Merola, R., Ernst, E., Samaan, D., Del Rio-Chanona, M. and Teutloff, O. (2026), The Impact of GenAI on Jobs, Productivity and Work Organization: A Review of the Empirical Evidence, International Labour Organization Research Brief

The potential for AI to reshape work is also likely to vary considerably:

- Change may be more rapid where activities can be clearly specified and assessed against established requirements
- It is likely to be more constrained where work depends on ambiguous evidence, physical context, professional relationships, tacit knowledge or the reconciliation of competing objectives

The degree of transformation will therefore differ by discipline, role, career stage and level of risk, suggesting that the future of built environment professions is unlikely to be defined by a choice between human and automated work. Instead, the boundary between the two may be repeatedly renegotiated as technological capability develops and organisations gain experience of its limitations.

5.1.2 From production to assurance, interpretation and judgement

There is a clear expectation from the evidence that professional roles and associated practices will be reshaped, initially, via task substitution, whereby AI routinely undertakes repeatable, structured tasks (e.g. summarising, analysing and content creation) or suggests outputs. In this scenario, professionals increasingly become responsible for checking and contextualising outputs and defending them.

This shift is reflected in research on quantity surveying and professional work more broadly. As AI takes on more document handling, calculation and initial production, professional input moves towards interpreting evidence, evaluating outputs and providing strategic advice. Research into workplace use of generative AI also suggests that critical thinking increasingly centres on verifying information, integrating outputs into the wider task and retaining oversight of the process. However, scrutiny may decline when users have greater confidence in AI, reinforcing the need for explicit checking and challenge within professional workflows[21].

A sub-theme in the interviews pointed to a potential, subsequent move, over time, to exception-based working where, instead of manually examining every item, a professional may use AI to process a portfolio of documents (or some other dataset) and identify the cases requiring human attention.

> **"I can start feeding it things and it will start marking these things, but not off its own interpretation… It is confined to the guardrails that I'm putting on it."**

The implication is that this process would substantially increase the scale at which professionals can operate, but it also introduces questions regarding how anomalies are defined, whether systems can recognise unfamiliar problems, what happens to cases that are incorrectly classified as routine. This invites the risk that professionals only see what the system has been configured to flag. In this scenario, effective exceptions-based practice will need periodic testing and random sampling to ensure it is functioning as it should.

21. AI4QS Initiative (2026), AI for Quantity Surveying Report; Lee, H.-P. et al. (2025), The Impact of Generative AI on Critical Thinking: Self-Reported Reductions in Cognitive Effort and Confidence Effects from a Survey of Knowledge Workers

How AI might redistribute risk

AI may reduce certain operational risks by improving consistency, or by checking larger volumes of information and identifying anomalies. However, it can also create or transfer risk elsewhere. For example:

- Drafting risk shifts towards verification risk
- Human inconsistency may be replaced by systematic model error
- Missing an individual document may become failure to detect an omitted data category
- Software-user error may become workflow-design error
- Unauthorised disclosure may arise through model use rather than conventional document transfer
- Individual mistakes may become repeatable across a portfolio
- A professional may be held responsible for actions performed through an agent

5.1.3 Foundational knowledge and professional judgement become more important

As professional roles are reshaped, and assurance, interpretation and judgement become more necessary, this is likely to shift the required underpinning skills and knowledge to more **foundational knowledge, reasoning, processes and behaviours**. Competence will therefore continue to require:

- Sufficient technical knowledge to recognise implausible or incomplete outputs
- Understanding of methods, processes and causal relationships
- Knowledge of relevant law, standards, contracts and professional obligations
- Awareness of the limitations and provenance of data
- The ability to explain and defend a recommendation
- Critical evaluation and professional scepticism
- Judgement about when AI is appropriate and when it is not
- Willingness to accept responsibility for work that has been reviewed or signed off

Recent research reinforces the importance of knowing when AI can be relied upon. An experimental study found that AI improved performance on tasks within its capability range but reduced the accuracy of responses when used for a task outside that range[22].

Guidance from the Institution of Structural Engineers similarly emphasises that professionals using AI to support modelling, design or reporting must retain sufficient engineering knowledge to test assumptions, undertake independent checks and maintain traceability[23]. Professional judgement therefore includes recognising when an apparently credible output falls outside the system's reliable range, rather than checking only whether it is clearly wrong.

22. Dell'Acqua, F. et al. (2026), Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality
23. Institution of Structural Engineers (2026), Implementing AI in Structural Engineering

Allied to this, the interviews repeatedly distinguished between knowledge that can be written down and converted into data, or rules or prompts, and knowledge that resides in professional experience. It is possible that tacit knowledge might become more valuable, in which case organisations will need effective mechanisms for transferring experience before senior professionals retire.

RICS refers to a 'judgement layer' which is "a firm's way of organising information, knowledge and controls so that AI-assisted work can be reviewed and signed off properly – from setting the task to delivering the advice the client receives". Whilst this layer is built by the organisation, the individual (the surveyor in this case) remains responsible for professional judgement and accountability. However, this does not convert professional judgement into a set of rules: some knowledge remains dependent on experience, physical context and the ability to recognise when a familiar approach is unsuitable[24].

Information that AI can process relatively reliably	Areas of tacit knowledge requiring human input
● Explicit standards ● Documented procedures ● Structured records ● Numerical thresholds ● Recognised categories ● Historic datasets ● Repeatable decisions	● Physical context ● Local knowledge ● Informal intelligence ● Recognising an unusual combination of circumstances ● Interpreting what has not been recorded ● Understanding human behaviour ● Experience of how apparently minor issues develop in practice

24. Sawhney, A. de Gruben, C. Garner, J. Wong, D (2026) Insight Paper, How to build a judgement layer for AI use in surveying

Although respondents were generally positive about the potential benefits of AI (notwithstanding prerequisites for safe and effective use), a number of respondents were concerned that easy access to AI could reduce the need to retain knowledge, work through problems or recognise gaps in understanding. The main concern here is a circular one in that, although competent checking depends on knowledge, reliance on AI may weaken the activities through which that knowledge is acquired.

> **"You cannot challenge the outputs of AI unless you understand what the answer should be... to get the answer, you have to have had the experience."**

5.1.4 Professions may become broader, but expertise will still require depth

A number of respondents described how AI is already enabling some individuals to undertake work outside their original specialism, resulting in some disciplinary and functional boundaries becoming more permeable. For example, a surveyor, planner, engineer or architect may still retain a core professional identity, while becoming able to undertake supporting analysis, create simple software or interrogate financial information or explore another discipline's evidence. For example:

- A professional who does not identify as a software engineer using AI to learn technical concepts, develop low-code applications and create tools for reviewing information across a large building portfolio
- Using AI for research, marketing, finance, customer management and software development – activities that would previously have required other specialists or commercial products

The emergence of a generalist with depth

The interviews suggest that professionals may become more capable across adjacent professional business and other technical functions.

AI may therefore produce both broader generalists and a continuing need for deep specialists who can resolve ambiguity in data or outputs as well as validating them, and assuming responsibility for high-risk decisions.

5.1.5 Professional competence will involve more collaboration and interdisciplinary working

AI-enabled practice is likely to require professionals to work with a broader range of expertise, such as data scientists, software developers and information management specialists who may become more closely integrated into built environment teams. The result is likely to be an extension of interdisciplinary practice beyond the traditional professions.

In this scenario, built environment professionals will not need to become experts in every technical field, but they will require sufficient literacy to define problems and to commission work intelligently and then challenge specialist assumptions and outputs.

> **"The planner does not need to be the expert, but there does need to be somebody. You're going to have to work with other people."**

The interviews also suggest that the ability to combine disciplinary perspectives will become increasingly important for problem solving and decision making. Whilst AI may make evidence from these areas easier to assemble and compare, professionals will still need to understand the contribution and limitations of different disciplines and then identify tensions between their conclusions.

The interviews and roundtables indicated that skills in negotiation, client engagement and stakeholder management may therefore increase in importance because professionals must be skilled in establishing needs, testing assumptions, explaining uncertainty and negotiating solutions that are both technically credible and achievable in practice – tasks that are best suited to human capabilities. These relational capabilities may become more prominent as AI supports more aspects of content creation.

However, technology will not automatically produce collaboration – there is a risk that overreliance on AI could reduce professional dialogue if practitioners use AI to generate answers from outside their discipline, rather than engaging directly with colleagues.

Research on AI in quantity surveying anticipates a similar broadening of professional boundaries, with surveyors working more closely across cost, design, engineering and data-related activities.

However, reliable advice will continue to depend on disciplinary knowledge and an understanding of the context in which information is being applied[25]. Skills England therefore recommends a common foundation in AI capability, supplemented by role-specific learning and continuing workplace development. This model would enable professionals to work across wider boundaries without weakening the specialist knowledge needed to recognise limitations, challenge assumptions and remain accountable for their advice[26].

The evidence suggests that future competence will therefore increasingly need to encompass the ability to:

- Communicate across professional and technical boundaries
- Integrate different forms of evidence
- Negotiate between competing objectives
- Help clients and stakeholders reach informed and workable decisions

The new 'interdisciplinary professional' will not use AI to perform every discipline independently, but they will be able to convene, understand and challenge different forms of expertise.

25. AI4QS Initiative (2026), AI for Quantity Surveying Report
26. Skills England and Department for Work and Pensions (2026), Skills for AI: Employer Guide

5.1.6 Professional identity may need to be redefined

As AI assumes a greater role in producing technical work, established ideas about what it means to be a built environment professional may begin to change. As highlighted by some respondents, professional identity has often been associated with personally producing reports or designs, whereas AI-enabled practice may place greater emphasis on directing those processes and then interrogating evidence and exercising judgement about the outputs.

Some respondents highlighted a risk that this could generate resistance among practitioners who perceive AI as diminishing their expertise, while the evidence also suggests that some organisations may seek to differentiate themselves through explicitly human-led services. One participant anticipated firms that

> **"will proudly boast that they are not using AI and they're human-driven and human-led."**

As discussed earlier, incorporating AI into professional practice will still require practitioners to understand the work sufficiently to be able to challenge effectively and to recognise errors.

In the longer term, professional identity may therefore become less closely tied to producing every element of the work personally and more closely associated with using technology well. Professional standing will continue to depend on retaining independent judgement and recognising the limits of one's competence and accepting responsibility for the outcome.

Employers and professional bodies will therefore need to ensure that the pursuit of efficiency does not remove the experiences through which future professionals develop the knowledge, judgement and confidence needed to fulfil this role.

