BE—ST

Pathways to Productivity

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Graphic design by Nicola Young, Digital Marketing Manager, BE-ST.

This research was funded by Skills Development Scotland and coordinated by the Skills Group of the Construction Accord.

Skills Development Scotland

Built Environment — Smarter Transformation

The authors would like to extend their sincere thanks to all those who contributed to this research through interviews, focus group participation, survey responses and informal discussions. We were consistently inspired by the openness, candour and commitment demonstrated by participants, and by the shared enthusiasm for achieving positive and lasting transformation within the sector. While the complexity of increasing the flow of new entrants is both evident and, at times, daunting, we were encouraged by the willingness of stakeholders to engage constructively with alternative pathways, challenge established assumptions and explore new solutions.

We are particularly grateful to our steering group members for their guidance, insight and constructive challenge throughout the process: Jocelyn Flemming (Chartered Institute of Building), Alison Malcolm (Scottish Funding Council), Catherine Cartmell (Historic Environment Scotland) and Karen Stevenson (Scottish Futures Trust). Finally, we extend our thanks to Elaine Ellis (Skills Development Scotland) for commissioning this work on behalf of the Skills Group of the Construction Accord and for her continued efforts in advancing this important agenda.

Executive Summary

Pathways to Productivity examines how the flow of new entrants into Scotland's construction and built environment workforce can be increased and, critically, sustained. References to 'the flow' are taken to capture the process of attracting, recruiting, developing, and retaining competent workers in the industry. The research was commissioned by Skills Development Scotland on behalf of the Skills and Workforce Group of the Construction Accord to support the Workforce Mission[i]. It draws on extensive stakeholder engagement across employers, representative bodies, education and training providers, and public sector partners.

The report is grounded in a simple but urgent premise: the current models supporting the flow of new entrants into the construction industry are at a critical inflection point and, without significant investment, do not scale to meet future demand. In the absence of fundamental reform, the sector will continue to struggle to mediate effectively between workforce supply and the evolving competence requirements of a modernising built environment. Without timely and coordinated intervention, the sector's capacity to meet society's essential needs, from delivering homes and hospitals to upgrading roads, energy systems and critical infrastructure, will become increasingly constrained, placing delivery resilience, quality and affordability at growing risk.

Prevailing cultural and commercial norms have contributed to what has been described as a 'dysfunctional labour model', one that externalises workforce development costs, rewards short term cost competition and undermines sustained, collective investment in skills. This model, alongside company demographics, has led to responsibility for bringing new entrants into the industry disproportionately resting with small and micro businesses, many of whom are operating under intensifying cost pressures and relying upon legacy pathway structures to develop new entrants. There is no single, clearly defined authority responsible for overseeing new entrant recruitment and development at sector level. Instead, responsibility sits within a complex ecosystem of interconnected actors who share broadly aligned ambitions for the industry; to be safe, productive, profitable and capable of delivering high quality outcomes, but who often hold differing views on the most appropriate measures of success and the pathways required to achieve it.

This divergence of perspective has resulted in a layered network of systems and subsystems that together constitute the wider construction skills and workforce ecosystem. From this point forward, references to 'the system' should therefore be understood as encompassing the full range of actors, pathways, funding

mechanisms and governance structures that collectively influence and shape the recruitment, development and progression of new entrants, unless explicitly stated otherwise.

The Strategic Context

The construction industry sits at the core of Scotland's economic, environmental and social ambitions. It is fundamental to tackling the housing emergency, decarbonising the built environment, modernising infrastructure, improving energy performance and enabling inclusive regional growth.

Yet workforce capacity has steadily eroded since the 2008 financial crisis, and the demographic profile of the sector, characterised by an ageing workforce and insufficient replacement rates, signals an increasingly imminent risk of both capacity and capability decline. Without timely intervention, the industry faces a potential workforce cliff edge that threatens not only delivery volumes, but the depth and resilience of the competencies required to meet Scotland's long term ambitions. Forecasts indicate modest net growth in the construction workforce over the coming years, with numbers projected to increase by 7,400 to around 214,500 by 2029. However, this headline projection conceals a far more complex picture. The Construction Industry Training Board (CITB) estimates that approximately 8% of the workforce must be replaced each year due to natural attrition alone. This reinforces the need to tackle systemic attrition alongside increasing the flow of new entrants if workforce capacity is to be both sustained and expanded over the long term.

At the same time, the sector is experiencing accelerating demand for new and evolving competencies linked to digitalisation, modern methods of construction, regulatory change and the transition to net zero. The result is a dual imperative: not only to expand overall workforce numbers, but to continuously upgrade and realign capability. In effect, the challenge is both quantitative and qualitative; growing the workforce while transforming the overall competency profile required to meet the evolving needs of society through the delivery and maintenance of a high performing built environment.

Methodology

This research was commissioned to provide an evidence led assessment of the challenges and opportunities associated with increasing the flow of new entrants into Scotland's construction and built environment workforce. It examined sector characteristic impacting employer capacity to recruit new entrants, entry pathways, system capacity and future skills demand holistically, focusing not only on participation volumes but on how effectively individuals transition into sustained employment, achieve competence and progress over time. The analytical lens

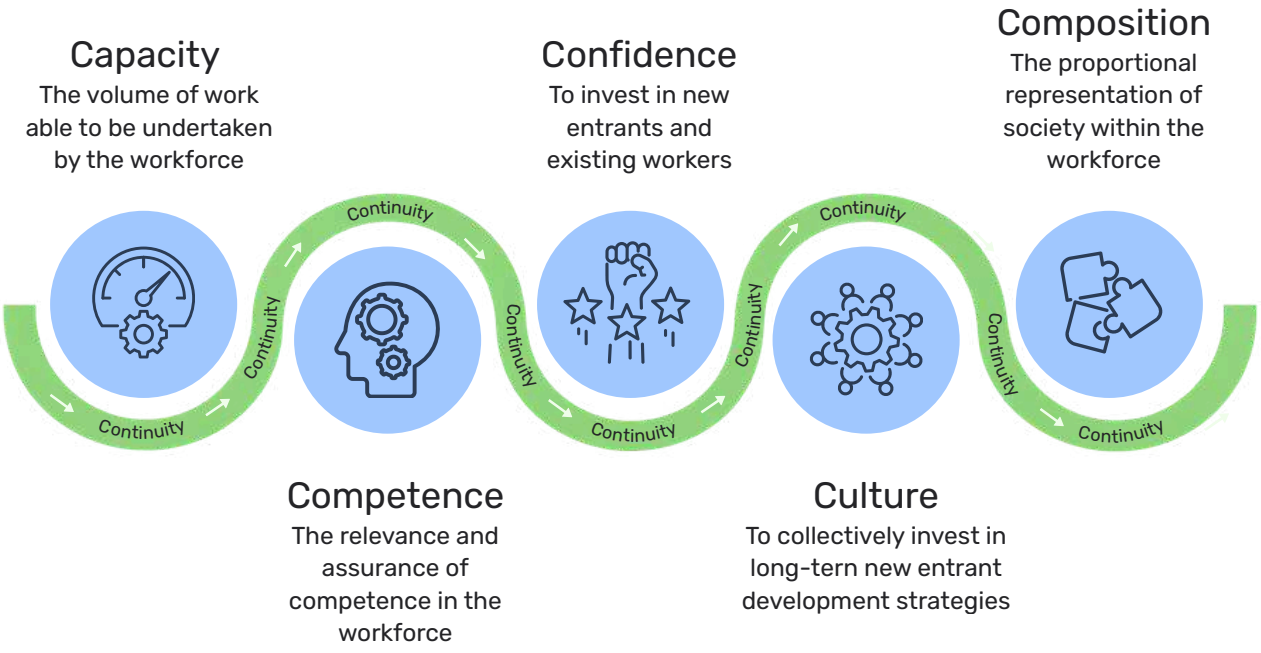
centred on identifying practical interventions with the potential to scale and strengthen attraction, accelerate transition to productive work, improve retention and support ongoing upskilling in a modernising sector.

The brief sought to identify practical levers that could support employers to recruit, develop and sustain the future workforce required by the sector. These levers have been derived from stakeholder feedback, alongside analysis of existing initiatives that are demonstrably strengthening the workforce pipeline. The intention is not to prescribe immediate action, but to establish a robust baseline of sector perspectives and provide decision makers with a structured set of options for future consideration and prioritisation. Each lever would require detailed appraisal, including full cost benefit analysis and assessment within the wider economic, policy and fiscal context, before any implementation decisions are taken.

Methodology combined desk based analysis of datasets, forecasts, industry publications, and policy with over 50 hours of stakeholder interviews, a sector survey and collaborative workshops. Findings were synthesised through thematic analysis to identify systemic barriers, improvement opportunities and implications for policy, funding and delivery.

Defining Success

A thematic analysis of success criteria, as detailed by research participants, identified the following unifying measures and drivers of success relating to increasing the flow of new entrants into the construction industry:



- **Capacity:** To maintain sufficient workforce volume to meet current and future client demand across regions and sub sectors.
- **Competence:** To ensure the workforce possesses the competencies required to operate safely, productively and in line with evolving technical, regulatory and performance standards.
- **Confidence:** To create the economic and policy certainty necessary for employers to invest in new entrants and the upskilling of the existing workforce.
- **Culture:** To foster a shared, sector wide commitment to long term workforce development rather than short term, transactional labour strategies.
- **Composition:** To build a workforce that reflects the diversity of the society it serves, widening access and improving representation across all roles and levels.
- **Continuity:** To provide the stability and forward visibility required to support long term planning, sustained investment and overall sector resilience.

This report underscores how structural characteristics of the industry, including its labour model, cost pressures and procurement dynamics, can operate as disincentives to recruiting and developing new entrants. To ensure the workforce is grown at the volume and scale required, a set of potential levers has been identified for consideration. If the sector is to build the workforce it needs, two fundamental shifts are required:

1. Create the conditions in which employers have access to coherent incentives and practical support, underpinned by systems and cultures that encourage strategic workforce planning and enable sustained participation in attracting, developing, retaining and retraining new entrants.

2. Industry, employers, and the skills ecosystem must work together to enable the development of evolving competence profiles required by both industry and society, underpinned by flexible entry pathways and integrated, career long upskilling capacity. This will have direct implications for pathway design, qualification architecture and the delivery models that support initial training, progression and continuous professional development across the workforce lifecycle.

Structural Industry Constraints

> This review has found that there is now a growing risk that labour supply constraints, skills scarcity and misalignment may create a dangerous cycle of unsustainable wage inflation, static or falling productivity.
>
> Farmer (2025)

The construction sector cannot be treated as a homogeneous industry. It comprises a diverse and historically evolved mix of trades, crafts, professions and occupations, each shaped by distinct traditions, delivery models and risk profiles. Consequently, pathways into the sector vary widely, and generalisations about entry routes must be treated cautiously.

Business demography further compounds this complexity. As of March 2025, Scotland had an estimated 53,495 construction businesses. Approximately 75% operate with no registered employees, while firms employing fewer than ten people account for around 96% of the total business base. By contrast, large firms employing more than 250 people represent only around 0.2% of businesses in the sector.

The labour market is therefore overwhelmingly characterised by micro and small enterprises, alongside a sizeable and highly volatile self employed cohort whose participation fluctuates in line with wider macroeconomic conditions. Over the past decade, direct employment within large construction firms has gradually declined, reinforcing a structural model in which workforce capacity is fragmented, decentralised and heavily reliant on small business and specialist subcontractor participation.

The prevailing commercial model has created the perfect storm for compounding workforce pressures. Cost driven procurement, fragmented subcontracting chains and aggressive risk transfer incentivise short term cost minimisation over long term workforce investment. While subcontracting and agency labour provide flexibility and manage risk, they dilute responsibility for skills development across supply chains. The result is a system adept at assembling labour for projects but structurally weak at sustaining and renewing the workforce.

For small and micro businesses, which employ most new entrants, recruiting and training carries disproportionate risk. Administrative burdens, supervision demands and cashflow constraints deter growth and participation in formal training schemes. Yet employers who do invest often cite professional identity, long term business sustainability and moral obligation as primary motivators. CITB research confirms that shaping workers to meet business needs, enabling growth, improving productivity and fulfilling social responsibility remain key drivers of recruitment.

Established pathways, particularly apprenticeships and graduate schemes, retain strong cultural legitimacy within the sector. Apprenticeships, described by CITB as the 'gold standard' for construction skills, are rooted in long standing craft traditions, combining public and private investment while embedding learning in real work environments[ix]. Yet this legitimacy can also act as a constraint. Alternative or accelerated pathways are sometimes poorly understood by employers and industry representative groups, viewed with scepticism, and perceived as diluting standards or weakening professional identity.

At the same time, divergent expectations around competence, regional variation in demand, high regulatory thresholds in safety critical occupations, and continued reliance on skilled migrant labour all complicate alignment between training provision and industry need. Proposals for accelerated or targeted models for competency development have generated mixed responses, exposing a deeper tension between preserving established traditions and adapting to changing operational realities.

In this context, skills scarcity and capability misalignment represent strategic risks to the sector's long term resilience. Structural fragility, recurring insolvencies and persistent workforce volatility intensify the urgency for reform, underscoring the need for a more coherent, responsive and sustainable workforce system.

The Skills System Landscape

Scotland's construction skills system mirrors the complexity and fragmentation of the industry it serves. It spans colleges, universities, private training providers, third sector organisations, community groups and employer led provision, funded through a mix of public investment, private finance and commercial activity. Training ranges from short, task specific certification to multiyear academic and professional programmes. Geographic access remains uneven, with rural and island communities facing limited provision and higher training costs.

A common perception among stakeholders is that the current system, operating through existing pathways and delivery models, lacks the capacity to accommodate a significant expansion in new entrants. However, understanding of the true scale, distribution and structure of provision remains uneven. While the diversity of routes

Publicly funded provision remains substantial. In 2024, 17,210 learners were studying construction and property related programmes in colleges, with 12,117 supported on full time construction education pathways. In higher education, 7,190 students were enrolled in architecture, building and planning courses in 2022/23. However, participation in education does not equate to becoming a new entrant; absorption rates into sustained employment vary significantly by programme, institution and region.

Apprenticeships remain the primary publicly funded route for supporting employed new entrants into trade and specialist roles the construction industry. Scotland operates three distinct pathways: Foundation, Modern and Graduate Apprenticeships. Foundation Apprenticeships provide valuable early exposure to construction careers within the school system, but do not involve an employment relationship.

Modern Apprenticeships continue to dominate entry into construction occupations. In 2024/25, there were 6,526 construction apprenticeship starts out of 25,507 total apprenticeship starts nationally, positioning construction as one of the largest users of the system. Completion rates remain comparatively strong at 78.4%, outperforming many English equivalents and reinforcing the apprenticeship model as a central pillar of workforce development within the sector.

Graduate Apprenticeships remain modest in scale, with 225 construction related enrolments in 2022/23, constrained largely by available provision rather than demand. Foundation Apprenticeships in construction have grown significantly, particularly at SCQF Levels 4 and 5, indicating strong interest remains among school aged learners. However, participation remains disproportionately male and concentrated among learners from more deprived communities, highlighting persistent representation challenges.

Whilst the education and skills system has a demonstrable capacity for supporting the development of the talent pool from which industry can recruit new entrants, importantly, not all routes into the industry are visible within official datasets. Direct recruitment by employers, privately funded training provision and the contribution of migrant labour form part of the wider entry ecosystem. Recent estimates suggest that non-UK workers account for approximately 8–10% of the UK construction workforce outside London, underlining the sector’s ongoing reliance on international labour flows.

The Scottish skills system is devolved from the UK Government to the Scottish Government, with distinct funding arrangements, qualification frameworks and policy approaches. While a detailed comparative analysis lies beyond the scope of this report, it is important to recognise that the indigenous construction workforce operates across all four UK nations. This is particularly pertinent when considering

the implications of the Building Safety Act. Although the Act applies primarily in England, its influence is UK-wide, elevating expectations around the transparent evidencing of skills, knowledge, experience and professional behaviours. Maintaining appropriate alignment, while safeguarding workforce mobility, therefore remains an important consideration for employers and policymakers alike.

The skills system makes substantial investment in construction related provision. On paper, the overall volume of training places exceeds projected workforce demand. However, investment in provision alone will not enable the sector to build the workforce required to meet future challenges.

Structural features of the industry continue to act as disincentives for employers to recruit and train new entrants. In this context, the role of the skills system as an enabler becomes even more critical. It must operate in ways that reduce barriers to participation, respond more effectively to real time labour market signals, and work in closer partnership with employers to design pathways that translate into sustained employment. Greater agility is also required to align competency development with regional priorities, sub sectoral demand and rapidly evolving industry requirements.

The Pathway Challenge

> The dilemma is clear and highly polarising. Employers are calling for broader, more flexible competency profiles to support efficient and productive working; trade associations and professional bodies are advocating for deeper investment in, and in some cases protection and professional recognition of, specific occupations and professional identities; and training providers are seeking to balance these competing demands for structure and flexibility within funding and qualification frameworks that are often outside their direct control. The absence of a unifying voice or coherent strategy further compounds the fragmentation of perspectives and acts as a significant barrier to the effective and efficient remodelling of the system.
>
> Morrison & Campbell (2026)

Stakeholder engagement demonstrated strong alignment on the need for change. There is broad consensus that existing approaches to recruiting and developing new entrants are unlikely to meet future workforce requirements. However, responsibility for reform is frequently perceived to sit elsewhere within the ecosystem, rather than within stakeholders' own spheres of influence. This disconnect, between collective recognition of systemic shortcomings and reluctance, and in some cases resistance, to recalibrate established roles, incentives and operating models, sits at the heart of the reform challenge.

Across all groups, a near universal view emerged that the mechanisms for cultivating talent pools and transitioning individuals into sustained employment require adaptation. In particular, they must be recalibrated to reflect the scale, pace and complexity of future industry demand, alongside the evolving operational and competency needs of employers.

A summary of commonly cited challenges is provided below:
occupationally focused and backward looking, reliant on historic labour market trends rather than forward looking, mission led planning. Stakeholders also identified persistent gaps in integrated provision for priority areas such as housebuilding, retrofit delivery and energy performance standards.

A summary of commonly cited challenges is provided below:

- **Training Provision Challenges** centre on capacity, cost and responsiveness. Colleges and universities face sustained fiscal pressure, with funding models that can incentivise lower cost or higher volume provision over labour market need. This has contributed to fragility in specialist and heritage craft pathways and constrained investment in capital intensive programmes aligned to emerging technologies. Rising material, energy and staffing costs, alongside spatial limitations within existing estates, further restrict flexibility. Private training providers are typically more agile but operate on tight margins and less predictable funding cycles, limiting their ability to commit to longer term investment and expansion.

- **Apprenticeship Challenges** reflect deeper structural weaknesses within the construction labour market. Only around one in five construction businesses employs an apprentice, with the majority hosted by SMEs. Micro and small firms face disproportionate financial and supervisory burdens, with four-year wage costs typically estimated at £70,000–£90,000 and productivity gains only realised as competence develops. Low margins, labour mobility and uncertain work pipelines further deter long term investment. Informal recruitment practices also persist, limiting transparency, widening access and workforce diversity.

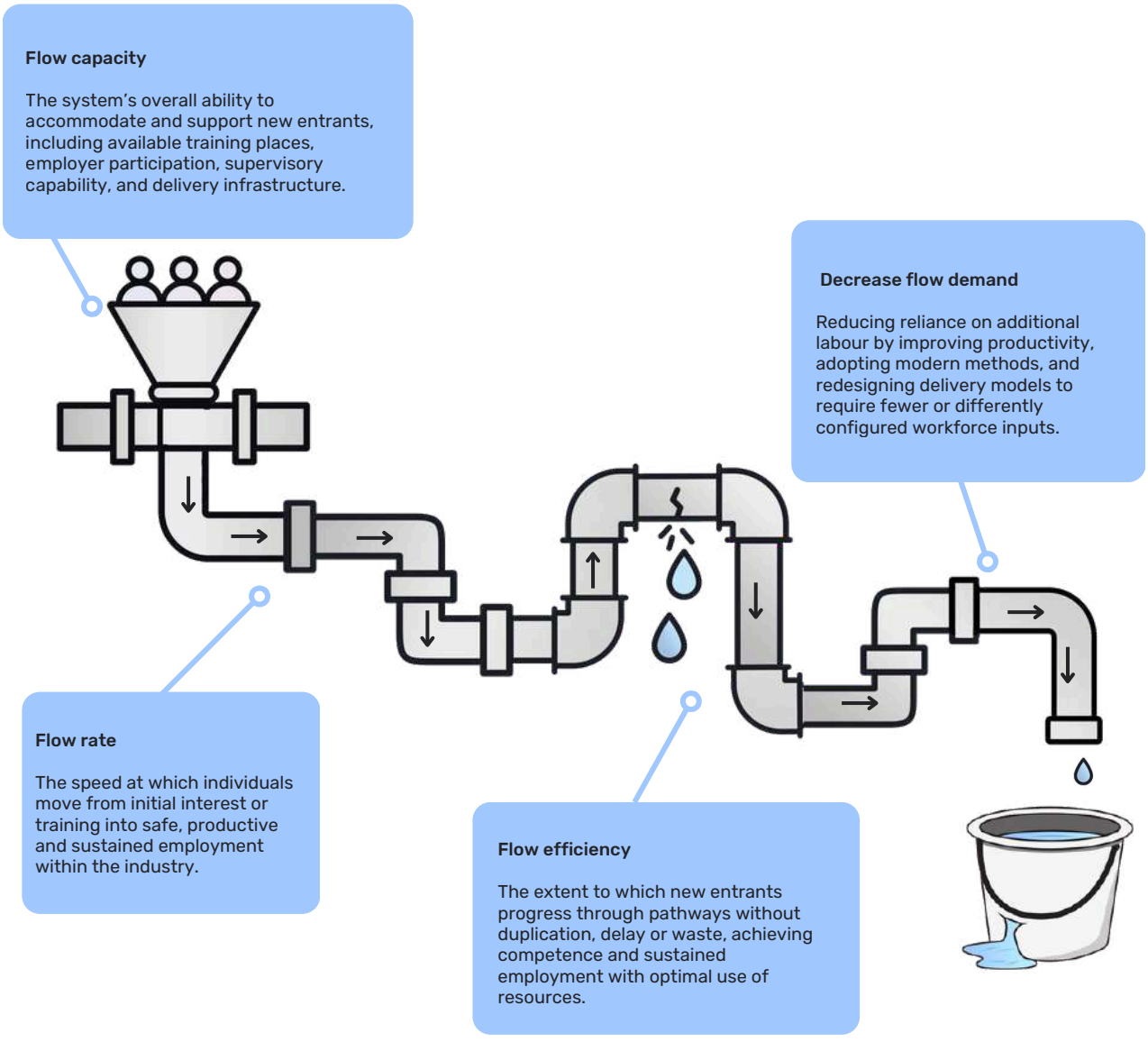
- **Career Changer Challenges** Career changer pathways are further constrained by inconsistent recognition of prior learning, rigid programme structures and significant financial risk for individuals. Standardised, timebound training routes frequently fail to account for transferable skills and existing competence, discouraging accelerated transition into productive roles. Targeted, employment linked models demonstrate clear promise, particularly where progression is tied to real vacancies, but they often require upfront capital investment and can encounter resistance, within the industry, where perceived to dilute established standards.

- **Ecosystem Inefficiencies** include weak absorption from training into sustained employment, misalignment between curriculum content and evolving industry need, occupational silos that restrict multidisciplinary pathways, and fragmented, inconsistent data on outcomes. The system remains heavily occupationally focused and backward looking, reliant on historic labour market trends rather than forward looking, mission led planning. Stakeholders also identified persistent gaps in integrated provision for priority areas such as housebuilding, retrofit delivery and energy performance standards.

Opportunities For Development

Overall, the challenges are systemic rather than isolated. They reflect fragmentation, misaligned incentives, planning uncertainty and deeply embedded cultural norms around duration-based competence. Addressing them will require stronger alignment between policy, funding, procurement and industry practice, alongside more flexible, competence led and forward looking pathways capable of responding to technological and market transformation.

The analysis draws on quantitative data, industry reports and stakeholder engagement. Contributors spoke as representatives of particular stakeholder groups, so the findings reflect broad, recurring themes rather than definitive or universally held positions.



The proposed levers for change are organised through four lenses that together describe how Scotland can increase the number of competent new entrants entering construction:

- **Increase flow capacity:** expand the system's ability to accommodate entrants by increasing training places, widening employer participation, strengthening and better distributing delivery infrastructure, and improving public and private investment and incentives. It also includes employers' practical capacity to supervise, support work based learning and assess competence, and the potential to aggregate provision to achieve greater scale and resilience.

- **Increase flow rate:** reduce the time it takes for entrants to move from initial entry to productive employment by removing unnecessary time bound constraints, enabling earlier safe entry to work, improving recognition of prior learning and transferable skills, and creating more flexible, iterative pathways, particularly for career changers, to reach competence faster.

- **Increase flow efficiency:** minimise friction and waste by simplifying funding and administration, improving alignment between training and employment outcomes, reducing duplication across providers and programmes, and focusing limited resources on pathways that deliver the highest throughput of competent workers aligned to industry demand.

- **Decrease flow demand:** while not the focus of the report, lowering labour demand through modern methods of construction, digital technologies and industrialisation is a critical complementary lever. It is included to underline that expanding workforce volumes alone has diminishing returns unless productivity constraints and systemic inefficiencies are addressed through coherent policy reform and targeted support.

Increase Flow Capacity

Increasing flow capacity means expanding the system's ability to support more competent new entrants into sustained employment. Stakeholders identified four broad levers: increasing the proportion of employers who recruit new entrants; increasing public and private investment; prioritising higher throughput pathways; and reducing barriers to skilled migrant labour.

Capacity is not simply about adding training places. It depends fundamentally on more employers choosing, and being able, to recruit and support new entrants. Expanding pre employment provision without corresponding job opportunities risks worsening already fragile absorption rates. Capacity must therefore balance employer demand with system support.

1

Increase the proportion of employers recruiting new entrants

Employer participation is the primary constraint, with confidence in future workload the key driver of recruitment. While public pipeline tools provide some visibility, no equivalent exists for the private market. Short term grants can boost engagement but rarely deliver lasting change. More sustainable levers include embedding apprenticeship and new entrant requirements within procurement and social value frameworks. Reducing employer risk is also critical, as rising wage, tax and compliance costs disproportionately affect SMEs. Shared, rotational and host employer models are frequently cited by stakeholders as potential mechanisms to distribute risk and widen participation. However, pilot initiatives have surfaced practical challenges across funding, governance, coordination, long term sustainability, and impact, which have limited their ability to scale and become embedded as mainstream delivery models.

2

Increase direct public and private investment

Additional funding is frequently proposed, but the funding landscape is complex and not well understood by stakeholders. Apprenticeship contribution rates vary significantly by framework and age. Scaling provision carries substantial cost: for example, 100 additional high cost trade apprenticeships could require close to £1 million in public contribution over their duration, excluding employer wage costs, which may total £70,000–£90,000 per apprentice.

Colleges and universities operate under differentiated price groups reflecting delivery costs. Expanding provision also requires investment in staff, facilities and equipment. Simply scaling existing models risks duplicating inefficiencies unless funding is targeted strategically. Aggregation through regional centres of excellence could reduce duplication, share specialist infrastructure and improve value for money.

3

Prioritise higher throughput pathways

A pragmatic lever is to focus investment on pathways that convert learners into competent workers at scale. Higher throughput routes aggregate demand, emphasise outcomes over duration, and integrate closely with employer demand. Apprenticeships, employer aligned pre apprenticeships and targeted career change routes typically demonstrate stronger employment conversion than supply led provision. In a constrained fiscal context, increasing throughput and reducing leakage offers greater return than expanding volume alone.

4

Reduce barriers to skilled migrant labour

Skilled migrant recruitment reduces training lead times and upfront costs. However, post-Brexit constraints limit flexibility. While easing migration could alleviate short term pressures, overreliance risks undermining long term domestic workforce development.

Credit: Katy King / Nesta / Climate Visuals

Increase Flow Rate

Increasing flow rate focuses on enabling new entrants to reach safe and productive competence as efficiently as possible, without compromising quality or standards. While proposals to shorten established pathways were contentious for some stakeholders, most accepted that greater flexibility could be introduced under robust governance. The following levers emerged from an analysis of stakeholder feedback:

1

Strengthening Pre-Apprenticeship Connectivity

There was strong support for aligning pre-employment provision more closely with apprenticeship frameworks. Front loading foundational technical and safety training before employment could reduce workplace absence, improve productivity and increase employer confidence. Ensuring all entrants are site ready, with baseline health and safety accreditation, would further ease transition into live environments. Clearer pathways from training into jobs could also reduce reliance on informal recruitment and address 'leaky pipeline' inefficiencies.

2

Iterative and Targeted Competence Development

Many stakeholders saw merit in models that enable early environmental competence, allowing individuals to work safely sooner, followed by progressive, modular upskilling. These approaches may suit lower risk, as opposed to heavily regulated or higher risk roles. Targeted, multidisciplinary pathways aligned to missions such as housebuilding or retrofit could complement traditional occupational routes, supporting emerging skill clusters linked to net zero, digitalisation and offsite construction. However, such models require strong quality assurance and careful alignment to labour market demand.

3

Semi-Flexible Durational Models for existing trade apprenticeships

The most debated issue concerned the time required to support individuals to a position of productive competence. Whilst no consensus was found, a pragmatic middle ground emerged: retain expected durations but permit earlier completion where full competence can be demonstrably evidenced, while allowing extended time where needed. This competence led flexibility supports throughput without diluting standards and better reflects evolving industry practice.

4

Enhancing Recognition of Prior Learning

Improved, consistent RPL was widely viewed as a high impact reform, particularly for career changers. Systematic credit for transferable skills would shorten time to productivity, reduce unnecessary retraining and improve inclusivity, supported by already embedded national infrastructure provided by the Scottish Qualifications and Credit Framework (SCQF).

5

Incentivising Employment and Strengthening Employer Engagement

Stakeholders consistently called for stronger alignment between publicly funded provision and sustained employment outcomes. While recruitment and training incentives can stimulate short term participation, they are unlikely to drive durable behavioural change in the absence of wider structural reform and can be costly to sustain. Earlier, deeper and more coordinated employer involvement in curriculum design and early careers engagement was widely viewed as critical to improving progression, strengthening relevance, and ensuring that both pre-employment and new entrant pathways reflect real world industry requirements.

6

Reducing Duplication and Improving Coordination

Stakeholders identified duplication between programmes, particularly between SCQF Level 6 provision and Modern Apprenticeships, and supported stronger alignment and recognition of prior learning across pathways. However, they cautioned against eliminating purposeful breadth in early stage provision that supports exploration and employability. Concerns were also raised about fragmented demand and market saturation. Overall, better alignment of provision with labour market demand was seen as essential to improving efficiency, viability and sustainability.

Increase Flow Efficiency

Increasing flow efficiency is about improving alignment between skills supply and labour market demand so that training effort converts more reliably into productive employment. While flow rate focuses on speed to competence, flow efficiency targets friction, duplication and misalignment so finite resources deliver maximum impact. Stakeholders identified the following priorities:

1

Strengthen work based learning pathways

Most stakeholders agreed that programmes built on sustained collaboration between employers, providers and learners deliver the strongest employment outcomes. Modern and Graduate Apprenticeships were consistently valued for integrating work, training and competence development. However, simply expanding existing models is insufficient without addressing constraints such as funding lagging inflation, learner attrition and inconsistent support. There was strong support for reorienting investment and incentives toward pathways with demonstrable conversion to sustained employment, supported by wraparound learner support.

