



Building the Future Construction Workforce

Jeremy Rose

Victorian Skills Authority Fellowship, 2026

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I acknowledge the Victorian Skills Authority Construction, Property and Mining Industry Advisory Group and the many industry representatives who have contributed to my understanding of the sector.





Acronyms and Definitions

Acronyms

AI	Artificial intelligence
AQF	Australian Qualifications Framework
BE-ST	Built Environment – Smarter Transformation (Scotland’s national innovation centre for construction)
BIM	Building Information Modelling
BYN	Byggnadsindustrins Yrkesnämnd (Swedish Construction Industry Training Board)
CEDEFOP	European Centre for the Development of Vocational Training
CITB	Construction Industry Training Board (UK)
CPD	Continuing professional development
DfMA	Design for Manufacture and Assembly
EU	European Union
FIEC	Fédération de l’Industrie Européenne de la Construction (European Construction Industry Federation)
IAG	Industry Advisory Group
ISS Institute	International Specialised Skills Institute
LiDAR	Light Detection and Ranging
MMC	Modern Methods of Construction
RTO	Registered Training Organisation
SBB	Samenwerkingsorganisatie Beroepsonderwijs Bedrijfsleven (Netherlands VET-business cooperation organisation)
SME	Small and medium enterprise

TAFE	Technical and Further Education
TNO	Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek (Netherlands Organisation for Applied Scientific Research)
UAE	United Arab Emirates
VET	Vocational Education and Training
VSA	Victorian Skills Authority

Definitions

Built environment. The built environment is used broadly to include planning, design, construction, infrastructure, property, real estate, facilities management, maintenance, renovation, demolition, waste and circular economy. It includes the people, organisations, systems and supply chains that shape, build, operate and renew the physical world.

Clean economy. In this report, clean economy refers to the economic and workforce transition associated with decarbonisation, electrification, renewable energy, circular economy, energy efficiency, waste reduction and climate adaptation. In the built environment, this includes electrification of homes and buildings, renewable energy infrastructure, retrofit, embodied carbon reduction and improved building performance.

Construction. Construction is used throughout this report to refer to the broad activity of designing, building, renovating, maintaining and renewing built infrastructure. It encompasses civil infrastructure, commercial construction, residential construction, renovation and retrofit, and related professional services. Where specific sectors are intended, they are named explicitly.

Digital transformation. Digital transformation refers to the adoption of digital tools, systems and processes across the built environment, including BIM, digital twins, AI, drones, LiDAR, augmented reality, project management platforms and compliance evidence systems. The scale of digital transformation varies significantly by role and business size.

Modern Methods of Construction (MMC). MMC refers to a range of off-site manufacturing, prefabrication and modular construction approaches that shift significant construction activity from the construction site to the factory. Also referred to as offsite manufacturing, prefabrication or DfMA.

Vocational education and training (VET). VET refers to applied tertiary education that develops occupational, technical, practical and workplace capabilities. This report argues that VET should not be treated as a lesser alternative to higher education, but as a distinct and valued form of tertiary learning that is central to national productivity, housing supply and clean economy outcomes.

Value chain. The built environment value chain refers to the full sequence of activity from planning and design through construction, commissioning, occupation, maintenance, renovation and end-of-life. Key decisions about building performance and sustainability are made at multiple points across this chain, not only during construction.

01

Executive Summary

Context and Purpose

Construction sits at the centre of most of Australia's hardest policy problems — housing supply, infrastructure delivery, the energy transition, productivity. It touches nearly every household and business in the country, yet it is routinely underestimated as a site of sophisticated, knowledge-intensive work.

This Fellowship investigated how vocational education and workforce systems in other countries are responding to the combined pressures of the clean economy and digital transformation in the built environment, and what Australia can learn from them. It was less a study of particular technologies than of system response: how emerging skills get identified, how education products adapt, and how existing workers, trainers and policy levers keep pace.

Victorian VET System Context

Australia's VET system has real strengths — nationally recognised qualifications, structured apprenticeship pathways, embedded industry input, strong licensing frameworks. Its weakness is speed. Formal training product reform is slow, trainer currency is hard to maintain, and investment in upskilling the existing workforce falls well short of need. VET is also still treated too often as the option for students not suited to university, rather than as the applied tertiary education it actually is.

International Learnings

Through visits, interviews and engagement with educators, industry bodies, government agencies and training providers across the United Arab Emirates, Sweden, Belgium and the European Union, the Netherlands, England and Scotland, the Fellowship found the same themes surfacing in very different national contexts. Australia's challenges — skills shortages, slow qualification reform, fragmented construction sectors, housing pressure — are shared almost everywhere. So are some of the practical models worth adapting.

Key Findings

The Fellowship identified the following cross-cutting findings:

Finding 1: Construction is not one workforce. Civil infrastructure, commercial construction, residential construction, renovation and retrofit, offsite manufacturing and property services each have distinct skill needs, business structures and transition pressures. A single construction skills policy will not meet the needs of the sector.

Finding 2: The clean economy transition is a systems challenge. Clean economy skills are not limited to new technologies. The transition requires systems thinking across the full built environment lifecycle — design, specification, procurement, installation, commissioning, maintenance and end-of-life.

Finding 3: The highest-impact decisions often occur before work reaches the tools. Design, specification, procurement and project management decisions shape what tradespeople install. Greater clean economy impact sits with clients, designers, engineers, surveyors and procurement teams, not only with trades.

Finding 4: Digital capability must be contextualised by role and business size. For many workers and small businesses, digital capability means practical tools for business operations, documentation and compliance — not advanced AI or modelling software. Training must be mapped to occupational context.