5.2 Structural change could enable more integrated and creative practice

5.2.1 Productivity as improved value, not simply greater output

Although AI may accelerate the tasks of content creation – whether this is drafting, summarising information, or reporting – interviewees did not always equate this to a reduction in the total time spent on a task.

Recent evidence reinforces the need to distinguish productivity gains from improvements in professional outcomes. The RIBA AI Report 2026 found that 75% of practices using AI reported improved productivity, but only 17% of respondents agreed that their designs were better because of AI[27]. A review by the International Labour Organisation similarly found that worker-reported time savings had not yet translated into higher measured output, earnings or employment[28].

27. Royal Institute of British Architects (2026), RIBA AI Report 2026
28. Merola, R., Ernst, E., Samaan, D., Del Rio-Chanona, M. and Teutloff, O. (2026), The Impact of GenAI on Jobs, Productivity and Work Organization: A Review of the Empirical Evidence, International Labour Organization Research Brief

> **"It might take the same amount of time, but rather than me thinking about the next word I need to write, it's just done and then I can go and check it against whatever I need to go and check it against."**

In this example, the benefit of AI lies in changing the quality and purpose of professional effort, whereby time previously spent constructing an initial output would instead be directed towards checking and improving it. Other interviewees described using released capacity for various other activities, including learning activities such as mentoring colleagues or undertaking continuing professional development (CPD); others used their time for speaking with clients and being able to respond more quickly to project needs.

Some interviewees also questioned how the use of AI could impact day-to-day activities more generally, at a sector-level and societal-level, by considering what could happen if AI frees up time through increased efficiencies. Will expectations on outputs increase? Will fees fall? Will jobs be redesigned around higher-value activities? Will it lead to a better work-life balance?

Whether these benefits are realised will depend on how organisations define productivity. If it is measured primarily through output volume, AI may lead to more work and shorter deadlines; some interviewees also spoke about greater intensity of work, without improving professional practice or work-life balance. The opportunity is therefore not simply to complete the same work faster, but to improve the quality and wider value of professional effort.

5.2.2 Commercial and workforce models may change before occupations disappear

As AI-enabled working becomes more established, clients may expect services to be delivered more quickly or at lower cost, placing pressure on deadlines and staffing arrangements, as well as on fees.

These pressures may also affect how professional services are priced. As AI weakens the relationship between time spent and the value delivered, clients may increasingly question charging models based primarily on professional hours. This could encourage greater use of fixed or outcome-related arrangements, although the extent of this shift is not yet established. Any change in pricing would require clear definitions of the service and intended outcome, appropriate allocation of risk and recognition of the continuing work involved in verification, professional approval and accountability[29].

Tensions may also arise where clients restrict AI use but offer budgets or timetables that implicitly assume greater technological efficiency (because they assume the work can be done more quickly and cheaply if the work is produced using AI). Employers may respond by increasing the volume of work handled by existing teams or redesigning jobs around higher-value activities.

29. Ahmoye, D., Sjödin, E., Blanco, J.L., Mawji, A., Winslade, M. and Rogers, P. (2026), How AI Is Reshaping the Future of the AEC Industry

Impacts on recruitment may also become apparent, as employers recruit fewer people through traditional entry routes – or they restrict recruitment altogether and redeploy activities to AI. Each possibility has different implications for commercial and workforce models.

Current evidence indicates that these changes are more likely to emerge through job redesign and altered staffing models than through the immediate disappearance of occupations. Research undertaken by the International Labour Organisation found limited evidence of large-scale job displacement to date, but identified early signs that generative AI is reorganising tasks within jobs and may reduce employment opportunities for younger workers[30]. In the built environment, this could mean that workforce impacts become visible first through changes in recruitment, task allocation and progression routes, even where overall occupational structures remain broadly intact.

The distribution of productivity gains will need to be very carefully considered, because efficiencies could create greater capacity for learning and improved work-life balance, but they could equally be absorbed through reduced fees or smaller teams.

The interviews suggest that generative and some currently low-cost systems could enable individuals and smaller firms to create simplified internal tools and thus reduce their dependence on some conventional software products. However, reliance on a limited number of major platforms or proprietary datasets could produce new forms of concentration whereby organisations may become locked into particular ecosystems, while changes in pricing or access could disrupt established workflows. Contingency planning will therefore become an important aspect of organisational resilience.

Contradictory directions of change

- Some functions may become more democratised because individuals can build tools
- Core infrastructure may become more concentrated among major platform providers
- Organisations may become locked into particular ecosystems
- Changes in pricing, access or model behaviour could disrupt professional workflows
- Small specialist software providers may face greater competition
- Proprietary organisational data may become a key competitive asset
- Access to high-quality models may create inequalities between organisations

30. Merola, R., Ernst, E., Samaan, D., Del Rio-Chanona, M. and Teutloff, O. (2026), The Impact of GenAI on Jobs, Productivity and Work Organization: A Review of the Empirical Evidence

5.2.3 AI could connect information and decisions across the building lifecycle

Moving beyond individual use cases, the interview evidence illustrates how AI could support a more connected information environment. One participant described bringing various assets – including strategy documents, guidance, task lists, standards, previous outputs, building information and compliance requirements – into an interconnected system. This made it possible to complete a task and then assess the result against the organisation's wider objectives:

> **"Because I've got the guidance on what the outcome should be in the strategy, I'm able to use the task list to complete whatever task I need to do and then go and critique it back against the strategy."**

This example is a helpful illustration of how AI can be used to maintain alignment between decisions made at different stages of work. In principle, AI could help connect original objectives with design requirements and construction information and standards, to inform long-term estate management. This could be particularly valuable where information is currently lost or fragmented between different building lifecycle stages (e.g. design, construction, handover and occupation).

Sector research supports this potential but also highlights that information is needed to fully realise it. AI applications already span planning, design, construction and operation, but their ability to connect decisions across these stages depends on information being structured, interoperable and retained beyond individual projects. Research by RICS highlights the advantages of recurring portfolio-level information in property, while project-based construction delivery can result in data and systems being fragmented or re-established at project boundaries[31].

AI may therefore help connect information across the building lifecycle, but it cannot compensate for fragmented records, incompatible systems or the loss of information between organisations and project stages[32].

Connected information, empowered by the use of AI, could also allow organisations to learn more systematically across projects and assets. Interviewees identified opportunities for using AI to identify improvements: bringing together lessons learnt from projects, looking at past data to identify common failures and using operational information to improve existing buildings. Other examples include using AI for real-time reporting and evaluating design alternatives.

31. Royal Institution of Chartered Surveyors (2026), AI in Commercial Property and Construction Report 2026
32. BEFA (2026), Mapping the AI Landscape in the Built Environment

5.2.4 Released capacity could support creativity, exploration and better professional dialogue

Where AI reduces the effort involved in producing initial material, professionals may have more time to explore alternatives, reflect on problems and involve others in developing solutions.

Evidence from the interviews suggests that AI could help externalise early ideas and then compare options, which could then be helpful for modifying proposals quickly. It could also make design and analysis more accessible to clients and non-designers by giving them something tangible to question and refine.

Available evidence supports this as a potential benefit, not necessarily a demonstrated outcome. Research into AI integration in built environment education also identifies the potential to generate and test design options more quickly, while highlighting the need for responsible use and appropriate professional oversight[33]. Whether AI creates more space for creativity, exploration and professional dialogue will therefore depend on how organisations use the capacity released, rather than following automatically from the technology itself.

It was suggested via the interviews that, rather than removing human creativity, AI may therefore change the medium through which it is expressed. One participant distinguished between the originating idea and its subsequent development:

> **"Whether a design is on the back of a notepad or a napkin, someone's going to have to draw something somewhere for it to come about. And then you can use AI to iterate and visualise."**

The result could be that 'creativity', or what is valued of those in creative roles, shifts to tasks such as framing the problem, directing iteration, evaluating alternatives and justifying recommendations. However, creativity could risk being weakened if professionals become passive selectors of generated options, rather than active developers of ideas. Furthermore, if efficiencies are converted into heavier workloads, shorter deadlines or lower fees, the potential for greater creativity will be lost.

5.2.5 Integrated practice could strengthen the focus on people, place and outcomes

Bringing together evidence from different disciplines and stages of the building lifecycle could create opportunities for professionals to consider built environment problems more holistically. For example, where interviewees spoke about planning, AI-

33. Zingre, K. et al. (2026), Towards Responsible AI Integration in Built Environment Curriculum: Evidence from UK Higher Education, peer-reviewed conference contribution, Northumbria University

supported analysis was seen as a way of exploring relationships between housing, infrastructure, employment, construction capacity and spatial constraints. It was also seen as a potential means of supporting consultation by processing large volumes of responses and helping communities express their contributions in a form that decision-makers can use.

However, interviewees drew a clear distinction between processing evidence and deciding what constitutes a good outcome. One participant argued that AI should be directed towards environmental and human challenges:

> **"Why not use AI to come up with a solution to benefit the environment and us all live in a much healthier, better environment for everyone?"**

The same participant questioned its ability to understand people sufficiently to produce genuinely people-centred solutions:

> **"In terms of being empathetic and understanding people, I don't think AI has got the capability to design or suggest things that are people-focused."**

So, where AI may help professionals identify patterns or test scenarios, people can contribute empathy or lived experience, or understanding of communities and local knowledge. In this way, AI could allow professionals to spend less time assembling information and more time considering what a place needs, who benefits, which compromises are acceptable and how competing objectives can be reconciled. However, this depends on engaging communities and users throughout the process.

6

The implications of AI are likely to differ across disciplines

6.1 Emerging uses and impacts across disciplines

The interviews and desk research took an interdisciplinary approach, focusing on highlighting specific applications for which AI is currently being used, and where AI has potential to support or disrupt future practice.

This section uses that evidence to identify implications for using AI between and within built environment disciplines.