A key constraint is employer capacity to supervise, assess and support entrants, particularly for SMEs that employ most new entrants but often lack managerial headroom. Continued reliance on the same subset of already engaged employers risks concentrating responsibility, creating competitive disadvantage and ultimately constraining system resilience. Shared, rotational and host-employer models offer a potential means of distributing responsibility more equitably across the sector. However, evidence to date highlights mixed results and practical challenges, suggesting that any wider adoption would require careful design, clear scope, sustainable funding structures and robust evaluation to ensure viability and impact. Stakeholders also highlighted the underdeveloped potential of onsite assessment ‘top-up’ routes for career changers to evidence competence without extended time in formal training.

2

Enhance flexibility of delivery models

Stakeholders identified clear opportunities to introduce greater flexibility within qualification frameworks. This ranged from the development of new multidisciplinary pathways to more agile mechanisms for reviewing and updating training content, ensuring qualifications keep pace with

practices. Debate centred on multiskilling: employers argued multidisciplinary working is operational reality (especially for micro firms), while trade bodies emphasised the importance of deep occupational competence and warned against deskilling, particularly in high risk regulated trades. A clear area of consensus emerged that occupational standards require more frequent review in response to accelerating industry change or should be designed with greater inbuilt flexibility to enable timely updates. Stakeholders also highlighted the need for shorter, more responsive review cycles and stronger representation from micro and specialist employers to ensure standards reflect the full rapidly evolving technologies, regulatory requirements and working diversity of real world practice. Stakeholders called for a clearer, jointly owned long term strategy, supported by interoperable standards, micro credentials and more site based 'pop-up' delivery and work based learning models aligned to live projects.

3

Improve alignment of curriculum content with industry requirements

Stakeholders highlighted the need for training provision and curriculum content to be streamlined and more regularly updated to reflect contemporary working practices, emerging technologies and evolving regulatory requirements. A widely supported approach is a defined core of mandatory competencies plus flexible elective 'top-ups' aligned to regional or employer needs, within nationally portable frameworks. More frequent, transparent and inclusive review mechanisms, especially involving SMEs, were seen as essential. Low volume specialist skills (e.g., stonemasonry, wood machining, and broader heritage crafts) require deliberate intervention through targeted funding premia and centralised centres of excellence to avoid irreversible erosion.

4

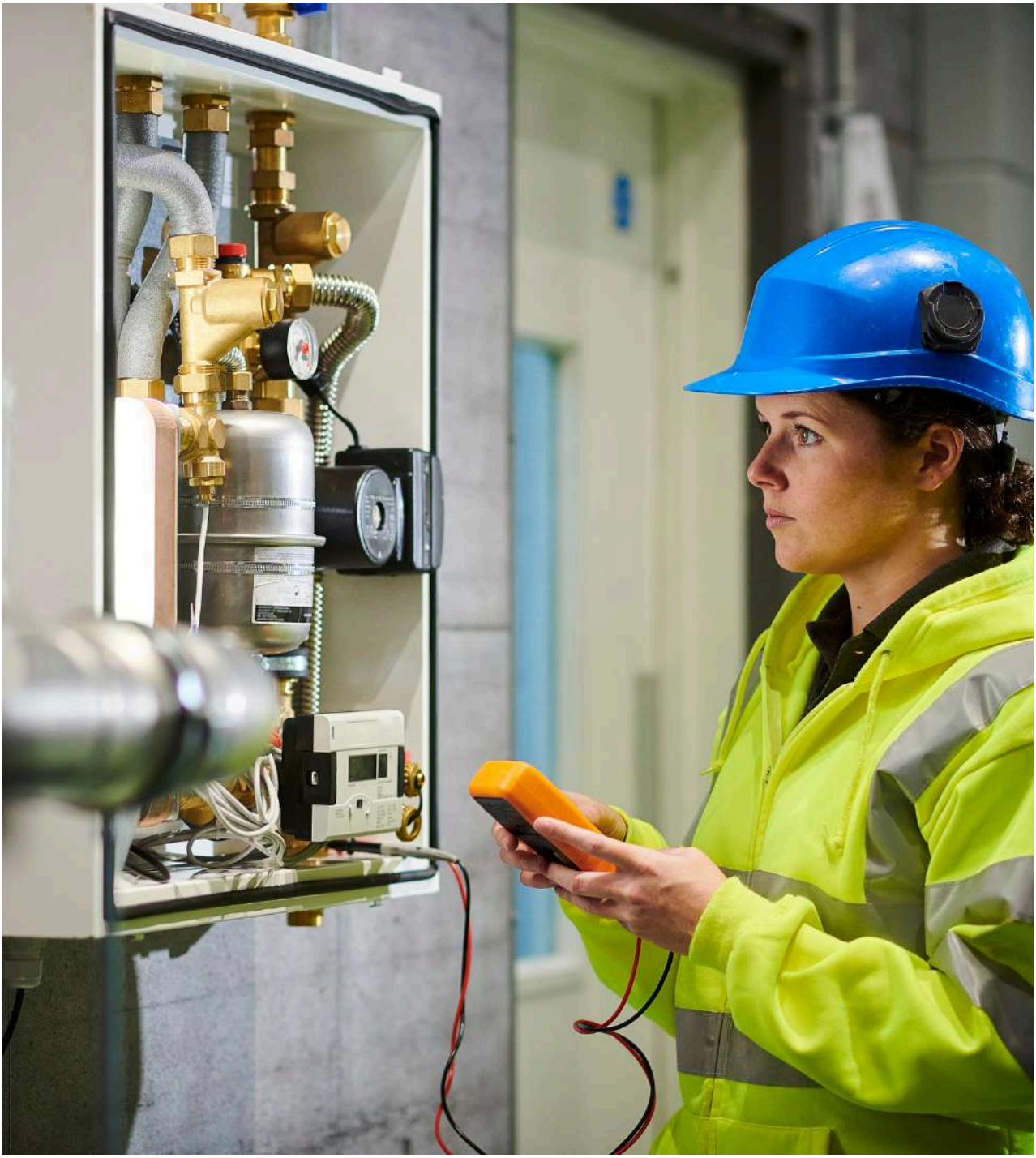
Improve access to training in areas of emergent demand

Occupationally specific pathways continue to dominate, but stakeholders see clear value in augmenting these with task focused training aligned to emerging technologies, major programmes and labour market shifts. Persistent shortages in areas such as the energy transition and retrofit highlight the limits of existing models, often leading to reliance on skilled migrant labour.

Confidence amongst stakeholders has been undermined by misalignment between policy ambition and procurement outcomes, discouraging sustained investment in new skills. There is strong appetite for alternative, more responsive pathways that support worker transition and enable faster adaptation to emerging opportunities. Industry led,

short duration and accredited interventions were widely supported as practical mechanisms to address near term gaps, accelerate competence development and provide a more agile bridge between evolving demand and existing workforce capability.

Overall, efficiency gains depend on demand led funding metrics, better data sharing, simpler interfaces, faster curriculum refresh, and stronger alignment between skills planning, procurement pipelines and real-world delivery needs.



Levers for Change

The report concludes by setting out thirteen practical levers to transform how Scotland recruits, develops and retains construction new entrants.

1. **Broaden Employer Participation in New Entrant Recruitment and Development**

   Reduce financial and administrative barriers, and focus available incentives, to enable more employers to routinely recruit and develop new entrants.

2. **Build Structured Employer Capability for Supervision and Work Based Learning**

   Strengthen employer, and particularly SMEs', ability to onboard, mentor and assess entrants through structured supervisory support.

3. **Embed Workforce Development Obligations Through Contracts**

   Hardwire sustained recruitment, retention and progression requirements into public and supply chain contracts.

4. **Align Pre Employment Provision and Work Based Pathways to Improve Absorption**

   Ensure all publicly funded introductory provision connects clearly to employment or defined progression routes.

5. **Normalise Competence Led Recognition of Prior Learning and Mobility**

   Embed competence led RPL and interoperable occupational standards to reduce retraining and accelerate worker mobility.

6. **Introduce Competence Led Flexibility Within Defined Pathway Durations**

   Allow earlier completion of programmes where full competence is evidenced, without lowering standards.

7

Introduce Iterative and Task Aligned Entry Pathways

Develop modular, staged, and task focused alternative entry pathways aligned to national and regional mission focused deliverables such as housing or retrofit.

8

Establish Mission Led, Networked Training Infrastructure

Create coordinated regional networks aligned to national priorities while protecting specialist skills.

9

Reform Funding and Investment Signals to Support Long Term Workforce Planning

Provide multiyear, mission aligned funding signals to enable confident investment by employers and providers.

10

Rebalance Incentives Toward Sustained Employment Outcomes

Shift performance and grant metrics from recruitment volume to retention, competence progression, and sustained employment.

11

Develop and Normalise Structured Career Changer and Modular Entry Pathways

Scale accelerated, employer sponsored or linked pathways with modular competency top-ups and clear sustained employment outcomes.

12

Strengthen Industry Led Skills Planning and Competence Alignment

Move from retrospective occupational planning to competence led forecasting aligned to net zero, digitalisation and pipeline investment data.

13

Modernise National Qualification Structures and Delivery Capability

Embed more regular industry led review cycles, modular delivery and educator upskilling to maintain qualification relevance and responsiveness to industry practice.

Collectively, these levers point to systemic reform rather than incremental adjustment. Progress depends on coordinated action across employers, funders, providers and government, guided by clear objectives including sustained employment, demonstrable competence, equitable contribution and long term workforce resilience.

Conclusion

The report highlights the scale and interconnected complexity of increasing the flow of new entrants into Scotland's construction industry. The challenge is systemic: a sector characterised by structural disincentives to recruitment operating within a volatile labour market, rising input costs, and accelerating technological and regulatory change. Without meaningful and coordinated intervention, stakeholders fear the industry will struggle to meet both replacement demand and the emerging competence requirements associated with modern methods of construction, digitalisation and the energy transition.

Addressing this will require cohesive action across industry and the supporting skills ecosystem to remove structural barriers, realign incentives and create a more enabling environment; one that connects employers to a system capable of helping them recruit, develop and sustain the future workforce at the scale required.
The issue is not simply headcount. Misalignment between existing skills and future requirements is as significant as absolute shortages. While Scotland benefits from substantial publicly funded provision across schools, colleges, universities and independent providers, impact is weakened by duplication, weak progression routes, inconsistent recognition of prior learning and limited responsiveness to real time employer demand. Improving mediation between supply and demand for competence is therefore central.

Widening employer participation is critical. Many firms cite financial risk, administrative burden, limited supervisory capacity and uncertainty over future workload as barriers to recruiting new entrants. At the same time, employers already investing in training must be supported to scale sustainably. Any expansion must reflect absorptive capacity across employers and providers, avoiding 'boom-and-bust' instability.

Incremental reform is unlikely to suffice. Short term funding cycles, occupational silos, fragmented planning and uneven employer engagement constrain responsiveness. More fundamental reconfiguration is required: realigning incentives, simplifying delivery, strengthening collaboration and placing competence outcomes at the centre of system design.

Crucially, reform must address the prevailing subcontracting and lowest cost procurement culture that disincentivises long term workforce investment. Workforce development must be reframed as a shared strategic imperative rather than a discretionary cost.

Despite differing views on solutions, there are clear examples of effective practice already operating within the system. Assessing their scalability, cost and suitability for wider adoption sits beyond the scope of this report. However, the levers outlined provide a structured basis for further appraisal and prioritisation. The priority now is to align, adapt, and scale proven approaches in a coherent and coordinated way. With shared leadership, improved demand certainty and competence led reform across flow capacity, flow rate and flow efficiency, a more resilient, inclusive and sustainable approach to workforce recruitment and development is achievable.

Introduction

The UK construction industry sits at the heart of national economic, environmental and social ambitions. As we progress into the second quarter of the twenty first century, the sector has been charged with simultaneously responding to a systemic housing crisis, rising fuel poverty, persistent workforce skills shortages and mismatches, and the urgent need to decarbonise the built environment. Rapid technological change is fundamentally reshaping how we design, deliver and operate buildings and infrastructure. Yet the labour market has failed to keep pace with these shifts, resulting in deep rooted and sustained skills gaps across most roles occupations within the industry.

The recruitment and development of new entrants is governed by a highly complex and interdependent ecosystem, encompassing employers, public and private training providers, recruitment agencies, third sector organisations and industry representative bodies. Pathways into the industry are shaped and funded by a smaller, more centralised group of industry leaders and public sector actors, who seek to coordinate the system on behalf of the sector while balancing the often competing needs of individual employers and learners with wider national and sectoral priorities. Throughout the research, perspectives on priorities varied significantly across stakeholder groups. For some, the primary lens was national policy objectives and macroeconomic performance; for others, it centred on wider social, environmental and place based value; while many focused more narrowly on the immediate needs of specific occupations, companies or representative groups. This divergence in framing shaped both the problems identified and the solutions proposed. It also emphasises the disaggregated structure of the industry, rendering the pursuit of a unified vision for new entrant development both inherently challenging and politically contested.

This challenge is further compounded by a paradox. Despite clear opportunities for industrial growth, improved productivity and consistently higher quality standards, overall workforce numbers continue to decline, compounded by well evidenced ‘boom and bust’ cycles that undermine confidence and have proven challenging to recover from.

The publicly funded education and skills system has long played a central role in enabling entry into construction, with pathways spanning further education (FE) and higher education (HE). FE provision is delivered primarily through colleges and private training providers, while HE pathways are primarily led by universities and colleges. Together, these routes form the backbone of Scotland’s formal entry infrastructure

into trade, technical and professional occupations.

However, the financial pressures facing the tertiary sector have been widely documented. Colleges Scotland and Audit Scotland[ii] have both raised concerns regarding the financial sustainability of the college estate, while private training providers have called for uplifts to apprenticeship and workforce development funding to reflect rising delivery costs. Similar challenges are evident within the university sector, where financial constraints across the UK have led to reductions in construction related provision in some institutions. Taken together, these pressures create a material risk that the current skills infrastructure may struggle to scale or adapt sufficiently to meet future workforce ambitions.

Apprenticeships remain the dominant, though not exclusive, route into many trade and craft occupations. Yet sustained public funding pressures, combined with the cost, risk and supervision constraints faced by employers, most of whom operate as small or micro enterprises, have placed employer investment in new entrants under strain.

Recent announcements from Scottish Government of funding uplifts and wider reviews of the skills funding landscape have therefore been broadly welcomed, reflecting a recognition that stabilising and strengthening the system is a prerequisite for increasing the flow of competent new entrants.

However, any assumption that increasing funding to the skills system alone will resolve these challenges is misplaced. Most businesses in the sector do not directly invest in new entrants, and the 'dysfunctional labour model' identified by the Centre for Social Justice continues to suppress both collective and individual incentives to invest systematically in workforce renewal [iii]. The combined effects of an ageing workforce and sustained underinvestment in new workers are now converging, creating an approaching inflection point at which the industry must either fundamentally adapt its approach to workforce development or face accelerating skills scarcity and structural decline.

> This scale of recruitment is unprecedented and will be a monumental challenge for the construction industry. Skills shortages already cripple the sector, and thousands of workers are on the cusp of retiring. Yet, our nation's future economic growth depends on it[i].
>
> Construction Leadership Forum, 2025

There is a generational opportunity to consolidate the construction industry's role as a critical enabler of national growth and prosperity. Delivering high quality, affordable and energy efficient homes, creating and renewing infrastructure that supports resilient public services and sustained economic growth, and providing the physical connectivity required to link communities, regions and markets. As the energy transition accelerates, the sector has a central role to play in decarbonising heat, improving building performance, upgrading energy networks and supporting the deployment of renewable and low carbon technologies at scale.

The purpose of this report is to consider how the flow of new entrants into the construction industry might be increased and, critically, sustained. It is predicated on the position, as highlighted by Mark Farmer in his review of the Industry Training Boards, that meeting our collective ambitions for the built environment will not be achieved through increasing the number of workers in the industry alone[iv]. Instead, it requires the creation of a more coherent system that supports entry into occupations while enabling the iterative, continuous upskilling and reskilling of the existing workforce. While the analysis focuses primarily on the Scottish construction industry, several of the findings are situated within the wider context of the UK construction sector.

Throughout this research, a broad range of stakeholders were engaged, representing all parts of the construction ecosystem, including employers, trade associations and representative bodies, public sector agencies, government officials, and education and skills providers. While perspectives vary considerably on the nature and sequencing of potential solutions, there is a strong and shared recognition of the scale and urgency of the challenges facing the industry.

What emerges clearly from this engagement is that the current system for scaling new entrants and developing the skills of the existing workforce is expensive, complex, inefficient, and increasingly ill equipped to respond to the demands of a modernising sector. The infrastructure that underpins high quality education and training struggles to adapt at the pace required, limiting its ability to support both technological change and evolving models of delivery. Moreover, the prevailing cultures and labour models that dominate much of the industry remain fundamentally misaligned with the requirements of long term, systemic investment in new entrants. Short term commercial imperatives, risk transfer down supply chains, and an overreliance on flexible and contingent labour continue to prioritise immediate delivery over continuous workforce development and renewal, undermining the collective capacity to plan for and invest in the future skills base.

It is evident that there is no single, or indeed simple, solution around which all actors can readily align. However, there is cause for measured optimism. Good practice exists across the system and, with the right conditions, has the potential to be scaled and replicated. The diversity of perspectives shared by industry actors is itself a

strength, and engagement revealed a clear and widespread willingness to work collaboratively in pursuit of a more coherent, effective and future ready construction industry. Scaling novel and effective models of practice to a whole system level will require sustained and coordinated investment from both public and private sources, alongside a profound shift in culture and behaviour across the sector. Achieving this will demand compromises from all actors and, critically, a willingness to challenge long held assumptions and vested interests in order to disrupt the status quo and enable meaningful transformation.

In presenting the views of specific stakeholder groups, there is no suggestion that these perspectives are universally held by all individuals or organisations within those groups. Rather, the report reflects a synthesis of recurring themes, shared challenges, emerging opportunities and broader feedback identified through the research process. In capturing these views, the intention is not to prescribe a singular position, but to provide a common platform for dialogue and a holistic point of reference from which the system can evolve. By doing so, we can support more informed discussion on how the education and skills landscape might adapt to enhance both the volume and the quality of new entrants into the construction industry, while better aligning workforce development with the future needs of a modernising sector.

Methodology

This research was commissioned to provide a robust, evidence led assessment of the challenges and opportunities associated with increasing the flow of new entrants into Scotland's construction and built environment workforce. The methodology was designed to examine entry level pathways, system capacity and future skills demand in the round, with particular emphasis on how individuals are attracted, recruited, developed and supported to become safe and productive workers. In doing so, the research sought not only to consider the volume of entrants entering the system, but also the effectiveness with which pathways translate participation into sustained employment, competence and longer term career progression. The overarching analytical lens was therefore focused on identifying practical, scalable interventions capable of strengthening attraction, accelerating transition to productive contribution, improving retention, and supporting the iterative upskilling and retraining required in a modernising construction sector.

The research brief sought to identify potential levers for change, but did not extend to detailed evaluation of the implementation costs, complexity, barriers, benefits or trade offs associated with each intervention or fit in the wider landscape. Rather than presenting a fully costed reform blueprint, the purpose of this work has been to establish a robust baseline of stakeholder perspectives on the challenges, opportunities and possible solutions. By synthesising these perspectives through a holistic, system wide lens, the report seeks to illuminate the complexity of new entrant recruitment within the construction sector and identify potential levers for change. These proposals are intended to inform discussion and support decision making, recognising that each would require detailed cost–benefit analysis and careful consideration within the broader policy and fiscal context.

The methodology combined desk based research, structured stakeholder engagement and collaborative sector events to ensure a balanced integration of quantitative evidence and qualitative insight. An initial review of national and sectoral datasets, policy documents and workforce forecasts was undertaken to establish baseline demand, identify priority occupations and highlight emerging trends. This evidence base was used to inform the design of subsequent engagement activity and ensure alignment with known gaps and risks.

Primary research comprised over 50 hours of semi structured interviews with employers, industry bodies, education and training providers, and public sector stakeholders, supported by a wider sector survey to test and validate emerging

themes. Details relating to workshop and question design can be found in the appendices. Entry routes were analysed through defined occupational groupings, enabling comparison of scale, infrastructure requirements, employer engagement and delivery constraints across different pathways. An in person stakeholder event was delivered in partnership with Skills Development Scotland and sector partners to sense check early assumptions, surface system level insights and support shared ownership of outcomes.

Findings were synthesised through thematic analysis, with outputs focused on identifying barriers to scale, opportunities for system improvement and the implications for policy, funding and delivery. The approach prioritised transparency, triangulation and proportionality, recognising the inherent limitations of forecasting while ensuring recommendations were grounded in both evidence and practitioner experience.

Defining Success

In order to define the success of any ambition to increase the flow of new entrants into the construction industry, it is first necessary to understand the scale and capability of the existing workforce. This is not straightforward. The construction sector is variously defined through standard industrial and occupational classification codes, resulting in differing interpretations of which roles and occupations sit within the scope of the wider built environment workforce.

Sector Definition

Two authoritative sources of workforce data illustrate this challenge. The Skills Development Scotland Sectoral Skills Assessment (SSA)[v] estimates the Scottish construction workforce is approximately 190,000 workers in 2025, while the Construction Industry Training Board's (CITB) Construction Workforce Outlook (Scotland) reports a 2024 workforce of 207,100[vi]. This, albeit minor, disparity reflects differing methodologies and boundaries rather than inconsistency in the underlying trend. Despite their differing approaches to measuring the size of the sector, both sources nonetheless identify a gradual national decline in workforce size, tracking back to the 2008 financial crisis and further exacerbated by the COVID-19 pandemic. While the data cited relates specifically to Scotland, the pattern of workforce contraction and sensitivity to economic cycles is mirrored across the wider UK construction industry. Analysis of labour market trends is provided in a later section of this report.

The CITB forecasts that Scotland's construction workforce will grow by 7,400 to 214,500 by 2029, representing average annual growth of 0.7% over the next five years, while, at a UK level, an additional 240,000 workers (0.8% annual growth) are

expected to be required over the same period [vii].

Skills Development Scotland's Skills Assessment (SSA) projects sustained long term growth in the construction workforce. Between 2028 and 2035, employment is forecast to increase by up to 17,200 people, representing growth of 8.6%; more than double the projected Scottish all sector average of 4% over the same period. The strongest growth is expected within Skilled Construction and Building Trades (approximately 5,700 roles), followed by Business and Public Service Professionals (around 2,600 roles) operating within the sector.

In addition to expansion demand, the SSA estimates that a further 54,200 workers will be required to replace those leaving the workforce, meaning total recruitment needs will be driven as much by replacement demand as by net growth.
Alongside the high level forecasts, the occupational groupings projected to experience the highest proportional growth rates include civil engineers (3%), road and rail construction operatives (2.8%), steel erectors and metal workers (2.8%), and non-construction professional and technical office based staff (2.8%). Over the same period, roles such as painters and decorators, plasterers, roofers, wall and floor tilers, scaffolders, groundworkers, and glazing and window trades are forecast to see modest contraction, in the region of approximately 50 workers per year across each occupation.

While available data points to only modest net growth in construction employment in Scotland, this headline figure risks obscuring the scale and complexity of the underlying workforce challenge. Feedback from employers consistently indicates that accessing appropriately skilled labour at the point of need has become increasingly difficult, a pressure that is already manifesting in rising costs, constrained capacity and programme delays for clients and project sponsors. Forecasting is inherently uncertain, and Skills Development Scotland appropriately provides important context for the interpretation of its forecast data[iii].

- Forecasts are based on what we know now and include past and present trends projected into the future.
- The more disaggregated they become, especially at smaller geographical units, the less reliable they are likely to be.
- Their value is in identifying likely directions of travel rather than predicting exact figures.
- The forecasts do not account for national or sectoral activities, initiatives or investments that are planned.

It is also important to distinguish between different drivers of workforce demand. A significant proportion of new entrants are required simply to replace workers leaving the industry, particularly in the context of an ageing workforce. Forecasts from Construction Industry Training Board indicate that the average age of construction workers is projected to rise from 42.1 years in 2023 to 46.4 years by 2050, reinforcing the scale of replacement demand facing the sector[viii]. Managing this natural churn; balancing those exiting the sector with those entering, represents a substantial and ongoing requirement. Beyond replacement demand, additional workforce capacity is needed to support growth arising from new projects, emerging technologies, evolving delivery models, new products and systems, and the broader modernisation of the industry.

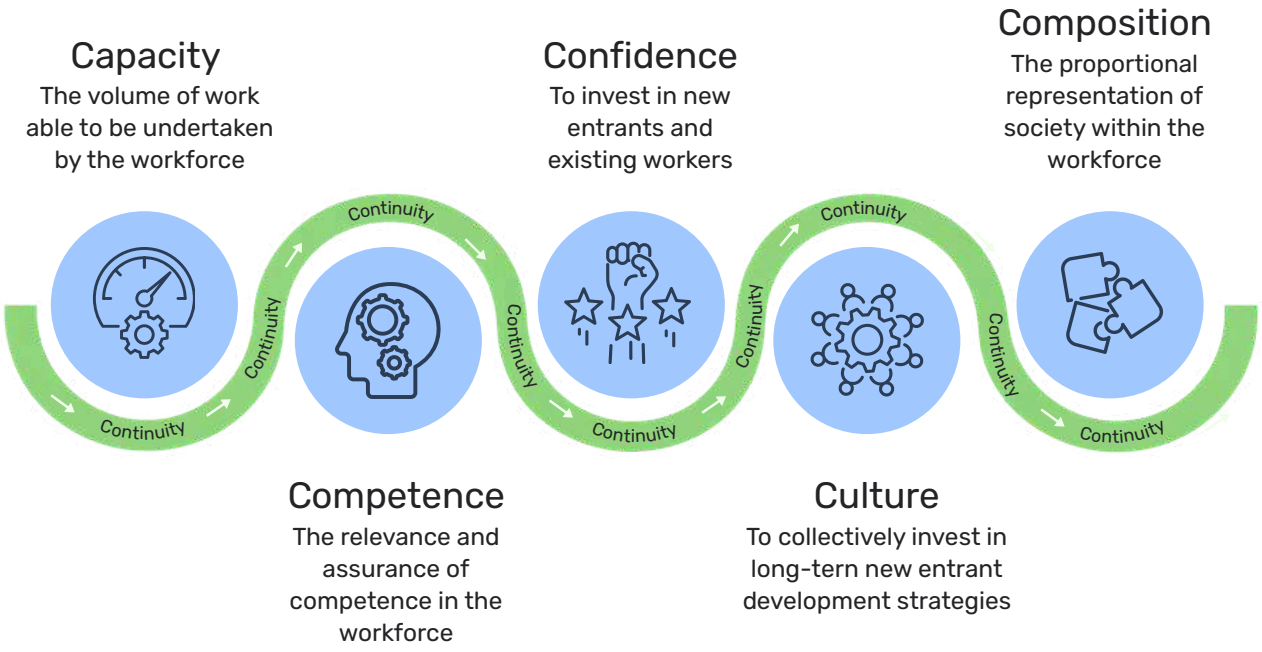
Viewed through this lens, the case for increasing the flow of new entrants becomes clearer. The Construction Industry Training Board estimates that the industry must replace approximately 8% of its workforce each year due to natural attrition alone. When combined with growth related demand and rising expectations around productivity, quality and decarbonisation, this reinforces the need for a more robust, responsive and sustainable approach to workforce entry and development.

Effective mediation between the volume of skilled labour supply and emerging industry demand is a critical measure of success. However, volume alone is insufficient. Equal consideration must be given to the extent to which the competency profile of the workforce aligns with both current requirements and the future demand the industry is actively creating.

In this context, it is essential to distinguish between workforce growth driven by replacement demand and that driven by capability gaps. While a proportion of future workforce requirement is driven by the need to replace labour lost through natural attrition and retirement, an increasing share of demand is being shaped by capability gaps and competency mismatches between the skills held by the existing and emerging workforce and those required to operate effectively within an increasingly industrialised, digital and technologically mature built environment.

Success Criteria

A thematic analysis of success criteria, as detailed by research participants, identified the following unifying measures:



A thematic analysis of stakeholder perspectives identified a series of interconnected success criteria. Capacity relates to the overall volume of work the workforce is able to undertake. Competence concerns the relevance, currency and assurance of competence across roles and occupations. Confidence reflects the willingness of employers and institutions to invest in both new entrants and the existing workforce. Culture captures the extent to which the sector collectively values and commits to long term workforce development. Composition speaks to the proportional representation of society within the industry, ensuring diversity and inclusion across pathways. Continuity underpins all of these factors, representing the stability and predictability required to sustain investment over time. A well functioning system must therefore balance flow and capacity, align supply with demand, and proactively address bottlenecks that constrain progression, so that workforce volume, competence and opportunity evolve in step to optimise overall system performance.

Success must also be measured by the industry's ability not only to attract and recruit new workers, but to retain them over extended periods, supporting sustained career progression, continuous competence development and long term attachment to the sector. Without improved retention, increases in entry volumes risk being diluted by ongoing attrition, perpetuating skills gaps and undermining workforce resilience.

The mediation of competence, defined as an individual's ability to demonstrate and appropriately evidence the skills, knowledge, experience and behaviours required for a specific role or task, has moved to the forefront of construction workforce management in the UK. This shift has been accelerated by the requirements emerging from the Building Safety Act, which place clear legislative obligations on employers to manage, assure and evidence workforce competence, ensuring that construction activity is delivered safely and to consistently high quality standards. Whilst the Act primary applies to England, there are implications in Scotland, both directly relating to issues such as defective cladding, and in recognition that many companies operating across the UK will deploy workers on both sides of the border. In any case, beyond measuring the number of workers in any given occupation or training programme, there is currently no structured approach to measuring task level competencies at a national or regional level in Scotland.

The Construction Leadership Council (CLC) is leading work to modernise industry competence frameworks in England through its Industry Competence Steering Group and associated sector bodies[ix]. This includes defining the skills, knowledge, experience and behaviours (SKEB) required for key roles, mapping clearer routes to competence, and aligning expectations with evolving regulatory, safety and net zero requirements. The development of structured, industry led competence frameworks has direct implications for UK-wide national occupational standards and qualification design. Ensuring alignment with this work in a Scottish context presents a potential opportunity to strengthen the connection between training provision and real world occupational performance, while responding more effectively to emerging industry priorities. It may also support greater standardisation of competence expectations across the UK, enhancing individual career mobility and enabling companies operating on a pan-UK basis to manage workforce competence in a more consistent and transferable manner.

The management of competence presents challenges that are not unique to the construction industry, but which do place a high threshold on the minimum entry competence of new entrants, particularly those undertaking activities in live construction environments. Unlike some sectors where individuals can be recruited with little or no prior experience and trained predominantly on the job, the inherently hazardous nature of construction activity requires a baseline level of technical understanding, situational awareness and behavioural competence from the outset. New entrants often operate within complex, high risk environments and therefore may require close supervision by experienced workers, particularly in the early stages of employment. Research participants reported that heightened concerns around health and safety obligations and risk management were increasingly acting as a deterrent to recruiting new entrants, particularly those under the age of 18, and in some cases discouraging recruitment altogether. Similar concerns were raised in relation to candidates with limited English language proficiency, where employers perceived increased risks associated with communication, compliance and site

safety.