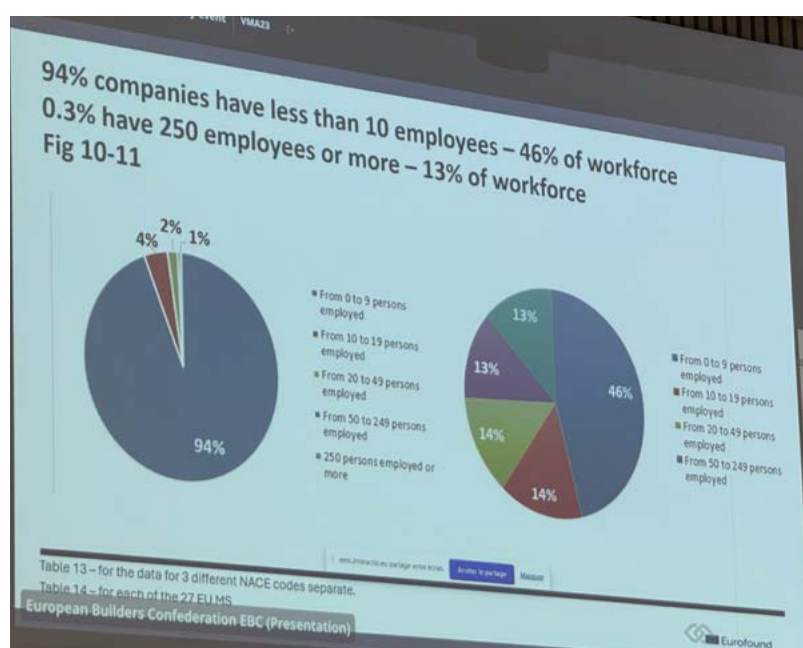
Finding 5: Qualification reform is necessary but insufficient. Formal qualification reform is too slow to be the only response to rapid change. A layered response is needed: national qualifications for occupational foundations, plus faster curriculum refresh, short-form training, CPD, micro-credentials and vendor-supported training.

Finding 6: The existing workforce is the main transition workforce. Apprenticeships matter, but the clean and digital transition will be delivered by people already working in the sector. Without investment in existing worker upskilling, the transition will be slow and uneven.

Finding 7: Trainer capability is transition infrastructure. Training systems cannot deliver future skills if trainers are not current with emerging technologies, sustainability practices and industry change. Trainer capability must be treated as core infrastructure.

Finding 8: SMEs and micro-firms need specific support. Much of construction is delivered by small businesses with limited capacity to invest in training or compliance systems. Transition policy must be designed with these businesses in mind.

Finding 9: Workforce attraction requires a new story about construction. Young people, parents and career advisers too often see construction as physically demanding and low-status. A stronger narrative is needed — one that connects the built environment to climate solutions, digital tools, community outcomes and career diversity.



System Change Opportunities and Recommendations

Drawing on international experience from the UAE, Sweden, Belgium/EU, the Netherlands, England and Scotland, this Fellowship recommends that Australian governments, industry, unions and VET institutions adopt a coordinated construction skills transition agenda. Priority actions include:

- A national clean and digital construction skills framework that coordinates regulation, procurement, training funding and industry capability programs.
- Stronger support for existing worker upskilling, including practical CPD models for licensed trades, builders and technical workers.
- A fast curriculum refresh mechanism that allows VET providers to update delivery content without waiting for full qualification reform cycles.
- Sustained investment in trainer capability, including industry immersion, access to contemporary tools and professional learning in sustainability and digital technologies.
- Better recognition of construction's multiple labour markets in policy design, funding allocation and workforce planning.
- Public procurement strategies that build industry capability and create demand for clean economy and digital construction skills.
- Targeted support for SMEs and micro-firms, including practical, affordable training accessible to small businesses.
- A reframing of VET as applied tertiary education, central to national productivity, housing supply and clean economy outcomes.

Impact

The Fellowship has strengthened Jeremy Rose's capacity to support construction skills reform through his work with Artibus Innovation and as Executive Officer for the Victorian Skills Authority Construction, Property and Mining Industry Advisory Group. The findings will be shared through IAG engagement, policy briefings, TAFE and RTO networks, Skills Labs, Centres of Excellence and broader sector dissemination.

02

Fellowship Background and Victorian/Australian System Context

2.1 Fellowship Purpose and Objectives

The purpose of this Fellowship was to investigate how international vocational education and workforce systems are responding to emerging skills needs in construction and the broader built environment, with a particular focus on clean economy transition and digital transformation.

The Fellowship sought to identify transferable lessons from countries that are grappling with the same challenges as Australia — skills shortages, housing pressure, energy transition, productivity constraints — and to apply those lessons to strengthen Australia's response.

It explored how different countries identify emerging skills and update their education products — and, behind that, how they engage industry, support apprenticeships and lifelong learning, keep trainers current, and coordinate the policy levers that sit around training.

2.2 Fellow Biography

Jeremy Rose has worked in and around vocational education, workforce development and the built environment for more than 20 years. His experience spans private training organisations, consultancy, state government, national training product development and industry advisory work.

Jeremy's work has focused strongly on the relationship between industry change and training system response. He has worked across construction, plumbing, property services and related built environment sectors, including building design, surveying, construction trades, construction management, real estate, facilities management, strata, waste cleaning, pest management and other service industries connected to the lifecycle of buildings and infrastructure.



Jeremy is the Executive Officer for the Victorian Skills Authority Construction, Property and Mining Industry Advisory Group, supporting structured engagement between industry, unions, training providers and government to inform workforce and training priorities. He is also Managing Director of Artibus Innovation, a consultancy focused on vocational education, workforce development and built environment skills.

Prior to this, Jeremy was involved in the development and maintenance of national training products for construction, plumbing and property services. This work provided a detailed understanding of the strengths and limitations of Australia's national VET architecture, including the role of qualifications, units of competency, skill sets, apprenticeships, industry reference structures and training package reform.