Areas where exposure is greatest	Less readily automated
● Structured data ● Repeatable analysis ● Document review ● Standardised reporting	● Physical observation and inspection ● Contextual interpretation ● Tacit and local knowledge ● Ambiguous information ● Safety-critical and publicly accountable decisions

The tables on the next few pages summarise the emerging position by discipline, drawing on interpretation of the qualitative evidence from the interviews and roundtables to establish:

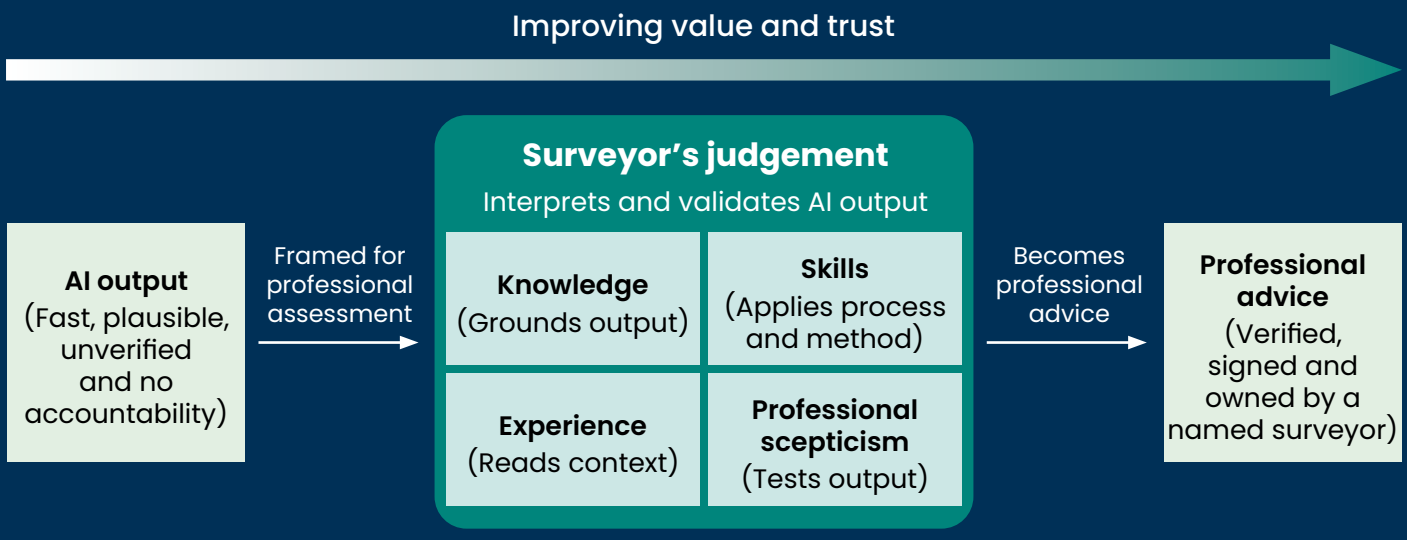
1. The areas of greatest exposure to AI
2. Activities that are likely to continue to be human-led
3. Key opportunities
4. Key risks

6.2 Discipline profiles

Quantity surveying and cost management

High exposure, particularly in measurement, benchmarking, cost modelling and reporting.

Areas of greatest exposure (short term)	AI can interrogate historic project data, prepare early benchmarks, support measurement and take-offs, structure cost information and produce initial reports.
Activities likely to continue to be human-led	Negotiation, contractual judgement and responsibility for cost advice are more resistant to automation.
Key opportunities	Faster access to cost evidence could support earlier option testing, anomaly detection and more continuous benchmarking, releasing time for negotiation, client advice and mentoring.
Key risks	Apparently precise estimates may conceal unsuitable data or assumptions. If entrants no longer undertake measurements or build cost plans, they may be expected to check models without understanding how the figures were constructed.



Reproduced from RICS graphic, Figure 1: The surveyor's judgement elevates AI output into advice[34]

34. RICS (2026) Responsible use of AI elevates surveyors' professional judgement

Architecture and architectural technology

High exposure in visualisation, documentation and option generation; **moderate exposure** in integrated technical design.

Areas of greatest exposure (short term)	AI is already supporting concept images, rapid visualisation, specifications, model checking, BIM-related workflows and the review of large volumes of building information.
Activities likely to continue to be human-led	Addressing context-sensitive technical and spatial problems.
Key opportunities	AI can accelerate exploration, make alternatives easier to communicate and check models against explicit requirements. It may also help practices connect design information with operational needs and build supporting tools around their own knowledge.
Key risks	Visually persuasive outputs may be technically weak, derived from copyrighted material or difficult to explain. Excessive reliance on generation could weaken spatial reasoning, specification knowledge and the ability to account for users' physical and social needs.

Civil and structural engineering

Moderate short-term exposure, with potentially high longer-term exposure in analysis and modelling.

Areas of greatest exposure (short term)	AI can analyse monitoring and project data, compare planned and actual performance, assist optimisation, automate reporting and check outputs against defined parameters.
Activities likely to continue to be human-led	Physical inspection, safety judgement and responsibility are likely to change more slowly.
Key opportunities	Combining AI with sensors, scanning, geospatial information and digital twins could improve anomaly detection, forecasting, predictive maintenance and the analysis of infrastructure performance.
Key risks	A model may satisfy formal thresholds while making little practical sense on site. Inadequate data, opaque assumptions or excessive automation could leave engineers responsible for outputs they are not equipped to verify, with potentially serious safety consequences.

Construction and project management

Moderate to high exposure in administration, reporting and project controls.

Areas of greatest exposure (short term)	AI can support meeting records, programme reporting, documentation, tender analysis, risk identification, workflow administration and comparison of planned and actual progress.
Activities likely to continue to be human-led	Site leadership, negotiation and responses to unforeseen events will need to be substantially human-led.
Key opportunities	Connecting programmes, models, cost information, correspondence and site records could improve forecasting, coordination and access to lessons from previous projects. Released capacity could enable managers to spend more time with project teams and clients.
Key risks	Automated reports may obscure rather than illuminate conditions on site. Reduced junior involvement in meetings and coordination could weaken project understanding, while efficiency gains may simply lead to managers overseeing more projects and carrying greater workloads.

Planning

High exposure in information processing and workflow support; **moderate exposure** in decision-making.

Areas of greatest exposure (short term)	AI can process consultation responses, interrogate policy, retrieve spatial information, support GIS analysis, digitise historic records and model housing and infrastructure scenarios.
Activities likely to continue to be human-led	Public accountability and legal challenge constrain automated decision-making.
Key opportunities	AI could make historic and spatial evidence more accessible, help teams examine alternative development patterns and support public participation by enabling people to understand proposals and formulate relevant responses.
Key risks	Black-box analysis, outdated policy, biased or incomplete spatial data and unequal access to AI could undermine transparent decision-making. Processing consultation evidence more efficiently must not reduce direct engagement with communities or obscure how evidence was weighted.

Real estate, valuation and property

High exposure in lease processing, research and routine analysis; **moderate exposure** in valuation judgement and negotiation.

Areas of greatest exposure (short term)	AI can support lease abstraction, property and portfolio research, market analysis, due diligence, financial modelling, reporting and customer administration.
Activities likely to continue to be human-led	Valuation decisions still require inspection, local knowledge and interpretation of market evidence.
Key opportunities	High-volume records could be processed more quickly, improving due diligence and portfolio visibility. Accessible AI tools may also allow smaller firms to undertake marketing, financial analysis and customer-management activities without separate specialist systems.
Key risks	Automated summaries may miss unusual lease provisions or rely on incomplete market data. Manipulated images, confidentiality concerns and false confidence in valuation outputs could affect decisions, while reduced lease reading and property research may weaken early-career development.

Building surveying and general surveying

Moderate overall exposure, with reporting and research more exposed than inspection and diagnosis.

Areas of greatest exposure (short term)	AI can assist desktop research, inspection preparation, report drafting, image analysis, customer administration and professional assessment preparation.
Activities likely to continue to be human-led	Physical inspection and causal diagnosis are central to the role.
Key opportunities	Reducing reporting and administrative burdens could allow surveyors to handle evidence more consistently and devote more time to inspections, clients and complex cases.
Key risks	Image-based suggestions may be mistaken for a diagnosis without sufficient consideration of building context. Increased volume expectations, fewer junior tasks, variable training and uncertainty over professional indemnity could reinforce uneven adoption across practices.

Facilities management, maintenance and asset management

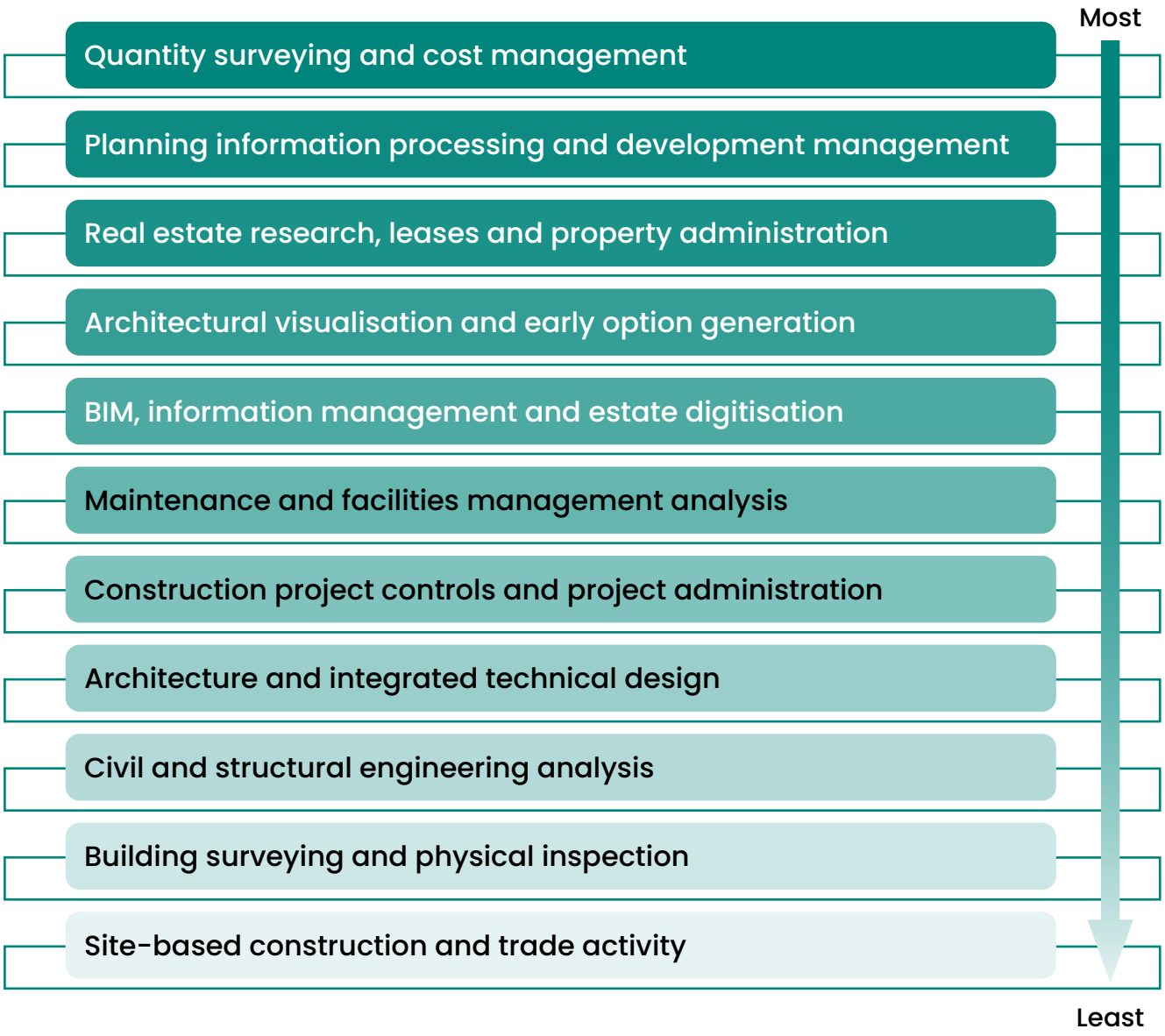
High exposure in administrative triage and data-led optimisation; **moderate exposure** in operational coordination.