As a result, the requirement to evidence a minimum level of competence can create a structural tension between the need to recruit new entrants and the practical realities of deploying them safely and productively on live sites. Managing this tension effectively is central to sustaining workforce inflow while maintaining safety, quality and regulatory compliance.

Industry bodies, trade associations and employers consistently identify skills gaps and skills mismatches as among the most significant constraints on growth and productivity. In response, this report proposes a fundamental shift in how new entrant recruitment and development is collectively conceived and delivered: moving away from fragmented, occupational pathway specific interventions towards a more cohesive and integrated ecosystem. Such a system would enable a sustained and predictable flow of new entrants sufficient to meet both replacement and growth demand at national, regional and sectoral levels, while also supporting the continuous development of the existing workforce. The ultimate objective is therefore twofold:

1. To create the conditions in which employers have access to coherent incentives and practical support, underpinned by systems and cultures that encourage strategic workforce planning and enable sustained participation in attracting, developing, retaining and retraining new entrants.

2. Industry, employers, and the skills ecosystem must work together to enable the development of evolving competence profiles required by both industry and society, underpinned by flexible entry pathways and integrated, career long upskilling capacity. This will have direct implications for pathway design, qualification architecture and the delivery models that support initial training, progression and continuous professional development across the workforce lifecycle.

In parallel, we recognise that delivering a built environment that genuinely meets the needs of society requires a workforce that better reflects the diversity of that society. As such, the consideration of potential solutions is undertaken with a clear recognition of the systemic underrepresentation that persists across many parts of the construction industry, and the need for more inclusive approaches to attraction, entry and progression.

Case Study: Esteem Training Ltd

Esteem Training Ltd is a private, 100% employee owned training provider with over 40 years' experience in training construction supervisors, managers, and leaders across the UK. It offers both face-to-face workshops and tailored in-house or 1:1 programmes. Their focus is on building confident, professional workforces by combining formal qualifications with additional competency and behavioural skills.

Industry skills challenge

The construction industry faces a gap in competent supervisors and managers, with an ageing workforce and new entrants often lacking practical onsite experience. Academic qualifications alone do not equip new professionals with the behavioural and leadership skills required for effective site management.

Training model

Esteem delivers fully supported programmes funded through Skills Development Scotland's Modern Apprenticeship scheme.

As a CITB approved training organisation, they offer SVQs at four levels: Occupational Work Supervision (SCQF 6), Construction Site Supervision (SCQF 7), Construction Site Management (SCQF 10) and Construction Senior Management (SCQF 11). Programmes include toolkit workbooks covering over 50% of the qualification, e-portfolios, multiple face-to-face workshops, onsite visits, 1:1 assessor sessions and a dedicated candidate support team. Accelerated learning techniques engage all learning styles and promote knowledge sharing between participants from different companies and experience levels.

Alternative approach to workforce development

Esteem addresses these challenges through an alternative, high value model, where they integrate softer skills training such as communication, conflict resolution, and management and leadership into their programmes, which are often overlooked elsewhere. Face to face workshops encourage peer learning across age groups and experience levels, fostering practical knowledge transfer and career development.

Progression into employment and impact

Participants gain recognised SVQs, CSCS cards, and professional membership routes such as MCIOB. The supportive, employee owned structure ensures every staff member is invested in candidate success, enhancing learner outcomes and employability.

Esteem's Modern Apprenticeship success rates have consistently exceeded Scottish Government Benchmarks by more than 20% since they became a Modern Apprenticeship provider, demonstrating the effectiveness of their approach.

In the year ending 31st March 2025, Esteem Training started a further 252 Modern Apprentices across the construction sector and achieved the highest achievement rate of any training provider, across all sectors, in Scotland.

Esteem Training Ltd demonstrates how blending accredited qualifications, soft skills development, and collaborative learning can address workforce gaps and deliver competent, career ready construction professionals.

What is a ‘New Entrant’?

In the context of this report, a new entrant is an individual who is entering the sector’s labour market for the first time or transitioning into a construction role from another industry, typically without established experience or competency in construction trades or professions. This includes individuals entering through structured entry routes such as apprenticeships, work experience schemes, traineeships, foundation programmes, or other formal training pathways designed to develop competence in specific occupational roles. New entrants may also include individuals entering through informal routes, such as direct recruitment into site based roles without prior qualifications, as well as skilled migrant workers who, while experienced internationally, are new to the UK construction environment and therefore require support to align their competence with national regulatory, safety and occupational standards. Regardless of route of entry, a new entrant is likely to require support, supervision, and a degree of upskilling in order to become a productive and safe worker.

The diversity and scale of the construction industry, when viewed through occupational and regional lenses, has given rise to a wide range of approaches to the recruitment, retention and development of new entrants. While these approaches vary significantly in form and emphasis, the most common routes into the industry can be broadly classified as follows.

Entry from the education system

Including schools, colleges, universities and private training providers.

Direct recruitment

Often drawing on local labour markets and frequently facilitated through informal or network-based approaches.

Skilled immigration

Supporting the supply of labour and specialist competencies where domestic provision is constrained.

Career transition routes

Involving the recruitment of existing workers and career changers, typically from adjacent or related industries. Includes service leavers and ex-offenders.

Direct entry

Individuals who establish themselves as self-employed or start trading directly, often with limited formal training but sometimes bringing transferable skills from adjacent sectors.

The diversity of entry routes is a critical consideration when assessing how effectively the system mediates knowledge, skills, behaviours and experiences, as the needs associated with each group differ markedly. Those entering directly from the education system, or through initial direct recruitment, typically have limited practical and situational experience and often require structured progression and workplace exposure. By contrast, individuals entering with prior experience, either from construction activity in other countries or through transferable skills gained in previous roles and occupations, may require targeted conversion, validation or upskilling rather than full foundational training.

Skilled migrants may also require additional support, particularly in relation to English language proficiency and familiarity with Scottish or wider UK building standards, regulatory frameworks and workplace practices. Taken together, this reinforces the need for a system wide approach to new entrant development that is sufficiently flexible and adaptable to respond to differing starting points, enabling effective upskilling and progression for new entrants regardless of their route into the industry or prior career background.

Despite variation in approach and context, a degree of consistency can be observed in patterns of entry to the industry. Apprenticeships remain the preferred and most common route into many occupational roles within the industry, predominantly spanning the Construction Building and Construction Specialist areas, with additional provision available across Construction Civil Engineering and Construction Technical and Professional pathways. New entrants to professional roles are predominantly drawn from university and graduate programmes, while technical roles are accessed through a wider range of pathways, including college and private training provider provision, university graduates and existing workers progressing from occupational into technical or managerial positions. Service leavers are commonly supported through structured career transition routes into construction,

and a range of programmes also seek to facilitate the reintegration of ex-offenders into the labour market. In parallel, a proportion of new entrants continue to join the industry through informal routes, without engagement in formal education or training, a pathway that CITB projected as representing 54% of the flow of new entrants (UK) in 2023/24[x].

It is therefore important not to treat new entrants as a homogeneous group, just as the construction industry itself cannot be considered uniform in structure or need. Approaches that are effective for one employer will not necessarily translate to another, even within the same market segment or occupational area. Our research identified a wide range of perspectives on which models of new entrant recruitment and development are most effective, reflecting the diversity of operating contexts across the sector.

We also acknowledge the presence of individuals operating within the construction sector who are not formally documented, registered or qualified, often referred to as participants in the 'grey economy'. While this group is difficult to quantify, its existence is periodically highlighted through industry reports and campaigns alongside negative media coverage associated with unsafe and unscrupulous practices or work delivered below required standards. Although the scale of this activity cannot be reliably measured, its presence reinforces the importance of ensuring that all new entrants, regardless of point of entry, have clear, accessible and proportionate routes to competency development, assessment, and professional recognition.

Notwithstanding the diversity of entry routes, a consistent theme emerged regarding the growing complexity of support required for new entrants, irrespective of background. Employers and training providers alike reported increasing challenges in addressing wider support needs, with communication, work ethic, mental health, digital capability and mathematical literacy repeatedly cited as significant and growing areas of concern.

Stakeholders identified these unmet or under supported needs as a material contributor to the 'leaky pipeline' of new entrants, with many individuals either failing to complete their training or exiting the industry within the first three years of employment. This dynamic reinforces the view that attrition is not solely a function of technical competence, but of the system's limited capacity to support individuals holistically as they transition into and sustain employment.

This emphasises that simply scaling existing approaches to new entrant recruitment and training, without addressing these underlying support challenges, risks perpetuating systemic inefficiencies rather than resolving them. Moreover, it fails to reflect the evolving needs of individuals entering the industry, or the constrained support capacity of employers and training providers tasked with their development. A more effective response must therefore integrate workforce development with learner support, wellbeing, and employability capability as core components of any strategy to increase the flow and retention of new entrants.

Case Study: Timber TED

Timber TED is a professional training programme delivered by the New Model Institute for Technology and Engineering (NMITE) in partnership with Edinburgh Napier University and Timber Development UK (TDUK). Courses are endorsed by the Chartered Institute of Building (CIOB) and the Chartered Institute of Architectural Technologists (CIAT) and are delivered from NMITE's award winning Centre for Advanced Timber Technology (CATT) in Hereford.

Industry skills challenge

The UK construction sector is traditionally brick and block focused, with limited use of engineered timber. Growing demand for sustainable, low carbon construction has created an urgent need for professionals skilled in timber based offsite construction and circular economy practices. Timber TED addresses this gap by providing training that combines technical knowledge, practical skills, and applied problem solving in sustainable timber design and construction.

Training model

Timber TED offers short courses and course bundles; TED 1 and TED 2, focused on sustainability, timber materials, design, construction, and technology. Courses are delivered using NMITE's unique "learn by doing" applied approach, combining hands on workshops, online content, and real world projects. Students engage with timber from material level to full assemblies, learning about both traditional and modern methods of timber construction.

Alternative approach to workforce development

Timber TED incorporates hands on training with both modern and traditional timber techniques, giving students practical insight into material properties and construction processes. The programme's hybrid learning model, combining in person, residential, and online modules, enables broader access and flexibility for professionals already in the workforce. The curriculum encourages creative, problem solving, such as designing and making proof of concept solutions for a real world applications either at scale or of representative scale that is manageable within the CATT workshop.

Progression into employment and impact

Timber TED equips learners with industry recognised skills endorsed by professional bodies, improving employability in the growing sustainable construction sector. Participants gain applied experience through projects aligned with real industry challenges, preparing them to contribute immediately to timber focused construction initiatives.

Timber TED has received recognition for excellence, winning the Accelerate to Zero Green Skills Award in 2023. The programme tracks diversity in its cohorts, with recent intakes achieving equal gender representation. Success stories include student led projects developing innovative timber solutions for housing.


Accelerate
to
Zero

Construction Sector Drivers of New Entrant Demand

As previously outlined, any attempt to characterise the construction sector as a homogeneous industry with common pathways, systems, cultures or recruitment practices is misplaced.

Construction is a highly diverse and historically evolved sector, comprising a wide range of crafts, trades, professions and occupations shaped by longstanding traditions, deeply rooted occupational identities, local and regional practices, and varying degrees of technological, environmental and societal disruption over time. In this context, the pathways available to new entrants vary widely, and any generalisations in regards to this that are presented in this report are intended to reflect the most prevalent routes and characteristics, while acknowledging that a range of alternative pathways also exist across the sector.

Figure 1: Private Sector Construction Businesses in Scotland 2010-25 by Employee Sizeband, BICS (2025)

According to models adopted by the Scottish Government's economic directorate (see figure 1), there were an estimated 53,495 construction businesses in Scotland in March 2025[xi]. Most of these enterprises have no registered employees (approximately 75%) and therefore do not typically engage in the recruitment or development of new entrants. Of those businesses that do employ staff, the majority operate with between one and four employees, with firms employing fewer than ten people accounting for approximately 96% of all construction businesses. By contrast, large firms employing more than 250 people, including those primarily responsible for the delivery of major public and private infrastructure projects, represent only around 0.2% of construction businesses in Scotland.

Further analysis of these models provides insight into longer term trends in how and where the construction workforce is employed. The number of self employed sole traders has begun to rise again following a dip in the period immediately after the COVID-19 pandemic, reinforcing the continued prominence and volatility of this segment of the labour market. In contrast, the number of employees working within large firms has gradually declined, from a peak of approximately 39,850 in 2010 to around 28,140 in 2025.

Employment across all other company size bands has remained relatively stable over the same fifteen-year time series. Taken together, this data (see Figure 2) suggests a labour market model characterised by high levels of volatility within the self employed and sole trader segment, alongside a gradual deprioritisation of direct employment within large companies.

These trends have material implications for how workforce development, training provision and new entrant recruitment can be effectively structured and targeted across the sector.

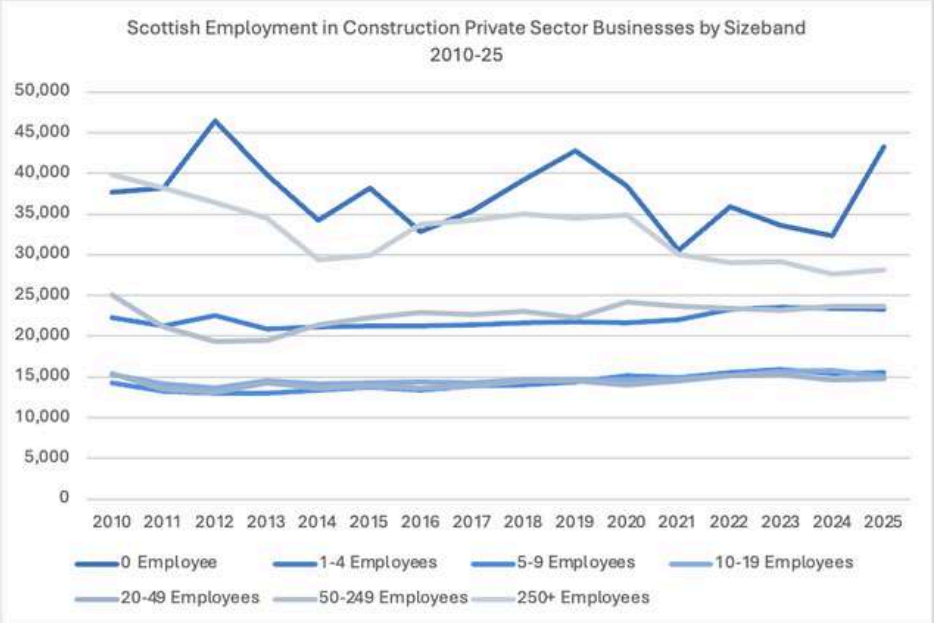


Figure 2: Scottish Employment in Construction Businesses by Sizeband 2010-25, BICS (2025)

In seeking to increase the flow of new entrants into the construction industry, a clear opportunity for progress lies in more effectively engaging those businesses that do not currently recruit, alongside developing a deeper understanding of the structural, commercial and behavioural barriers constraining recruitment and growth among those that do. The Centre for Social Justice characterises construction as operating within a 'dysfunctional labour model', marked by pronounced demand volatility, cyclical boom and bust patterns, and elevated levels of risk and uncertainty[i]. They argue that the consequences of this model are systemic, leading to a sector that 'neither develops skills effectively, nor ensures long term workforce sustainability.'

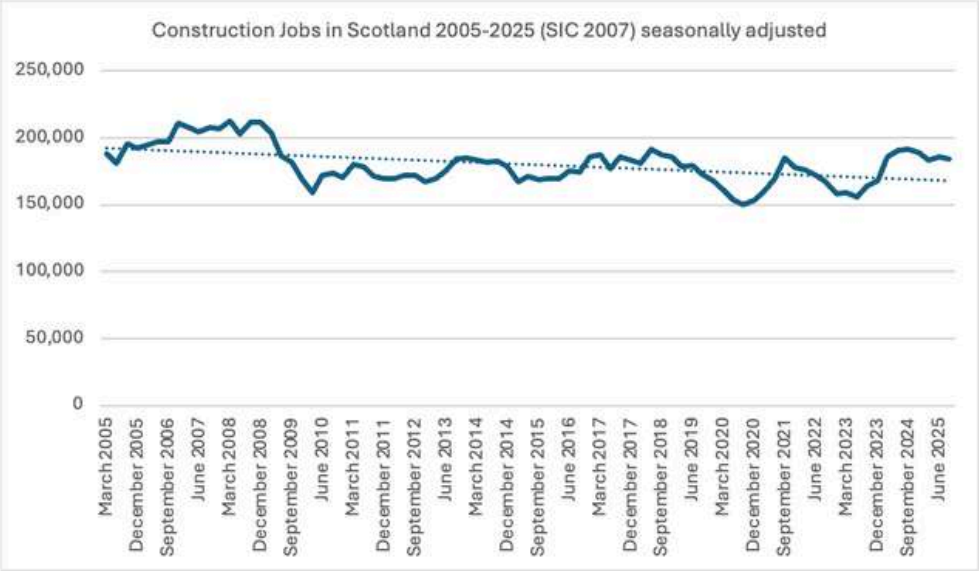


Figure 3: Construction Jobs in Scotland 2005-25, NOMIS (2025)[x]

The cyclical nature of the industry is clearly illustrated in the analysis of workforce levels (see Figure 3), with pronounced contractions following the 2008 global financial crisis, the 2020 COVID-19 pandemic, and the 2023 downturn associated with high inflation, rising interest rates, tightening credit conditions, reduced private sector investment, and constrained public capital expenditure. The 2023 contraction also reflects a combination of macroeconomic headwinds, including cost escalation in materials and energy, fiscal tightening across public budgets, and weaker housing and commercial development pipelines; pressures that continue to shape business confidence, investment decisions and workforce planning across the sector.

The trend data demonstrates a gradual overall decline in workforce size from a peak of 211,179 in 2008 to 184,043 in September 2025 (the most recent data available at the time of writing). The nonlinear pattern of contraction and partial recovery reinforces the volatility inherent within construction labour demand and highlights the structural difficulty of scaling new entrant recruitment up or down in response to short term market cycles.

The prevailing procurement environment, across both public and private clients, tends to prioritise cost over longer term value outcomes. Delivery is frequently coordinated by a relatively small number of large firms managing increasingly complex and disaggregated supply chains operating through subcontracting and self employment models. This culture of cost minimisation creates strong incentives for firms throughout the supply chain to strip out non essential expenditure, including investment in new entrants and workforce development, in order to remain competitive and secure work.

Many companies and sole traders within the sector do not tender for higher value or complex contracts, nor operate within formalised supply chains. General building firms are commonplace, particularly within domestic markets, contracting directly with clients, homeowners and local businesses. Similarly, specialist firms providing installation, maintenance, operation, and repair services often operate directly with both domestic and non-domestic clients and outside extended supply chain structures.

Even within these more localised and decentralised market segments, cost remains the primary determinant of winning work. In this context, the financial burden associated with recruiting and training a new entrant can represent a significant proportion of turnover, particularly for small and micro businesses, reinforcing structural disincentives to invest in workforce development.

The landscape becomes more complex when extending analysis beyond the ‘construction industry’, as defined by Standard Industrial Classification codes, to the wider ‘built environment sector’, encompassing design, engineering, operations and manufacturing activities. These domains are, generally, less characterised by low margins and in some cases are highly lucrative. They also exhibit markedly different workforce development models, with design, engineering and consultancy functions demonstrating greater reliance on graduate recruitment, internships and structured trainee programmes, rather than the apprenticeship, direct recruitment and skilled migrant labour pathways that dominate trade and craft occupations.

In most market sectors there is a well evidenced relationship between sustained investment in the workforce and subsequent growth in productivity, profitability and organisational resilience. By contrast, the construction industry has repeatedly demonstrated a fragility that weakens this relationship. The sector has experienced persistent levels of insolvency and business failure across firms of all sizes, reflecting underlying structural and commercial vulnerabilities rather than isolated management failures.

That fragility is illustrated by the repeated failure of high profile contractors and the cascading impact this can have on supply chains. Carillion's liquidation in January 2018 exposed the vulnerability of subcontractors and suppliers to sudden cashflow shocks and disputed payments, with commentary at the time highlighting the scale of firms left unpaid and the risk of secondary failures across the supply chain. More recently, ISG's collapse into administration in September 2024, described as the biggest failure in the sector since Carillion, resulted in immediate large scale redundancies and left a significant portfolio of live public sector projects in limbo, with subcontractors stood down and payment uncertainty intensifying across tiers of delivery. These dynamics are not confined to UK wide Tier One contractors. Recent evidence suggests that specialist contractors are finding trading conditions increasingly challenging, with reports of record levels of insolvencies across the construction sector. In Scotland, this has been reflected in the collapse of firms such as Connect Modular[xiii], disrupting modular housing delivery, and Orr Decorators[xiv], a long established specialist contractor that ceased trading amid rising cost and cashflow pressures. Pressures are also seen on the supply side, with the recent announcement that the National Timber Group has entered administration leading to 169 job losses[xv].

Common drivers for market and company failure include highly volatile demand cycles, sustained cost inflation, narrow operating margins, cash flow pressures arising from late or disputed payments, and the transfer of disproportionate risk down the supply chains. These dynamics have contributed to construction accounting for a consistently high share of business insolvencies relative to other sectors of the economy.

The subcontracting model remains highly effective in delivering short term outcomes that manage cost, risk and flexibility for clients and principal contractors. It enables rapid scaling up and down of labour, the transfer of delivery risk down the supply chain, and tight control of direct employment liabilities. However, these characteristics, while commercially rational in the short term, are widely regarded as structurally damaging to the long term health, capability and sustainability of the industry.

Research by RICS[xvi] highlights that the historical adoption of subcontracting was driven not only by operational efficiency, but also by wider structural factors including taxation policy, the desire to limit exposure to unionised labour, and the growing specialisation of labour required on increasingly complex projects. These drivers remain in play today. However, they now coexist with additional reinforcing dynamics: increasingly fragmented supply chains, aggressive risk transfer through contracting, and, as previously noted, low margins and procurement models that continue to prioritise price over long term value. The industry also makes extensive use of agency labour to access competent workers at the point of need and to manage fluctuating demand, offering flexibility and managing risk. However, any

reliance on agency labour can discourage longer term investment in workforce development and often carries higher pay costs than direct employment, increasing overall cost to clients.

Taken together, these factors have created an environment in which responsibility for workforce development, skills investment and capability building is systematically diluted across multiple tiers of delivery. The result is a model that can be highly effective at assembling labour for projects, but is inherently weak at sustaining, developing and renewing the workforce over time. This structural misalignment between project delivery and workforce stewardship lies at the heart of many of the challenges identified in this report relating to new entrant recruitment, retention and progression.

For small and micro businesses, which as previously stated collectively employ most new entrants in the industry, the pursuit of growth is accompanied by a disproportionate level of risk. Maintaining a steady pipeline of work, avoiding costly delays and delivery complexities often outwith their control, and managing the administrative and financial burden associated with an expanding workforce are frequently cited as deterrents to growth. In this context, taking on new entrants is not simply a question of willingness, but of capacity, confidence, and risk appetite within highly constrained operating conditions.

In this context, investment in new entrants can appear, on the surface, misaligned with the prevailing commercial characteristics that underpin short term success and even survival in the industry. This raises a fundamental question: what motivates those employers who do choose to invest in new entrants to assume additional cost and risk, particularly when many competitors do not, and where the benefits of that investment are often externalised as trained workers are subsequently recruited by other firms?

Throughout this research, employers consistently articulated a strong sense of responsibility to their profession and a moral obligation to contribute to the sustainability of the future workforce. While many expressed frustrations at the cost, complexity, and administrative burden associated with new entrant development, often compounded by negative past experiences, this was frequently balanced by a deep pride in the outcomes achieved. Employers spoke passionately about former apprentices and trainees who had progressed into supervisory and leadership roles, and in some cases gone on to establish their own businesses, reinforcing the long term value of their investment.

Employers also reported increasing pressure on skilled workers in relation to providing onsite supervision and training for new entrants, particularly where workers are employed under productivity linked pay arrangements. Interviewees noted that it is becoming increasingly common for qualified tradespeople to resist supervisory responsibilities altogether, or to seek additional remuneration in return for undertaking them. The administrative burden associated with formal new entrant schemes, particularly apprenticeships, was identified as a contributory factor, further reinforcing reluctance to assume supervisory roles.

Although much of this sentiment was framed in relation to apprenticeships rather than alternative entry routes, evidence from CITB supports these perspectives. Their research identifies the primary drivers for employer recruitment of new entrants as including the opportunity to shape individuals to meet specific business needs, enabling business growth and the maintenance of critical skills, improving productivity, and fulfilling a sense of social responsibility [vii].

Perceived parity between entry routes is a significant factor shaping stakeholder attitudes. CITB describe apprenticeships as the ‘gold standard for construction skills’, and there is relative merit in this position[vii]. The prevailing apprenticeship model combines public and private investment in the development of new entrants, directly engages employers in workforce formation, and provides individuals with a well established route to competence through the principle of ‘earning and learning’ in a real working environment.

Although the national apprenticeship system has evolved considerably over time, it remains closely aligned to the historical foundations of training in the sector, tracing its origins to the guild, craft and trade halls of the sixteenth century[xvii]. In this sense, apprenticeships represent not merely a delivery mechanism, but a deeply embedded cultural and professional tradition within construction. For many trade and craft occupations, apprenticeships have been the dominant route into the profession for hundreds of years. Tradespeople frequently express strong pride in their apprenticeship journey and professional identity, and trade associations are understandably cautious about alternative entry routes that may be perceived to dilute standards, fragment identity, or weaken professional recognition.

This cultural legitimacy grants apprenticeships with a degree of authority and acceptance that other pathways struggle to replicate and helps to explain both their continued centrality within the skills system and the resistance to any reform that challenges their primacy.

The long term historical evolution of crafts, trades and professions has given rise to a highly disaggregated ecosystem of representative groups, associations, federations and professional bodies. The Designing Buildings Wiki identifies almost four hundred separate organisations operating on behalf of, or in support of, specific sectoral and sub sectoral interests across the built environment[xviii]. When combined with the previously noted diversity and fragmentation of the industry itself, this creates inherent challenges in aligning new entrant pathways with industry demand and raises fundamental questions about how, and by whom, the 'industry voice' is defined and represented within skills planning and system design.

In undertaking this research, it was evident that employers generally value the contribution made by their representative bodies and recognise the roles these organisations play on behalf of their members. The Federation of Master Builders, for example, was cited by several interviewees as providing a strong platform for promoting quality standards and for effective cross sector representation. SELECT, representing electrical contractors, was widely acknowledged for its role in driving standardisation and modernisation within the electrical sector, as well as for its active involvement in apprenticeship recruitment and development through SECTT. SELECT's work in seeking protected professional status for electricians, ensuring that the use of the title 'electrician' is restricted to those able to demonstrate full qualification and competence, was also identified as a positive and worthwhile endeavour. More broadly, the Construction Leadership Forum and the Construction Industry Collective Voice were recognised as providing important sector level leadership and coordination.

In developing a national approach to new entrant recruitment and development, achieving holistic consensus across the industry is inherently challenging. The diversity of occupations, risk profiles and delivery contexts gives rise to fundamentally different expectations of what effective entry pathways should look like. For example, the high regulatory and safety thresholds associated with occupations such as electrical installation and gas engineering are inherently less suited to iterative or fast track models of competence development than lower risk roles. This is not to suggest that these roles and occupations should be excluded from the development of new pathways or more efficient approaches to new entrant development. On the contrary, they are arguably more critical than ever in the context of accelerating skills demand and workforce transition. Stakeholders engaged in this research noted the emergence of models such as those delivered by the Energy Training Academy have attracted a mixed response from traditionalists, yet there is clear evidence that they are enabling faster and more targeted transitions into the workplace, particularly for career changers, without necessarily undermining occupational standards.

Agreement on what should constitute core vocational qualifications is further complicated by the influence of individual employers and representative bodies, whose perspectives may diverge even within the same occupational domains. These tensions are reinforced by regional variation driven by historical practice, cultural norms, client demand and differential access to formal training provision. Labour availability also plays a role in shaping views, particularly in areas experiencing high value, time bound project activity, where short term pressures can materially increase reliance on skilled migrant labour.

Moreover, general builders operating within the one to nine employee categories are more likely to exhibit a degree of multi disciplinarity and tend to value a workforce with a broader range of technical competencies that can be adapted to meet the specific and often varied needs of individual clients. By contrast, larger specialist contractors typically place greater emphasis on deep technical competence within clearly defined domains. Trade associations and professional bodies, in turn, tend to reinforce clear differentiation between occupational areas, while also collaborating around a set of generic competencies such as health and safety, sustainability and digital skills.

Representative bodies and large employers are more likely to engage directly in political advocacy and lobbying with government ministers, senior officials and the leadership of public sector agencies responsible for aspects of new entrant recruitment and workforce development. Through these channels, they can exert a disproportionate influence on policy formation, funding priorities, qualification duration and content, and system design, shaping the strategic direction of skills provision in ways that may not always fully reflect the needs or constraints of smaller businesses or the wider diversity of the sector.

> This review has found that there is now a growing risk that labour supply constraints, skills scarcity and misalignment may create a dangerous cycle of unsustainable wage inflation, static or falling productivity.
>
> Farmer (2025)

The review of the Industry Training Boards, carried out by Mark Farmer in 2025, found that the confluence of factors constraining new entrant recruitment and development represented the single greatest risk to the longer term viability of the construction industry. As overall industry headcount diminishes, client demands evolve, and the skills system grapples with a complex transformation agenda, as discussed later in this report, the need to optimise pathways for new entrants has never been greater.

The challenges associated with new entrant recruitment and development in construction are not the product of isolated weaknesses but are deeply rooted in the structural characteristics of both the industry and the systems that support it.

The prevailing commercial model, characterised by cost driven procurement, subcontracting and aggressive risk transfer, has produced a system that is highly effective at assembling labour for projects, yet structurally weak at sustaining, developing and renewing that workforce over time. For many firms, particularly small and micro businesses, investment in new entrants is constrained less by willingness than by capacity, confidence and risk tolerance within highly pressured operating environments.

At the same time, the industry is not devoid of long term commitment. Employers continue to invest in new entrants despite these constraints, driven by professional identity, long term business interest and a strong sense of social responsibility. Apprenticeships retain cultural legitimacy and professional authority, reflecting centuries of tradition in craft and trade formation, but this same legitimacy can also constrain reform. The fragmentation of representative structures and the diversity of occupational, regional and commercial contexts further complicate the alignment of new entrant pathways to collective need. As a result, skills scarcity and misalignment now represent a strategic risk to the long term viability of the sector, rather than a peripheral workforce issue.

There is a clear need for a broader national conversation on how best to align new entrant development with the dominant practices and realities of the construction industry as it is actually delivered. Deeply held beliefs held by core stakeholder groups regarding professional identity, training duration and routes to competence represent a significant barrier to simple or rapid change. However, failure to address the growing divergence between occupational standards and industry practice risks embedding long term fragmentation within the labour pool, constraining mobility, weakening workforce coherence, and ultimately undermining the sector's capacity to respond to evolving economic, technological and societal demands.

The pursuit of full consensus across such a fragmented system is neither achievable nor desirable. Instead, transformation must be shaped by those who directly employ and develop new entrants, and enabled by those who hold the policy, funding and regulatory levers of change. Ideally, the system should be geared explicitly towards meeting Scotland's current and future needs for the built environment. It should also be geared to directly support those who contribute to new entrant development, balancing flexibility with high assurance, and offering clear, navigable pathways with coherent incentives linked to recruitment, progression and sustained employment. While the challenges are profound, the evidence gathered through this research demonstrates both the appetite and the foundations for change.