2.3 Victorian VET System Context

2.3.1 Construction as a national policy priority

Construction is central to Australia's economic, social and environmental priorities. Governments want more housing, renewed infrastructure and a faster energy transition — while also expecting better building quality, higher productivity and lower emissions. None of that happens without a capable construction workforce.

The sector, meanwhile, is under strain. Labour shortages run across many trades and professional roles, productivity growth has been weak, and business failures, cost escalation and fragmented subcontracting have all put pressure on delivery. The gap between what governments are asking of construction and what the sector can currently deliver is widening.

That gap is why the skills system matters: it goes a long way to determining whether construction can deliver what governments and communities expect of it.

2.3.2 Construction is not one industry

One of the clearest messages from the Fellowship was this: we need to stop treating construction as a single labour market. The word “construction” is often used as if it describes one coherent industry. In practice, it describes a series of related but distinct sectors with different workforce structures, business models, regulatory settings and skills needs.

At minimum, the construction workforce should be understood across the following segments:

- civil infrastructure and horizontal construction
- high-rise commercial and major project construction
- low-rise residential construction
- renovation and retrofit
- offsite manufacturing and modern methods of construction
- building services and technical services
- property, facilities, maintenance and asset management
- demolition, waste and circular economy services

The skills needs of a plumber working on a high-rise commercial project differ from a plumber working in residential renovation. The digital tools used by a civil contractor differ from those used by a small builder. The clean economy influence of a designer, engineer or procurement manager differs from that of a tradesperson installing specified products. Treating these roles as part of a single undifferentiated construction workforce risks producing blunt training responses.

2.3.3 The clean economy transition

Clean economy policy in Victoria and nationally spans electrification, renewable energy, energy efficiency, building performance and the circular economy. Each of these carries workforce implications that the policy documents rarely spell out.

In the built environment, clean economy transition includes:

- all-electric homes and buildings
- renewable energy infrastructure
- battery and storage systems
- heat pumps and efficient mechanical systems
- energy-efficient building envelopes
- deep retrofit of existing buildings
- circular economy and materials reuse
- construction and demolition waste reduction
- embodied carbon measurement and reduction
- improved building performance verification

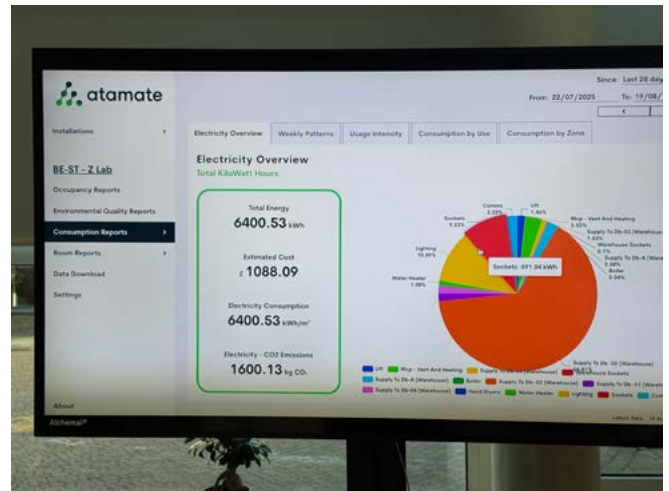
One insight from the Fellowship kept recurring: clean economy skills are mostly not about new technology. They are about systems thinking, sequencing, quality and correct installation — and about advising clients well. A tradesperson may not choose the window system, insulation product or energy system, but their workmanship determines whether the building performs as designed.

2.3.4 The digital transition

Digital transformation is reshaping parts of the built environment, but unevenly. BIM, drones, augmented reality, AI, digital twins, LiDAR, compliance evidence platforms, project management software, prefabrication, robotics and sensors are all relevant, but not equally relevant to every worker.

For many tradespeople, digital transformation may not mean using advanced AI or modelling software on the tools. It may mean:

- receiving and interpreting plans on a tablet
- documenting work with geotagged photos
- using apps for job management and compliance
- scanning spaces for quoting or measurement
- communicating with clients digitally
- using digital systems for scheduling, invoicing and procurement



- contributing evidence to digital building records

For professionals, designers, surveyors, engineers, project managers and larger contractors, digital transformation may involve deeper integration of BIM, digital twins, automation, data analytics, remote sensing and compliance evidence systems.

For VET, the implication is that digital skills need mapping to occupational context. Generic digital literacy misses the point; so does a narrow focus on advanced technology. The useful question is what digital capability a given role actually needs — and the answer changes with sector, business size and position in the value chain.

One of the most significant and underexamined transition points is the move from operational tradesperson to supervisor, business owner or sole trader. This is where the digital and clean economy demands converge most acutely. A tradesperson who starts their own business suddenly needs to quote competitively, manage scheduling, interpret compliance requirements, advise clients on energy systems or product choices, document work for warranty and regulatory purposes, and make purchasing decisions about equipment and materials — many of which now carry clean economy implications. These are not peripheral skills. They are the decisions that determine whether a small construction business can participate in the electrification, retrofit and sustainability markets that policy is actively trying to create. Yet VET has historically treated this transition as an afterthought, covered partially by business qualifications that were not designed for the construction context. The Fellowship reinforced that this gap is real and consequential. Supporting tradespeople through the transition to business ownership — with practical, contextualised capability in digital tools, compliance, client advisory and clean economy decision-making — is one of the more concrete opportunities for the skills system to make an immediate difference.

2.3.5 The VET system challenge

Australia's VET system has important strengths. Nationally recognised qualifications provide consistency. Apprenticeships provide structured pathways into licensed trades. Industry input is embedded in training product development. TAFE and RTOs provide applied learning across diverse communities and industries.

However, the system also faces challenges in responding to fast-moving change.

Formal training product reform is slow. A qualification review can take years, followed by implementation periods, curriculum development, teacher preparation and the time required for learners to complete training. In apprenticeships, it may be seven to ten years before changes to a qualification are visible in the fully qualified workforce.