Areas of greatest exposure (short term)	AI can support work-order triage, helpdesk analysis, predictive maintenance, occupancy and energy analysis, compliance monitoring, contractor review and communication with building users.
Activities likely to continue to be human-led	Physical inspection and fault finding
Key opportunities	Repeated operational data could reveal patterns that are difficult to identify from individual work orders, improving prioritisation and helping organisations connect maintenance history, asset condition and service performance.
Key risks	Data-led decisions may overlook occupant experience or the human and organisational causes of problems. Incomplete sensor and asset data could conceal deterioration, while automated communication may weaken relationships with users and erode organisational knowledge held by experienced staff.

6.3 A spectrum of change across professional practice

6.3.1 Most- to least-affected disciplines

Evidence from the interviews suggests the most immediately affected to the least immediately affected disciplines are:



6.3.2 Cross-disciplinary implications

The greatest exposure is at the task level, not the profession level

No discipline is likely to be transformed entirely, because most professional roles combine readily automated processes and they will always need well-developed behaviours. Exposure should therefore be considered at task level, paying attention to the relationship between activities. Workforce planning will need to identify which tasks can be supported or automated and which will continue to depend on professional judgement.

Physical tasks will be protected in the short term

Site visits, inspections and physical interventions are less immediately vulnerable to automation because they require direct engagement with buildings and infrastructure. However, the processes that support site visits, such as coordination and reporting surrounding this work, are already being affected. A profession may therefore retain its physical core while requiring fewer hours to complete the associated documentary and administrative activity. This could alter workloads and staffing structures, even where the key purpose of the profession remains unchanged.

Safety-critical disciplines may adopt assistance without autonomous decision-making

Engineering disciplines could derive considerable value from AI-supported modelling and use it for monitoring and optimising processes. Nevertheless, the consequences of making errors place stronger constraints on autonomous decision-making than in lower-risk administrative work. Here, independent verification and sign-off by a competent individual will still be essential.

Learning exposure broadly mirrors automation exposure

The disciplines most exposed to automation are also those in which routine analytical and documentary tasks have traditionally supported early-career learning. Tasks such as measurement and cost planning; lease and property research; policy reviews; programme preparation and project coordination enable new entrants to develop their knowledge and experience. Roles in quantity surveying, property, planning and project controls may therefore face the most immediate need to redesign professional development. Automating these activities without replacing their learning function could leave entrants responsible for checking outputs they have had limited opportunity to produce or understand.

7

Entry-level roles will become more demanding as traditional learning opportunities decline

7.1 Opportunities for learning through work are changing

Much of the learning that takes place during the early stages of an individual's built environment career is embedded in carrying out routine tasks. According to interview respondents, these tasks include basic tasks such as assembling data and writing reports, as well as reading and absorbing regulations and project documentation.

This concern is reflected in recent research with architectural practices. The RIBA AI Report 2026 found that 61% of respondents agreed that AI would make it more difficult for early-career professionals to acquire essential skills and experience[35]. This does not mean that the loss of learning opportunities is inevitable, but it highlights the need for employers to identify which tasks currently contribute to professional development and consider how equivalent opportunities for observation, practice, feedback and increasing responsibility will be maintained as these tasks become automated.

> **"Routine work is often described as low-value because it can be automated, but it has also been one of the main ways new surveyors learn on the job... If that work disappears without anything to replace it, firms may gain efficiency now at the expense of weakening their future professional capability."[36]**

These activities have far more value than simply generating an output; they also expose new entrants to the processes and standards on which professional practice depends. Through repeated engagement with these tasks, early-career professionals begin to recognise patterns and understand how different elements of a project connect and make progressively more complex decisions under supervision.

35. Royal Institute of British Architects (2026), RIBA AI Report 2026
36. Sawhney, A. de Gruben, C. Garner, J. Wong, D (2026) Insight Paper, How to build a judgement layer for AI use in surveying

Although these activities are sometimes characterised as basic or repetitive, interview and roundtable participants consistently distinguished between repetition that has ceased to be developmental and work that provides essential practice.

- Reviewing a large set of documents, for example, may appear inefficient when AI can summarise them rapidly, but the process can also familiarise a learner with terminology and common issues
- Similarly, manually preparing a specification or report helps an individual understand how the final output has been constructed and where errors or omissions are likely to arise.

"We've had this happy coincidence that useful work is learning work, but that work might not continue to be useful. So, how's that in-practice experience going to be developed?"

The interviews indicate that learning through routine work is cumulative, rather than being confined to the acquisition of a discrete technical skill (as illustrated in the diagram below). Over time, this cycle helps the new entrant to move from following instructions to understanding why a task is undertaken, how evidence should be interpreted and when an apparently standard case requires a different response.



Should these opportunities be removed entirely, this presents a substantial challenge for developing competence as, although an AI-generated summary or design may allow the individual to see what an answer looks like, it may conceal the choices and assumptions that were made in reaching it. Therefore, they may become familiar with the work without developing a sufficient understanding of its underlying reasoning. The developmental value of individual activities differs across disciplines, but the interviews identified a consistent relationship between production, understanding context and reflecting on feedback:

Task	Learning
Measurements and take-offs	Interpreting drawings, understanding construction components and relating quantities to the physical building
Meeting minutes	Learning professional language, following the development of discussions and recognising the significance of decisions
Specification writing	Understanding technical requirements and learning to express them clearly and unambiguously
Report drafting	Structuring evidence, distinguishing observation from interpretation and constructing a defensible argument
Research through source documents	Understanding the provenance, authority, status and limitations of different forms of information
Organising project information	Recognising how dependencies and decisions connect across a project
Producing work that is reviewed by experienced colleagues	Receiving correction, testing assumptions and reflecting on how an output could be improved
Site visits and manual data collection	Relating documented or modelled information to physical conditions and developing contextual awareness

Interviews with early-career professionals demonstrate that AI is already helping some entrants to navigate long documents and prepare for professional discussions. One apprentice described critically analysing AI-produced reports as part of their university work, while another participant reported that using AI to refine correspondence had helped them learn clearer ways of communicating technical information.

These examples suggest that AI can support learning where the user remains actively involved in interpreting and revising the output, rather than accepting it unconditionally.

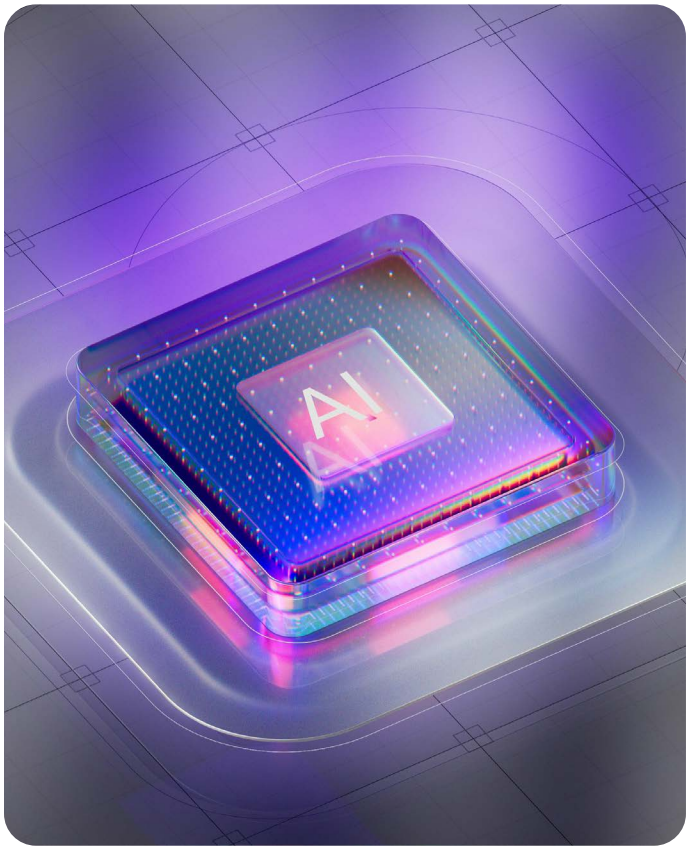
However, early-career participants also recognised that convenience can remove part of the thinking process, for example:

- Summaries may omit context
- Generated material may contain unsupported information (or hallucinations)
- Checking an output can sometimes take as long as completing the task manually

Access to experienced colleagues, therefore, is particularly important for making complex judgements, as professional advice will reflect practical and contextual knowledge that AI has not acquired. This challenge may be intensified by hybrid and remote working, which have already reduced opportunities to observe colleagues and ask questions, as well as commercial pressures that can constrain the time available for supervision and feedback.

Although some employers are responding by requiring increased office attendance and creating stronger disciplinary communities, their capacity to do so varies. Structured graduate and apprenticeship programmes may be better placed to identify and replace lost learning, while smaller organisations may provide broader project and client exposure, but have fewer formal resources. Conversely, entrants to larger organisations may benefit from structured development while working within more specialised or automated processes.

The interviews consistently emphasised that, with increased adoption of AI, experiences through which professional understanding develops are likely to become increasingly uneven. There is a risk therefore that the attractiveness of short-term efficiency achieved through the adoption of AI may conceal a longer-term weakening of professional judgement.



7.2 Expectations of early-career professionals are likely to increase

As AI assumes a greater share of routine work and content creation, early-career roles may become more demanding, with new entrants expected to move more quickly into interpreting evidence and validating outputs, and assuming more responsibility for communicating with clients and colleagues. This creates a tension between the level of judgement expected and the opportunities available to develop it.