Case Study: PlanBEE

PlanBEE (Plan for Built Environment Education) is a programme delivered by Gateshead College in collaboration with employers across the built environment sector. Operating in the North East of England, Manchester and London, PlanBEE enables students to “earn while they learn” through a shared apprentice, rotational model.

Industry skills challenge

The built environment sector faces growing demand for multi skilled professionals who understand design, construction technology, digital skills and low carbon approaches. PlanBEE is a collaborative, industry driven higher apprenticeship scheme designed to help attract, retain and diversify talent in the built environment and construction sector and solve the industry’s skills shortage.

Training model

The curriculum has been cocreated in a unique partnership between industry and education to give apprentices the broad knowledge and skills needed in the global construction economy.

Apprentices undertake six, four-month placements over two years, hosted by different employer 'sponsors'. By rotating between companies and roles, they gain wide experience and skills in architecture, engineering, management and other construction roles and a unique insight into the industry.

The two-year programme is underpinned by an HNC/D in design, construction and management and is supported by CIOB, ICE and RICS. Apprentices spend one day per week at Gateshead College’s Skills Academy for Construction, where they learn through lectures, tutorials, fieldwork and site visits. Areas of study include leadership, economics, design, technology and production, with an emphasis on digital capability and collaborative working.

When it launched in 2016, there were 14 sponsors who joined the consortium including Ryder, Cundall and Sir Robert McAlpine. 10 years on and over 70 companies have recognised the value of the programme and been involved. Skills Academy for Construction, where they learn through lectures, tutorials,

fieldwork and site visits. Areas of study include leadership, economics, design, technology and production, with an emphasis on digital capability and collaborative working.

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Alternative approach to workforce development

The open ended nature of the PlanBEE programme is one of its key strengths and an important differentiator to a university degree, where students are required to commit for three years to a specific route that they may regret choosing and where they will incur significant costs.

By offering a diverse range of paid placements and experiences, the students not only build an invaluable understanding of how the sector works across disciplines, but they are left completely free to go in the direction that best suits them. As the programme is free, it also creates opportunities for young people from disadvantaged backgrounds who might otherwise be excluded by the high cost of university study.

Progression into employment and impact

PlanBEE reports a 97% progression rate into permanent roles or further study, with over 850 industry placements delivered. The programme has expanded into new sectors through PlanBEE Rail and PlanBEE Cyber.

The Current Capacity of the Skills System

Much like the industry it serves, Scotland's construction skills system comprises a complex and fragmented landscape, spanning tertiary institutions (colleges and universities), private training providers, third sector organisations, community groups and in house employer provision. Investment across the system is underpinned by a diverse mix of public funding, private investment, business-to-business and business-to-consumer activity, alongside philanthropic and charitable contributions.

Training interventions range from short duration, 'ticket based' programmes designed to evidence competence at a specific task level, through to multi year programmes of learning and research aligned to professional and academic progression. The availability and accessibility of provision varies significantly by geography, with urban regions typically benefiting from a greater diversity and density of training options than rural and island communities. As a result, many prospective new entrants face extended travel times or the requirement to study away from home, creating additional financial, social and practical barriers to participation and progression. The effects of constrained rural skills provision are evident in persistently high construction costs and acute labour scarcity across these regions,

A commonly held view among research participants is that the current skills system lacks the capacity to adequately support a significant increase in new entrants to the sector. While perceptions of constrained funding and limited training places were widespread, understanding of the actual scale and structure of existing provision was more variable and, in many cases, less well developed.

Given the complexity and continually evolving nature of Scotland's skills system, a comprehensive analysis of all available pathways sits beyond the scope of this report. It is sufficient to recognise both the strength inherent in diversity of provision and the reality that no single model is universally applicable. Nor is there an implicit requirement or benefit in scaling all routes: in rural areas and within niche or specialist occupations, indiscriminate expansion may be counterproductive, increasing delivery costs and generating volumes of new entrants that local labour markets are unable to absorb sustainably.

In terms of public investment into formal construction programmes, Colleges Scotland[xix] reports that 17,210 individuals were studying construction and property related built environment programmes in 2024. Over the same period, Scottish Funding Council data indicates that 12,117 students were supported on full time construction related education programmes[xx]. In addition, the Higher Education Statistics Agency reports that 7,190 students were enrolled in architecture, building and planning courses in the 2022/23 academic year[xxi].

Absorption rates, defined as the rate at which individuals within the skills system successfully transition into sustained employment and become active new entrants to the industry, vary significantly by programme type, institution and region. Participants in education and training should therefore not automatically be considered 'new entrants', but rather as a talent pool from which industry may draw. At the time of writing, the Scottish Funding Council and CITB Scotland are collaborating on the development of approaches to improve absorption rates across the Further Education construction skills system. Regardless of the specific mechanisms ultimately adopted, increasing absorption has the potential to strengthen employment outcomes for learners, improve value for public investment, and, critically, provide employers with more consistent and reliable access to work ready new entrants.

In line with the adopted definition of a new entrant as an employed individual, the primary focus of publicly funded intervention is centred on the apprenticeship system, which remains the principal mechanism, by volume, through which many new entrants are formally supported into sustained employment within the industry. In Scotland, there are three established apprenticeship routes: the Foundation Apprenticeship, designed for learners in school education; the Graduate Apprenticeship, supporting those employed in technical and professional roles; and the Modern Apprenticeship, which has long been the predominant route for entry into occupational roles within the construction industry. It should be noted that Foundation Apprenticeships do not involve an employment relationship and, while they are considered within this report as an important preparatory pathway, they do not in themselves constitute new entrants under the adopted definition.

The Modern Apprenticeship programme, administered by Skills Development Scotland, supported 25,507 apprenticeship starts in 2024/25, of which 6,526 were in construction and related occupations. This positions construction as the second largest user of apprenticeships in Scotland, behind only sport, health and social care, albeit noting it has historically been the largest user. Achievement rates within construction apprenticeships remain comparatively strong, with a completion rate of 78.4% in 2024/25, improving from 72.9% in 2023/24. Skills Development Scotland also notes that construction and related occupations have historically demonstrated some of the highest achievement rates across the apprenticeship system[xxii].

Skills Development Scotland data indicates that private training providers, trade associations and industry representative bodies deliver and/or administer the majority of Modern Apprenticeship provision at 2353 places, with colleges accounting for approximately 350 construction related places in 2024/25. However, this headline picture does not capture the full complexity of delivery arrangements. A significant proportion of places are held by managing agents, such as the Construction Industry Training Board, SELECT, and SNIPEF, who in turn contract with colleges and other training providers to deliver the training element of the apprenticeship.

The data also points to a marked difference in achievement rates by provider type. Non-college providers record average achievement rates in the range of 85–88%, compared with an average of 61–63% for college delivered provision. These differential warrants careful consideration in the context of delivery models, learner profiles and the wider support infrastructure underpinning apprenticeship provision[xxii]. In comparative terms, the Scottish apprenticeship system consistently demonstrates higher achievement rates than its English counterparts. By contrast, completion rates within English construction apprenticeships have been characterised in a joint report by the NOCN Group and the British Association of Construction Heads as being "in crisis", with achievement levels of around 50% reported as commonplace[xxiv].

Graduate Apprenticeship numbers remain comparatively modest. The most recent data published by Scottish Funding Council for the 2022/23 academic year indicates 125 enrolments on the Civil Engineering framework and a further 100 enrolments on the Construction and Built Environment framework. This represents a total allocation of 225 construction related Graduate Apprenticeship places, set against 1,140 Graduate Apprenticeship places across all frameworks nationally[xxv]. Note the relatively modest numbers are primarily a result of available provision as opposed to a reflection of industry or new entrant demand.

Foundation Apprenticeship data for 2022/23, the most recent available, indicates that construction related frameworks at SCQF Levels 4 and 5 account for more than half of all Foundation Apprenticeship enrolments. Participation has increased markedly across these pathways. Enrolments on the Civil Engineering Foundation Apprenticeship at SCQF Level 6 rose from 47 in 2016 to 135 in 2022, having peaked at 215 in 2020. Over a shorter period, Construction Foundation Apprenticeships at SCQF Level 4 increased from 141 enrolments in 2019 to 480 in 2022, while SCQF Level 5 enrolments grew from 132 to 750 over the same period[xxvi].

Taken together, this data suggests a sustained and growing interest in construction careers among school aged learners, alongside a clear appetite for early engagement in construction related training. This trend is further reinforced by wider school engagement initiatives, including programmes delivered by organisations such as

Class of Your Own, the North Lanarkshire Council 'Next-Gen' programme, and Primary Engineer, which continue to expand exposure to built environment careers at earlier stages of the education journey. Skills Development Scotland data indicate that interest in construction careers remains strong among school aged learners. However, participation is disproportionately concentrated among males and pupils from communities in the lower quartiles of the Scottish Index of Multiple Deprivation, highlighting both the sector's continued appeal and the ongoing challenge of broadening representation[xxvi].

The Withers Review[xxviii] called for a simplified skills funding landscape in Scotland, and proposals emerging through the Scottish Government's Tertiary Education and Training (Funding and Governance) Bill[xxix] similarly aim to consolidate provision funding. While a detailed assessment of the relative merits of the Scottish Government's tertiary education funding and governance policy sits out with the scope of this research, the principle of a more transparent, cohesive and simplified funding landscape was welcomed by a significant majority of stakeholders engaged through the research process.

Data relating to new entrants supported through direct employment routes and/or private training providers operating under commercial, non government funded contracts is not routinely captured and is therefore not included within this analysis, beyond acknowledging that these routes continue to form part of the overall entry

landscape. Similarly, the proportion of the workforce comprised of skilled migrant labour is inherently variable, fluctuating in response to market conditions and short term demand, and robust, up-to-date data is not readily available at a Scotland specific level. However, recent estimates from the CITB suggest that, outside of London, approximately 8–10% of the construction workforce is likely to be made up of non-UK workers[xxx].

Several respondents noted that the construction industry operates on a pan-UK basis and, in some cases, internationally. In this context, they highlighted the disparity and limited connectivity between Scottish and wider UK skills programmes, funding mechanisms and policy frameworks as a significant challenge. This lack of alignment was seen as a constraint on the development of a workforce that is sufficiently flexible and adaptable to respond to UK-wide demand and emerging opportunities.

Given the scale of investment and the number of places available within the publicly funded skills system, any suggestion of a simple absence of investment is misplaced. In aggregate, the volume of funded training places for construction training programmes that nurture the talent pools from which new entrants can be drawn appears to exceed projected workforce demand.

However, this interpretation is overly simplistic. It fails to account for the significant nuances associated with local, regional and sub sectoral demand cycles, as well as the extent to which the competencies developed through the skills system align with those required by an evolving and increasingly complex industrial landscape. The challenge is therefore not one of headline capacity alone, but of relevance, responsiveness and alignment between provision and real world demand, alongside the absorption of learners into the labour market.

Case Study: SECTT

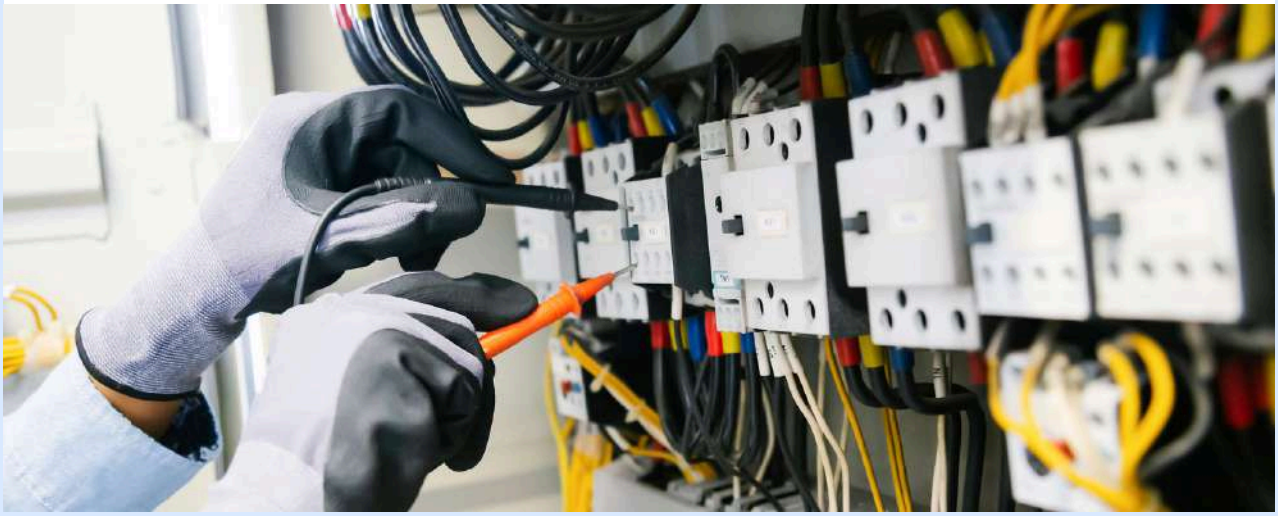
The Scottish Electrical Charitable Training Trust (SECTT), established in 1990, delivers and oversees Scotland's industry approved electrical apprenticeship training programme on behalf of the Scottish Joint Industry Board (SJIB). SECTT works nationally with over 1,500 electrical contractors and manages more than 3,000 apprentices and adult trainees across 22 approved centres.

Industry skills challenge

The electrical sector faces increasing demand due to technological change, electrification, and net zero transition requirements. At the same time, employers face financial pressures, including increased National Insurance contributions and the cost of sustaining apprenticeship wages. Colleges experience constraints linked to lecturer availability and workshop capacity, limiting the number of places available each year. SECTT manages these pressures with limited funding, approximately £7,800 per apprentice over four years, while Training Officers each support around 200 apprentices.

Training model

SECTT delivers the SVQ Electrical Installation at SCQF Level 7 through a blend of college based learning and structured on site experience. The programme is delivered holistically rather than through isolated modules, enabling apprentices to build interconnected technical understanding. Trainees are supported by SECTT Training Officers, qualified electricians with industry experience, who provide pastoral guidance, monitor progress, and liaise regularly with employers and college lecturers. This mentoring approach helps apprentices manage the transition into both college and the workplace.



Alternative approach to workforce development

SECTT provides a pre employment Assessment and pre apprenticeship opportunities that give prospective entrants a realistic understanding of the role. These pathways help individuals test their suitability for the trade. Those who progress into an apprenticeship begin at the start of the Modern Apprenticeship framework.

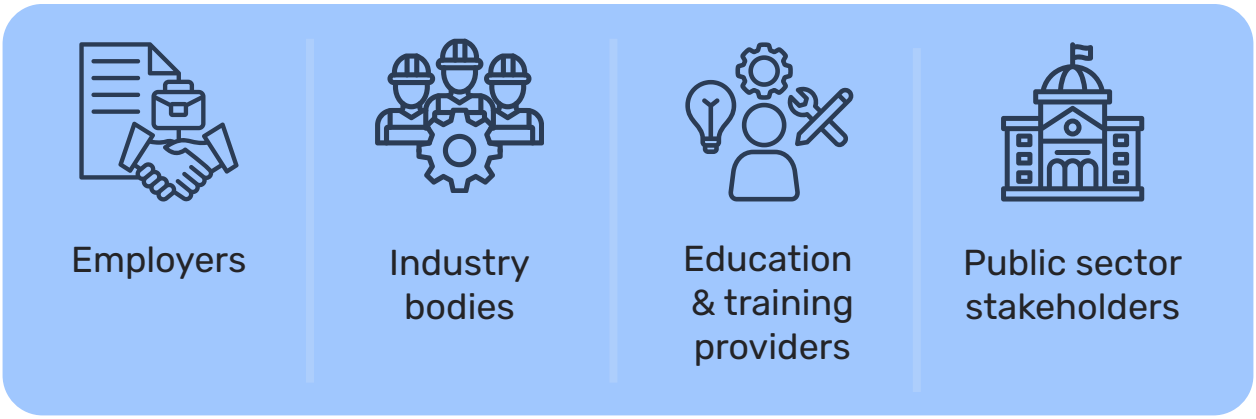
Progression into employment and impact

All SECTT apprentices are directly employed from the outset, ensuring access to meaningful onsite experience and strong links to job opportunities. Since 1990, SECTT has trained more than 20,000 apprentices and adult trainees, supported by a network of over 1,500 contractors.


TESCON

The Pathway Challenges

The following sections are informed by a combination of quantitative data, qualitative insight drawn from industry reports, and feedback gathered through stakeholder engagement. Research participants contributed in their capacity as representatives of specific stakeholder groups and, as such, the insights presented reflect generalised themes rather than definitive or universally held views across all organisations or individuals within those segments. Participants were largely drawn from the following stakeholder groups:



A prevailing theme emerging from stakeholder feedback is one of conflict, tension and paradox. Across all groups there was strong alignment on the weaknesses and limitations of current approaches to new entrant recruitment and development, and broad agreement on the types of interventions most likely to have impact. At the same time, many participants called for increased government investment while expressing frustration with elements of the existing publicly funded skills and delivery infrastructure. Most also acknowledged the need for greater collective investment from employers and for a cultural shift within the industry towards a more coordinated and shared approach to workforce development. A near universal view emerged that the system through which talent pools are cultivated, and new entrants are supported, is inefficient, under resourced, and structurally misaligned with the scale and complexity of the challenge it is required to address, necessitating substantive and systemic change rather than incremental adjustment.

Funding was referenced by all interviewees, with perspectives varying in relation to its overall adequacy, distribution, efficiency of use, and the extent to which it delivers value for money and an appropriate return on investment.

A significant majority of focus group participants, survey respondents and interviewees expressed the belief that the current system, or any continuation of the status quo, would be unlikely to meet future workforce needs or scale sufficiently to increase the flow of new entrants into the industry. While recognition of the need for change was widespread, this was frequently accompanied by an expectation that responsibility for delivering that change sat elsewhere within the system. Many stakeholders indicated that their own contribution should remain largely unchanged, albeit supported by additional resources. This tension, between the call for systemic reform and the desire to preserve existing roles and arrangements, lies at the heart of the conflicts, contradictions and paradoxes explored in the commentary that follows.

The Training Provision Pathway Challenge

The previous section of this report examined the volume of new entrants entering Scotland's skills system and highlighted a fragmented landscape of provision delivered across private training providers, colleges, universities and in house employer led training. The analysis did not seek to quantify training activity supported directly through training provision managed or delivered directly by third sector organisations, public bodies, or Local Authorities.

The diversity inherent within this mixed model represents a clear strength of the system, supporting breadth, innovation and responsiveness. However, it also introduces complexity when considering how best to scale provision and allocate additional training capacity in a proportionate and strategic manner.

> Without changes to baseline funding, colleges will have to deliver even less to remain sustainable at a time when demands from students and employers are not being met. As college funding is also dependent on credit delivery, there is a risk that colleges prioritise courses that are less expensive to deliver over those that meet local need[xxxi].
>
> Audit Scotland 2025

The challenging funding environment facing colleges and universities in Scotland is well documented. While a detailed examination of these pressures sits out with the scope of this report, it is evident that institutions are increasingly required to make difficult decisions about how limited public investment is prioritised.

In the case of colleges, Audit Scotland captured this issue clearly in its Annual Review of Scotland's Colleges 2025, noting that the current configuration of the system may incentivise institutions to prioritise courses based on cost of delivery rather than labour market demand. This dynamic is evident across the sector, with colleges increasingly decommitting from low volume or low growth areas of construction activity, such as stonemasonry, wall and floor tiling and wood machining, in recent years. As a consequence, provision for heritage and specialist craft skills, alongside advanced craft pathways, within the publicly funded college landscape is becoming increasingly fragile. This raises significant concerns about the long term sustainability of these capabilities, with implications extending beyond workforce supply to the resilience of low volume specialist pathways, such as those that underpin the maintenance, conservation and performance of Scotland's existing built environment.

Similar pressures are now being observed within the university sector. At the time of writing, concerns have been raised regarding proposals by Glasgow Caledonian University to suspend its Building Surveying and Construction Management programmes for the 2026/27 academic session, prompting a campaign led by Clark Contracts to challenge the potential loss of this provision and to highlight the wider implications for skills supply in these domains[xxxii].

At the time of writing, the Scottish Government announced financial uplifts for the 2026/27 academic year. These were broadly welcomed by Colleges Scotland, while responses from Universities Scotland and the Scottish Training Federation were more mixed, reflecting differing assessments of whether the uplifts are sufficient to address underlying cost pressures and sustainability challenges across the sector[xxxiii, xxxiv, xxxv]. This highlights a further inherent complexity in undertaking any review of the skills system. The continuous cycle of policy commitments, labour market analyses (including this report), budgetary announcements, shifting patterns of demand, and legislative change means that any comprehensive assessment is, by its nature, time bound and can be rapidly overtaken by new developments.

In any case, the current fiscal constraints experienced across Scotland's tertiary education system are not only contributing to the erosion of existing and traditional provision; they are also materially limiting the ability of colleges and universities to respond to emerging areas of market demand. This is particularly acute where delivery depends on capital and energy intensive machinery, technologies, equipment and materials, creating structural barriers to the timely development of new provision aligned to industry need. The CITB's 2025 report, *Understanding Further Education and Construction*[xxxvi], identifies a range of economic and social constraints limiting the scale up of construction training across the UK. Feedback from education stakeholders participating in this research closely mirrors many of the report's findings.

In particular, rising material costs were consistently cited as a critical pressure, increasingly forcing college and university management teams to make difficult prioritisation decisions, often favouring lower cost provision over capital intensive construction programmes. Increased energy costs were also highlighted, reflecting the inherently energy intensive nature of construction training environments. Stakeholders further identified challenges associated with educator capability, including maintaining up-to-date industry expertise and ensuring sufficient exposure to modern construction practices. The pace and frequency with which curricula can be refreshed to reflect local employer needs and wider industry change was also raised as a growing concern.

Spatial constraints emerged as another significant source of tension. While headline college and university occupancy and hypothetical capacity rates may suggest scope for expansion, the specialist nature of construction training requires purpose built environments with specific characteristics relating to floor loading, ceiling height, access and egress, ventilation, plant, equipment and health and safety controls. These requirements significantly limit the extent to which generic teaching spaces can be repurposed to support construction training at scale. An Association of Colleges report surveying English Colleges found that 32% of colleges reported special and staffing challenges relating to construction activity[xxxvii].

While a selection of industry stakeholders suggested that colleges could increase utilisation of specialist facilities outside standard teaching hours, educational stakeholders highlighted a range of structural constraints. These include limitations on staff teaching hours, contact time and working patterns, which are not set locally by individual institutions but agreed nationally through collective bargaining between Colleges Scotland and staff trade unions. Several employers participating in the research reported diminishing confidence in the ability of colleges to meet their workforce development needs. In particular, they pointed to recurring, nationally coordinated industrial action as having a significant and disruptive impact on the delivery of training. This was cited as undermining employers' ability to plan and manage the development of their existing workforce, and, in some cases, reducing their willingness to engage with colleges as training partners in the future.

Stakeholders also noted that the pedagogical, or learning, teaching, and assessment, nature of many construction programmes requires models, mock-ups and partially completed works to remain in situ between sessions. This limits the ability to clear or reconfigure specialist spaces to accommodate additional teaching activity, further constraining opportunities to extend capacity through more intensive use of existing facilities.

College stakeholders were keen to emphasise the distinction between construction programmes funded through credit bearing activity and apprenticeship delivery. For credit bearing provision, colleges reported having greater control over student

numbers and clearer visibility of enrolment patterns, alongside strong performance in supporting learners to positive destinations.

By contrast, apprenticeship and broader work based learning delivery, particularly where colleges are contracted by managing agents, was described as more difficult to predict and plan for. College stakeholders reported that advance visibility of anticipated apprentice numbers and class volumes is often limited, particularly where recruitment activity is coordinated through managing agents acting as intermediaries between employers and delivery providers. The timing and sequencing of these processes can constrain forward planning, affecting staffing, timetabling and resource allocation, and in some instances impacting the early experience of apprentices entering the system.

There is therefore clear scope to strengthen planning cycles, data sharing and communication protocols between managing agents and subcontracted training providers of all types, in order to improve predictability, enhance learner experience and support more efficient deployment of delivery capacity.

Colleges and universities are arguably at their most effective in supporting new entrant pathways where there is long term strategic certainty. In such circumstances, they are able to deliver sustained volumes of provision while maintaining robust quality standards. However, they find it considerably more challenging to respond to emergent, time bound or sporadic demand, particularly given the administrative, governance and, in some cases, legislative requirements associated with staff recruitment and the procurement of specialist resources. Colleges tend to be more heavily reliant on national awarding bodies to determine curriculum content, whereas universities benefit from greater autonomy through

their degree awarding powers. This distinction is relevant because the design of training provision has direct implications for the spatial, material and equipment requirements needed to deliver it effectively. That said, both types of institution work closely with trade associations and professional bodies to ensure that provision remains relevant, current and fit for purpose.

In addition, where colleges recruit staff to meet short term demand, employment protection arrangements, set by Scottish Government in the 'Fair Work' framework[xxxviii], can introduce longer term commitments. This dynamic reinforces the close relationship between confidence in the forward pipeline of demand and the willingness and ability of colleges to expand capacity within their construction provision.

College stakeholders consistently reported rising waiting lists for construction programmes, indicating that there remains strong interest in pursuing careers within the construction industry. However, this interest is not evenly distributed across society. Stakeholders acknowledged that learners on waiting lists and those enrolled on programmes are not broadly representative of the wider population and continue to be predominantly young men, often drawn from areas of multiple deprivation.

Private training providers are often better positioned to respond to emergent or sporadic demand, reflecting a generally lower cost base and fewer structural constraints than colleges and universities. This is not to suggest that administrative burden is absent; providers reported year-on-year increases in both the volume and frequency of data and reporting requirements imposed by public funding bodies.

> Many private training providers are running on empty. Margins have been cut to the bone and many small companies are hanging on by a thread[xxxix].
>
> Scottish Training Federation, 2026

Unlike colleges, private training providers do not benefit from credit allocation mechanisms and are therefore more heavily reliant on apprenticeship provision and commercial relationships with employers. While apprenticeship volumes have remained relatively consistent, the real terms value of associated funding has declined over several years. Providers also noted that in-year funding allocations limit their ability to undertake longer term strategic planning, while the prevailing industry culture, particularly the emphasis on lowest cost provision, creates a competitive

environment that can drive a ‘race to the bottom’ ethos in training delivery.

Private training providers are, of course, still exposed to rising costs associated with materials, equipment, energy and specialist space. However, they generally operate with a lower staff cost base than colleges and universities, which can provide greater short term flexibility but does not fully offset wider structural and funding pressures.

Private training providers engaged through this research broadly welcomed the continued availability of public funding to support apprenticeships and wider workforce development activity. However, in practice, funding requests are drawn from a single Modern Apprenticeship budget that spans all sectors, meaning allocations are inherently competitive and not guaranteed. Providers may receive lower allocations than requested, or reduced contract values compared to previous years, creating uncertainty around staffing, subcontracting and capital commitments.

In some instances, additional budget becomes available later in the financial year and providers are subsequently approached to assess whether they can scale delivery at short notice. While this flexibility can be positive in responding to emerging demand, the cyclical and variable nature of allocations makes even short term operational planning challenging, constraining providers’ ability to invest confidently in workforce, facilities and longer term capability development.

This approach to funding allocation was identified as a primary bottleneck to longer term strategic planning. It also creates operational and financial tension for private training providers, particularly in managing staffing levels and pay costs within fixed financial year constraints while attempting to respond flexibly to fluctuating demand.

The simplification of the funding landscape proposed through the Tertiary Education and Training Bill presents an opportunity to realise cost efficiencies within the current system. However, even if such efficiencies are achieved in practice, they are unlikely to unlock the scale of additional investment required to materially expand provision, whether through credit bearing activity in colleges and universities or apprenticeship delivery across a wider range of training providers.

There is, of course, an argument that employers could increase their direct investment in training, a position advanced by several education stakeholders. As previously stated, employers, in turn, emphasise the significant contributions they already make through taxation, direct employment costs, mandatory training expenditure and, in some cases, levy payments. This highlights the ongoing tension around responsibility for funding workforce development and the limits of incremental reform within the existing financial framework.

The Apprenticeship Pathway Challenge

Industry investment in new entrants has been considered in the preceding section, alongside public investment in the development of talent pools from which industry can recruit. It is possible to demonstrate both sufficient interest among citizens in pursuing careers in construction and sustained employer demand for improved access to skilled labour. This therefore raises a fundamental question: in the context of a structurally dysfunctional labour market, where sector wide demand for skills does not align with aggregate employer behaviour, what levers can be deployed to better align incentives and actively shape a more effective mediation between labour supply and employer demand?

> … only one in five (21%) construction businesses employ an apprentice and just one in ten (10%) employ more than one. Large construction employers are much more likely to recruit an apprentice with 90% employing apprentices[xl].

The research uncovered a perception shared by several non-employer stakeholders that employers do not invest sufficiently in workforce development, or that, like other sectors, they should assume greater responsibility for investing in the future workforce they require. Moreover, stakeholders noted the construction industry's disproportionate reliance on government funding for new entrant workforce development. There is some merit in this perspective. Compared with many other sectors, construction remains proportionally more reliant on public funding to support new entrants.

Employers and industry representative bodies counter that they already make substantial investments in new entrants. These include the payment of salaries and National Insurance contributions, mandatory compliance and safety training not covered by government grants, and the costs associated with tools, materials and specialist equipment. In some cases, employers also contribute through UK Government or Construction Industry Training Board apprenticeship levies.

> The industry has a robust track record of investing in compliance focused training but less so on personal development. Compliance related basic training increases the direct cost of taking on new entrants.
>
> Research participant

Taking the modern apprenticeship route as an illustrative example, Construction Industry Training Board research indicates that only around 20% of construction businesses across the UK employ an apprentice, with just 10% recruiting more than one. While the likelihood of employing apprentices increases with firm size, most construction businesses do not engage in apprenticeship recruitment at all. At the same time, most apprentices within the system are employed by small and medium sized enterprises, reflecting the overall structure of the sector rather than a concentration of participation among large firms.

This is not to suggest that micro businesses, defined as those employing fewer than five people, are absent from apprenticeship or new entrant recruitment. Rather, it recognises that these firms are disproportionately exposed to the financial, administrative and operational burdens associated with recruiting, training and sustaining new entrants, which materially constrains their capacity to participate at scale. More fundamentally, apprenticeship recruitment entails an implicit long term commitment, with new entrants often requiring many months, and in some cases several years, before reaching a level of productive competence. For micro businesses in particular, this extended period of low or negative return on investment can be prohibitively costly and carries a disproportionate level of commercial risk.

In addition, some small and micro business owners make a deliberate strategic decision not to expand headcount as a means of maintaining tighter control over their cost base. Where work pipelines are unpredictable, cyclical or seasonally dependent, for example in climate sensitive trades or project based domestic markets, increasing permanent staffing can expose firms to fixed operating costs that are difficult to sustain during quieter periods. In such contexts, remaining lean and relying on subcontracting or flexible labour can be perceived as a more predictable and commercially resilient operating model.

The Scottish Building Federation estimates that wage costs alone over the course of a traditional four year apprenticeship typically range between £70,000 and £90,000 per apprentice, depending on age at commencement and pay progression[xli].

The Federation also recognises that apprentices are not generally expected to deliver a net return on investment for their employer until the third or fourth year of training, underscoring the importance of sufficient workload and business profitability to absorb costs in the initial years.