This creates a timing problem. The clean and digital transitions are happening now, and industry, existing workers and trainers all need support well before the next reform cycle can deliver it. Apprenticeship reform remains important — it just cannot be the only mechanism.

Responding to this requires a wider view of what the VET system actually is. Too often, “the VET system” is treated as synonymous with “training packages”, as if the qualification framework were the only lever



available. In practice, curriculum can be refreshed between training package reviews. Trainers can develop contemporary knowledge through structured industry engagement. Vendor and manufacturer training already happening informally across the sector can be recognised, structured and aligned to learning outcomes. Micro-credentials and modular skill sets can be developed and deployed in weeks rather than years, responding to specific capability gaps without a full qualification overhaul. None of these are workarounds — they are legitimate parts of a functioning skills ecosystem, and other countries use them deliberately and at scale.

There is also a deeper issue with how the system frames its purpose. The dominant focus on entry-level qualifications and apprenticeships, while understandable, obscures the scale of upskilling needed across the existing workforce. Many of the people who will deliver Australia's housing, infrastructure, electrification and retrofit agenda over the next decade are already working. They have trade qualifications; some have been in the industry for twenty years. What they need is practical, accessible, credible learning that helps them work differently: adopt new technologies, understand changing compliance requirements, advise clients on clean economy choices, move into supervisory or business roles, or specialise in emerging areas like retrofit, offsite manufacturing and building performance. Career development within the existing workforce is both a retention strategy and a productivity strategy, and the VET system should be designed to support it — not treat it as secondary to initial qualification delivery.

2.3.6 VET as applied tertiary education

One of the broader system issues explored through the Fellowship is the status of vocational education. In Australia, VET is too often treated as an alternative for students who are not suited to university. This framing is outdated and damaging.

VET is better understood as applied tertiary education — not lower in quality or value than higher education, but a different form of tertiary learning, built around applied capability, occupational competence, workplace performance and technical judgement.

The distinction matters for construction because the future built environment workforce will span trades, design, compliance, digital systems, manufacturing, sustainability and customer advisory work — pathways that mostly demand applied learning rather than purely academic study. How VET is framed shapes who chooses those pathways.



2.3.7 The narrative challenge

Construction has a narrative problem. Too often, young people, parents and career advisers see construction as physically demanding, dirty, traditional and low-status. That picture bears little resemblance to the breadth of the modern built environment.

A stronger narrative is needed. Construction should be presented as a sector where people can:

- shape the future of cities and communities
- contribute to climate solutions
- build housing and infrastructure



- use technology and digital tools
- work in teams and solve practical problems
- become self-employed or build businesses
- move between trades, supervision, design, management and entrepreneurship
- contribute to social, economic and environmental outcomes

If young people want to change how cities function, how homes perform, how energy is used, how communities are connected and how resources are managed, the built environment is one of the most important sectors they can enter.

2.4 Why This Matters

The Australian construction and built environment workforce sits at the intersection of several national priorities at once — housing, infrastructure, energy, productivity — and each of them depends on how well the construction skills system functions.

The Fellowship argues that Australia does not simply need more construction training. It needs a more responsive skills ecosystem capable of supporting a complex, fragmented industry through a long and uneven transition. This is not a peripheral skills policy question — it is a strategic national priority.

2.5 Fellowship Methodology

2.5.1 Research Questions

The Fellowship was structured around six core research questions:

1. What skills are actually changing?

The clean and digital transition is often discussed in broad terms. This Fellowship sought to identify whether the changing skills are technical trade skills, business skills, digital literacy, sustainability knowledge, systems thinking, or something else entirely.

2. Where in the value chain are the key decisions made?

The built environment value chain includes clients, designers, engineers, planners, surveyors, project managers, builders, trades, manufacturers, suppliers, regulators, asset owners, facility managers and more. Understanding where the most significant clean economy and digital decisions are made is essential for effective skills policy.

3. How can VET respond faster than formal qualification reform allows?

National qualifications provide consistency, but formal reform cycles are slow. The Fellowship explored how systems can use curriculum, short courses, CPD, vendor training, applied learning and employer partnerships to respond to change more quickly.

4. How should the existing workforce be supported?

The clean and digital transition will be delivered largely by people already working in the sector. The Fellowship examined existing worker upskilling, not just apprenticeships and new entrants.

5. What role should trainers and teachers play?

Trainer capability is central to transition. If trainers are not current with emerging technologies, sustainability practices and industry change, learners will not receive contemporary training.

6. What policy levers are needed beyond training?

Skills development does not occur in isolation. The Fellowship considered how regulation, procurement, licensing, incentives, funding, industry capability building and consumer awareness influence workforce behaviour and training demand.

2.5.2 Approach

The Fellowship used a qualitative, practice-based approach, combining semi-structured interviews, site visits, meetings with training providers, discussions with industry associations and policy bodies, conference participation, and review of policy and training system material. Reflective analysis against Australian and Victorian VET settings was applied throughout.

The goal was never to transplant another system wholesale; each country operates within its own economic, cultural, regulatory and institutional context. The aim was to work out which principles, practices and models might transfer — and under what conditions.

03

International Insights and Comparative Analysis

3.1 International Visits: Countries and Rationale

The Fellowship included visits, interviews, conferences and targeted engagement across six countries. The organisations, institutions and events engaged during the Fellowship are listed in Appendix A.



United Arab Emirates

The UAE was included because it is building at extraordinary speed and scale, with a globalised workforce, smart city ambitions and heavy investment in international education models. It offered a view of how such an economy approaches construction workforce development, digital tools and professional education.

Relevant visits and engagement included: the Leaders in Construction UAE Summit; Dubai Municipality; Heriot-Watt University's Centre of Excellence in Smart and Sustainable Construction (CES²C); and the American University of Sharjah. Research and reference organisations that informed this section also included the UAE Ministry of Education and the National Qualifications Centre.