The ability to prompt or operate a system is therefore only one component of competence – early-career professionals will still need strong foundational knowledge.

This potential shift places greater emphasis on critical thinking and what research participants described as 'healthy scepticism'. Graduates and apprentices will need the confidence to question outputs that appear authoritative and resist accepting an output because it appears professionally produced. Curiosity will also continue to be valued, which is important for challenging and validating outputs. Likewise, professional judgement will increasingly encompass deciding not only whether an output is correct, but whether AI was an appropriate method to use in the first place.

Frequently identified capabilities include:

- Critical thinking and healthy scepticism
- Curiosity and willingness to investigate
- Understanding data quality, limitations and provenance
- Communication and collaboration
- Verification and challenge
- Confidence to question an automated output
- Professional judgement
- Systems thinking
- Ethical reasoning
- Understanding context and purpose
- Awareness of privacy, confidentiality and intellectual property
- Taking responsibility for decisions



One roundtable participant anticipated **"much more of a shift into… the more human side of project management"**, involving more conversation, analysis and client-facing work. Future entry-level roles may therefore require a broader combination of capabilities from the outset, including:

- Stronger critical evaluation and verification
- A secure foundation of disciplinary and technical knowledge
- Confidence in questioning automated outputs
- Communication, collaboration and relationship management
- Awareness of data protection, confidentiality and intellectual property
- The ability to explain and defend AI-supported work
- Understanding of professional accountability and risk
- Judgement about when AI should not be used

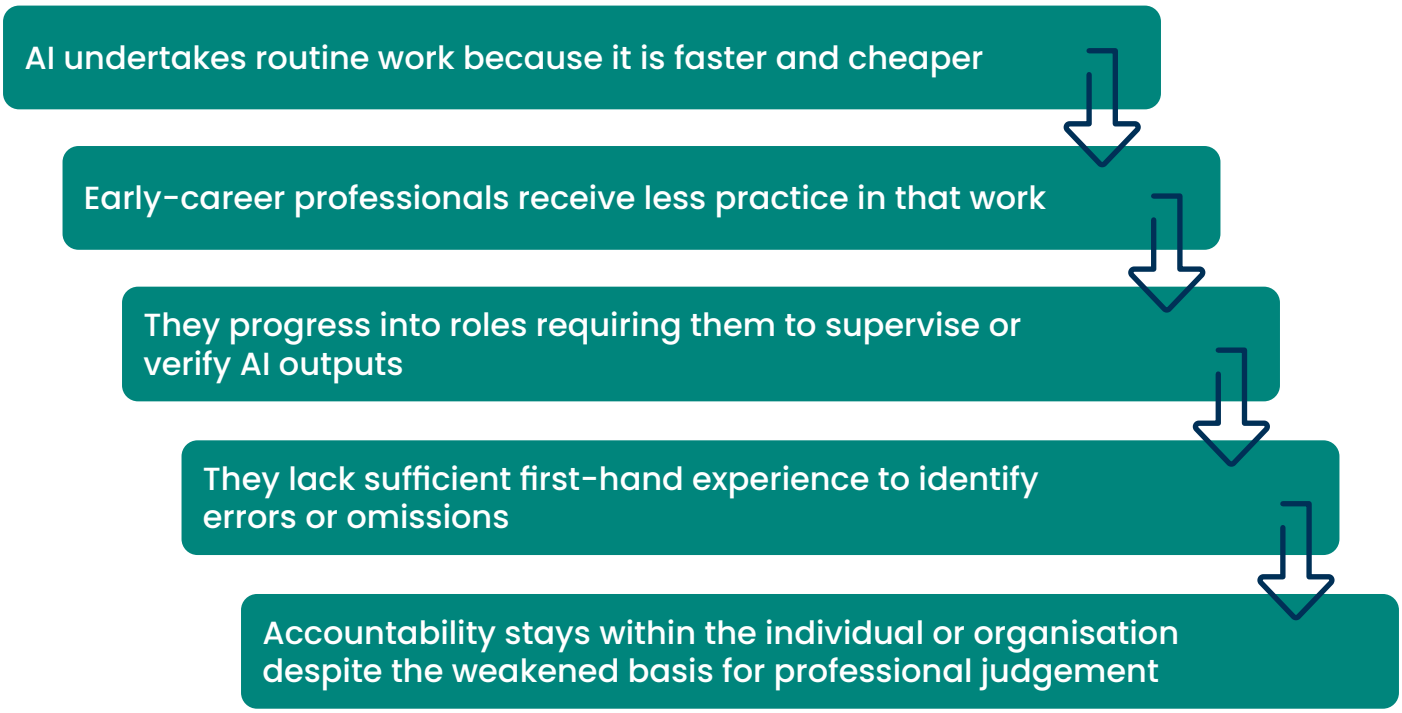
These changing expectations could deepen inequalities in entry to the professions if employers require work-ready judgement without providing the experiences through which it develops. Opportunities may become concentrated among entrants with access to high-quality placements or apprenticeships, or established professional networks.

Recruitment and progression will therefore need to assess more than confidence in using AI, but potentially require applicants to interrogate an AI-generated output and verify it against authoritative evidence as part of the selection process.

Employers will therefore need to balance access to AI with structured opportunities to develop independent competence, ensuring that rising expectations for disciplinary knowledge, critical evaluation, AI literacy and human capabilities are matched by appropriate practice, supervision and feedback.

7.3 Career development will need to be deliberately redesigned

As AI changes the distribution of work, career development will need to become more deliberate and structured. Evidence from the interviews suggests that employers should weigh the benefits of automating an activity against removing a learning opportunity, since tasks that appear routine may provide the repeated practice through which entrants acquire technical understanding. Automating these tasks without replacing their developmental function has the potential to create an issue for the competence pipeline:



To help combat this, organisations should identify the foundational experiences required within each profession and determine which activities should initially be undertaken independently; these can then be introduced through comparison between manual and AI-generated outputs.

Regular feedback can then focus on the final output and also on the assumptions underlying it. Some of the capacity released through AI will likely need to be reinvested in mentoring and protected learning.

CPD will also need to treat AI competence as continuous and applied learning, rather than one-off training in particular tools. The table below identifies ways in which learning as continuous development could be integrated into disciplines, across roles and business problems.

Mechanism	Detail
A common foundation	Digital and data literacy; a basic understanding of how AI systems operate; and awareness of limitations, bias, hallucination, confidentiality, intellectual property and responsible use
Profession-specific application	Learning tailored to the risks, evidence, standards and applications relevant to different disciplines
Learning through real work	Opportunities to apply AI to authentic professional problems and then test, discuss and improve the resulting outputs
Structured mentoring and supervision	Regular feedback from experienced professionals, potentially complemented by 'reverse mentoring' between colleagues with different technical and digital strengths
Modular and accessible learning	Flexible provision that can be updated as technologies, professional requirements and working practices change
Assessment based on reasoning	Evaluation of the evidence, assumptions, checks and professional judgement behind an output (not just memory or production alone)
Stronger collaboration	Coordination among employers, education providers and professional bodies to establish consistent expectations and reduce duplication

The interviews reveal that no settled model has emerged for replacing all the learning previously acquired through routine work, and there is uncertainty about the quality of available AI training and how AI competence should be assessed.

The immediate priority is therefore to establish adaptable development pathways that preserve foundational experience while enabling responsible use of AI. This will require investment and coordination, but it is necessary if the sector is to realise productivity gains without weakening the knowledge, judgement and accountability that professional competence depends on.

8

Education and training pathways will need to evolve

8.1 Existing education pathways face significant challenges

8.1.1 The pace of change is difficult for education providers to match

AI is developing more rapidly than conventional curriculum cycles can readily accommodate. This is largely because formal changes to modules and programmes often pass through multiple committees and approval processes, meaning that a proposed change may not be introduced until the following academic year.

Emerging research indicates that formal adoption within built environment higher education remains uneven. A UK survey of 32 respondents across 23 academic institutions found that 17 respondents faced barriers including skills gaps, unclear guidance and concerns about academic integrity. Twenty-four respondents called for training, clearer institutional policies and access to appropriate tools. This suggests that students' opportunities to develop AI capability may vary considerably between institutions and courses, rather than forming a consistent part of built environment education[37].

As one interviewee observed, **"Universities are not the fastest and the most agile things in the world"**; missing a committee deadline could mean waiting **"another 12 months"** before revised content can be incorporated and delivered. This creates a severe challenge for education providers, because AI is evolving so rapidly that, by the point curriculum changes have been made, AI tools and workplace applications may have changed substantially. Periodic programme reviews are therefore poorly aligned with a technology that is evolving continuously and becoming embedded across a wide range of professional activities.

AI also raises questions about what should be taught, how learning should be assessed and which forms of knowledge and practical experience must be retained when production tasks are automated. This creates a challenge whereby universities are being asked to prepare learners for emerging workflows before employers have fully established how those workflows will operate.

Traditional subject and accreditation structures may also reinforce disciplinary silos, making it difficult to integrate interdisciplinary capabilities across programmes. In addition, built environment departments may struggle to maintain current practitioner knowledge where the academic recruitment process prioritises research credentials and publication records. Salaries and employment conditions can also make it difficult to attract experienced industry professionals.

37. Zingre, K. et al. (2026), Towards Responsible AI Integration in Built Environment Curriculum: Evidence from UK Higher Education, peer-reviewed conference contribution, Northumbria University

8.1.2 Industry expectations are not yet sufficiently clear

Interviews with academics reveal that curriculum development is further complicated by uncertainty about what industry requires. Employers and university advisory boards increasingly ask education providers to produce graduates who are 'AI ready' or 'AI native', but interviewees indicated that employers are often unable to define the relevant capabilities or identify the applications for which graduates should be prepared.

Education providers are therefore expected to anticipate future practice while employers themselves are at different stages of adoption, and are still determining which combinations of technical and human skills they will need. This creates a circular relationship in which industry looks to education for direction, while education seeks clearer evidence of changing workplace requirements.

Furthermore, whilst current demand may emphasise knowledge of particular tools, those tools may be superseded or incorporated into standard software before a student completes a programme. This underlines the need for graduates to have strong disciplinary foundations combined with critical analysis, data literacy, verification, communication and professional judgement.

As one participant explained, organisations must ensure that people entering development pathways have **"the skill set they need to succeed in a rapidly changing business world"**, while avoiding investment in knowledge that may quickly become obsolete. Curricula therefore need to prepare learners for continuing adaptation.