Participants representing employers and trade associations further emphasised that the burden associated with the first two years is not purely financial. It also reflects the requirement for experienced workers to provide supervision, training and onsite guidance, alongside the operational disruption created by apprentices spending, in some cases, significant periods away from the workplace to attend offsite training with their allocated provider.

The requirement to employ apprentices places a range of statutory responsibilities and obligations on employers. In an industry characterised by low operating margins, employers report that rising apprenticeship minimum wages, increased National Insurance contributions, and broader cost pressures, including materials, equipment and energy, have collectively challenged the viability of employing apprentices. These pressures have been compounded by increased reporting and administrative requirements attached to grant funded provision.

Employers who continue to recruit apprentices reported that doing so can place them at a competitive disadvantage when bidding against firms that do not, particularly in a market where lowest price tendering remains the dominant procurement approach. All employers engaged in the research highlighted the need for greater certainty and confidence in the pipeline of construction activity in order to make, and sustain, long term commitments to workforce development.

Several employers went further, pointing to a perceived disconnect between policy intent and industrial reality. In particular, they cited instances where public contracts or policy commitments were withdrawn, delayed or diluted after progressive businesses had already made anticipatory investments in their workforce. This volatility was seen as undermining confidence and increasing the risk associated with long term skills investment.

Larger employers, particularly those operating on public procurement frameworks, are more likely to realise a direct return on workforce investment through an increased likelihood of securing public contracts. By contrast, many small and micro businesses, especially those operating in domestic or residential markets, do not tender for such work and therefore do not experience the same competitive advantages.

While critics of this position argue that employers who invest in skills benefit from improved productivity and workforce capability regardless of procurement route, many employers nonetheless expressed reluctance to invest in training beyond

mandatory or role specific requirements. This reluctance is driven in part by high levels of labour mobility within the sector, where workers frequently move between employers for relatively modest increases in hourly pay, reducing the perceived return on longer term investment in skills development.

For smaller businesses in particular, the administrative burden associated with recruiting an apprentice can be prohibitive. Several participants described their experience of using the apprenticeship.scot website and/or similar generic recruitment approaches, noting that vacancies often generated hundreds of speculative applications, which they lacked the time or capacity to assess effectively.

This volume driven process was cited as one of several factors encouraging employers to rely instead on informal recruitment methods, where family members, friends or individuals within extended personal and professional networks are given preferential access to opportunities. While often more manageable for employers, such approaches can inadvertently limit transparency, accessibility and diversity within the workforce. Employers who reported negative experiences with apprenticeship recruitment, administration or low success rates linked to behaviour and/or attitudinal factors, indicated that they would be less likely to recruit an apprentice or trainee in the future as a result.

Small and micro business owners also highlighted the disproportionate impact of apprentices spending extended periods away from the workplace with training providers, in some cases for up to 20 weeks during the first year. During these periods, employers continue to meet the full costs of employment while experiencing little or no direct value creation from the apprentice, placing additional strain on limited operational capacity.

In larger organisations, this impact can be mitigated by employing apprentices across multiple year groups, allowing absences to be offset by the presence of others at different stages of training. Achieving this requires careful coordination of training schedules to avoid overlapping absences. While this is more feasible where employers recruit apprentices within a single occupational grouping and work with a limited number of training providers, it becomes significantly more complex for small firms operating across multiple trades, occupations and, in some cases, multiple providers.

Several employers also identified ineffective communication between training providers, managing agents and employers as a significant weakness in the delivery of apprenticeships. Employers reported limited visibility of the training content being undertaken by apprentices while off site, and a lack of clarity regarding their own responsibilities in supporting development, addressing skills gaps, and ensuring apprentices meet the requirements of workplace assessment and portfolio evidence.

All employers consulted through the research indicated that improved communication mechanisms would be beneficial. They suggested that clearer, more consistent information flows could enhance the quality of the apprenticeship experience, strengthen alignment between onsite and offsite learning, and reduce the administrative burden placed on employers.

A number of employers involved in the research expressed frustration at what they perceived to be a disproportionate responsibility for training the future workforce, particularly given that many of them operate as small or micro businesses. When asked why they continued to invest in apprentices and trainees while competitors made limited or no comparable investment, responses were consistent. Employers cited a strong sense of responsibility to the industry, recognition that they themselves had benefited from similar pathways earlier in their careers, and a commitment to the long term health and prosperity of the sector as primary motivators.

Several employer representative groups also noted that, while overall apprenticeship numbers may appear relatively stable, the value of publicly funded apprentice contribution rates, and in some cases grants, has not increased in line with inflation over the past eight years. Although at the time of writing, Scottish Government has committed to carrying out a review of contribution rates, scheduled to begin by April 2026[xlii]. This divergence has eroded the affordability of apprenticeship administration and support for training providers and managing agents.

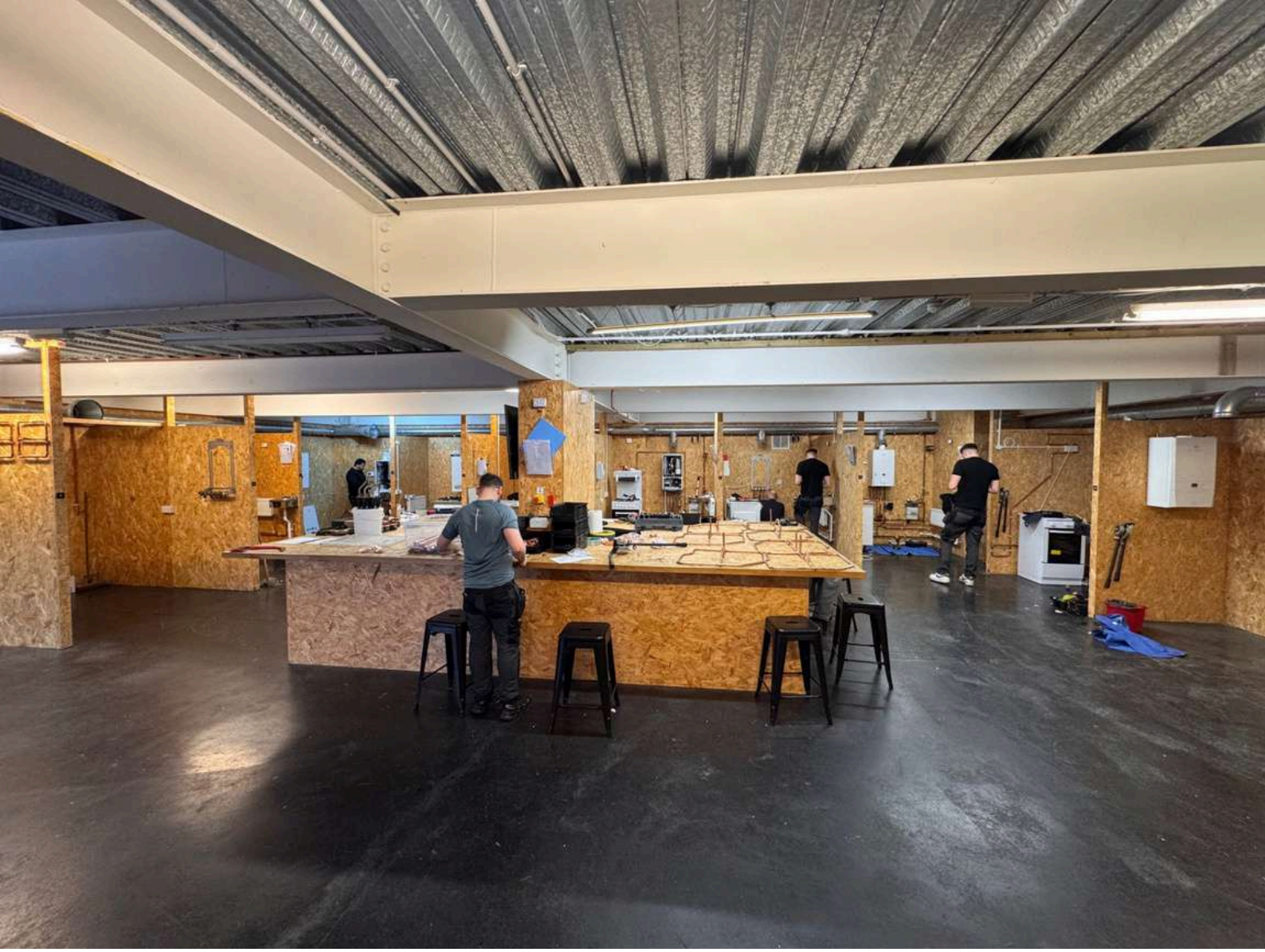
The Career Changer Pathway Challenge

Career changers represent a significant source of new entrants and may be drawn from adjacent industries, the armed forces and other uniformed services, individuals with lived experience of the justice system, and those seeking entirely new employment opportunities later in their working lives. While there is clear evidence of this route being successfully utilised, and several examples of effective practice were identified through the research, there remain systemic barriers that limit the scale at which this pathway can contribute to workforce growth.

A key challenge inherent in the career changer pathway is the effective identification and recruitment of suitable candidates, particularly where individuals lack awareness of construction career opportunities or do not have access to established recruitment networks. The industry's continued reliance on informal recruitment practices further limits visibility, both of the roles available and of potential candidates seeking entry, constraining the reach, accessibility and diversity of the talent pool.

The inconsistent recognition of prior learning, experience and transferable skills further constrains progression, often resulting in career changers being required to retrain at a level below their existing capability or to retrain capabilities in which they are already demonstrably competent. The one-size-fits-all approach to new entrant development disproportionately disadvantages career changers. In many cases, individuals who could be effectively upskilled within a matter of weeks or months are instead often required to follow lengthy, standardised pathways lasting months or years, simply because existing frameworks do not adequately recognise prior experience or transferable competence. In addition, the cost burden associated with career transition, affecting both employers and individuals, can be prohibitive, particularly where retraining involves reduced earnings, upfront training costs or extended periods before individuals become fully productive. Participants noted that prospective career changers with family, caring or other responsibilities often struggle to identify financially viable entry routes into the construction industry. This challenge is particularly acute where entry relies on returning to the education system, often with limited income support and no guaranteed employment outcome on completion.

By contrast, models such as those delivered by the Civil Engineering Contractors Association and the Energy Training Academy, where training is targeted, time limited and closely aligned to specific employment opportunities, with direct employment outcomes, were highlighted as especially attractive to career changers. These approaches reduce financial risk for individuals and provide clearer pathways into sustained employment. They can however require a large initial capital outlay which can be out of reach for many individuals without additional funding support.



Participants also highlighted a range of wider considerations, including the need for more flexible training models that better accommodate adult learners, targeted wraparound support to address confidence, financial and pastoral needs, and clearer, more transparent pathways that link prior experience to defined occupational outcomes. This approach appears inherently pragmatic. However, it continues to encounter a degree of resistance within parts of industry, particularly where models are perceived to shorten the duration, depth or breadth of competency development through more streamlined or iterative pathways. This tension is explored in greater detail in a later section of the report.

Adopting a more systemic and consistent approach to the recognition of prior learning would benefit not only career changers, but the wider workforce and labour market as a whole. Current limitations in how workforce competence is managed, assured and evidenced constrain national capability to understand and enable transitions between occupations and sectors as economic and societal needs evolve. In this context, the ongoing work being led by the Scottish Credit and Qualifications Framework to strengthen the infrastructure supporting recognition, transferability and progression of skills and learning is welcome.

The Ecosystem Pathway Challenges

The recruitment and development of new entrants does not operate within a single, homogeneous system, but rather within a complex system of systems, or broader ecosystem. References to 'the system' from this point onward should therefore be understood as encompassing the full range of actors, pathways, funding structures and governance frameworks that collectively shape the new entrant recruitment and development landscape, unless stated otherwise.

Views on the efficiency of the current system varied both between and within stakeholder groups, ranging from calls for incremental, iterative improvement to arguments for more fundamental reform. Participants tended to hold strong views on where inefficiencies lay, most often identifying shortcomings in the actions or responsibilities of other parts of the system.

When synthesised, a consistent set of core inefficiency themes emerged:

Absorption inefficiencies, most notably weak or inconsistent progression from training into sustained employment, were identified by several stakeholders as a persistent challenge. Delivery models that involve employers directly were generally viewed as more effective in supporting transition into work, although a number of employers reported uncertainty about how best to engage with the system or at which points their involvement would add most value.

Data on employment outcomes is fragmented and inconsistent across traditional pathways. Colleges typically report on 'positive destinations,' a category that can include progression into further study or employment outside the construction sector, limiting its usefulness as a measure of workforce entry. University outcomes data is more specific in relation to employment but is often time lagged and therefore less effective in informing real time planning. Several employers also highlighted that foundation and pre apprenticeship programmes could deliver greater value if more tightly aligned to Modern Apprenticeship frameworks.

Stakeholders noted inefficiencies within learner progression pathways. It is not uncommon for individuals to enrol in introductory construction programmes at SCQF Levels 3 or 4 and spend several years progressing through successive levels before seeking employment at SCQF Level 5 or 6. Equally, learners may complete a Level 6 programme before entering a Modern Apprenticeship, resulting in the potential repetition of content and delayed entry into the workforce.

While comprehensive data on the direct conversion of training participants into employment is not available, a high level comparison of annual enrolments across the skills system with new entrant recruitment suggests that strengthening the

alignment between training provision and employment outcomes represents both a significant challenge and a major opportunity.

Stakeholders also described what amounts to a leaky talent pipeline, raising ethical as well as practical questions about whether simply increasing the flow of new entrants into the system will deliver the employment conversions required by industry. In the absence of strong and visible links to jobs, many learners disengage or exit the system altogether when they are unable to secure employment at key transition points. This attrition is further exacerbated by the prevalence of informal recruitment practices, which limit transparency and accessibility, and disadvantage those without existing networks or connections. Taken together, this highlights the risk that expanding introductory training provision, such as pre apprenticeships and access courses, without addressing conversion mechanisms may increase churn rather than workforce entry, underscoring the need for more deliberate alignment between training, recruitment and employment outcomes.

The issue of absorption inefficiencies is currently being examined by a short life working group convened by the Scottish Funding Council and CITB Scotland. The group is tasked with identifying practical measures to improve the transition of learners on Further Education programmes into sustained employment, with recommendations anticipated by Q2 2026.

Relevance and currency inefficiencies, manifested through misalignment between training content and current or emerging industry needs, alongside limited mechanisms for continuous updating, were identified as a significant source of tension across all stakeholder groups. Employers consistently pointed to a growing gap between the competencies they require and those being prioritised within the skills system. In contrast, actors within education and training highlighted the constraints imposed by curricula determined through national awarding bodies, sector skills councils, trade associations and professional institutions.

There was broad recognition that the pace of industrial and technological change now exceeds the system's ability to respond in a timely manner. This tension was further compounded by the differing needs of individual employers and regional economies when set against the requirements of a standardised, national framework. Stakeholders reflected on the challenge of balancing consistency and portability of qualifications with the flexibility needed to respond to local labour markets, sector specific practices and emerging technologies.

A recurring theme was the extent to which the system has become deeply embedded in established occupational pathways, often structured around historic craft and professional boundaries. While these pathways carry cultural legitimacy and provide clarity of progression, their dominance has arguably constrained the emergence of structured alternative routes that cut across traditional occupational silos.

In an environment characterised by labour scarcity, increasing specialisation and the need for coordinated, multidisciplinary delivery, more flexible entry models that emphasise task level competence, systems thinking and collaborative working may be better aligned to operational realities. The delivery of high performing buildings, retrofit programmes, energy systems integration and modern methods of construction frequently demands blended skillsets rather than narrowly defined occupational identities. Yet the prevailing qualification architecture continues to reinforce occupational segmentation, limiting the development and scaling of multidisciplinary, solution focused pathways that could increase agility and productivity within a constrained labour market.

While no single unifying vision emerged, there was shared agreement on several core principles: that existing provision is struggling to keep pace with change; that a common baseline of competencies is required for all workers within a given role or occupation; and that greater flexibility is needed within frameworks and delivery models to allow employers and regions to address specific competency needs without undermining quality or national coherence.

Several stakeholders highlighted challenges in ensuring that the full breadth of industry perspectives informs the design of new entrant training programmes. In particular, they noted that small and micro businesses are often underrepresented in consultation processes, with the ‘industry voice’ frequently shaped by a relatively small number of representative bodies and larger employers. This was seen as risking a partial or unbalanced view of industry needs that may not fully reflect the diversity of operating models across the sector.

Cost inefficiencies, reflected in high and variable cost bases across different pathways and provider types, were a recurring theme in stakeholder feedback. Central to this issue is not only the absolute cost of bringing new entrants into the industry, but also how those costs are distributed between employers, individuals and the public sector.

From an employer perspective, recruiting competent workers directly from the skills system or from adjacent industries was generally viewed as the most cost effective means of increasing total workforce capacity through new entrants. Although the prevalence of the previously described 'dysfunctional' contracting model within the industry can incentivise the transfer of capacity pressures down the supply chain or the recruitment of labour directly from competitors, rather than investment in the development of new entrants. As a result, incentives are skewed towards securing existing, immediately available resources rather than growing collective workforce capacity in a sustainable manner.

Employers also highlighted significant cost variability when upskilling individuals who lack site experience, industry exposure or mandatory health and safety accreditations. The apprenticeship model continues to be widely regarded as a valuable route of entry, as it balances earning and learning for individuals while enabling employers to align pay and conditions with capability and productivity as skills develop. As previously discussed, the apprenticeship pathway also presents limitations for certain cohorts, particularly career changers, and remains underutilised by a substantial proportion of employers across the sector.

At a system level, and as a broad generalisation on a per-learner basis, private training providers were perceived to represent the lowest cost route for new entrants, followed by colleges and then universities. This is a high level generalisation and does not account for the diversity of funding models, non-government funded provision, or bespoke contractual arrangements between funders, investors and individual providers. Nor does the analysis imply a direct correlation between cost and overall system value, a relationship that stakeholders frequently contested and for which no definitive evidence based conclusion was reached.

In any case, there was broad agreement that rising cost pressures, encompassing wages, National Insurance contributions, materials, equipment, energy and physical infrastructure, are collectively making the current system increasingly unaffordable for employers, training providers, learners and existing workers alike, and placing increasing strain on an already fragile system. This convergence of cost pressures is reducing flexibility, constraining investment decisions and amplifying the risk that capacity, quality and accessibility will deteriorate further without targeted intervention.

Fragmentation and opacity inefficiencies within the publicly funded skills infrastructure were frequently cited as material sources of inefficiency. The Withers Review highlighted tangible opportunities to strengthen the efficiency, coherence and strategic alignment of Scotland's skills system, noting that the breadth of public agencies and institutions involved in new entrant development can, at times, make streamlined and responsive delivery more challenging[xxv]. Stakeholders contributing to this research broadly supported this view and expressed a constructive appetite for reform that would reduce unnecessary bureaucratic complexity, clarify lines of accountability and enhance operational flexibility. In particular, there was a consistent call for mechanisms that allow curriculum, funding and delivery models to adapt more dynamically in response to labour market shifts, regulatory change and technological advancement.

Similar reflections were also directed towards trade associations, professional bodies and trade unions. While these organisations play a vital role in safeguarding standards, professional identity and worker interests, some stakeholders observed that change processes can be cautious and deliberative, particularly where reforms intersect with established responsibilities or areas of influence. Strengthening collaboration and shared ownership of reform across these bodies was therefore seen not as a critique of their role, but as an opportunity to accelerate system wide responsiveness while maintaining robust quality and assurance standards.

Public sector representatives, in turn, pointed to structural, policy and funding constraints that limit their ability to respond more flexibly to labour market needs. While the purpose of this report is not to provide a detailed critique of individual organisations, the research revealed a strong collective desire for more streamlined and coherent approaches to occupational standards, task level competency requirements, curriculum development, funding mechanisms, training delivery, assessment and inspection processes, and ongoing career support.

Employers, in particular, reported that the system is difficult to navigate and to engage with effectively. Many cited the scale of organisational overheads associated with delivering core functions and a perceived lack of transparency in demonstrating the value created through public investment. Stakeholders across all groups also emphasised that the skills system does not operate in isolation, highlighting the opportunity for stronger alignment between public sector procurement practices, policy intent and investment in new entrant support to reinforce workforce development outcomes.

Private training providers and third sector organisations were subject to comparatively less critique, with broad recognition among stakeholders that they tend to align provision more closely with employer demand and operate with greater flexibility and responsiveness to industry needs.

Perceptions of fragmentation extended to the many skills focused groups convened by a combination of public sector bodies, employers and industry representatives. The research identified dozens of such groups, each seeking to reform aspects of the system, address skills gaps, improve value for money or drive transformation. Stakeholder feedback suggested that these groups are generally well intentioned and, in many cases, undertaking valuable work.

However, stakeholders also observed that much of this activity is focused on relatively narrow or highly specific segments of the industry, sometimes duplicating work being undertaken elsewhere, progressing in parallel to existing initiatives, or remaining only loosely connected to wider systemic reform. The prevalence of such groups is, in many respects, understandable and reflective of the sector's inherent diversity, spanning multiple occupations, professional domains and regional contexts, each with distinct needs and priorities.

At the same time, the proliferation of initiatives highlights the absence of a sufficiently coordinated and shared strategic framework through which these efforts can be aligned. While the breadth of activity demonstrates strong collective commitment and goodwill, it also underlines the need for clearer mechanisms to connect, sequence and prioritise reform, ensuring that local and specialist innovation contributes to coherent, system level progress rather than reinforcing fragmentation.

Recognition and progression inefficiencies, most notably the limited and inconsistent recognition of prior learning and transferable competence were identified as constraining workforce mobility and the potential for accelerated progression. The absence of a unified, system wide mechanism for recognising prior learning has already been highlighted as a significant barrier for career changers. More broadly, in an industry characterised by continuous transformation and modernisation, the need to support iterative, lifelong competence development has never been more pronounced.

A central source of tension within this theme relates to the duration of new entrant pathways, which emerged as one of the most contested issues across the research. Several employers and industry representative bodies expressed the view that competence, through the apprenticeship route for example, is intrinsically linked to the length of 'time served'; defined by the Scottish Building Apprenticeship and Training Council as the period concluding 'after the apprentice has served the requisite period under the programme, completed the relevant college course (Professional Development Award), fully submitted the portfolio of evidence, passed a final 'Skills Test' and achieved the relevant SVQ'[xliii]. This position gives rise to a paradox: calls for systemic reform are often accompanied by a desire to retain long established training models and expectations. In some cases, stakeholders expressed discomfort when asked to weigh the relative merits of a shorter, outcomes focused pathway producing a highly competent worker against a longer programme resulting in lower demonstrated competence.

Proponents of duration led models emphasised the importance of sustained on site experience, arguing that certain aspects of competence development cannot be replicated in classroom or simulated environments, nor compressed into shorter timeframes. These views were frequently grounded in personal experience, with stakeholders referencing the length of their own training as a benchmark for new entrants, alongside a belief that competence was unlikely to be achieved through accelerated pathways. This divergence of perspectives highlights a fundamental challenge for the system: how to balance respect for experiential learning with the need for more flexible, competence led pathways that respond to changing workforce demands.

Several stakeholders identified the potential value of adopting more iterative approaches to new entrant development, particularly within operative and vocational roles. This model would enable individuals to achieve an initial level of competence sufficient to work safely and productively in a construction environment, followed by structured progression through further upskilling towards qualified tradesperson, supervisory or management roles over time.

This perspective was, however, contested by some trade associations and trade union representatives, who raised concerns that such approaches could encourage

“shortcuts” to competence, risk deskilling, and ultimately diminish overall workforce capability. Opponents also noted that colleges are already under pressure to withdraw low volume provision, including advanced craft programmes. From this viewpoint, further disaggregation of established pathways, for example into discrete SVQ Level 2 and Level 3 programmes, could risk permanently eroding provision that may not be reinstated, rather than delivering genuinely more flexible or streamlined routes.

Two participants reported awareness of employers choosing to send Scotland based apprentices to training providers in England, citing greater flexibility in programme duration and lower training costs. The researchers were unable to determine the prevalence or scale of this practice.
While detailed views on the role of private training providers in supporting such models were limited, there was broad acknowledgement that they have an important role to play and possess inherent flexibility that could support more modular or phased approaches to workforce development, should the system choose to pursue them.

For stakeholders who placed greater emphasis on demonstrated competence rather than programme duration or qualification level, the primary requirement was the individual’s ability to evidence competence against recognised competency frameworks and national occupational standards. This group, predominantly consisting of employers, expressed frustration with a system they perceived as overly time bound: one that can unnecessarily slow the progression of highly capable individuals by locking them into fixed duration programmes, while simultaneously lacking the flexibility to support those with the potential to become competent workers but who may require additional time or alternative development pathways.

Foundation Apprenticeships were generally welcomed by participants as an effective means of engaging and inspiring young people and raising awareness of construction careers. However, they were widely viewed as having a limited direct impact on increasing the flow of new entrants into the industry. Stakeholders consistently identified weak connectivity between Foundation Apprenticeships and subsequent Modern Apprenticeships, as well as between Foundation Apprenticeships and college based programmes. This was seen as a missed opportunity, with clear potential to enhance the value of Foundation Apprenticeships through stronger alignment, clearer progression routes and more deliberate integration with post school training and employment pathways.

This commentary highlights the inherent challenge of increasing the flow of new entrants within a system already constrained by financial pressure. In practical terms, where overall capacity cannot be significantly expanded, attention must shift to increasing the rate at which individuals progress through the system. However, the deeply held and often divergent views of key stakeholders are likely to present a

substantial barrier to achieving consensus, particularly in debates concerning the appropriate duration and level of new entrant training programmes.

Planning and confidence inefficiencies, driven by short term funding cycles and uncertain demand signals, were widely cited as undermining strategic planning and capacity investment across the system. Small and micro businesses, in particular, are more likely to recruit new entrants reactively, responding to immediate workload pressures rather than operating within a longer term workforce development strategy. Recruitment decisions in this segment are also more frequently shaped by informal networks, including family, friends and local contacts, influencing not only who is recruited but also the timing and nature of that recruitment.

This contrasts with larger small-to-medium and large employers, who are generally better positioned to take a more strategic view of labour requirements, aligning recruitment with forward pipelines of work, structured training plans and longer term business growth objectives.

All employers highlighted confidence in the forward pipeline of work as a primary determinant in decisions to recruit and train new entrants. For smaller businesses, this challenge is especially acute: committing to apprenticeships often requires between multiyear durational training obligations in a context where visibility of six to twelve months' work is considered aspirational. Larger organisations, particularly those delivering high value public and private contracts, typically benefit from longer term workload certainty. However, stakeholders noted that these employers often invest proportionally less in new entrants directly, relying instead on supply chains to absorb workforce development responsibilities.

Small businesses reported that the increased emphasis on work based training and assessment, alongside the requirement to evidence the full breadth of activity within apprenticeship vocational qualifications, has reduced their appetite for, or in some cases prevented, the recruitment of new entrants through apprenticeship routes. Employers noted that specialist firms are often unable to provide the full range of work experiences required to satisfy qualification standards, while general contractors highlighted that project work is driven by client demand and cannot guarantee consistent alignment with apprenticeship requirements throughout the training period or during times when apprentices are available on site.

At the same time, many employers expressed frustration at what they perceive to be the growing volume and granularity of evidence required within vocational frameworks. However, it was also widely acknowledged that employers, frequently acting through representative bodies and technical groups, play a direct role in shaping the very standards and frameworks they later experience as burdensome. Efforts to streamline or rationalise qualification content are often met with resistance on the grounds of protecting professional standards, avoiding deskilling, or safeguarding occupational identity. This tension highlights the absence of an easy resolution. One potential way forward is not to dilute established pathways that reflect the full breadth of occupational competence, but to complement them with more streamlined, specialist and flexible routes. Such routes could focus on clearly defined competency clusters aligned to specific employer needs or regional practice variations, while preserving the integrity and progression opportunities associated with comprehensive occupational frameworks.

Rotational and shared apprenticeship models, including host employer arrangements, were frequently identified as mechanisms with potential to mitigate the risks and capacity constraints associated with single employer recruitment. By enabling apprentices to gain structured experience across multiple firms, these models can broaden exposure, improve the breadth of competency development and reduce the supervisory and workload pressures borne by individual businesses. Their wider adoption was recommended by the Fair Work Convention's Construction Industry Inquiry and subsequently acknowledged by the Scottish Government, albeit with noted reservations regarding the lack of support for shared apprenticeship schemes from micro businesses[xliv].

Several pilots have been undertaken, including the Shared Apprentice Ltd initiative in Angus delivered in partnership with Dundee and Angus College, CITB and participating employers, alongside comparable trials in other sectors[xlv]. While these pilots have demonstrated elements of good practice, they have also surfaced practical challenges relating to coordination, cost and data sharing, accountability, continuity of employment and long term sustainability. To date, these barriers have limited large scale replication. The potential of these models, and the conditions required for viable expansion, are explored in greater detail in the solutions section of

this report.

At a system level, stakeholders also pointed to longstanding challenges in aligning policy ambition with investment in skills capacity. Scotland's record in coordinating education, economic and environmental policy and funding was cited as a limiting factor, a theme examined in the Royal Society of Edinburgh's Gaps, Overlaps and Challenges report[xlvi]. This lack of alignment was seen as reinforcing uncertainty, diluting impact and constraining the system's ability to plan and invest with confidence over the long term.

Stakeholder perspectives closely aligned with those set out in the Royal Society of Edinburgh report, highlighting the disruption, uncertainty and missed opportunities arising from a prolonged period of skills reform in Scotland. That said, stakeholders expressed cautious optimism regarding the mission focused work being progressed by the Skills Group of the Construction Transformation Board under the Construction Accord, viewing this as a potential mechanism for greater alignment, coordination and renewed momentum in addressing construction workforce challenges.

The labour market intelligence informing industry and public investment in new entrant recruitment and development continues to be shaped by two dominant approaches: a reliance on historical trend data and the articulation of labour demand through established occupational groupings. While these methods provide a degree of stability and comparability, they are inherently backward looking. At best, they enable incremental refinement of existing systems and recruitment models. At worst, they risk entrenching legacy assumptions and perpetuating the structural inefficiencies the system is seeking to overcome.

At the time of writing, Scotland's skills planning architecture is undergoing reform. This presents a timely opportunity to reposition skills planning as a genuinely forward looking instrument, capable of anticipating technological, environmental and market shifts, identifying emerging competency requirements, and supporting more agile, mission oriented investment in new entrant development.

Stakeholders articulated this challenge clearly through two related observations. First, there was widespread concern that transformative outcomes cannot reasonably be expected when forward planning is grounded primarily in retrospective analysis of past gaps. In doing so, the system risks preparing the workforce to address the constraints of yesterday rather than the opportunities of tomorrow. Second, the strong emphasis on occupational classifications was seen as creating distortions, where mission led or multidisciplinary approaches may be more effective.

Stakeholders pointed, for example, to the paradox that, despite an acute housing crisis, there is no publicly funded training explicitly focused on housebuilding as an

integrated discipline (notwithstanding that elements are dispersed across occupational frameworks). Similar gaps were identified in provision for retrofit, Passivhaus or equivalent energy performance standards, entrepreneurial capability within construction education, and training for planners at a time of significant pressure on the planning system.