Sweden

Sweden was included for its sustainability culture, its mature industry institutions and its reputation for high-quality built environment practice. It offered insight into how industry-led standards, workforce attraction and social partnership combine to sustain a capable construction workforce.

Relevant visits and engagement included: Skolverket (Swedish National Agency for Education); RISE (Research Institutes of Sweden); Smart Built Environment Sweden; BYN (Swedish Construction Industry Training Board); Byggnads (Swedish Building Workers' Union); Chalmers University of Technology.



Belgium and the European Union

Belgium was included primarily because it is home to the European Union institutions, providing access to the European construction policy environment — valuable for the scale of the renovation challenge, the focus on micro-enterprise support and the sophistication of EU skills policy.

Relevant visits and engagement included: European Builders Confederation 35th Anniversary Conference; European Commission Joint Research Centre; European Construction Industry Federation (FIEC); Constructiv and Embuild (Belgian construction sector organisations). CEDEFOP research and skills intelligence publications were drawn on extensively through desktop research.



The Netherlands

The Netherlands was included because of its vocational education system, applied learning culture, public-private partnerships in VET, lifelong learning activity and practical work on energy transition and renovation. The Dutch approach to employer engagement and applied learning is directly relevant to Australia.

Relevant visits and engagement included: ROC Midden Nederland — Technology Campus, Utrecht (regional vocational training college with a specialist focus on energy transition and digital construction curricula; visited in two stages — initial scoping meeting with institutional leadership, followed by engagement with curriculum staff responsible for adapting construction programmes to clean economy and sustainability





requirements); HU University of Applied Sciences Utrecht (applied higher vocational institution, engaged on industry-originated applied research and student involvement in demonstrator projects); SBB (Samenwerkingsorganisatie Beroepsonderwijs Bedrijfsleven — the organisation that manages VET-business cooperation and workplace learning quality); TNO (Netherlands Organisation for Applied Scientific Research — the applied research institute engaged in sustainable built environment innovation); Vollandis (the joint occupational health and safety organisation for the Dutch construction sector); Bouwend Nederland (the construction and infrastructure employers' association); Techniek Nederland (the technical services industry association covering electrical, climate and sustainable technology installers).

England

England was included because of its construction training systems, apprenticeship reforms, occupational standards, construction industry training board arrangements, skills cards and live debates about the future of construction trades. England's experience with funding reform, occupational standards and industry levy arrangements is particularly relevant to Australia.

Relevant visits and engagement included: CITB (Construction Industry Training Board); BRE (Building Research Establishment); Buildoffsite; Digital Construction Week; GMB union; Unite union.

Note: The engagement was focused on England specifically, which has its own distinct construction training arrangements within the wider UK context.



Scotland

Scotland was included because of its distinct apprenticeship and further education context, retrofit and net zero agenda, strong trade identity and live policy questions about competence, modern trade pathways and built environment innovation. Scotland's approach to retrofit, skills passports and industry innovation provided particularly relevant examples.

Relevant visits and engagement included: BE-ST (Built Environment – Smarter Transformation, Scotland's national innovation centre for construction and the built environment); CITB Scotland (Construction Industry Training Board Scottish operations — engaged on apprenticeship delivery, levy arrangements and workforce skills planning specific to Scotland); Skills Development Scotland (SDS) (Scotland's national skills agency, responsible for workforce development strategy, careers services and VET system oversight; engaged on construction workforce planning and learner transition pathways); South Lanarkshire College (further education college delivering construction trades, engaged on retrofit and renovation curriculum, trade pathway design and existing worker upskilling).



3.2 International Practices and Models

The following sections summarise the key practices, insights and models observed in each country, with particular attention to how they compare with and inform the Australian context.

3.2.1 United Arab Emirates: Rapid Development, Digital Ambition and Professional Education

The UAE, and Dubai in particular, offered a view of a built environment developing at speed and scale. The construction market is highly international — global capital, global professional expertise, migrant labour, international education providers — and buildings and precincts are often conceived as symbols of national ambition as much as functional assets.

Rapid development pulls skill demand through every level of the value chain: not just trades, but engineers, designers, project managers, facilities managers, compliance specialists and digital construction professionals. Workforce development



in that environment has to consider the whole lifecycle of buildings, from design and construction through to operation, maintenance and renewal.

Digital tools and AI are increasingly visible in professional and site management contexts, with drones, AI-enabled inspection, digital models and automated progress reporting all being explored as ways to improve productivity, safety and oversight. Adoption is far from universal, though. Whether the tools are practical depends on cost, project scale, data management, licensing, cyber security and how ready the organisation actually is.

The winners are the ones who are going to take these outputs and utilise them in their workflows — to do their job faster, to do their job more accurately.

— Imad, construction technology expert, AI & Drones panel, UAE Leaders in Construction Summit, 18 September 2025

There is also a distinction worth drawing between iconic development and system-wide capability. High-profile buildings can showcase advanced design and technology, but the broader built environment still depends on maintenance, public realm, technical services, compliance and workforce quality — construction as an integrated system, not a sequence of prestige projects.

The Summit also surfaced a debate about tradition and technology. A panel on heritage in urban design argued that, far from erasing craftsmanship, digital fabrication and AI could act as a new artisanal tool to revive it:

Innovation is not the enemy of heritage.

— Heritage in Modern Urban Design panel, UAE Leaders in Construction Summit, 18 September 2025



International education models raised useful questions about contextualisation. Global universities and education providers can deliver consistent programs across countries but built environment education must still be contextualised to local climate, regulation, culture, materials, construction practice and workforce structures. A building services example in Dubai may focus on cooling and air conditioning, while a similar course in Scotland may focus on heating and heat pumps. The principles may be transferable, but applied learning must be locally relevant.