Skills England's foundation skills benchmark[38] provides a useful starting point for defining basic AI capability. It identifies six skills across technical, non-technical, and responsible and ethical domains:

- Writing clear instructions for AI tools
- Using AI to support routine tasks
- Using simple software to automate work
- Adjusting tools to improve results
- Understanding the risks and consequences of AI use
- Analysing AI-supported information, including checking outputs for accuracy and identifying errors

AI capability will need to be developed alongside critical thinking and the interpersonal skills required for professional practice. Students need to understand how to use AI effectively, but also how to question its outputs, validate the underlying information and recognise when it is not an appropriate response to the problem. Communication, presentation and relationship-building will remain important because professionals must be able to explain and defend their reasoning to clients and colleagues rather than rely on the apparent authority of an AI-generated output[39].

38. Skills England (2026), AI Foundation Skills for Work Benchmark
39. De Gruben, C. (2026), 'AI's Impact on Property and Jobs', keynote address delivered at the Innovation in Built Environment Education Conference, 10 September 2026

8.1.3 Education provider capacity and acceptance are uneven

The integration of AI into teaching currently varies substantially between institutions and programmes. Interview evidence reveals that, in some cases, AI awareness, ethics and critical evaluation are being incorporated into professional studies and technical modules, with students asked to generate or examine outputs and assess their accuracy and limitations. Elsewhere, provision is limited or dependent on voluntary activities led by staff with an interest in AI who take an informal approach to develop students' skills and knowledge in AI. Interview evidence from planning education similarly suggested that the quality and extent of AI teaching often reflect the expertise and enthusiasm of individual academics, producing uneven exposure among students entering the same profession.

Differences in staff capability are also compounded by differences in opinion on acceptable AI use. For example, some academics are redesigning assignments so that students critique or improve AI-generated material, while others are returning to examinations or controlled assessments to control for inappropriate use of AI.

Although tighter controls may provide greater assurance over authorship, respondents questioned whether examination-based approaches can adequately assess critical thinking and the application of knowledge to realistic professional situations. They may also reverse progress towards authentic and inclusive assessment. The experience of one apprentice illustrates this tension: AI use was encouraged for similar activities in the workplace but prohibited in written university assignments, although newer modules had begun to require critical analysis of AI-generated reports.

Emerging sector guidance places the emphasis on whether assessment provides valid evidence of what a student has learned, rather than simply whether AI has been used. Draft principles published by QAA focus on assessment validity and alignment with learning outcomes, while Jisc identifies growing use of oral and investigatory vivas, portfolios and process-focused assessment. These approaches can make students' reasoning, development and professional judgement more visible, helping education providers establish that the required learning has taken place[40].

8.1.4 Professional standards are too broad

Professional bodies have begun to incorporate AI into accreditation standards as well as learning outcomes and competence frameworks; however, the requirements are often high-level. Expectations set out in these documents – that learners should recognise the appropriate use of AI, demonstrate AI literacy or use technology ethically – provide an important foundation, but they offer limited guidance about what competence looks like in practice. In one example given by an academic, AI appears only briefly at the end of a broader learning outcome concerning technology and communication, leaving individual education providers to interpret the depth and type of learning required. There is variation across professional bodies in what – and in what detail – competencies for using AI are specified. Interviewees highlighted a need for clearer guidance on what AI competence looks like within different professions.

40. Quality Assurance Agency for Higher Education (2026), Assuring Academic Standards in the Age of AI: Draft Sector Principles; Jisc (2025), Trends in Assessment in Higher Education: Considerations for Policy and Practice

Broad references to appropriate or ethical use leave education providers to determine how much teaching is required and how learners should demonstrate their understanding.

Because the use cases for AI can vary by professional context, there is a need for greater specificity in standards and frameworks for professional education. For example, a planner assessing evidence, a surveyor reviewing a valuation, an architect generating design options and an engineer verifying a safety-critical calculation face different data, risks and consequences of error.

Shared expectations should therefore be supplemented by discipline-specific guidance covering aspects such as:

- Foundational knowledge
- Acceptable reliance on AI
- Verification and disclosure requirements
- Likely failure modes and circumstances in which AI should not be used

Clearer standards would also help education providers align curricula and assessment with professional practice. Also, because detailed standards can themselves become outdated, interviewees proposed a more dynamic approach in which professional bodies provide regularly refreshed roadmaps alongside formal accreditation requirements. These could identify the capabilities graduates need now, those likely to become important over the next few years and the enduring professional principles that should remain stable as tools change.

As one academic suggested, an annually updated view of industry needs would enable education providers to respond more effectively without embedding transient technologies into programmes that are reviewed much less frequently.

Professional bodies are well placed to coordinate this work because they can draw together evidence from employers, educators and practitioners across disciplines rather than relying on the partial view available to any single organisation. As RICS has acknowledged, professional bodies, educators and employers will need to decide which capabilities remain essential, as AI supports more routine production.[41]

Published requirements illustrate different approaches to AI and professional competence. The RTPI's Policy Statement on Initial Planning Education includes appropriate use of AI within learning outcome 13, which also covers communication and collaboration[42]. ARB's Competency Outcomes for Architects address digital systems and the critical evaluation of evidence, without explicitly referring to AI[43].

More detailed educational expectations appear in QAA's 2026 Subject Benchmark Statement for Architecture. Its dedicated section on generative AI covers ethical and environmental implications, bias, intellectual property, evaluation of outputs and transparency about how tools have contributed to work[44]. Although this is an educational benchmark rather than an accreditation standard, it offers providers a more specific basis for curriculum development.

41. Sawhney, A. de Gruben, C. Garner, J. Wong, D (2026) Insight Paper, How to build a judgement layer for AI use in surveying
42. Royal Town Planning Institute (undated), Policy Statement on Initial Planning Education
43. Architects Registration Board (undated), Tomorrow's Architects: Competency Outcomes for Architects
44. Quality Assurance Agency for Higher Education (2026), Subject Benchmark Statement: Architecture

Professional practice requirements are also developing. RICS' Responsible Use of Artificial Intelligence in Surveying Practice specifies baseline knowledge and requirements for assessing output reliability, documenting decisions and communicating with clients[45].

8.2 Education providers are beginning to respond

Although adaptation remains uneven, the interviews with academics identified a shift from attempting to restrict AI use towards integrating it more explicitly into teaching and assessment. Instead of creating separate AI programmes, some education providers are introducing relevant content across professional studies and discipline-specific modules, including discussions of how AI may affect specification writing, design, analysis and quality assurance. Collaborative AI clubs and other informal forums are also enabling staff and students to explore applications and limitations together, providing a more agile complement to formal curriculum change.

Teaching is increasingly concerned with critical and responsible use rather than tool proficiency alone, with emerging provision addressing topics including privacy, intellectual property, bias, hallucination and the reliability of generated information, and also reinforcing the need to verify outputs against authoritative evidence.

This illustrates a recognition from academia that graduates will require familiarity with AI and sufficient disciplinary understanding to identify errors, question assumptions and take accountability for their work. As one interviewee explained, employers are looking for "the critical bit and the understanding", as well as problem-solving and empathy.

The evidence suggests that assessment practice is also beginning to evolve accordingly. Examples include asking students to:

- Use AI to summarise source material and then critique the result
- Analyse the strengths and limitations of an AI-generated professional report
- Reflect on how AI contributed to an assignment

These approaches assess whether learners can interrogate and improve an output, not simply produce one, while retaining greater relevance to AI-enabled professional practice than either unrestricted use or blanket prohibition. Evidence from an apprentice suggested that this form of assessment also provides a stronger connection between academic learning and workplace expectations.

AI may also support more personalised and interactive learning because students can use it to test their understanding and receive repeated feedback. Other uses include generating revision materials. However, academics cautioned that these benefits depend on learners being intellectually engaged and retaining opportunities to develop foundational knowledge through practice, including making and correcting mistakes.

AI can be incorporated into built environment education through dedicated modules and through its use across existing teaching and assessment. These approaches can complement one another: a specific module can introduce concepts and methods that students then apply and question in design work, technical analysis and other professional tasks throughout their course.

45. Royal Institution of Chartered Surveyors (2025), Responsible Use of Artificial Intelligence in Surveying Practice

The examples below show provision described in published course and module information, including dedicated AI modules, AI content within broader digital modules and applications in design studios. They are not intended to be a comprehensive account of how each institution addresses AI across its programmes. The Liverpool example describes provision advertised for 2027 entry.

Institution	How AI is incorporated	Content
University of the Built Environment: Chartered Surveyor apprenticeship, Planning and Development pathway	Includes a 10-credit Introduction to Digital Planning and Artificial Intelligence module within the MSc route.	Introduces machine learning, geospatial platforms and digital twins for planning decisions and urban challenges, including housing and sustainability.[46]
University of Dundee: undergraduate planning degrees	The 30-credit Digital Futures module includes practical AI workshops and an assessed 'AI in Practice' policy and ethics brief.	Students apply generative AI within planning workflows, address governance and ethical issues, and develop a professional digital portfolio.[47]
Loughborough University: BSc Construction Engineering Management	AI features within the compulsory Digital Construction Management module, alongside building information modelling and digital twins.	Explores applying digital technologies to construction project planning, delivery and maintenance.[48]
University of South Wales: BSc Building Surveying	The curriculum valid from September 2026 offers a 30-credit optional Applied Artificial Intelligence module.	Students propose, develop and evaluate an AI prototype addressing an interdisciplinary problem, including ethical considerations. Content covers broader STEM applications.[49]

Continued on the next page

46. Chartered Surveyor - Planning and Development - University of the Built Environment
47. Digital Futures module (UP32006) | University of Dundee, UK
48. Construction Engineering Management BSc | Undergraduate study | Loughborough University
49. BSc (Hons) Building Surveying (Inc SW)- Curriculum Information - University of South Wales

Institution	How AI is incorporated	Content
Brunel University of London: MEng Civil Engineering	Includes compulsory final-year Civil Engineering with Artificial Intelligence.	Develops programming, data analytics, machine learning and deep learning skills to address civil engineering problems, including sustainable infrastructure.[50]
University of Liverpool: MA Advanced Architecture, Computational Design and AI pathway	The curriculum advertised for **2027 entry** includes compulsory AI-assisted design studios and AI-integrated environmental and energy modelling.	Applies AI and computational methods to architectural design development, simulation and building performance.[51]

AI courses are also starting to feature in CPD, for individual disciplines – for example the University of the Built Environment's courses on Using AI in Architectural Practice[52] and Using AI in Quantity Surveying[53].