This paradox highlights the potential value of developing task focused, rather than strictly occupation bound, new entrant pathways. In a context where housing delivery increasingly depends on coordinated, multidisciplinary activity, there may be merit in training individuals to achieve competence across a defined cluster of interdependent tasks aligned to modern building standards. Such pathways would reflect the operational realities of contemporary delivery, where sequencing, quality assurance, energy performance, digital coordination and offsite integration cut across traditional trade boundaries. By orienting entry routes around task level competence within real project environments, the system could create more adaptable, work ready entrants while preserving clear progression routes into deeper occupational specialisation where required.

Taken together, these issues highlight the need for stronger alignment between national policy development, skills planning and public procurement activity. Improved connectivity across these domains would enhance confidence and coherence within the system, support longer term decision making, and enable more effective forecasting for all those involved in the recruitment and development of new entrants.

Funding and administration inefficiencies characterised by complexity, inconsistency and administrative burdens associated with grants and funding awards were consistently raised by stakeholders across all parts of the system. Funding featured as a recurring theme in almost all engagement activity, with issues of availability, visibility and conditionality cited as persistent challenges for employers, training providers and managing agents alike.

Stakeholders reported that navigating the funding landscape is often complex and time consuming, reflecting the number of schemes, eligibility criteria and reporting requirements involved. While public funding was broadly welcomed, the administrative effort required to access locally available and/or CITB grant funding support was frequently described as disproportionate to the value of support received, particularly for small and micro employers and smaller training providers with limited administrative capacity. Several participants noted that funding rules and conditions can vary between programmes and funding bodies, creating inconsistency and uncertainty that undermines confidence and complicates planning.

Increased reporting requirements were highlighted by training providers of all types, as well as employers involved in apprenticeship delivery. Stakeholders described a growing volume of data collection and compliance activity, often involving extensive form filling and duplication of information across systems, with limited feedback on how data is used or the value it generates. This lack of visible feedback or outcome reporting was seen as reducing trust in the system and reinforcing perceptions of inefficiency.

When issues arise, stakeholders reported difficulty in identifying and engaging with the appropriate point of contact, particularly in delivery models involving multiple actors such as funders, managing agents, training providers, employers and new entrants. The absence of clear accountability or ownership in these circumstances was cited as a source of frustration, delay and risk, with problems often passed between organisations rather than resolved efficiently.

Collectively, these factors were seen to divert time and resource away from frontline delivery and learner support, disproportionately affecting smaller organisations and acting as a brake on participation, innovation and scale. Stakeholders emphasised that addressing funding and administrative inefficiencies would not require increased investment alone, but clearer governance, simplified processes, improved communication and greater transparency around decision making and outcomes.

Case Study: NHBC

The National House Building Council (NHBC) is the UK's largest independent provider of warranty and insurance for new homes. Its purpose is to raise standards in house building by championing high quality homes and protecting homeowners. It delivers this through its training and services, and by assessing, inspecting and directly insuring new homes registered with the organisation.

Industry skills challenge

Employers in the housebuilding sector continue to experience difficulties in recruiting qualified tradespeople and supervisors, this is partly due to the inflexibility of traditional apprenticeship training models which can take up to four years to complete and split time between learning in college and onsite. In Scotland, there is also currently no provision for an apprenticeship or college course focused on housebuilding alone.

Training model

NHBC delivers construction and building apprenticeships designed specifically for the housebuilding sector.

Trade apprenticeships take place at purpose built NHBC training hubs that replicate real site conditions, while the Construction Site Supervisor apprenticeship combines online learning with work based experience. NHBC apprenticeships can be completed faster, with trainees typically completing them in as little as 14 to 18 months. It includes on-the-job coaching, intensive training periods, employer induction, online materials, mentoring and regular workplace reviews.

Alternative approach to workforce development

NHBC's accelerated apprenticeship model differs from traditional college based routes. Instead of attending college one day per week, apprentices complete front loaded immersive training in bricklaying, groundworks or site carpentry at its dedicated NHBC training hubs.

Three weeks of intensive hub based quality learning is designed to equate to approximately 15 weeks in a conventional college model, meaning apprentices return to site more quickly and with strong practical foundations. Multiple intake dates throughout the year and flexible learning options support both new entrants and existing employees seeking to learn a new trade or upskill. All training is aligned with NHBC's industry leading standards to promote compliance and high quality work.

Progression into employment and impact

NHBC's immersive training supports faster progression into site roles, ensuring apprentices gain real site experience from the earliest stages of their training. Ongoing expert support from tutors helps apprentices complete their qualification so they can contribute effectively for their employers on site from day one.

NHBC is investing £100 million in training by launching 12 new training hubs to help train 3,000 site ready tradespeople every year. The apprenticeship programme and hubs are currently operating in England only.

Opportunities for Development

This section focuses on opportunities for development and potential levers of change that can be deployed to increase the flow of competent new entrants into the construction industry. Stakeholder engagement revealed a high degree of divergence in views, with many solutions proposed by one group being contested or opposed by others. As previously stated, views were informed by a broad range of evidence based proposals, alongside personal experience and professional perspectives. In some instances, perceptions of the viability of potential solutions diverged from quantitative assessments of their effectiveness, highlighting a distinction between measured impact and stakeholder confidence in delivery.

While there was limited universal support for any single intervention, there was consistent and shared recognition of the need to increase both the volume and competence of new entrants entering the sector.

The analysis that follows is informed by a combination of quantitative data, qualitative insight drawn from industry reports, and feedback gathered through stakeholder engagement. Participants contributed in their capacity as representatives of specific stakeholder groups and, as such, the perspectives presented reflect generalised themes rather than definitive or universally held positions across all organisations or individuals within those segments.

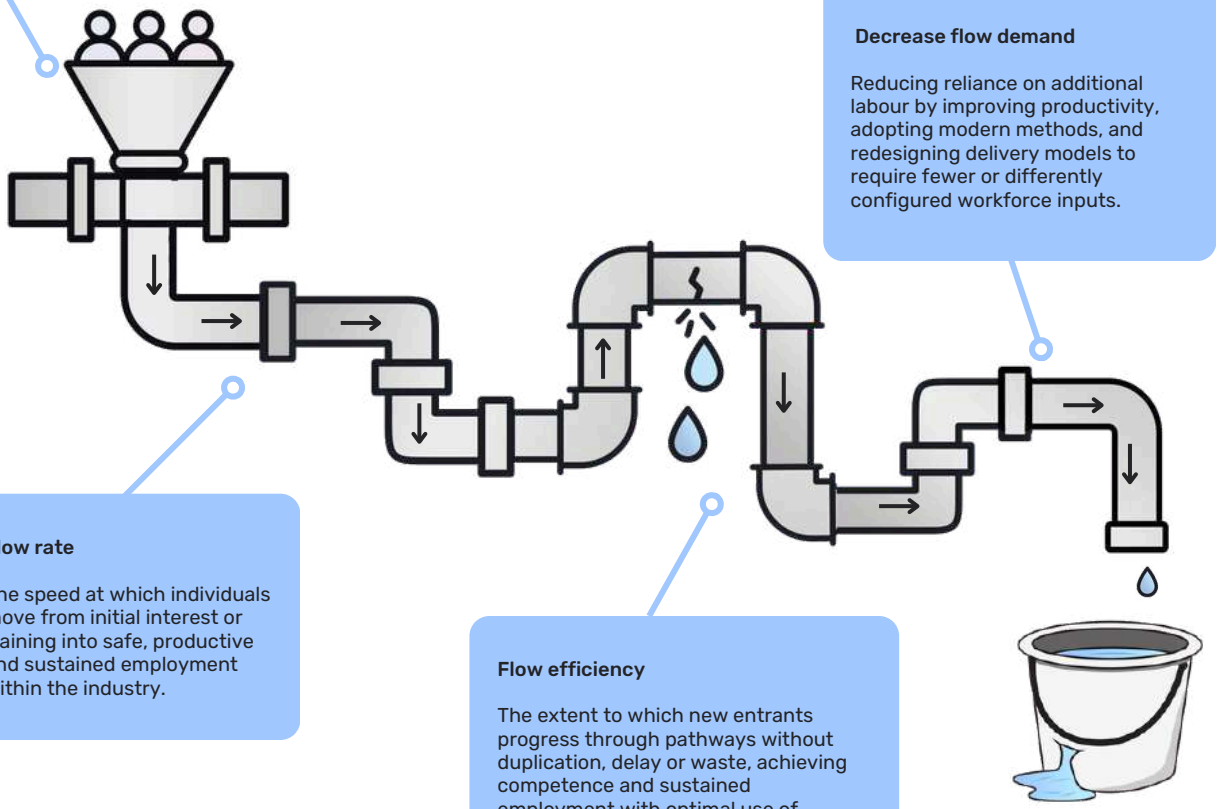
The proposed levers for change are structured around three complementary lenses that together frame how the system can increase the number of competent new entrants entering the construction industry:

Flow capacity

The system's overall ability to accommodate and support new entrants, including available training places, employer participation, supervisory capability, and delivery infrastructure.

Decrease flow demand

Reducing reliance on additional labour by improving productivity, adopting modern methods, and redesigning delivery models to require fewer or differently configured workforce inputs.



Flow rate

The speed at which individuals move from initial interest or training into safe, productive and sustained employment within the industry.

Flow efficiency

The extent to which new entrants progress through pathways without duplication, delay or waste, achieving competence and sustained employment with optimal use of resources.

Increase flow capacity

This lens concerns the overall capacity of the system to accommodate new entrants. It encompasses the volume of available training places, the level of employer participation in recruitment and development, the scale and distribution of delivery infrastructure, and the extent of public and private investment and incentives supporting these activities. It also includes the practical capacity of employers to provide supervision, work based learning and assessment, as well as the potential aggregation of provision to achieve greater scale and resilience.

Increase flow rate

This lens addresses how quickly new entrants are able to progress through the system from initial point of entry to productive employment. It emphasises reducing unnecessary time bound constraints, enabling earlier safe entry to work, improving recognition of prior learning and transferable skills, and creating more flexible, iterative pathways that allow new entrants, particularly career changers, to reach competence more rapidly.

Increase flow efficiency

This lens focuses on reducing friction, waste and inefficiency within the system. It includes simplifying funding and administrative processes, improving alignment between training and employment outcomes, reducing duplication across providers and programmes, and ensuring that finite resources are directed towards pathways that deliver the greatest throughput of competent workers aligned to industry demand.

Decrease flow demand

While out with the scope of this report, reducing labour demand through increased adoption of modern methods of construction, digital technologies and wider industrialisation of construction activity represents a significant lever in improving the balance between skilled labour supply and demand. Reference to demand reduction is included to highlight the diminishing returns associated with expanding workforce volumes in isolation, without addressing underlying productivity constraints and systemic inefficiencies within the sector. The ongoing transformation of industrial practices, much like the evolution of the skills system, will require a coherent suite of policy reforms and targeted support interventions to enable systemic change and sustained impact.

Increase Flow Capacity

Proposed levers for change for increasing the system's capacity to support new entrants, as identified through stakeholder engagement, can be broadly categorised as set out below.

1. Increase proportion of employers recruiting new entrants
2. Increase direct public and private investment in new entrant training
3. Prioritise investment in higher throughput pathways
4. Reduce barriers to recruiting and retaining skilled migrant workers

Increasing flow capacity is not simply a question of expanding classroom provision or increasing funded training places. At its core, scaling the number of new entrants is contingent on more employers choosing, and being able, to recruit and support new entrants into productive employment. This must be accompanied by a system that effectively onboards and develops individuals to a position of safe and productive competence. Expanding introductory or pre-employment provision without a corresponding increase in employment opportunities would risk exacerbating already fragile absorption rates, creating larger pools of partially trained individuals unable to transition into sustained work. Flow capacity, therefore, must be understood as a function of both employer demand and system support, not training volume in isolation.

Increase proportion of employers recruiting new entrants

In principle, government could increase public investment to support new entrant training and to incentivise employers to recruit more new entrants, thereby helping to offset cost pressures arising from taxation and inflation driven wage increases and creating headroom for further private investment. Such an approach has the potential both to draw more companies into employing new entrants and to enable those already engaged to expand their commitment to workforce development.

Employers engaged in the research consistently identified long term confidence in the pipeline of work as both the primary enabler and the principal barrier to recruiting new entrants. The willingness and ability to invest speculatively in workforce development was strongly influenced by visibility of future workload, confidence in

the capacity to accommodate training and upskilling requirements, and the ability to sustain employment and funding commitments over the required training duration. While the Scottish Futures Trust Construction Pipeline Forecast Tool[xlvii] provides a free-to-access, valuable and transparent indication of planned public sector capital investment, there is no equivalent mechanism offering comparable visibility of projected activity across the substantial proportion of construction work delivered outside public procurement frameworks.

The use of employer recruitment incentives was identified by several employers as a potential lever to encourage greater engagement in the recruitment and development of new entrants. Initiatives such as the Young Person's Guarantee were cited as examples that can help reengage a wider range of employers and reduce some of the financial risk associated with taking on apprentices and trainees. Increasing the number of employers who recruit new entrants directly through the school system would help to distribute demand more evenly across the sector, reducing pressure on the relatively small number of employers who currently engage, and, by extension, increasing overall investment flowing back into the system.

While employer recruitment incentives can generate short term uplift in engagement and recruitment activity, they are often resource intensive to administer and do not consistently drive sustained behavioural change once schemes conclude. As such, they are best understood as catalytic interventions that can stimulate participation or address immediate pressures, rather than as a durable, long term solution to systemic workforce challenges.

A further lever lies in the more coordinated and consistent use of social value requirements within public procurement to incentivise new entrant recruitment throughout the supply chain. Social value and community benefit clauses are already embedded within many public contracts; however, stakeholders suggested that their impact could be strengthened through clearer alignment with long term workforce outcomes, greater consistency of application across contracting authorities, and more robust monitoring of delivery. Embedding structured new entrant recruitment, apprenticeship starts, and progression outcomes as core evaluation criteria, rather than peripheral commitments, would send a stronger and more predictable signal to the market. When coupled with longer term, outcome focused procurement models that reward sustained workforce development rather than short term compliance, social value mechanisms have the potential to create more stable demand for new entrants across multiple tiers of the supply chain, reinforcing confidence, reducing risk, and encouraging deeper employer participation in workforce investment.

Increasing the number of new entrants cannot be reduced to the introduction of incentive schemes or improved visibility of future workload alone. Rising wage costs and increases in employer National Insurance contributions are placing additional

pressure on businesses, particularly small and micro enterprises, to scrutinise the commercial viability of expanding their workforce. For many companies operating on tight margins, the decision to recruit and train a new entrant must be weighed carefully against immediate cashflow pressures and delivery risk. These concerns have been reflected by several industry representative bodies, including The Scottish and Northern Ireland Plumbing Employers' Federation (SNIPEF), which has called for a review of 'fair pay' arrangements for apprentices, to ensure they balance the operational realities faced by employers with the shared ambition to maintain high quality, work based learning pathways[xlviii].

Reducing the level of risk borne by individual employers could materially increase the number of businesses willing to engage in new entrant development. As previously mentioned, wider adoption of shared apprenticeship schemes, as recommended by the Fair Work Convention's Construction Industry Inquiry, alongside rotational and host employer models, has been positioned as a means of lowering perceived risk and operational friction[xlix]. However, unpublished (although referenced by Scottish Government)[xlii.] evidence from pilots to date suggests that shared apprenticeship models can be expensive to administer and do not always demonstrate a clear return on investment, despite their perceived benefits. Host employer approaches have shown greater promise, with schemes led by Morgan Sindall and Tigers Ltd[l] and Historic Environment Scotland indicating a continued appetite for exploration, albeit stopping short of significant scale. In parallel, alternative and more flexible pathway models, as explored in subsequent sections, may offer additional routes to broaden employer participation by addressing both the perceived and evidenced barriers identified throughout this report.

In practice, however, the prevailing fiscal environment for both government and industry suggests that delivering such increases at sustained scale would be challenging. Different entry routes and incentive schemes carry varying cost profiles, and all pathways have distinct strengths and limitations that must be considered in context.

Increase direct public and private investment in new entrant training

A commonly cited response to the challenges outlined in this report is to increase public and private investment in the skills system at a level commensurate with rising demand. This view was reflected, in different forms, across all stakeholder groups engaged in the research. Notably, however, the majority of stakeholders tended to identify their own area of activity or preferred delivery model as being most in need of additional funding, often characterising alternative approaches as inefficient or ill suited to scale. Employers may, of course, choose to increase investment in skilled labour drawn from adjacent industries where individuals possess transferable skill sets and require limited additional training, often without the need for significant public funding intervention. However, such decisions are largely contingent on prevailing business conditions and the specific needs, resources and risk appetite of individual employers, and do not in themselves constitute a mechanism for the systemic optimisation or reconfiguration of the skills system or the supporting education and training infrastructure.

Any attempt to quantify the real terms cost of increasing direct investment in new entrant training must contend with the inherent complexity of the current system, and raises wider questions relating to cost profiles, funding structures and return on investment. By way of illustration, the apprenticeship contribution rates set out in Table 1 show that Skills Development Scotland support for construction apprenticeships ranges from approximately £850 to £8,700 per apprentice, depending on the specific framework and the age of the apprentice[li].

	16-19 Age Group					20-24 Age Group						
	Output Based Funding – 25%-40%					Output Based Funding – 50%						
Framework	SCQF5	SCQF6	SQCF7	SCQF8	SCQF 9/10	SCQF5	SCQF6	SQCF7	SCQF8	SCQF9	SCQF 10	SCQF 11
Construction: Professional Apprenticeship					£3,300						£2,150	£2,150
Construction: Technical Apprenticeship					£3,300					£2,150		
Construction: Building; Civil Engineering; Specialist	£3,700	£8,700				£2,550	£7,100					
Construction: Technical		£7,200	£7,200				£5,600	£5,600				
Electrical Installation			£8,700					£7,100				
Heating, Ventilation, Air Conditioning and Refrigeration		£8,700	£8,700				£7,100	£7,100				
Minerals Extraction and Processing (SCQF Level 5/6)	£2,200	£2,200				£1,050	£1,050					
Minerals Extraction and Processing (SCQF Level 6/7)		£5,200	£5,200				£1,600	£1,600				
Plumbing and Heating			£8,700					£7,100				
Wood and Timber Industries	£2,200	£3,700	£3,700			£850	£1,700	£1,700				

Table 1: SDS Apprenticeship Contribution Rates 2025/26

In parallel, the credit value allocated to colleges by the Scottish Funding Council varies according to the price group of the qualification, with, for example, Civil Engineering typically classified within Price Group 3 and Construction Management within Price Group 1, as illustrated in Table 2. The price group is largely determined by associative costs of delivering a programme; so courses that requires specialist equipment, expensive materials, or smaller class sizes, are likely to be in higher price groups. Broader guidance on college credit allocations, price groupings and eligibility criteria is published by the Scottish Funding Council[lii]. University funding allocations are linked to a combination of teaching subject prices and gross subject prices (see table 3), with costs varying by subject area, student domicile status and, for non-Scottish-domiciled students, institution specific fee structures*. As a result, determining the cost of any specific university based new entrant pathway in a consistent or generalisable way is inherently challenging. Further detail on university allocation rates is published by the Scottish Funding Council[liii].

College Sector Price Groups 2025/26				
Price Group 1	Price Group 2	Price Group 3	Price Group 4	Price Group 5
£235	£266	£308	£394	£406

Table 2: College Sector Price Groups 2025/26

University Subject Price Groups 2025/26 (Gross)					
Price Group 1	Price Group 2	Price Group 3	Price Group 4	Price Group 5	Price Group 6
£18,343	£10,408	£9,224	£8,030	£7,099	£5,785

Table 3: University Subject Price Groups (Gross) 2025/26

*University gross subject prices include assumed levels of tuition fees for Scottish-domiciled or 'home fee' students at the following rates: Full-time first degree (£1,820), Other Undergraduate (£1,285), and Taught Postgraduate (£7,000).

While the funding landscape is complex, it is possible to draw broad indicative estimates to illustrate the potential costs associated with increasing the flow of new entrants through additional public investment. By way of example, based on current Skills Development Scotland contribution rates, increasing the number of electrical installation and plumbing and heating apprenticeships by a combined 100 places would result in an estimated additional public cost of approximately £870,000 over the duration of the apprenticeships.

Where off-the-job training is delivered through colleges, for example via a 12-credit National Certificate programme, the associated delivery cost is typically in the region of £4,000 per learner, equating to an additional £400,000 in the first year. It should be noted that colleges frequently supplement core provision with additional modules in response to employer demand, and as such these figures are intended to be illustrative rather than definitive, highlighting order of magnitude costs rather than precise funding requirements.

While indicative estimates of the direct costs associated with increasing provision are useful up to a point, they rest on the assumption that existing contribution rates and funding allocations are sufficient to meet the full costs of delivery. This assumption is contested by both employers and training providers, many of whom point to funding settlements that have lagged behind inflation and, in some cases, remained flat in cash terms over several years.

Moreover, such estimates do not account for the wider associated costs of scaling provision, including requirements for additional staff, specialist facilities, equipment and learning space, all of which represent material constraints on the system's capacity to expand.

In addition to public funding, it is necessary to consider the costs borne directly by employers, including apprentice wages, materials and equipment, National Insurance contributions and other associated on costs. The previously cited estimate from the Scottish Building Federation, indicating total employer costs in the range of £70,000 to £90,000 over the duration of a traditional apprenticeship, illustrates the scale of investment required to train a new entrant under current models[xxxix].

Increasing direct investment in individual institutions or regions, in isolation, risks creating duplication of provision and introducing inefficiencies at a national level. Several stakeholders therefore advocated for the aggregation of training capability within collaboratively managed centres of excellence, involving colleges, universities, training providers and employers. Such models were seen as offering greater potential to manage overhead costs effectively and to ensure that existing investment is more directly translated into frontline delivery.

This approach also has the potential to mitigate several of the risks identified by training providers, particularly those associated with the recruitment and retention of specialist training staff and the capital costs linked to providing and maintaining the physical infrastructure required for construction training.

Taken together, these examples highlight the variability and opacity of funding flows across different routes and provider types, and illustrate the challenge of establishing a consistent, system wide understanding of the true cost of training new entrants or of comparing the relative value and efficiency of different pathways.

In any case, scaling existing approaches on a like-for-like basis risks exacerbating many of the challenges and inefficiencies identified by stakeholders through this research. Increasing capacity should not be interpreted as a simple expansion of current provision. Rather, it requires critical examination of whether existing models are delivering best value for learners, employers and the system as a whole.

This, in turn, necessitates a more deliberate approach to prioritising the use of finite resources, ensuring that investment is directed towards pathways and delivery models that maximise throughput of new entrants while aligning with both established and emerging areas of demand.

Prioritise investment in higher throughput pathways

Prioritising investment in higher throughput pathways represents one of the most pragmatic levers available to increase system capacity without a commensurate increase in overall cost. Evidence from this research suggests that concentrating training capacity where labour market demand is most acute, and where conversion into employment is demonstrably strongest, can significantly improve value for money across the system.

Based on stakeholder feedback, higher throughput pathways are characterised by three defining features. First, they aggregate demand and delivery, allowing providers and employers to achieve economies of scale. This may involve clustering provision around priority occupations, missions (such as homebuilding, retrofit or energy transition), or geographic demand hotspots. By reducing duplication of infrastructure, staffing and administrative overheads, aggregation lowers the unit cost of provision while increasing the number of learners that can be supported within existing budgets.

Second, these pathways are explicitly designed to support new entrants to a position of safe and productive competence as efficiently as possible. This does not imply a dilution of standards; rather, it places emphasis on outcomes over inputs, ensuring that time spent in training is proportionate, relevant and directly aligned to occupational requirements. Where learners reach competence earlier, capacity is released more quickly for subsequent entrants, increasing overall throughput across the system.

Third, higher throughput pathways are typically more tightly integrated with work based learning and employer demand. Apprenticeships, employer aligned pre apprenticeships, accelerated career changer routes and targeted graduate pathways consistently demonstrate stronger conversion into employment than stand alone, supply led provision. By prioritising funding towards these models, the system reduces leakage between training and work, improving flow efficiency as well as capacity.

Taken together, this approach reframes the challenge away from simply “adding more places” and towards optimising how existing resources are deployed. By focusing investment on pathways that convert learners into competent workers at scale, the system can increase effective headcount, improve employer confidence and reduce per learner costs, all without necessarily increasing total public expenditure. In a constrained fiscal environment, this represents a critical shift from expansion by volume to growth through smarter system design.
The concepts outlined above are explored in greater depth in the sections that follow.

Reduce barriers to recruiting and retaining skilled migrant workers

The complexity associated with recruiting and training new entrants, as detailed by research participants, partly explains the industry's continued reliance on skilled migrant labour. Recruiting experienced workers from international markets can significantly reduce the upfront costs associated with training and enables employers to access competent labour at the point of need, without the longer term commitments required to develop the domestic workforce.

While the wider political context surrounding migration policy sits out with the scope of this report, the recruitment of migrant labour has become increasingly complex and constrained in the period following the UK's exit from the European Union, adding further pressure to an already tight labour market. Any significant shift to enable a substantial increase in the flow of skilled migrant workers into the UK would represent a complex policy intervention requiring action at UK Government level. While such an approach could alleviate immediate labour market pressures, it also carries the risk of undermining longer term workforce planning and the development of domestic capability if not carefully balanced.
follow.

Case Study: CECA Scotland Academy

The CECA Scotland Academy was established by the Civil Engineering Contractors Association (CECA) Scotland to address skills shortages in the civil engineering sector. It sits within CECA Scotland's wider role as an industry body supporting contractors, influencing policy, and promoting high standards across infrastructure delivery. The Academy is designed to develop skilled operatives who can meet current and future workforce demands.

The programme has been supported by CITB funding over four years, with a total investment of £695,000, enabling the Academy to deliver high quality, industry aligned training to its candidates.

Industry skills challenge

The academy responds to an ongoing skills gap within the civil engineering sector, particularly the need for job ready operatives who are able to contribute quickly to infrastructure projects. The programme is designed around employer demand, ensuring that training content aligns with live industry requirements and standards.

Training model

The academy delivers a full time, five-day-per-week training programme that is highly practical in nature, with over 80% of learning taking place through hands on, on site activity. Delivery combines classroom based learning, workshops, site visits, and onsite experience. On completion, learners gain a National Progression Award (NPA) in Construction Operations at SCQF Level 5 and a skills portfolio aligned to industry needs.

Learning units include workplace health, safety and welfare; productive work practices; excavation and reinstatement; road drainage; concrete structures and finishing; setting out controls; and work readiness. The course requires a strong commitment from participants to both practical and theoretical learning.

Alternative approach to workforce development

A distinguishing feature of the CECA Scotland Academy is its industry led, no-barrier-to-entry training-to-employment model. By offering accelerated access to skills development and direct employer engagement, the academy aims to remove common entry barriers faced by new entrants, while also supporting upskilling pathways for the existing workforce. The model provides a clear and structured route into a fast growing sector with long term employment prospects.

Progression into employment and impact

On successful completion of the programme, learners are guaranteed an interview with an employer, offering a direct route into employment as a civil engineering operative. The Academy demonstrates strong employment outcomes, with a significant proportion of graduates progressing directly into employment across Scotland.

Since its inception, it has supported a significant number of learners now working in the sector. At the point of reporting, 56% of graduates had secured employment within the civil engineering sector, with a further 9% progressing into roles within the wider construction industry. An additional 7% of graduates achieved a positive destination through employment in other sectors or by returning to further study. This represents an overall positive destination rate of 72%.

The Academy operates in partnership with multiple colleges across Scotland, including Dundee & Angus College, South Lanarkshire College, UHI Inverness, West College Scotland, Fife College, UHI North, West, and Hebrides, and North East Scotland College Aberdeen as well as HMP Perth delivered by Fife College & South Lanarkshire College with other colleges set to join in August 2026.

Since its inception, the Academy has supported a significant number of learners into the construction and civil engineering sectors. To date, 63 graduates have secured roles within civil engineering, with a further 10 moving into the wider construction industry. Recent graduates have already begun taking up positions, which is expected to further increase the number of learners entering the sector in the coming weeks, demonstrating the Academy's ongoing impact on workforce development.

N. B. Based on data to end of August 2025, with recent graduations taking place in early 2026 these figures will increase.

Levers to Increase Flow Capacity

The following levers are drawn from the evidence gathered through this research and are presented as potential mechanisms for increasing the system's overall capacity to support new entrants into the construction industry. They are set out without evaluation and are not ranked in order of priority. The relative scale, interdependencies, feasibility and implementation requirements associated with each lever sit beyond the scope of this report and would require more detailed appraisal, modelling and stakeholder engagement before adoption.

- Increase employer contribution rates for employers of apprentices.
- Reduce apprenticeship and/or trainee wages to agreed unionised rates or….
- Introduce direct salary support or tax incentives for recruiting employers
- Introduce multiyear employer recruitment incentive agreements.
- Explore expansion of shared and rotational apprenticeship employment models nationally.
- Scale host employer models for SMEs lacking supervision capacity.
- Aggregate specialist training provision into regional centres of excellence.
- Invest in mobile and site based temporary training facilities.
- Expand graduate apprenticeships in construction and built environment disciplines.
- Ringfence funding for priority occupations
- Introduce social value weighting tied to sustained new entrant employment.
- Provide onboarding and HR support services for micro employers.
- Expand targeted recruitment campaigns in underrepresented demographics.
- Stabilise apprenticeship contract allocations over multiyear cycles.
- Increase capacity for on site assessment and workplace verification.
- Protect and subsidise low volume specialist provision through centres of excellence model.
- Develop coordinated regional workforce planning partnerships.
- Enable increased flow of skilled migrant workers.

Increase Flow Rate

Increasing the flow rate is driven by the objective of enabling new entrants to reach a position of safe and productive competence in the most time and resource efficient manner possible. As previously noted, proposals to modify the duration of established training routes were highly contentious for some stakeholders. However, the majority of those engaged in the research acknowledged that, under the right conditions, a degree of flexibility could be introduced without undermining quality or standards.

Proposed solutions for increasing the flow of new entrants through the system, as identified through stakeholder engagement, can be broadly categorised as follows.

1. Improve pre apprenticeship connectivity.
2. Introduce iterative and targeted competency development models.
3. Enable flexible durational models for competency development.
4. Enhance recognition of prior learning for career changers.
5. Incentivise employment outcomes within publicly funded provision.
6. Strengthen employer engagement and collaboration at earlier stages of training.
7. Reduce duplication and repetition across entry and progression pathways.
8. Improve coordination and management of skilled migrant labour pathways.

Improve Pre Apprenticeship Connectivity

There was broad support for improving the value derived from pre apprenticeship provision, particularly by ensuring that SCQF Level 5 and 6 programmes delivered by colleges and private training providers align more closely with associated apprenticeship frameworks. Stakeholders emphasised that stronger alignment could improve progression, reduce duplication and increase employer confidence in the

preparedness of new entrants.

Several employers were receptive to models in which a greater proportion of training is front loaded within a funded training environment. Under this approach, the overall duration of an apprenticeship is retained, but time away from the workplace is reduced once employment begins. This was seen as offering multiple benefits: reducing productivity loss for employers, increasing confidence that new entrants, whether apprentices, trainees or interns, have made an informed and sustained commitment to their chosen occupation, and enabling individuals to add greater value in the workplace from an earlier stage.

Proponents also highlighted the potential for such models to improve conversion rates from training into employment, helping to address inefficiencies associated with the previously referenced leaky talent pipeline. By creating clearer and more direct pathways from training into jobs, this approach may also reduce reliance on informal recruitment practices, as employers are able to recruit from visible, work ready cohorts within colleges and training providers.