A key framing challenge for drawing lessons from the UAE is the structure of the construction workforce itself. In the UAE, construction is understood primarily as a professional enterprise. Architects, engineers, surveyors, project managers, developers and lawyers are recognised participants in the industry — people with careers, qualifications and status. Trades and construction workers, by contrast, are predominantly drawn from migrant labour, often from South Asia, and are not typically considered part of the industry's professional identity or skills development agenda. This bifurcation shapes what the UAE has invested in: world-class built environment education at the professional level, and a large, relatively low-cost trade workforce expected to execute plans rather than contribute expertise.

This has an important implication for what the UAE can and cannot teach us. The visit offered real insight into professional education models, digital construction tools and the ambitions of large-scale development, but limited insight into the trade and VET workforce questions at the heart of this Fellowship. It also exposed a challenge Australia shares in a different form: the gap between high-performing design and high-performing delivery. When the people who build, install and construct are not treated as skilled contributors — when their knowledge, judgement and capability are undervalued — the translation from high-quality plan to high-quality building is not guaranteed. The UAE faces this gap at significant scale. Australia's own struggles with building quality, defect rates and safety failures are partly a symptom of the same structural problem.

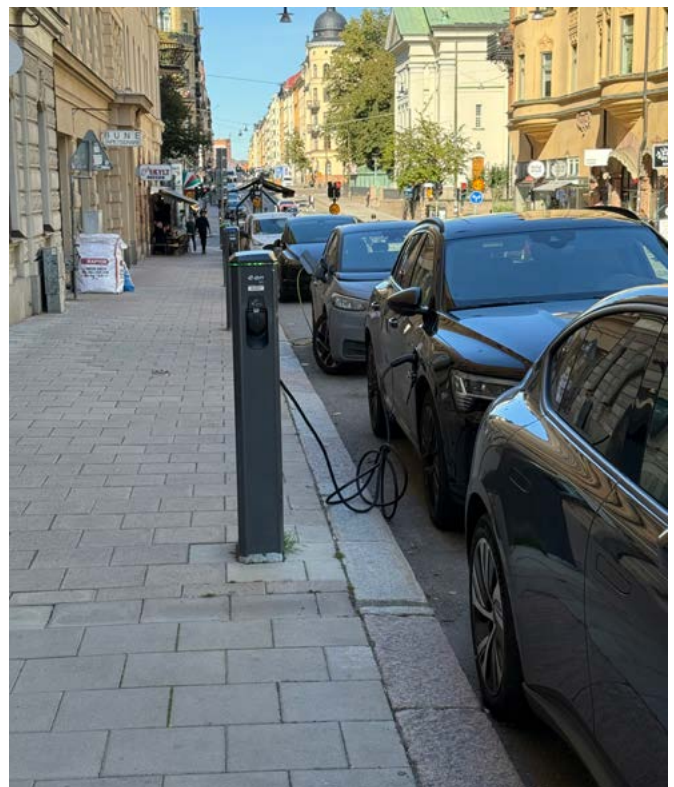
3.2.2 Sweden: Sustainability, Industry Standards and Workforce Attraction

Sweden's construction sector operates inside a strong sustainability culture and a mature institutional environment. What stood out most was how mainstream sustainability has become — an expectation embedded in industry practice and reputation, not a compliance add-on.

Sustainability there is tied as much to industry reputation, social licence and workforce attraction as to technical practice. Australia tends to frame clean economy policy through regulation or technology; Sweden frames it as part of the sector's identity.

Industry institutions do much of the work of setting expectations — defining good practice, supporting member capability, promoting ethical conduct and providing a channel between employers and policy makers. In a fragmented sector full of small businesses, that role matters more, not less.

Sweden also pressed the point about narrative.



Attracting workers takes more than advertising vacancies; it takes a compelling story about the sector's role in sustainability, technology and community building. That connects directly to the need in Australia to drag career advice away from outdated assumptions about trades and construction.

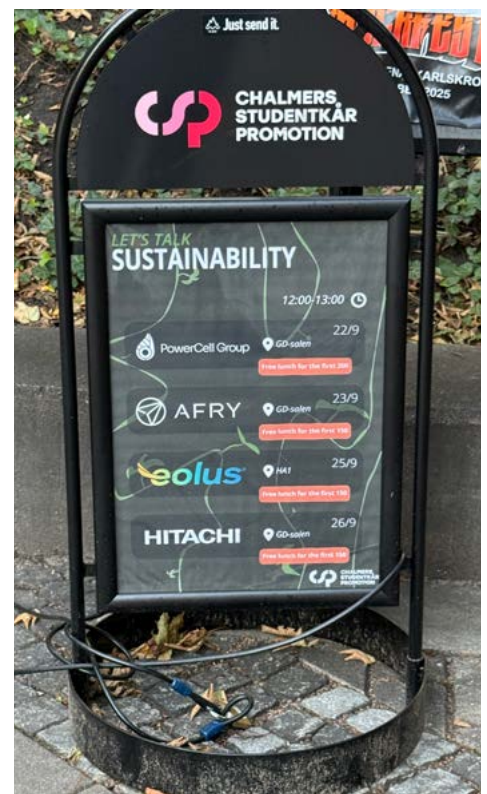
Then there is the question of diversity, participation and the future workforce. If construction is to meet future demand it cannot keep relying on traditional labour pools — it has to become attractive to women, young people, migrants, career changers and people seeking purpose-driven work.