Although interviews and documentary evidence point to various responses by education providers, readiness is uneven. A study presented in September 2026, involving 32 participants from 23 UK institutions, found that 47% of respondents integrated AI into built environment teaching and assessment. Barriers reported in that research include staffing skills gaps and limited institutional guidance and resources.[54]

Wider research published by Skills England in 2026 identified a shortage of trainers combining AI and sector expertise, and difficulties updating qualifications and apprenticeships quickly.[55]

50. Civil Engineering MEng | Brunel University of London
51. Advanced Architecture (Computational Design and AI) MA | Courses | University of Liverpool
52. Using AI in Architectural Practice (A26) - University of the Built Environment Online Academy
53. Using AI in Quantity Surveying, University of the Built Environment
54. Zingre, K. et al. (2026), Towards Responsible AI Integration in Built Environment Curriculum: Evidence from UK Higher Education, peer-reviewed conference contribution, Northumbria University
55. Skills England and Department for Work and Pensions (2026), Insight briefing based on research: what works for AI upskilling in the UK

8.3 Future pathways will need to support new combinations of skills

8.3.1 A common foundation, applied through disciplinary practice

The evidence also supports greater use of interdisciplinary and experiential learning. Built environment professionals will increasingly need to understand how AI-supported decisions in one discipline affect other parts of a project, while engaging with clients, communities and colleagues whose priorities cannot always be reduced to a technical problem.

Across the built environment, education and training will need to combine shared AI and data capabilities with the specialist knowledge required for safe and accountable practice. Interdisciplinary learning should widen practitioners' understanding of how decisions affect other professions and stages of the asset lifecycle, without making professional roles interchangeable.

The table below sets out the principal components of a possible model:

Component	Education and training implications
Shared AI and data foundation	All disciplines should understand: data quality and provenance, AI capabilities and limitations, bias and hallucination, privacy, confidentiality, intellectual property, governance and professional accountability.
Disciplinary depth	Learners need sufficient technical and contextual knowledge to recognise unreliable outputs, question assumptions and decide whether AI is appropriate. Specialist competence will still form the basis for professional judgement and accountability.
Interdisciplinary breadth	Learners should understand how decisions within their discipline affect design, cost, safety, buildability, environmental performance, operation and user outcomes. The aim will be to enable informed collaboration.
Applied and experiential learning	Live briefs, multidisciplinary projects, simulations, placements and site-based learning should provide opportunities to apply AI within realistic professional contexts.
Staged use of AI	Learners should first develop an independent view, then compare it with an AI-supported output, examine points of difference and decide which conclusion is supported by the stronger evidence.
Reasoning and challenge	Learners should be able to identify missing evidence, question apparently authoritative outputs, explain their reasoning and recognise when further investigation or specialist input is required.

8.3.2 Assessing reasoning, not production

Interview evidence emphasises that, since the more widespread availability of AI tools, conventional written assignments are becoming less reliable as standalone evidence of individual competence. However, in interviews, academics also questioned whether a wholesale return to closed-book examinations would adequately assess critical thinking, problem-solving and the application of knowledge in realistic professional settings. It could also weaken progress towards more authentic and inclusive forms of assessment.

Credible approaches could include:

Assessment approach	What is assessed
Unfamiliar or incomplete scenarios	Application of knowledge, problem definition and decision-making under uncertainty
Documented use of AI	Transparency about how AI was used, including the prompts, sources, checks and revisions undertaken
Comparison of independent and AI-generated work	Ability to identify errors, omissions, unsupported assumptions and differences in reasoning
Staged submissions	Development of thinking over time and the learner's response to feedback
Reflective accounts of errors and revisions	Recognition of weaknesses and evidence of learning from mistakes
Critical analysis of AI-generated professional reports	Ability to evaluate an output rather than simply produce or accept it
Oral questioning and presentations	Understanding of the work, explanation of choices and ability to respond to challenge
Practical observation	Application of knowledge and judgement in realistic professional contexts

A critical success factor is whether graduates can use AI appropriately, while demonstrating the underlying competence needed to judge whether its output is sound.

Achieving this will require closer collaboration among employers, education providers and professional bodies, with sustainable expectations around: disciplinary knowledge, ethics and accountability supplemented by guidance that can be updated more frequently as technologies and working practices evolve.

9

Conclusions and recommendations

9.1 Conclusions

The evidence gathered for this research suggests that AI is more likely to reshape built environment professions than replace them wholesale because change is occurring first at the level of tasks and workflows, with generative and analytical tools increasingly used to produce material and process data. As these capabilities become more established, the contribution of professional oversight may shift towards defining requirements, interrogating evidence and, crucially, accepting responsibility for the resulting advice or decision.

Although adoption is accelerating, its pace and form remain highly uneven, with differences in leadership, organisational culture, information maturity, workforce capability and access to secure tools producing divergent trajectories. Organisations that connect controlled experimentation with staff development and defined business problems can accumulate knowledge and capability, while those relying on ambiguous rules or blanket prohibition risk fragmented or hidden use. These differences extend across supply chains, where the reliability and security of shared work depend on the capabilities of multiple organisations.

The more significant benefits of AI will therefore depend on organisational foundations rather than technology acquisition alone. Reliable and accessible information, as well as practical governance and clear lines of accountability, are needed if AI-assisted work is to be trusted. Responsibility must therefore remain with identifiable professionals and organisations, supported by meaningful review and assurance processes.

As AI assumes more routine production and information-processing activity, disciplinary knowledge and professional judgement are likely to become more important. Professionals must understand the work sufficiently to recognise omissions and challenge assumptions and to check the quality and accuracy of outputs. Tacit knowledge and experience will continue to be particularly significant where knowledge cannot readily be codified.

Alongside this continuing need for disciplinary depth, professional practice may become broader and more collaborative. Built environment practitioners may work across a wider range of adjacent activities and more closely with other professionals – who may be integrated into their teams – such as data scientists and information management specialists. This will increase the importance of good communication and negotiation as well as relationship management and the capacity to combine different disciplinary perspectives without obscuring the limits of individual competence.

Whether AI improves professional practice will depend partly on how released capacity is used. Efficiencies could support stronger assurance, learning and mentoring, creativity and attention to people, place and environmental outcomes. They could equally be absorbed through lower fees, smaller teams, shorter deadlines and greater work intensity. Productivity should therefore be understood in terms of improved value and outcomes rather than output volume alone.

The effects will differ across disciplines because exposure is shaped by the characteristics of activities rather than professional titles alone. Structured and repeatable work is likely to change sooner than activities that demand physical inspection or involve safety-critical judgement. A common foundation in responsible AI use will therefore need to be applied across professions.

The most significant workforce implication concerns the succession and sustainability of different professional cohorts. Many of the tasks most adaptable to AI assistance also provide the repeated practice through which early-career professionals develop technical understanding and contextual judgement. If these activities are removed without alternative learning opportunities, entrants may be expected to challenge and defend increasingly sophisticated work without having acquired sufficient first-hand experience of how it is produced.

This creates a potential weakness in the professional competence pipeline because, as routine work is automated, entrants may receive less direct practice before progressing into roles centred on review and verification, even though accountability remains with them or their organisations. Industry and academia



will therefore need to come together to identify what people learned through those activities and redesign workplace development, education and assessment accordingly.

The implications for professional development differ between disciplines. In quantity surveying, property and valuation, planning and project management, AI can support many of the documentary and analytical activities through which entrants become familiar with professional evidence and processes. These disciplines face a particular challenge in maintaining opportunities to understand how information is assembled, interpreted and translated into advice. Architecture faces related questions about how learners develop design reasoning and technical understanding when compelling images and design options can be generated quickly. In civil and structural engineering, building surveying and facilities management, direct experience of physical conditions remains particularly important. Here, development must preserve the ability to connect calculations, models, images and operational data with what is happening in a building or on a site.

These differences should inform the response to the challenge. Shared expectations for responsible AI use are needed, but professional bodies, employers and educators must also identify the particular experiences and checks on which competence depends within each discipline. The priorities will vary by task and level of responsibility, as well as by profession.

Overall, these findings indicate that responsible AI adoption and development of professionals should be treated as connected priorities. The sector will need to redesign technology, work and learning in parallel, to ensure that the pursuit of efficiency does not weaken the knowledge and judgement required to assure future professional practice.

9.2 Recommendations

The sector cannot assume that established routes into professional competence will continue to work as AI changes professional practice. Employers may expect entrants to exercise judgement sooner, while removing some of the activities through which that judgement develops. Education providers face similar pressures, with growing expectations to prepare students for practices that employers and professional bodies are still defining.

The priority is to make professional development an explicit part of AI adoption. Decisions about automation should therefore address how people will acquire the experience they need and demonstrate that they are competent. The following recommendations set out actions for employers, professional bodies, education providers and sector partners.

Recommendations for employers



1. Consider the effect on learning and competence whenever professional work is automated

Employers should assess how proposed changes will affect staff development before introducing them. Alongside the expected savings, this assessment should identify what people currently learn through the activity, whose development will be affected and how that learning will be provided in future. This is particularly important where automation affects measurement, document review, research, report preparation and project coordination. These activities can build technical understanding, expose people to unfamiliar situations and provide opportunities for correction. Their removal may leave entrants checking work they have had little opportunity to understand through first-hand practice.

Future enhancements in the power of 'expert' AI models which overlap more senior levels of professional judgement should be adopted with caution and on a risk-controlled and regulated basis, especially concerning the risk of 'cognitive offloading' eroding human ability to exercise critical challenge and take true accountability for outputs.

Responsibility for addressing these effects should sit jointly with those leading AI adoption and those responsible for technical standards and staff development. Where a significant learning opportunity will be lost, a replacement should be included in the implementation plan and resourced as part of the change. Employers should then review whether it provides the intended learning, drawing on feedback from learners and supervisors.



2. Redesign early-career pathways around the experiences people need to become competent

Employers should review graduate, apprenticeship and other development pathways to identify the practical experience needed to build technical knowledge, contextual understanding and professional judgement. These should include producing and interrogating technical work, examining original evidence, encountering physical conditions, observing professional discussions and explaining decisions to others.

Development plans should establish how responsibility increases. Learners may initially undertake selected activities independently, then compare their work with AI-supported outputs, investigate differences and progress towards supervised use on live projects. Greater independence should follow demonstrated competence, including the ability to recognise omissions, challenge assumptions and identify when further investigation or specialist advice is needed.

This review should also inform recruitment and workforce planning. Employers should consider how changes to entry-level work and recruitment will affect their future supply of experienced professionals. Expectations of greater judgement at an earlier career stage must be matched by opportunities to develop it.