Most employers agreed that establishing a minimum baseline requirement, ensuring all entrants emerging from the education and skills system hold basic health and safety certifications and the appropriate cards or accreditations, would be beneficial in order to be site ready and to reduce risk at the point of entry to live working environments.

Examples of good practice aligned with this approach include SELECT's integration of pre apprenticeship programmes with college provision, and Morgan Sindall's Employment Academy delivered in partnership with Tigers Ltd. Beyond Scotland, stakeholders pointed to the Skills Centre model developed in London and now expanding across the UK as a strong example of employer led training that integrates recruitment, early employment and ongoing workforce development.

Introduce Iterative and Targeted Competency Development

The model of iterative competence development, outlined earlier in the challenges section, was also seen by many stakeholders as having merit. Rather than assuming that all new entrants must be trained to broad or advanced levels before being considered competent, this approach prioritises enabling individuals to become environmentally competent; that is, able to enter and operate safely within a construction environment at an earlier stage. Task specific competence is then developed progressively, either on the job or through modular and micro credentialled training aligned to employer needs.

Stakeholders noted that this model has the potential to increase the flow of new entrants and deliver better value from the wider skills system by reducing unnecessary delay before individuals can contribute productively. Variants of this approach are increasingly evident within the English system. However, stakeholders collectively highlighted several important considerations:

1. Role suitability: Iterative models are more easily designed for less complex roles and occupations and are more challenging to apply to roles with high safety and regulatory thresholds, such as electrical, plumbing and heating, and gas engineering.

2. Competence assurance: If not carefully governed, iterative approaches risk lowering the average competency profile within an occupation over time, particularly where progression and assessment are not rigorously enforced.

3. System readiness: Successful implementation would require greater planning certainty and flexibility within the skills system and may introduce further inefficiencies where demand for upskilling is fragmented or difficult to aggregate at scale.

A related and potentially complementary development is the creation of targeted pathways that are not anchored exclusively to a single occupation but instead aligned to a multidisciplinary collection of task level competencies linked to specific deliverables, such as housebuilding, retrofit or energy efficiency upgrades. The intention of such pathways would not be to diminish the role or provenance of established occupational models, which remain critical for safety, professional identity and regulatory assurance. Rather, they would augment existing routes by

Importantly, as particular task groupings become more commonplace and as new technologies, materials and delivery systems mature, there is the potential for entirely new role profiles to emerge and mainstream, in much the same way that rapidly evolving roles have crystallised in the digital technology and renewable energy sectors. What begins as a multidisciplinary cluster of tasks can, over time, coalesce into a recognised occupation with defined standards, career pathways and professional identity. Construction is unlikely to be immune from this dynamic as offsite manufacturing, building performance verification, digital and AI adoption, and systems integration become embedded within routine practice.

Any such model would need to be underpinned by robust health and safety standards, clear quality assurance mechanisms and transparent competence thresholds, and should primarily be focused on areas of actual or forecast volume demand to ensure viability and sustained employment opportunities.

Taken together, these considerations underline the need for any adoption of iterative and targeted competence models and pathways to be carefully considered, well governed and clearly aligned to occupational risk and labour market demand.

Enable Flexible Durational Models for Competency Development

By far the most contentious issue raised through the research was the proposition that existing pathways for new entrants could be shortened in pursuit of increased throughput. For some industry representatives, this approach was fundamentally opposed on principle. However, the majority of employer stakeholders expressed strong support, provided that any flexibility was anchored firmly in the demonstration of competence to required standards, rather than arbitrary reductions in training duration.

The emerging middle ground was a shared recognition that the core objective should not be speed alone, but the appropriate balance between demonstrated competence and sufficient time on site to develop the behaviours, judgement and experience that cannot be fully acquired in offsite or simulated environments. Rather than advocating for radical compression of established pathways, stakeholders described a more pragmatic approach in which programmes retain an expected duration but allow earlier completion where individuals can demonstrably evidence full competence against agreed standards, under clearly defined and robustly governed conditions.

As previously noted, this model introduces flexibility in both directions. It allows for reduced duration where entrants can demonstrate enhanced competence or bring substantial transferable skills from prior experience, while also accommodating extended pathways for those who require additional time. When carefully governed

and competence led, stakeholders viewed this approach as a viable means of increasing system throughput without compromising safety, quality or long term workforce capability.

Opposition to this type of approach, however, can be illustrated in a recent SNIPEF report entitled *Apprenticeships Under Pressure*[liv], in which 87% of SNIPEF member respondents in the plumbing and heating sector indicated that apprenticeships should remain at the four year 'gold standard' duration, with a further 5% advocating for even longer training periods.

Of course, apprenticeships are not the sole route to occupational competence, and the iterative competency development pathways discussed earlier inherently incorporate greater flexibility in duration and progression. Achieving a more balanced and sustainable flow rate of new entrants is therefore likely to depend on the complementary deployment of both models, rather than the privileging of one at the expense of the other.

Similarly, shortened and accelerated construction focused pathways are emerging within the Scottish university sector, offering alternative routes into the industry that can reduce time to competence and strengthen employer engagement. For example, the University of the West of Scotland has developed a Town Planning Workplace Learning degree that allows students to earn while they learn, integrating academic study with real world professional experience to help address shortages in planning roles across Scotland[lv]. The Centre for Advanced Timber Technologies hosted by NMITE similarly offers accelerated three year Construction Management Degree BSc (Hons)[lvi] alongside iterative models for competency development, including the successful TIMBER-TEDD programme[lvii].

A further merit of introducing carefully governed flexibility within new entrant pathways lies in its capacity to respond to the evolving nature of work itself. The transition to net zero, the decarbonisation of the built environment, and the increasing adoption of modern methods of construction are reshaping traditional occupational profiles and altering the mix of task level competencies required across many roles. Energy systems integration, retrofit coordination, digital design, offsite assembly, performance verification and building information modelling are no longer peripheral capabilities but increasingly central to mainstream delivery. In this context, rigid, time bound training structures risk locking new entrants into legacy role definitions that do not fully reflect contemporary or future practice. More flexible, competence led provision can create the foundations for career long development, enabling individuals to enter the industry safely and productively, while also providing structured opportunities to acquire new and adjacent competencies as technologies, regulatory standards and market demands evolve. When aligned to robust quality assurance and clear occupational standards, such flexibility offers a means not only of increasing throughput, but of future proofing the workforce against accelerating change.

Case Study: Tigers

Tigers is focused on supporting young people to find their way into work. Its core mission is to improve access to employment by providing training, connections and ongoing support, particularly for those who may face barriers to entering the workforce. The organisation works across multiple sectors, including construction, early years, business and digital, and collaborates with a range of external partners to improve workplace opportunities for young people.

Industry skills challenge

The organisation addresses challenges related to young people's access to skills, experience and networks needed to enter the workforce. The sectors tigers focuses on often require practical experience, recognised qualifications and employer connections, which can be difficult for new entrants to secure without structured support.

Training model

tigers operates a "Relationship Led Practice" training model. This approach is based on the belief that meaningful learning and development happen most effectively within secure, positive relationships. Training is delivered through courses, apprenticeships and hands on work experience, complemented by mentorship and sustained pastoral support. The model integrates skills development with personal support, aiming to help participants build confidence alongside technical and employability skills.

Alternative approach to workforce development

tigers takes an alternative approach by embedding relationship based support throughout the training journey. Rather than focusing solely on technical instruction, it combines on-the-job training, mentoring and continuous personal support. Partnerships are structured around long term relationships, including initiatives such as job placements and facilitated conversations with employers about issues affecting young people. This holistic model aims to support both new entrants and those looking to upskill within their chosen sector.

Progression into employment and impact

Participants are supported to move into employment through a combination of work experience, apprenticeships, employer connections and employability support. This includes CV preparation, job applications, interview preparation and access to workplace mentors. In construction specifically, learners can earn while they learn, gaining practical experience alongside recognised qualifications.

tigers positions its work as leading to improved job outcomes through sustained support and employer engagement.

Enhance Recognition of Prior Learning for Career Changers

Enhancing the recognition of prior learning (RPL) represents a practical and high impact opportunity to increase the flow of career changers into the construction industry. A more consistent, competence led approach to RPL would enable individuals with relevant transferable skills, experience and behaviours to enter the sector at an appropriate level, reducing unnecessary retraining, shortening time to productivity and lowering costs for both employers and learners.

Stakeholders consistently highlighted the need for clearer, more transparent mechanisms to assess and credit prior learning, particularly for individuals transitioning from adjacent industries, the armed forces, or other technical and vocational backgrounds. Embedding RPL as a standard feature of entry and progression pathways would allow training programmes to be tailored to individual starting points, supporting accelerated progression where competence can be demonstrated, while maintaining robust assurance against occupational standards.

The ongoing work led by the Scottish Credit and Qualifications Framework (SCQF) to strengthen the national infrastructure for RPL across Scotland's skills system is helpful. This work provides a foundation for more systematic adoption of RPL, enabling providers and employers to have greater confidence in recognising prior learning and aligning it to defined qualification and occupational outcomes.

Leveraging this infrastructure more fully within construction pathways would support modular, flexible and competence based routes into employment. From a delivery perspective, improving RPL would require clearer guidance, shared tools and greater consistency across providers, alongside stronger employer involvement in validating competence. Implemented effectively, enhanced RPL would increase flow rates without compromising quality, improve value for money within the skills system, and support a more inclusive labour market by removing unnecessary barriers for career changers.

Incentivise Employment Outcomes

Several stakeholders called for the introduction, and in some cases reintroduction, of recruitment incentive schemes to support the attraction, recruitment and retention of new entrants. Suggested incentives ranged from direct cash payments linked to recruitment and successful training outcomes, to wider business support aimed at reducing the administrative burden on small and micro employers. Schemes commonly cited as effective included the Young Person's Guarantee, which targets 16–24 year olds and provides wraparound support for employers; Skills Development Scotland's employability programmes, which offer tiered financial incentives linked to post training outcomes; and levy funded grants, particularly through the Construction Industry Training Board, albeit with frequent reference to the perceived complexity and efficiency of grant administration.

College and university representatives noted that, while they are measured against 'positive destinations', they can in some circumstances be financially disadvantaged when learners progress into employment before completing a programme. This dynamic was seen as influencing recruitment and employer engagement activity, which is often aligned to academic cycles and course completion points. A small number of employers expressed the view that colleges, in particular, were incentivised to retain learners within the system for longer by progressing them through successive levels. While all college participants strongly refuted this interpretation, they did acknowledge that additional funding or explicit incentives to support learners into employment would be welcome.

Stakeholders also highlighted a lack of consistency in incentive schemes, with eligibility, visibility and accessibility varying by geography and, in some cases, being more readily available to businesses engaged in public procurement. Several employers reported reliance on trade associations or professional bodies to identify and navigate available support. Taken together, the feedback points to a clear need to improve strategic coordination, visibility and practical support across both upstream (training provider led) and downstream (employer led) employment incentive schemes to maximise their impact on workforce entry.

There was broad recognition among stakeholders that employer recruitment incentives can be expensive to sustain and complex to administer. Moreover, there is limited evidence that such schemes generate enduring behavioural change or stimulate sustained engagement in new entrant recruitment and development beyond the lifespan of the intervention itself. As such, while incentives are widely viewed as a useful lever for catalysing short term engagement and lowering initial barriers to participation, they are less clearly positioned as a best value mechanism for long term systemic change when compared to alternative approaches focused on structural reform, capacity building and demand alignment.

Strengthen employer engagement and collaboration at earlier stages of training

Evidence suggests that employers, particularly larger organisations, are well engaged in early careers activity, with numerous examples cited that have the potential to scale and widen the pipeline of prospective new entrants into the skills system. However, there was limited evidence that early engagement activity in schools, community settings or lower level provision consistently enables individuals to secure experience, accreditation or recognised learning that materially accelerates progression to competence. Stakeholders also highlighted the sporadic and fragmented nature of engagement, an issue that initiatives such as Developing the Young Workforce Glasgow's Construction Aware programme are explicitly seeking to address.

There was strong consensus around the need for more coordinated and sustained engagement with the developing workforce, alongside a balanced narrative that combines an aspirational vision of a transforming industry with a realistic portrayal of day-to-day life in construction. Employer led initiatives such as the World of Work Tasters programme delivered by Morgan Sindall were repeatedly identified as examples of effective practice. Stakeholders also highlighted the value of stronger recognition and articulation from colleges and universities for in school programmes such as Design Engineer Construct delivered by Class of Your Own, and early stage engagement through initiatives like North Lanarkshire Council's placement and the King's Trust's 'Get Into' programmes.

Across the examples cited, successful interventions were most often characterised by strong leadership from individual employers or employer consortia, with public agencies and publicly funded organisations playing a supportive and enabling role. This balance, where industry leads on relevance, credibility and access to real work environments, and the public sector provides coordination, funding and reach, was consistently associated with more impactful and scalable outcomes.

Taken together, the evidence points to the need for a more coherent, sustained and outcomes focused approach to early careers engagement, one that prioritises continuity, recognition and progression into site ready pathways rather than stand alone or episodic activity.

Reduce duplication and repetition across entry and progression pathways

The potential for duplication between programmes and providers has been noted throughout this report. There was widespread support for measures that ensure training interventions and evidenced competence can be readily recognised as prior learning within subsequent programmes. Stakeholders highlighted duplication of learning in particular between SCQF Level six academic provision and Modern Apprenticeship frameworks, and acknowledged that programme structure and content can vary significantly between training providers.

One proposal advanced by stakeholders was that funders introduce clearer conditions requiring new entrant programmes, such as pre apprenticeships, to align explicitly with work based learning pathways, including apprenticeships. In parallel, apprenticeship providers in receipt of public funding could be required to demonstrate effective and consistent recognition of prior learning. When tested with stakeholders across all groups, this approach received broad support, albeit with some caution regarding potential impacts on administrative burden and funding arrangements.

However, stakeholders also urged caution in distinguishing between unnecessary duplication and purposeful breadth within early stage provision. Not all repetition represents inefficiency; some introductory and exploratory programmes are intentionally designed to build employability skills, expose learners to a range of occupational areas, and support informed career choice before specialisation. Overly rigid alignment requirements could risk narrowing pathways prematurely or removing valuable opportunities for learners to experience different trades or disciplines. An effective system should therefore strike a balance: minimising avoidable duplication while preserving structured flexibility that allows learners to explore, consolidate employability behaviours, and transition seamlessly into streamlined, competence based routes when ready.

Duplication was also identified in relation to market saturation, where competing providers operate at volumes that are insufficient to sustain viable provision, resulting in fragmented demand and, in some cases, market failure. While the adoption of simplified funding arrangements may support clearer strategic investment decisions, stakeholders emphasised that, irrespective of the funding model, aligning the scale and distribution of provision with regional, sectoral and national demand is essential to ensure viability, efficiency and long term sustainability.

Address Complexity and Improve Coordination and Management of Skilled Migrant Workers

The recruitment and management of skilled migrant workers remains an important, but complex, component of the construction workforce mix. Responsibility for migration policy sits primarily with the UK Government, and stakeholders consistently noted that post-EU exit arrangements have increased complexity, cost and uncertainty for both employers and workers. Improving coordination, clarity and responsiveness within this policy framework would help employers better access skilled labour where acute shortages exist.

Stakeholders noted work being undertaken by the Construction Industry Training Board and the Construction Leadership Council to promote construction as an attractive destination for skilled workers, including international audiences, and to articulate priority occupations facing the greatest pressure. These efforts were mostly welcomed by stakeholders as helping to improve visibility and coherence.

However, stakeholders were clear that reliance on skilled migrant labour should be viewed as a complementary, short term measure rather than a primary solution to systemic workforce challenges. While migration can alleviate immediate capacity constraints, it does little to address underlying issues of domestic skills supply and, if over relied upon, risks exacerbating longer term competency gaps and mismatches. Without parallel investment in domestic workforce development, migration led solutions may reduce incentives to reform entry pathways, improve training efficiency and build sustainable capability.

As such, improved coordination of skilled migration should be positioned as part of a balanced approach, supporting short term resilience while reinforcing, rather than displacing, longer term strategies to grow, upskill and retain a competent domestic construction workforce.

Levers to Increase Flow Rate

The following levers are drawn from the evidence gathered through this research and are presented as potential mechanisms for increasing the system's overall capacity to increase the flow of new entrants into the construction industry. They are set out without evaluation and are not ranked in order of priority. The relative scale, interdependencies, feasibility and implementation requirements associated with each lever sit beyond the scope of this report and would require more detailed appraisal, modelling and stakeholder engagement before adoption.

1. Align pre employment provision directly to live vacancies.
2. Embed structured recognition of prior learning across all pathways.
3. Introduce competence led early completion within defined governance frameworks.
4. Expand accelerated career changer entry routes.
5. Front load foundational technical and safety training before employment.
6. Modularise qualifications into task based components.
7. Create alternative fast track competency pathways.
8. Enable credit transfer between academic and work based routes.
9. Digitise learner records through portable competence passports.
10. Standardise onboarding frameworks for new entrant integration.
11. Expand blended and block release delivery models.
12. Increase early employer involvement in curriculum design.
13. Reduce duplication between introductory and apprenticeship programmes.
14. Introduce fast track assessment for experienced informal workers.
    Expand site ready certification prior to employment.
15. Strengthen transition support between training and sustained employment.

Increase Flow Efficiency

Increasing flow efficiency focuses on improving alignment between skills supply and labour market demand, ensuring that training effort translates more reliably into productive employment. While increasing flow rate is concerned with how quickly individuals progress to competence, flow efficiency addresses the reduction of friction, duplication and misalignment within the system so that finite resources deliver maximum impact.

Stakeholder engagement identified the following priorities as central to improving flow efficiency:

1. Strengthen work based learning pathways
2. Enhance flexibility of delivery models
3. Improve alignment of curriculum content with industry requirements
4. Improve access to training in areas of emergent demand

Taken together, these measures aim to create a more responsive, coherent and demand led system, increasing the likelihood that new entrants are trained for the roles that are needed and supported into work in a timely and efficient manner. Perspectives on increasing flow efficiency varied widely across stakeholder groups and represented another area of significant contention, particularly in relation to approaches to multiskilling and the balance between breadth and depth of competence.

Strengthen work based learning pathways

Improving employment outcomes and reducing waste within new entrant recruitment and development was identified by most stakeholder groups as a critical component of system reform. A widely held view was that programmes built around direct and sustained collaboration between employers, training providers and new entrants are most likely to generate long term value. In this regard, modern and graduate apprenticeships were consistently held in high esteem, reflecting their structured integration of employment, training and competence development.

Increasing the volume of apprenticeships is therefore an intuitive and important lever for change and is considered in more detail within the flow capacity section of this report. However, stakeholders were clear that simply expanding existing models without addressing their structural limitations would be insufficient. Alongside the need to increase the number of places and address funding allocations that have recently lagged behind inflation, participants articulated a range of complementary solutions focused on improving quality, conversion and sustainability across work based routes.

Central to these solutions was the need to strengthen work based learning pathways by prioritising delivery models that actively promote collaboration between employers and training providers in the development of new entrants. Stakeholders emphasised the importance of focusing investment on approaches that maximise conversion from training into sustained employment, while embedding wraparound support for learners to address the increasingly complex pastoral, financial and developmental needs associated with entry into the industry. Improving success rates and reducing attrition across all entry routes was viewed as being contingent not simply on recruitment volume, but on the quality and coherence of the training to employment pathways.

More specifically, greater alignment of public investment and incentives with work based learning models was widely seen as offering the potential to increase the flow of new entrants without necessarily increasing overall system costs. This includes prioritising funding for pathways where employers are directly engaged in shaping delivery, learners are supported through transitions into work, and outcomes are measured not merely in participation but in sustained employment, progression and retention. Reorienting investment in this way would strengthen the link between skills provision and labour market demand, while improving value for money and resilience across the new entrant pipeline.

However, stakeholders were equally clear that the capacity of employers to engage in work based learning, assessment and supervision is itself a binding constraint on system expansion. The ability of employers to host, train and support new entrants varies significantly across company size, sector and operating context. Small and micro businesses, which collectively employ the majority of new entrants, often lack the financial headroom and managerial and supervisory capacity required to take on formal training responsibilities, particularly within heavily regulated frameworks such as apprenticeships. These constraints are compounded by productivity linked pay arrangements, rising compliance requirements, and cultural resistance among skilled workers to undertaking supervisory roles without additional recognition or remuneration. Importantly, stakeholders cautioned against strategies that rely primarily on increasing participation among employers already engaged in new entrant development, as this risks creating an uneven and potentially unsustainable burden on a relatively small subset of businesses, while simultaneously undermining

their competitiveness in a market that continues to reward lowest cost delivery.

This reinforces the need for policy and funding interventions that widen participation in new entrant recruitment and development, rather than deepening reliance on the relatively small cohort of employers already contributing disproportionately. Mechanisms such as shared and rotational employment models, group training arrangements and host employer structures were consistently identified as potential means of distributing responsibility more equitably and mitigating individual employer risk, while preserving strong work based learning outcomes. However, as previously noted, the evidence base regarding their efficacy and comparative value for money remains mixed. In particular, shared apprenticeship models have been subject to scrutiny in relation to cost, administrative complexity and demonstrable return on investment, suggesting that careful design, targeting and evaluation are essential if such approaches are to deliver sustained impact.

These considerations also extend to the university graduate route, where there is clear potential to scale existing provision through Graduate Apprenticeships and structured internships. The current flow of graduate apprentices into the construction industry remains relatively modest, suggesting further opportunity to better align existing investment with work based learning pathways and employer demand, particularly in technical, digital and management roles that are increasingly central to sector transformation. The PlanBEE model shows promise in this respect, with assessments of potential viability of the model in Scotland currently being undertaken by the Housing, Construction, and Infrastructure Skills Gateway in Edinburgh.

Finally, strengthening the infrastructure for onsite assessment programmes, particularly for career changers, was identified as a further opportunity to enhance system efficiency. Enabling existing competencies to be ‘topped up’ and evidenced through structured workplace assessment can reduce reliance on extended periods of formal education and training, streamline pathways to recognised competence, and accelerate entry into productive employment. Stakeholders noted that such models remain underdeveloped and insufficiently visible to both employers and potential career changers, representing a missed opportunity to improve system responsiveness while maintaining robust quality assurance.

Enhance flexibility of delivery models

Critics of the education and skills landscape pointed to the perceived inflexibility of colleges and universities, alongside the slow pace of change and limited responsiveness of national awarding bodies and sector skills councils. These perceived constraints were associated with training content, pathway design, regional and local availability of provision, programme duration, and the timing and structure of delivery. While independent training providers were generally viewed as

more agile and responsive, stakeholders acknowledged that they too are not immune to structural or funding related inflexibilities.

The most contested issue within this theme related to multiskilling and cross disciplinary learning. Critics of the current system described an occupationally siloed model characterised by overly expansive training content and rigid, mono occupational pathways. In contrast, supporters of the occupational approach emphasised the value of deep technical competence aligned to national occupational standards, arguing that this structure enables clearer quality assurance and more effective mediation between skills supply and labour market demand. Concerns previously noted around deskilling, the emergence of two tier workforce structures, and the potential loss of occupational identity were prevalent among stakeholders opposed to multidisciplinary and cross disciplinary learning approaches.

Employers were keen to emphasise that much of their work is inherently multidisciplinary, particularly among small and micro businesses and sole traders. While individuals may have a core trade, craft or profession, many have expanded into adjacent areas in response to client demand and commercial necessity. When undertaken safely and to high quality standards, this approach can deliver greater efficiency and responsiveness.

A measured degree of multidisciplinary working and skilling is likely to form an important part of the overall solution to improving system efficiency. However, they also emphasise clear reservations where multiskilling intersects with roles carrying high health, safety and regulatory risk, such as electrical, heating and gas engineering, where strict competence assurance and compliance must remain paramount. This consideration becomes even more significant in the context of increasingly complex, multidisciplinary sequencing requirements associated with energy performance standards such as Passivhaus and EnerPHit, alongside the broader adoption of modern methods of construction, particularly within housebuilding. These approaches demand tighter coordination between design teams and trades, a clearer understanding of interdependencies on site, and a more integrated competence profile across roles, reinforcing the need for training pathways that balance specialisation with structured cross disciplinary awareness.

Despite these differing perspectives, a clear area of common ground emerged. Stakeholders broadly agreed that existing occupational standards and frameworks are becoming increasingly misaligned with industry practice. This misalignment was attributed to several factors, including the pace of industrial and technological change, infrequent review and updating of standards, variation in local and regional requirements, and limitations in how employer perspectives are captured. In particular, representatives of small and micro businesses frequently reported that industry needs are often shaped by a narrow group of stakeholders, who assert, but do not always validate, claims of representing collective industry views.

The dilemma is clear and highly polarising. Employers are calling for broader, more flexible competency profiles to support efficient and productive working; trade associations and professional bodies are advocating for deeper investment in, and in some cases protection and professional recognition of, specific occupations and professional identities; and training providers are seeking to balance these competing demands for structure and flexibility within funding and qualification frameworks that are often outside their direct control. The absence of a unifying voice or coherent strategy further compounds the fragmentation of perspectives and acts as a significant barrier to the effective and efficient remodelling of the system.

The scale and complexity of the tensions, dilemmas and conflicts reported by stakeholders appear to be contributing to a combination of transformation fatigue, well intentioned but conflicting or duplicative interventions, and a broader paralysis in strategic progress. In this context, the development of a clear, unifying long term strategy, jointly agreed between industry leadership groups and government and its agencies, is critical. Additional emphasis should be placed on ensuring that any agreed strategy is underpinned by long term commitment, supported by regular review and transparent progress reporting.

Attempting to accommodate the full range of individual stakeholder preferences would be counterproductive. Instead, emphasis should be placed on agreeing a limited set of shared outcome statements focused on high level objectives, such as the delivery of a trained and competent workforce, straightforward access to career

long and iterative competency development, and the regular refinement and review of skills provision in line with evolving industry need. Given the strength and diversity of views expressed across stakeholder groups, it is essential that 'industry need' is defined in the broadest and most systemic sense. This should reflect not only immediate employer demand but the long term health and performance of the wider skills and delivery ecosystem, and may be most credibly determined through an independent, evidence led process.

In the short term, stakeholders identified the development of more interoperable competency standards as a practical step to better support the acquisition of adjacent and complementary skills. Greater use of micro credentials, alongside short duration training focused on specific tasks, products or systems, was also widely viewed as valuable in enabling targeted upskilling and rapid response to emerging needs.

Several stakeholders highlighted the increasingly important role played by product and system manufacturers in delivering training and certification to ensure their solutions are correctly designed, installed, operated, maintained and repaired. Aligning public investment within the skills system to support wider adoption of task level and role agnostic competencies would help stimulate broader competence across the existing workforce. It would also provide new entrants with greater flexibility to structure their competency profiles in ways that best reflect employer requirements and local labour market demand, without undermining quality or safety standards.

As identified in the challenges section, stakeholders highlighted the need to manage the risks associated with short term training interventions becoming longer term liabilities. In response, more flexible, site based delivery models are increasingly being adopted. Examples of effective practice include the work of NHBC through onsite training hubs, and programmes delivered by The Skills Centre across England and Wales. In both cases, temporary training environments are established on or near live sites, with explicit alignment between training content and the specific technical, programme and regional requirements of the project.

Similar approaches have been deployed by Morrison Construction, particularly in upskilling supply chain partners to deliver Passivhaus standard steel framed structures and has long been adopted by organisations such as Historic Environment Scotland. This "pop-up" model offers a pragmatic mechanism for addressing time bound or project specific skills needs while supporting positive employment and delivery outcomes. While not suitable in all contexts, wider and more strategic adoption of such approaches has clear merit and warrants further exploration as part of a more responsive skills system.

As previously noted, small, micro and specialist employers often find it difficult to guarantee both continuity of work and exposure to the full range of activities required to evidence work based assessment and vocational elements of apprenticeship programmes. Shared and rotational apprenticeship models, such as those delivered by PlanBEE, were consistently highlighted as offering significant potential to address these constraints. Further exploration and broader adoption of such approaches in Scotland may be advantageous, particularly as a means of widening employer participation in a way that manages potential risk factors while maintaining robust standards of competence development. Alternatively, host employer models such as the partnership between Morgan Sindall and Tigers Ltd enable cost and risks to be managed across several contributing partners.

Improve alignment of curriculum content with industry requirements

As previously stated, many participants pointed to the increasing challenges of aligning new entrant development pathways and frameworks to current practice. Emergent demand will be considered in the next section with this section considering current established labour market requirements.

Stakeholders repeatedly contested assumptions about volume demand, noting that the prevailing “industry voice” is often shaped by a relatively small group of organisations. This was seen as operating to the detriment of small and micro

businesses, which typically lack the time, capacity or influence to shape system design and reform. As a result, the pursuit of one-size-fits-all solutions was widely regarded as misplaced.

Several participants observed that new entrant qualifications have become increasingly bloated, attempting to accommodate an overly broad range of use cases within single frameworks. Many employer participants pointed to specific examples of curriculum content that they considered outdated and no longer relevant to current practice within their trades and occupations, with roofing and plumbing frameworks cited as particular examples. While Skills Development Scotland's Technical Excellence Groups were acknowledged as a mechanism for addressing these issues, progress was widely perceived to be slow. Stakeholders suggested that a more effective approach would be to structure programmes around a clearly defined core set of mandatory competencies, supplemented by flexible, optional "top-ups" aligned to employer, regional or sectoral need.

Greater flexibility in how training provision is designed and delivered would also support more effective regional planning within nationally agreed frameworks, enabling local labour market needs to be addressed without undermining consistency, quality or portability of qualifications at a national level.

This approach should not be conflated with the iterative competence development models discussed elsewhere in the report. Rather, it would involve a fixed notional duration or volume of learning, comprising both compulsory and elective elements. Such flexibility is already embedded within many qualification frameworks in principle, but is not consistently or systematically applied in practice, particularly in ways that meaningfully respond to the specific needs of individual employers. Regardless of the approach adopted, a consistently held view across all stakeholder groups was that new entrant training pathways require more frequent review and updating, informed by a broader and more representative cross section of industry.

Stakeholders emphasised that current review cycles are often too slow to keep pace with changes in technology, regulation, procurement practice and market demand, and that engagement is frequently dominated by a limited subset of larger or more vocal organisations.

There was strong support for more dynamic and inclusive mechanisms that enable small and micro businesses, specialist contractors and emerging sectors to meaningfully influence curriculum content, competency frameworks and delivery models. More regular and transparent review processes were also seen as critical to maintaining industry confidence, improving relevance, and ensuring that training pathways remain aligned with both immediate labour market needs and longer term strategic priorities.

Education and training providers noted that curriculum design is informed by skills planning underpinned by labour market intelligence from Skills Development Scotland, the Construction Industry Training Board and other industry bodies, alongside local economic development agencies and relationship led engagement with local employers. From this perspective, providers consider their provision to be broadly fit for purpose.

However, in practice, providers are often meeting the needs of a subset, albeit potentially a representative subset, of employers within constrained training and funding frameworks that are not always sufficiently flexible or responsive to the full diversity of industry demand.

The provision of low volume and highly specialised skills, particularly within heritage and traditional craft areas, was consistently identified as a priority challenge requiring deliberate intervention. Demand for these skills is geographically dispersed, employers are often small and specialist, and colleges and universities reported difficulty achieving cost viability. Private and thirdsector training providers similarly noted that high delivery costs and low learner volumes make commercial sustainability difficult without targeted support. Stonemasonry and wood machining were repeatedly cited as prominent and recent examples.