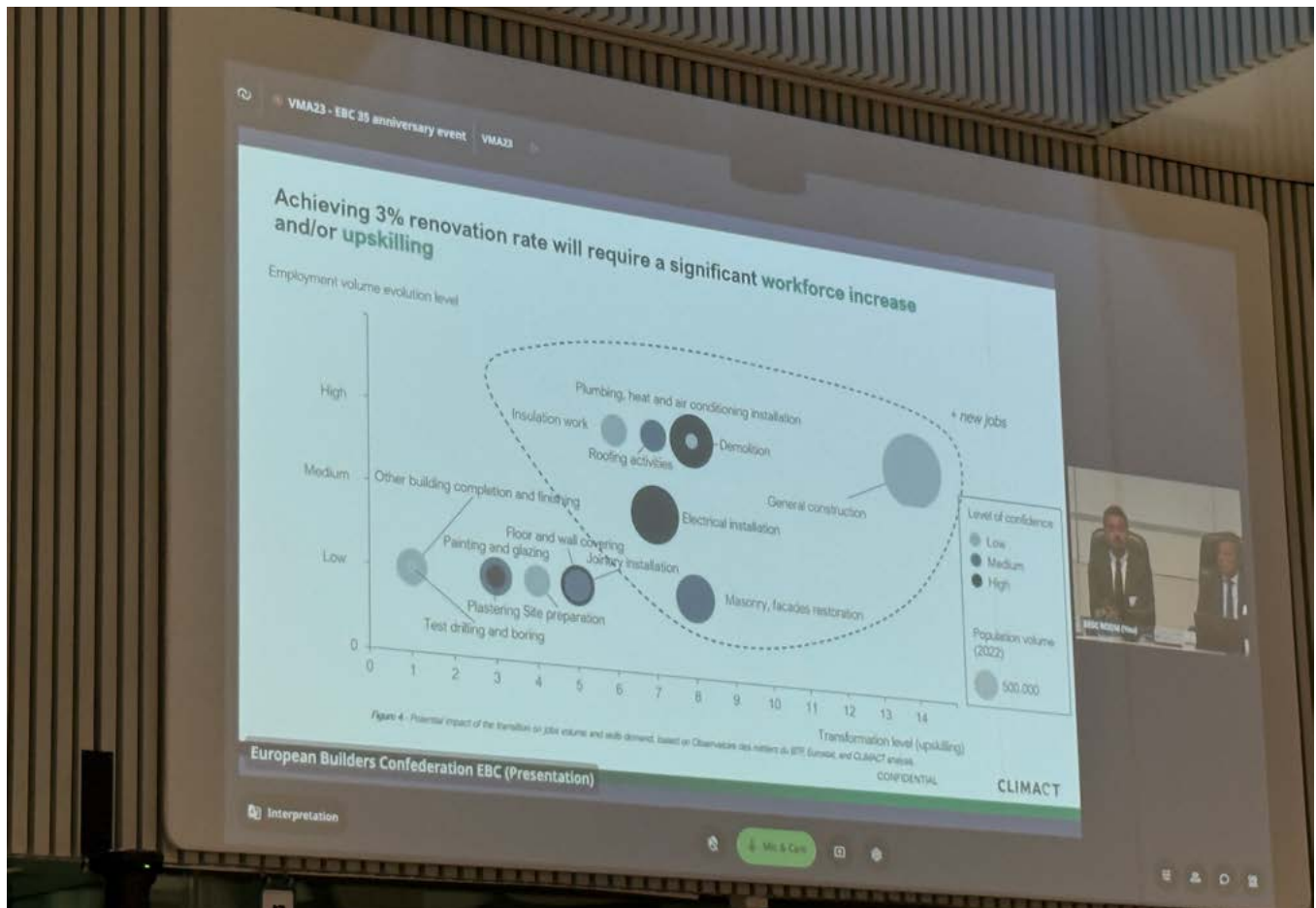
What Sweden suggests for Australia is that clean economy skills policy needs to connect to the sector's identity, its social purpose and its role in the communities it builds. The pitch shouldn't be "join construction because there's work available". It should be "help build the future of housing, energy and sustainable communities".

3.2.3 Belgium and the European Union: Renovation, Micro-Enterprises and Policy Coordination

The European visit provided one of the clearest policy lenses of the Fellowship. Across Europe, the construction sector is central to housing affordability, energy efficiency, climate goals and economic resilience. At the same time, the sector is highly fragmented and dominated by SMEs and micro-enterprises.

The scale of the renovation challenge dominated the European discussions. Lifting the energy performance of existing buildings requires a massive uplift in retrofit activity, and the binding constraints are rarely technical — they are workforce, financing, consumer confidence, regulation and the capability of thousands of small businesses.





Today we are having quite a reactive approach to the energy renovation market. We need a much more proactive approach — towards the market and towards homeowners, to understand what they want, what they need, and who can pay what.

— Jeremy Pontif, CleanMap Belgium, Micro-Firms and EU Green Renovation event, Brussels, 1 October 2025

The renovation task depends heavily on small businesses. Policy makers may set ambitious targets, but delivery occurs through local builders, tradespeople, designers, assessors, suppliers and small firms. If policy assumes large institutional capacity that does not exist in the market, implementation will fail.

Affordability and sustainability must be addressed together. Sustainable construction and renovation can increase upfront cost, even where it lowers lifetime operating costs. Policy must therefore consider financing, consumer confidence, staged works, public support and the capacity of households and small landlords to act.

Skills shortages sit underneath all of it. Europe's renovation and housing goals cannot be met without enough workers with the right skills — but simply calling for more training misses half the problem. The sector also has to become more attractive to work in, with better conditions, stronger employer responsibility and clearer pathways.

Digitalisation and industrialisation are seen as potential productivity levers. Prefabrication, modular renovation, digital tools and industrialised construction methods can support productivity, but they must be adapted to the structure of the sector, including SMEs.

Above all, the levers have to be pulled together. Regulation, funding, procurement, innovation, training and business support achieve little in isolation; a fragmented policy response adds burden without enabling change.