3. Invest in supervision and practical knowledge sharing

Employers should give experienced staff explicit responsibility, time and recognition for developing others. Project budgets and workloads should accommodate review, explanation and feedback, including discussion of why a decision was made and what could have led to a different conclusion.

Revised workflows should protect the supervision and development time required, with these costs included when assessing potential efficiency savings. Where AI releases capacity, employers should consider how it can support mentoring, joint inspections, case reviews and participation in client or multidisciplinary discussions.

Particular attention should be given to knowledge held by experienced practitioners approaching retirement or leaving an organisation. Joint working and structured handovers should help colleagues learn how to recognise unusual problems, interpret local circumstances and judge when established procedures are insufficient. Learning can also work in both directions, with digitally confident colleagues helping others explore AI while experienced practitioners contribute technical and contextual judgement.



4. Give professionals the authority and time to challenge AI-supported work

Employers should define who is responsible for setting up, reviewing and approving AI-supported work. Those individuals must have the competence, evidence, authority and time to fulfil that responsibility. A requirement for human sign-off provides little assurance if the reviewer cannot examine the underlying information or challenge the result.

Organisational policies should be translated into practical controls covering approved tools, permitted information, client requirements, checking, escalation and record-keeping. These should cover AI capabilities introduced into existing software as well as separately procured systems. Organisations should also establish whether the information used by an AI system or relied upon in AI-supported work is sufficiently reliable, current and traceable.

The extent of review and critical challenge should be proportionate to the consequences of error. For systems undertaking connected activities, checks may be needed during the process as well as at the end. Records should distinguish what the system did from the professional's reasons for accepting, changing or rejecting its output. Where AI identifies exceptions, testing should include cases it has classified as routine, to check for problems that would otherwise remain unseen.

Recommendations for professional bodies

5. Define what AI competence means for each profession, career stage and level of responsibility

Professional bodies should translate broad expectations about appropriate or ethical AI use into practical descriptions of what people must know and demonstrate. These should cover entrants, those working towards qualification, independent practitioners, supervisors and those responsible for approving or governing AI-supported work. They should also address established professionals whose previous training and experience may not have prepared them for these responsibilities.

CPD/professional regulations should also guard against risks of long-term 'cognitive offloading' caused by either the legitimate increasing power of AI models or the misplaced temptation to accept an AI-generated answer due to financial, timescale or workload pressures.

A common foundation should cover AI capabilities and limitations, data quality and provenance, confidentiality, ethical use, critical evaluation and accountability. Each profession should then explain how these expectations apply to its own activities, including the underlying knowledge required, the extent and circumstances in which AI may be relied on, appropriate verification and circumstances requiring independent methods or specialist advice.

Worked examples should reflect differences in evidence, risk and consequences of error across disciplines. Professional bodies should develop this guidance with employers and educators, building on relevant frameworks and sharing common elements. Enduring competence requirements should be supported by practice guidance that can be reviewed regularly and updated as applications change.

The table at the end of this section provides a starting point for discipline-specific priorities.



6. Align qualification and continuing development requirements with the competence needed for AI-supported practice

Professional bodies should review whether existing education, experience and assessment requirements demonstrate that their competence expectations have been met. This should cover both routes into the profession and the continuing development of established practitioners. The review should identify essential experiences that may become harder to obtain as routine tasks are automated. Professional bodies should clarify how these can be gained and evidenced through revised workplace development, supervised practice or other credible routes. Employers should use this guidance when allocating work, determining supervision and deciding who can review or approve particular outputs.

Professional assessment should examine the reasoning behind work, including the evidence considered, checks undertaken, limitations recognised and decisions made. Continuing professional development should provide opportunities to apply and test these capabilities in relevant professional situations. Supervisors and reviewers will need particular support where they are taking responsibility for AI-supported work without substantial experience of using or evaluating the systems involved.

Recommendations for education providers



7. Integrate responsible AI use across the curriculum

Education providers should review where and how students develop AI capability throughout their course. Dedicated modules can introduce concepts and methods, but students also need repeated opportunities to apply, question and explain their use within technical subjects and professional studies.

Programmes should retain the disciplinary knowledge needed to recognise unreliable work. Students should practise developing an independent view, comparing it with an AI-supported output, checking sources and investigating differences. Teaching should also address when direct investigation, calculation or professional discussion is more appropriate than using AI.

Site visits, placements, live briefs and multidisciplinary projects should connect digital information with physical conditions and the needs of clients, communities and building users. These experiences should also develop communication, collaboration and the ability to explain professional decisions.



8. Use assessment to test understanding, judgement and responsible AI use

Education providers should review whether assessment effectively establishes what the student understands, how they reached their conclusions and whether they can respond when evidence or circumstances change. Methods should be selected to suit the learning outcomes. Options include staged submissions, oral questioning, practical observation, critique of AI-generated material and comparison of independent and AI-assisted work. Students should be able to explain the evidence they relied on, the checks they undertook and the changes they made.

Assessment should retain opportunities to demonstrate independent foundational competence while also testing responsible AI use in realistic professional situations. Approaches should remain accessible and proportionate, rather than defaulting to a single assessment format in response to concerns about AI.

Recommendations for sector partners



9. Test practical ways to replace learning lost through automation

Employers, professional bodies and education providers should agree a small initial programme of pilots across different disciplines and types of employer to test how essential learning can be retained or replaced as routine work is automated. Priorities should include activities where AI use is advancing and the developmental role is clear, such as measurement, document review, report preparation and project coordination.

Each pilot should identify the original activity, the competence developed through it, how AI changes the learning experience and the proposed replacement. It should specify the supervision and resources required, how competence will be assessed and whether the approach is feasible for smaller employers as well as larger organisations.

BEFA should convene partners to agree priorities, delivery responsibilities and resources, and help share the findings. Delivery should sit with participating employers, professional bodies and education providers. Learners and supervisors should contribute to the design and review of each approach. The resulting examples should show what works, under which conditions and with what demands on staff time.



10. Give education providers a clearer view of changing professional practice

BEFA should coordinate employers, professional bodies and education providers to produce a concise, shared update on changing tasks, competence requirements and implications for teaching and professional development. This should turn general requests for "AI-ready" graduates into specific descriptions of what entrants need to know and do.

This should identify emerging responsibilities, learning opportunities being reduced or removed, changes to professional requirements and the implications for curricula, placements and assessment. Existing networks and evidence should be used wherever possible.

An annual review, supplemented when significant changes occur, would give education providers a more current basis for decisions between formal programme reviews. Live briefs, practitioner contributions and opportunities for teaching staff to observe changing workflows should support the exchange between education and practice.



11. Develop shared resources that smaller employers can use to provide effective learning and supervision

Professional bodies, employer networks and education providers should coordinate resources that organisations with limited internal training capacity would struggle to develop alone. Priorities should include discipline-specific case studies, comparisons of independent and AI-assisted work, supervisor discussion guides, sample learning plans and worked examples of competent checking and challenge.

Resources should build on useful provision already available and on lessons from the pilots. They should explain how learning can be incorporated into normal work, what supervision is required and how progress can be evidenced. Shared workshops, mentoring and peer learning could provide additional support where employers lack particular expertise.



12. Assess whether AI improves professional practice as well as productivity

Employers should assess AI-related changes against quality, outcomes and future capability alongside time saved and production costs. Before changing a workflow, they should establish its current performance and intended benefits, including the time required for preparation, checking, corrections and supervision. Post-implementation review should examine whether the change has improved the work and what has happened to learning opportunities and workloads.

Clients, employers and professional bodies should also address how expectations about fees and turnaround times affect the capacity to investigate issues, verify outputs and develop staff. Faster production does not remove the cost of professional responsibility or the need to build experience. If organisations reduce investment in entry-level development on the assumption that others will train the next generation, the sector will weaken the professional competence on which clients, employers and the public rely.

Appendix: Considerations for professional disciplines

The table below illustrates how the recommendations apply across professional disciplines, drawing on the profiles in Section 6. It identifies priorities for learning, development and professional oversight that employers, professional bodies and education providers can use when planning their response.

Professional discipline	Priority for professional learning and development	Priority for verification and professional oversight
Quantity surveying and cost consultancy	Retain supervised experience of measurement, interpreting drawings and building up costs. Learners should understand how quantities and assumptions produce an estimate before relying on automated outputs.	Check quantities, scope, exclusions and the suitability of cost benchmarks for the project. Learners should be able to explain differences between independent and AI-supported estimates.
Architecture	Ensure students and early-career professionals develop and explain their own design reasoning, supported by technical study and site experience. AI-generated options should be examined for their spatial, material and construction implications.	Test whether convincing images and proposals are technically credible and appropriate to the brief, site and users. Review should examine the design decisions behind the presentation.
Civil and structural engineering	Preserve foundational calculation, modelling and site experience. Learners should understand assumptions, physical behaviour and the limits of a model before using AI to support analysis.	Apply independent checks appropriate to the safety consequences. Review should establish whether the method, assumptions and results reflect actual conditions and relevant engineering requirements.

Continued on the next page

Professional discipline	Priority for professional learning and development	Priority for verification and professional oversight
Construction project management	Retain participation in project meetings, site coordination and discussions about changes, risks and competing priorities. Automated minutes and reports should support this exposure rather than replace attendance.	Check reported progress, dependencies and emerging risks against project evidence and discussions with those delivering the work. Increased reporting capacity should not lead to unmanageable spans of responsibility.
Planning	Maintain direct engagement with policy documents, application evidence and consultation responses. Learners should practise weighing competing considerations and explaining recommendations, including through engagement with communities.	Check that evidence and policy are current, that summaries preserve material concerns and that the basis for weighting evidence is clear. AI analysis should support accountable planning judgement.
Property and valuation	Preserve experience of reading leases, examining market evidence, inspecting property and understanding local circumstances. Learners should investigate how unusual provisions or property characteristics affect advice.	Verify extracted terms, the suitability of comparable evidence and the assumptions underlying valuations. Review should explicitly consider information omitted or flattened by summaries.
Building surveying	Protect supervised inspections and opportunities to develop diagnoses from observations, history and further investigation. Learners should connect defects and symptoms with possible causes.	Treat AI-supported image analysis and report drafting as inputs to investigation. Check conclusions against physical evidence and recognise when images or records are insufficient to support a diagnosis.
Facilities management	Maintain practical fault-finding, familiarity with assets and direct contact with occupants and maintenance teams. Staff should learn to interpret operational data alongside service history and user experience.	Check automated alerts and maintenance priorities against asset condition, data completeness and reported problems. Review should consider issues that sensors or automated triage may fail to capture.

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