Where there is a clear national interest in maintaining or growing capability in these areas, stakeholders expressed a strong view that government and its agencies should play an active role, rather than leaving provision solely to market forces. Suggested solutions included the introduction of targeted funding premia for low volume, high value courses; aggregation of provision within designated centres of excellence, with recognition and support for additional travel and accommodation costs for learners; and greater use of work based learning and multidisciplinary “top-up” programmes to widen access and improve viability.

There was widespread concern that continued reliance on financial viability alone risks further erosion of essential skills, potentially creating long term systemic issues for the maintenance, repair, conservation and performance of the built environment. In this context, several stakeholders highlighted the leadership shown by Historic Environment Scotland, with the development of the Lock-16 campus cited as a valuable national asset and a model for how specialist capability can be strategically supported.

Improve access to training in areas of emergent demand

The previous section considered the dominance of occupationally specific pathways and the extent to which these can be augmented through task or solution specific training interventions. This blended approach offers clear potential to respond more effectively to emerging demand associated with new technologies, major projects and wider shifts in the labour market.

Shortages of skilled labour in areas of emergent or acute demand are repeatedly cited as a critical bottleneck, affecting both the viability and cost of construction activity. As previously outlined, where such pressures arise, most notably in relation to the delivery of the energy transition, the industry has often relied on skilled migrant labour to fill gaps in domestic provision.

Employers and industry representative bodies highlighted a perceived lack of confidence in the alignment between policy announcements and the subsequent delivery of public investment or major contracts. Many reported having invested in training existing staff and recruiting new entrants in anticipation of workstreams that ultimately failed to materialise. Frequently cited examples included commitments associated with the Heat in Buildings Bill, delays in the adoption of Passivhaus or equivalent performance standards, and inconsistency in public investment in retrofit activity.

Stakeholders described a recurring systemic cycle: government announces policy change or investment intent; industry responds by developing higher quality, often higher cost solutions aligned with policy objectives; procurement decisions then prioritise lowest cost outcomes; and industry subsequently reverts to established practices. Within the skills system, this dynamic manifests in training providers being unable or unwilling to invest in staff capability and infrastructure at the pace or scale implied by policy ambition. As a result, employers increasingly turn to specialist independent training providers to meet immediate needs, reducing exposure to emergent practice for new entrants progressing through mainstream provision and further widening the perceived gap between industry requirements and system outputs.

All employers engaged in the research reported that the need for additional, employer funded intervention training for new entrants, regardless of their route through the skills system, is increasing. Stakeholders consistently emphasised that greater certainty and coherence across policy development, investment decisions, skills planning and delivery models is essential if confidence is to be restored and meaningful, sustained progress achieved.

Therefore, ensuring that a proportion of the skills system is explicitly geared towards addressing areas of high and emerging demand would provide a clear signal of a more responsive and adaptive approach. Acknowledging the time, cost and complexity associated with evolving national occupational standards and competency frameworks, and the capacity pressures faced by national awarding bodies, greater use of industry led, short duration training interventions is beneficial.

Developed in partnership with relevant actors across the system and underpinned by recognised accreditation or certification, such interventions can play a critical role in addressing near term competency gaps. In parallel, they offer a practical mechanism for supporting more iterative and responsive approaches to individual competence development and, over time, to the evolution of occupational standards themselves.

Levers to Increase Flow Efficiency

The following levers are derived from the evidence gathered through this research and are presented as potential mechanisms for improving the overall efficiency of the system in supporting new entrants into the construction industry. They are set out without evaluation and are not ranked in order of priority. The relative scale, interdependencies, feasibility and implementation requirements associated with each lever sit beyond the scope of this report and would require more detailed appraisal, modelling and stakeholder engagement before adoption.

1. Reform funding metrics to prioritise sustained employment outcomes.
2. Align curriculum review cycles with emerging technology adoption.
3. Embed task level competencies within occupational standards.
4. Improve interoperability across occupational standards to increase transferability.
5. Introduce forward looking competence based labour market planning.
6. Improve data sharing between funders, providers and employers.
7. Simplify funding interfaces across agencies and programmes.
8. Standardise supervisory training for workplace mentors.
9. Introduce interoperable competency frameworks across occupations.
10. Incentivise progression and retention beyond three years.
11. Align skills investment with procurement and capital pipelines.
12. Develop integrated educator upskilling networks.
13. Require enhanced employer representation in qualification governance bodies.
14. Integrate digital competence across all construction pathways.
15. Introduce regional supply and demand monitoring dashboards.
16. Establish structured pathways from multidisciplinary task roles to occupational specialisms.


I enjoyed getting out of school and I learned that timber/wood can be reused from old buildings
I enjoyed learning more about my school- mates and having fun with them at the same time!
I have really enjoyed learning how to build a eco friendly School!

Case Study: Energy Training Academy

The Energy Training Academy is a community interest company specialising in training and education for the gas and renewables sector. Its instructors are experienced, certified industry professionals who deliver both theoretical and hands on learning.

Industry skills challenge

The organisation operates within a sector facing significant workforce shortages, an ageing workforce, and inconsistent demand for low carbon technologies. Employers report barriers to taking on apprentices, including perceived risk, cost, and concerns about retention. The requirement for time served electricians to install solar PV and battery systems creates additional bottlenecks. Meanwhile, relatively low homeowner demand for heat pumps limits uptake of related training. These structural issues slow progress on national decarbonisation targets.

Training model

The Academy delivers a broad portfolio of courses, from entry level programmes to advanced certifications. Its core model combines intensive, competency based training with access to state-of-the-art facilities and technology.

Its flagship offer is the 27 week Managed Learning Programme (MLP), which is a structured new entrant pathway designed for people with transferable skills seeking a career change. The Academy also provides a five year requalification for gas engineers, alongside short upskilling programmes in technologies such as solar PV, battery storage, EV charging, and heat pumps. Training is available onsite and online for flexibility.

Alternative approach to workforce development

The Academy offers an accelerated, intensive route for mid career workers unable to undertake a four year apprenticeship. This model removes barriers for adults with financial and family commitments and focuses solely on core technical competencies rather than broader college based learning frameworks. The Academy's responsiveness also enables rapid curriculum development based on employer insights. An example of this is its heat network training suite and readiness to introduce new courses as market demand evolves.

Progression into employment and impact

The Academy aims to train 120 new engineers in 2026, equivalent to around 25% of Scotland's college output in this field. Its most popular short course is the Solar PV & Battery Storage course.

It notes that trainees typically secure work as gas engineers and, once qualified, may progress to roles in heat pumps, heat networks, and wider retrofit. The Academy has seen a 100% completion rate, which is believes it down to the learners self funding their training.

Levers for Change

This section sets out the principal levers for change available to decision makers with responsibility for, and influence over, the recruitment and development of new entrants. It synthesises the opportunities identified throughout the preceding sections and reflects themes also evident in recent industry focused reviews, including the Fair Work Convention Construction Inquiry[xlvii] and Mark Farmer's review of Industry Training Boards[iii].

Importantly, the levers identified are not theoretical constructs. Across Scotland and the wider UK there are demonstrable examples of effective practice aligned to each of these areas, whether in employer led training models, shared apprenticeship arrangements, mission focused provision, or innovative approaches to competence recognition and progression. The intention is not to create additional initiatives, but to mainstream what is already working, integrate good practice more systematically into the core architecture of the system, and scale proven approaches where appropriate.

These levers are not presented as simple or easily enacted interventions. Rather, they represent a strategic framework for enabling a paradigm shift in how new entrants are recruited, developed and retained within Scotland's construction industry. Collectively, they point to the scale and depth of change required to move beyond incremental adjustment and towards a more resilient, responsive and inclusive system.

A note of caution is warranted. Increasing the flow of new entrants requires careful balance between employer capacity to recruit and supervise, the availability and quality of training provision, and sufficient visibility of future demand to sustain a larger workforce over time. Expanding activity at scale in any one domain without commensurate development in the others risks destabilising an already fragile system, placing disproportionate strain on engaged employers and providers, and undermining quality and confidence. Sustainable progress will therefore depend on coordinated, proportionate reform across the whole ecosystem rather than isolated expansion in a single area.

Meaningful systemic change will not be achieved without difficult choices and a willingness to confront entrenched interests across the complex ecosystem that supports new entrants into construction. Any significant intervention carries potential benefits, trade offs and unintended consequences, whether in relation to

cost, quality, equity of contribution or market distortion. No single lever, in isolation, is likely to deliver the scale of change required. Each option warrants deeper analysis to assess its relative merit against financial implications, implementation complexity and anticipated return on investment. Prioritisation will therefore be essential, informed by clear outcome objectives and a shared understanding that not all stakeholder preferences can be accommodated simultaneously if substantive reform is to be realised.

One: Broaden Employer Participation in New Entrant Recruitment and Development

Target: Employers and industry representative bodies (with coordinated support from government, funders and agencies)

Increasing flow capacity depends on widening the proportion of employers actively recruiting and developing new entrants. Government, agencies and industry bodies should focus on reducing perceived and actual barriers to participation by expanding flexible employment models that lower individual company risk and administrative burden(s). Incentive structures should be stabilised and aligned to sustained employment outcomes, combining direct financial support with work winning advantages through coordinated social value frameworks and practical business support. Training providers should offer flexible development pathways that align with the operational realities of small and micro businesses.

Objective: to normalise participation across the sector, rather than concentrate responsibility among a limited cohort of already engaged employers.

Two: Build Structured Employer Capability for Supervision and Work Based Learning

Target: Employers (particularly SMEs), industry bodies, funders and training providers

Increasing flow capacity requires strengthening employers' capability not only to recruit, but to onboard, support, supervise, assess and develop new entrants safely and productively. This includes embedding workforce planning within core business strategy, formalising supervisory and mentoring roles, allocating protected time for training and assessment, and strengthening human resource and onboarding processes to ensure new entrants are effectively integrated into the workplace from the outset. Industry bodies and agencies should co develop practical supervisory development programmes and distributed support models that reduce administrative burden, particularly for SMEs. Training providers must enable alignment and flexibility of delivery with the operational realities faced by construction companies.

Objectives of 1 and 2: To expand and sustain employer participation in new entrant recruitment by reducing risk, strengthening supervisory and onboarding capability, and distributing responsibility more evenly across the sector to protect competitiveness and long term capacity.

Three: Embed Integrated Workforce Development Obligations Through Public and Supply Chain Contracts

Target: Principal contractors, clients, government procurement bodies, employers and industry representatives

Public, and ideally major private, contracts should include consistent, nationally coordinated and outcome focused workforce development requirements that incentivise the sustained employment of new entrants across the supply chain. This must move beyond short term placement targets towards measurable recruitment, retention and progression outcomes. Principal contractors should be required to cascade obligations proportionately through subcontracting tiers, supported by transparent and proportionate reporting arrangements.

In designing and implementing such frameworks, explicit consideration should be given to facilitating greater SME participation. While industry representative bodies should play a clear role in supporting SMEs to engage effectively, the system itself should seek to identify and mitigate structural barriers from the outset. Reporting and compliance requirements must be sufficiently robust to ensure accountability, but not unnecessarily burdensome in ways that deter smaller firms or undermine wider system objectives. Government and its agencies should better align procurement frameworks nationally to reduce fragmentation and duplication.

The aim of this approach is to distribute responsibility more equitably, strengthen demand certainty, and ensure that those benefiting most from industry growth contribute proportionately to workforce renewal.

Objectives of 1 and 2: To embed a fair and proportionate model of workforce renewal in which responsibility for developing new entrants is shared equitably across the sector, aligned with demand certainty, and reflective of those who benefit most from industry growth.

Four: Align Pre Employment Provision and Work Based Pathways to Improve Absorption

Target: Funders, qualification bodies, providers and employers

All publicly funded introductory and pre employment provision should demonstrate clear alignment with employment pathways and work based learning frameworks, while also safeguarding high quality provision that supports broader employability and informed progression into further study where appropriate. Programmes should minimise unnecessary duplication, streamline progression routes, and strengthen absorption into sustained employment without diminishing the value of exploratory or preparatory learning. Employers should be engaged early in curriculum design to ensure learners are work ready, while funders prioritise models evidencing strong and transparent transition outcomes, whether into employment or clearly articulated further study pathways.

Objective: To optimise progression from publicly funded provision into employment and further study, improving absorption rates and system value while safeguarding employability focused learning and sustainable workforce pathways.

Five: Normalise Competence Led Recognition of Prior Learning and Mobility

Target: Qualification bodies, funders, employers and providers

Recognition of prior learning should be embedded as standard practice across all entry and progression routes. Interoperable competency standards, learner passports and a unique learner identifier should underpin a consistent, competence led approach to recognising transferable skills, experience and prior achievement. Employers should play an active role in defining competence thresholds and validating workplace evidence, while training providers and qualification bodies systematically integrate RPL into assessment and progression frameworks. Normalising RPL in this way would reduce unnecessary retraining, accelerate time to productive competence, and enhance occupational mobility for both career changers and the existing workforce.

Objective: To enhance career mobility, shorten pathways to productive employment, and increase effective system capacity and workforce flexibility by better recognising and mobilising existing competence across the labour market.

Six: Introduce Competence Led Flexibility Within Defined Pathway Durations

Target: Employers, qualification bodies and funders

New entrant development programmes should retain an expected duration while enabling earlier completion where full occupational competence can be demonstrably evidenced against clearly defined and robustly governed standards. This competence led flexibility ensures that throughput gains are anchored in safety, quality and professional integrity, rather than arbitrary reductions in time served. Employers and their representative bodies should co-define competence thresholds and minimum site experience requirements, while qualification bodies embed rigorous and transparent assessment governance. Such an approach increases flow efficiency without diluting standards and provides the agility required to respond to evolving role profiles shaped by decarbonisation, digitalisation and the growing adoption of modern methods of construction.

Objective: To enable timely progression to productive competence while safeguarding quality, safety and occupational standards in a rapidly evolving industry.

Seven: Introduce Iterative and Task Aligned Entry Pathways

Target: Employers, providers, funders and qualification bodies

Develop structured iterative competence pathways that enable new entrants to achieve early environmental competence and progressively build task specific capability through modular, workplace aligned training. In parallel, establish targeted, multidisciplinary pathways aligned to defined deliverables, such as housing, retrofit or energy transition programmes, without displacing established occupational routes. These pathways should be anchored in robust health and safety standards, clearly defined competence thresholds and staged progression frameworks, with explicit routes into recognised occupational specialisms as careers develop. Qualification bodies must ensure rigorous governance and assessment integrity, while employers commit to structured workplace exposure and progression planning.

Objective: To increase early productive participation while maintaining quality assurance, enabling workforce flexibility and creating structured progression routes as new role profiles emerge.

Eight: Establish Mission Led, Networked Training Infrastructure

Target: Government, funders, providers, employers and industry bodies

Develop a nationally and regionally coordinated network of training provision explicitly aligned to strategic missions such as housing delivery, retrofit, the energy transition and infrastructure renewal. This network should integrate and connect existing centres of expertise, while safeguarding low volume and specialist capabilities that are essential to the maintenance, conservation and performance of Scotland's built environment. Provision should be designed to serve both new entrants and the existing workforce through modular, iterative development pathways that support progression, retraining and cross sector mobility. Employers and their representative bodies should play an active role in governance and demand signalling to ensure alignment with real world delivery requirements.

Objective: To build a mission led, resilient and future ready skills ecosystem that strengthens workforce flexibility, protects critical capabilities and reduces delivery bottlenecks across priority programmes.

Nine: Reform Funding and Investment Signals to Support Long Term Workforce Planning

Target: Government, funders, agencies, employers and providers

Move towards clearer, multiyear funding and commissioning settlements that are explicitly aligned with national policy commitments, infrastructure pipelines and sectoral demand forecasts. Providing predictable and transparent signals enables training providers to invest confidently in staff capability, facilities and equipment, and gives employers the confidence to make sustained recruitment and workforce development commitments. Funding frameworks should be structured to support strategic, mission led workforce planning rather than short term, in-year adjustments that can constrain capacity growth and long term decision making.

Objective: To strengthen demand certainty and enable coordinated, long term investment in workforce development, unlocking sustainable system capacity and resilience.

Ten: Rebalance Incentives Toward Sustained Employment Outcomes

Target: Funders, agencies, employers and providers

Incentive structures should be rebalanced to prioritise sustained employment, competence progression and retention rather than headline recruitment or participation metrics alone. Employer grants and levy mechanisms should reward demonstrable progression to productive competence, while publicly funded providers should be measured against meaningful conversion into sustained employment. Simplified, predictable and SME accessible incentive models are essential to widen participation without adding disproportionate administrative burden. Aligning incentives to long term outcomes would reduce leakage across entry pathways and strengthen shared accountability for workforce development across the system.

Objective: To align financial and performance incentives with sustained employment and competence development, improving long term workforce retention and system value.

Eleven: Develop and Normalise Structured Career Changer and Modular Entry Pathways

Target: Employers, providers, funders and representative bodies

Expand targeted, employer aligned accelerated pathways for career changers, underpinned by robust competence assurance, structured workplace assessment and modular ‘top-up’ training that reflects real occupational standards. These pathways should be explicitly linked to identified vacancies and agreed employment outcomes where public investment is deployed. Employers must commit to clear progression routes, while funders and providers support flexible delivery models that accommodate adult learners, including blended and work based learning approaches.

Objective: To accelerate entry to safe and productive competence for career changers while maintaining quality standards and strengthening alignment between training investment and real labour market demand.

Twelve: Strengthen Industry Led Skills Planning and Competence Alignment

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Target: Industry representative bodies, employers, funders and government

ILabour market intelligence should evolve from a predominantly retrospective, occupation based model towards forward looking, competence led planning aligned to regulatory change, net zero delivery, digital transformation and emerging delivery models. This approach should be informed not only by historic workforce datasets, but by data derived from broader built environment research and publications, including housing need and demand assessments, national and local pipeline commitments, infrastructure investment plans, planning data, and wider labour market intelligence and economic signals.

Employers and representative bodies must play a central role in shaping and regularly updating competence frameworks to ensure that occupational standards reflect real world practice rather than legacy role definitions. Government and agencies should ensure that skills planning reforms enable dynamic, iterative adjustment informed by live market signals and cross sector evidence, rather than periodic, incremental revisions. Without this shift, planning risks entrenching structural misalignment between workforce capability and future demand.

Objective: To align workforce planning with emerging competence requirements, enabling the skills system to anticipate change rather than respond reactively to historic gaps.

Thirteen: Modernise National Qualification Structures and Delivery Capability

Target: Employers, providers, funders and representative bodies

National qualification frameworks and associated delivery models should be modernised to ensure they remain aligned with contemporary industry practice, technological change and evolving regulatory requirements. Employers and representative bodies must be systematically embedded within structured, time bound review cycles to ensure standards and content reflect real world occupational performance. Qualification bodies and funders should promote balanced delivery and assessment approaches that are robust yet proportionate, affordable for providers, and reflective of actual site practice. Parallel investment is required in educator upskilling, industry secondments and strengthened educator networks to support co design, shared teaching assets and continuous professional development.

Objective: To ensure qualification frameworks and delivery capability remain relevant, affordable and industry aligned, strengthening confidence in standards while improving responsiveness to emerging workforce needs.

Case Study: Low Carbon Passport

In partnership with Tier 1 contractors including Balfour Beatty and funded by the CITB Industry Impact Fund, BE-ST leads the delivery of the Low Carbon Passport, an accredited training programme focused on low energy construction skills. The programme has been developed with major contractors, technical contributors and Scottish colleges.

Industry skills challenge

The programme responds to a recognised skills gap in delivering low energy demand, high quality buildings, particularly with regards to closing the gap between design intent and actual building performance. As Scotland works towards Net Zero targets, the construction sector requires a workforce with improved understanding of energy demand reduction, construction quality, and the interaction between fabric, building services and on site practice to ensure quality in construction.

Training model

The Low Carbon Passport is a fully funded, beginner level programme combining online learning with in person, practical training. Delivery takes place at different affiliated hubs across Scotland including City of Glasgow College and the BE-ST Innovation Campus. The model combines online, learn as you go modules and hands on sessions which focus on real construction scenarios.

Participants receive a certificate on completion, with the course seeking CPD certification in 2026.

Alternative approach to workforce development

The Low Carbon Passport takes an alternative approach by being fully funded and open to workers across the supply chain, including contractors, subcontractors, educators, college learners, apprentices and new entrants. The blend of online and in person learning is designed to build practical competence rather than purely theoretical knowledge. It also supports both upskilling the existing workforce and enabling entry level access to low carbon skills without cost barriers.

Progression into employment and impact

The programme is industry led, with direct involvement from major contractors, aligning training content with current workforce needs. By equipping participants with recognised low carbon competencies, the course is intended to improve employability and workforce readiness across the sector.

The Low Carbon Passport is in the process of being SCQF levelled allowing for the opportunity for colleges to integrate into the current curriculum. The programme aims to train 1,200 construction professionals by December 2026.

Conclusion

This report has highlighted the scale, complexity and interconnected nature of the challenges associated with increasing the flow of new entrants into Scotland's construction industry. These challenges are not confined to a single organisation, funding mechanism or entry route. Rather, they are the product of a fragmented and increasingly strained system operating within a volatile labour market, rising cost base and an industry undergoing profound technological, regulatory and structural change. Stakeholders across all parts of the ecosystem expressed deep concern that, without meaningful reform, the sector will struggle to meet both replacement demand and the emerging competence requirements of a modernising built environment.

The evidence presented makes clear that this is not simply a question of increasing headcount. Workforce demand is being shaped as much by misalignment between existing skills and future requirements as by absolute labour shortages. In this context, the central challenge is the sector's ability to mediate effectively between supply and demand for competence, ensuring that new entrants are able to enter the industry safely, progress efficiently, and continue to develop capability over time. While there is significant, and high quality, publicly funded provision across schools, colleges, universities and training providers, its impact is diluted by duplication, weak progression, inconsistent recognition of prior learning, and limited alignment with real time employer demand.

This in turn underscores the necessity of engaging a significantly broader base of employers in new entrant recruitment and development by addressing the root causes of non-participation, including perceived financial risk, administrative burden, limited supervisory capacity and uncertainty over future workload. At the same time, employers already investing in workforce development must be supported to increase intake sustainably, without compromising productivity or competitiveness. Any strategy to expand participation must therefore be calibrated carefully against the absorptive capacity of both employers and the supporting skills system, recognising the cyclical 'boom and bust' dynamics that have historically destabilised employment continuity and training provision.

Against this backdrop, increasing the flow of new entrants requires a shift away from fragmented, supply led provision towards a more strategically coordinated, demand informed system. It also requires prioritising high throughput, work based and employer connected models; strengthening recognition of prior learning for career

changers; enabling flexible employment arrangements; and creating clearer, more accessible routes for individuals from diverse backgrounds to enter and progress within the industry. Increasing flow, therefore, is not simply about recruiting more people, but about enabling more people to move successfully, safely and efficiently from aspiration to productive employment, and to remain and progress within the sector over time.

However, the evidence is equally clear that continuation or incremental scaling of the current status quo is unlikely to deliver the scale, speed or efficiency required to meet future needs. Existing approaches have evolved within a system shaped by short term funding cycles, occupational silos, volatile demand signals and uneven employer participation, all of which constrain their capacity to respond to the combined pressures of replacement demand, growth requirements and emerging opportunities such as the energy transition and industrialised construction. Without structural change, simply increasing participation in existing models risks compounding inefficiencies rather than resolving them. A more fundamental reconfiguration is therefore required, one that realigns incentives, simplifies delivery, strengthens collaboration across the ecosystem and places competence outcomes at the centre of system design.

Crucially, this reconfiguration must also confront the prevailing labour and contracting model that continues to shape employer behaviour. The dominant subcontracting and lowest cost procurement culture, while commercially rational in the short term, systematically externalises responsibility for workforce development and disincentivises long term investment in new entrants. This has created a ‘dysfunctional labour model’ in which firms compete on cost by minimising training commitments, relying instead on labour mobility, agency work and skilled migration to meet immediate needs. Increasing the flow of new entrants therefore cannot be achieved through structural reform alone; it also requires a cultural shift within the industry towards viewing workforce development not as a discretionary cost, but as a shared strategic investment essential to productivity, resilience and long term value creation.

Stakeholder engagement revealed strong alignment on the nature of the problems, but far less consensus on the solutions. Deeply held and, at times, polarised views persist around issues such as training duration, multiskilling and responsibility for investment. These tensions have contributed to transformation fatigue and, in some cases, strategic paralysis. However, the research also identified a substantial body of good practice already operating within the system, from employer led training models and rotational apprenticeships to targeted career changer pathways, onsite delivery hubs and innovative approaches to competence assurance. The challenge, therefore, is less about inventing new solutions and more about creating the conditions in which proven approaches can be scaled, coordinated and sustained.

The levers for change set out in this report are intentionally structured around three complementary areas: increasing flow capacity, increasing flow rate and increasing flow efficiency. Together, they point towards a system that is more mission led, competence focused and outcomes driven, with clearer alignment between policy, funding, provision and employment. Central to this is the need for longer term confidence in demand, simplified and transparent funding arrangements, stronger employer collaboration, and more flexible pathways that recognise prior learning and support iterative skills development.

Despite the scale of the challenge, there is cause for cautious optimism. The breadth and depth of engagement underpinning this research demonstrates a genuine willingness across industry, providers, government and agencies to work differently. With sustained commitment, shared leadership and a clear focus on outcomes rather than institutional boundaries, meaningful progress is achievable. The opportunity now is to move beyond incremental adjustment and towards a more coherent, collaborative and future ready system that can deliver the skilled, competent and diverse workforce the construction industry, and society, urgently requires.

Appendix A: Stakeholder Engagement

Survey design

A stakeholder survey was developed to complement and validate findings from the desk research and interview phases, enabling broader sector engagement and insight. Evidence gathered during the desk research phase informed the survey design, ensuring questions were aligned with identified evidence gaps and sector priorities.

The survey focused on understanding what the sector needs to train its future workforce, with particular emphasis on how individuals with no prior skills or knowledge can be supported to become occupationally competent. Respondents were asked to share perspectives on training pathways, capability development, and system-level enablers and barriers.

The survey was distributed through BE-ST, Skills Development Scotland (SDS), and Construction Leadership Forum (CLF) social media channels and newsletters, supporting wide dissemination across relevant stakeholder groups.

A total of 23 responses were received.

All contributions were treated in confidence and reported anonymously.

Stakeholder Interviews

A series of semi-structured stakeholder interviews was undertaken to explore workforce entry routes, training pathways, and the development of occupational competence across the construction and built environment sector. The interviews were designed to deepen and contextualise findings from the desk research and stakeholder survey.

With an aim of carrying out 30 interviews, a total of 32 interviews were completed, involving a broad cross-section of stakeholders, including across employers and industry representatives, education and training providers, alongside government agencies and sector bodies. Interview questions were tailored to each audience group to ensure relevance while maintaining a consistent core focus on workforce

readiness, competence, and future capacity.

See interview questions below:

General

- Are current approaches alone sufficient to meet future workforce needs?
- What are the best practices for supporting new entrants to become competent in specific occupations or roles?
- How can employers be better supported and encouraged to recruit new entrants and support them to become fully competent in a job role/occupation?
- What are the main barriers into current entry routes across the industry? Please give examples.
- For occupations/ roles with restricted entry routes, why has this been the preferred route in the past? Are there different perspectives emerging?
- Could new or simplified pathways help build a competent workforce, and how can competence remain central?

For Employers/Industry

- What new entrant roles have you employed or are within your industry's scope?
- Do current pathways and training support new entrants to become competent in an occupation/ job role? What improvements would you suggest?
- Which qualifications or courses do you value when recruiting new entrants? If none, what would you prefer?
- Would flexible or modular training (e.g., short courses, micro-credentials) make new entrants more employable? In which roles?
- Could alternative pathways (e.g., adult entry, career changers, accelerated training) help fill hard-to-recruit roles? Which ones?
- What role do you think employers and others such as Industry Stakeholders should/do play in the following.
    a. Helping prepare Individuals so they are ready to enter the sector in their 1st job role (e.g. offering placements, co-designing content)?
    b. Help define occupational competence and set standards for training associated with a specific occupation?
    c. Have you had an opportunity to undertake this activity in the past? Would you know how to connect?
- What changes would make it easier or more attractive for your business to employ and train the future workforce?

For Education/Training Providers

- Are current approaches alone sufficient to meet future workforce needs?
- Where are your programmes well aligned with employer and industry needs, and where could they improve?
- What are the main barriers to expanding provision that prepares competent workforce for the sector (e.g., facilities, staffing, funding, regulation)?
- Do you have cost estimates for expanding or modernising provision?
- How flexible are your programmes for non-traditional entrants (e.g., adult learners, career changers, remote learners), and what adaptations work best?
- What innovative or alternative pathways have you seen that help people become competent in a job role, and how could these be scaled up?
- How does your institution support ongoing competency development (e.g., initial training, upskilling, reskilling)?
- Are you planning to increase or decrease construction provision in the coming years?
- What support (policy, funding, partnerships) would help you expand construction provision?

For Government Agencies & Stakeholders

- Based on your engagement, can the construction sector build the workforce it needs on its current path? Why or why not?
- What are the main barriers preventing the sector from building the workforce it needs?
- What levers (funding, policy, procurement) can support workforce development to meet future demands?
- How do you measure value for public investment in skills, and what indicators matter most?
- What risks do you see in not diversifying entry and upskilling pathways, both for workforce numbers and competence?
- How can industry and the skills system better align funding and provision with employer demand, while avoiding duplication?
- How could lifelong learning be embedded in construction workforce development?

Workshop design and facilitation

A stakeholder engagement workshop was designed and facilitated to test early research themes, gather system-level insight, and inform the project's analytical framework. The workshop formed the inception and initial consultation stage of the research and was delivered as a hybrid online/in-person event at BE-ST Campus in partnership with Skills Development Scotland (SDS) and the Accord Skills and Workforce Group.

BE-ST led event workshop design and logistics, including venue management, facilitation, and delegate communications, with the aim of securing balanced representation across employers, education and training providers, and strategic and public sector bodies. SDS and the Scottish Funding Council (SFC) supported dissemination by signposting event communications to relevant stakeholders. 33 stakeholders took part in the workshop.

The workshop was structured around a central framing question: if current career pathways continue unchanged, will the sector be able to deliver the future workforce it requires? Participants were encouraged to adopt a forward-looking, systems perspective, focusing on future workforce requirements rather than existing structures or practices.

Facilitation was organised around three interactive exercises. The first, looked at future workforce mapping, and invited participants to imagine a 2040 end-state in which Scotland is successfully addressing climate change and housing challenges. Participants identified priority roles, skills and competencies, potential barriers, and opportunities for innovation, working backwards from long term to mid- and near term horizons.

The second exercise focused on identifying systemic constraints and opportunities affecting workforce entry routes and skills pathways. Using a radar-style framework structured around cost, policy, infrastructure, and culture, participants captured and prioritised barriers and enablers at a sector-wide level, with facilitation prompting practical and actionable framing, particularly in relation to funding.

The final exercise, explored alternative and flexible routes into the construction and built environment sector. Participants worked in small groups to generate, prioritise, and develop ideas for new pathways, with an emphasis on adaptability, scalability, and alignment with industry needs. Facilitated voting and structured prompts were used to focus discussion on the most viable concepts.

Insights from the workshop were captured through facilitated discussion and written outputs and used to refine research themes, inform subsequent stakeholder interviews, and shape the project's emerging findings and recommendations.

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