The European experience maps very closely onto Australia's situation. We have the same fragmented sector, the same housing challenge, the same clean economy ambitions, the same skills shortages, and the same dependency on small businesses to deliver it all. The lesson is simple but important: transition policy has to be built around the actual structure of the industry, not an idealised version of it.



3.2.4 The Netherlands: Vocational Education, Lifelong Learning and Applied Innovation

The Netherlands offered the strongest example of vocational education institutions working alongside employers on applied learning and lifelong learning. VET providers there are involved well beyond initial training — they support companies and workers through transition.

Dutch vocational institutions have a strongly applied learning culture, with training connected to live projects, industry needs and real-world settings. It is VET as applied tertiary education in practice, rather than a lower-status alternative to university.

Lifelong learning sits inside the provider role, not alongside it. Colleges work with companies to identify training needs and build tailored programs — exactly the capability that clean economy and digital transformation demand for the existing workforce.

Public-private partnership is the backbone of the Dutch system. Apprenticeships and workplace learning rest on strong college-employer relationships, with shared responsibility for making the learning meaningful rather than leaving it to chance.

Without co-creation, you have to give your money back. It's as simple as that.

— ROC Midden-Nederland staff member, Utrecht, 9 October 2025 (on the Dutch public-private funding model, where government funds 80% only if industry co-creates)

The Dutch energy transition also made a point about system constraints. Skills are necessary



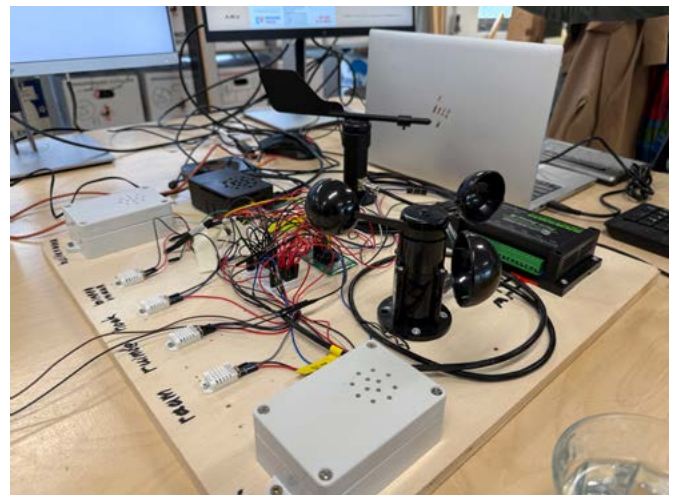
but not sufficient — grid capacity, housing stock, finance, regulation and consumer behaviour all set the pace of transition.

The TDI500 initiative — Team Duurzaam Installeren 500, a consortium of installers, energy suppliers and knowledge institutes led by TNO — illustrates this at a practical level. The programme sets a target of 500 additional hybrid heat pump installations per day across the Netherlands — a concrete, measurable workforce mobilisation goal linked directly to the national energy transition target. It is the kind of specific, sector-level ambition that translates policy into workforce planning. Australia's electrification agenda implies a similar scale of installation demand, but without equivalent workforce targets or the coordination infrastructure to meet them.

Applied research and demonstrator projects bridge the gap between innovation and education. Putting students inside real renovation and building performance projects connects their learning to live transition challenges.

It really needs to be a question out of the business, not our question as researchers.

— Patrick, HU University of Applied Sciences, Utrecht,
9 October 2025 (on the RAAK-SIA scheme, which only funds applied research questions that originate from industry)



What the Netherlands showed me is a model worth considering here. VET providers there aren't just qualification delivery machines — they're active partners in industry transition. Australian TAFEs and RTOs could play this role. They have the relationships, the facilities and the applied expertise. The question is whether the system creates the conditions for them to do so.

3.2.5 England: Construction Training Systems, Occupational Standards and Reform

England showed what construction training reform looks like in a mature but contested system — occupational standards, apprenticeship models, skills cards, training boards, adult pathways and industry bodies all layered over one another, each carrying history.

The scale of the English construction workforce challenge is significant. CITB's Construction Workforce Outlook 2025–29, current at the time of the Fellowship visit, estimated that 47,860 additional workers were needed each year across the forecast period — on top of replacing the roughly 8% of the workforce lost annually to retirement and churn, itself around 212,000 people. The gross annual recruitment requirement is therefore closer to 260,000. Simply standing still consumes the overwhelming majority of that effort; growing the workforce to meet housing and infrastructure ambitions requires something well beyond steady-state recruitment. CITB's subsequent Workforce Outlook 2026–30 revised the additional-worker requirement

down to 41,200 a year and recorded a 1.6% fall in the workforce during 2025, which sharpens rather than softens the point.

Construction training systems are shaped by history. Apprenticeship models, trade identities, occupational standards, unions, employer bodies, levy arrangements and qualification frameworks all carry institutional legacy. Reform must work with this history rather than assume a blank slate.

Occupational standards can provide useful structure, particularly where they define functions rather than narrow tasks. This distinction is important for future-oriented training. For example, a unit or standard built around “storage devices” or “energy systems” may be more durable than one built around a specific current product.

Core skill set but then bolt on — that’s how we kind of do it. You get them the core, put them through the apprenticeship, and then build a structure you can bolt the specialisations onto.

— UK construction industry expert, England, 14 October 2025 (on a post-trade specialisation model)

Adult and experienced worker pathways are essential, because not everyone enters construction through a traditional apprenticeship. Mature workers, migrants, specialists and people with partial skills need credible routes to recognition, upskilling and occupational mobility.

Trainer attraction and retention is also a major issue. Skilled tradespeople can often earn significantly more in industry than in teaching roles. If colleges cannot attract and retain current practitioners, the quality and currency of training will suffer.

Industry-led training organisations can play a valuable role where they are strongly connected to employers and able to maintain occupational currency. The challenge is ensuring such models remain inclusive, scalable and aligned with public outcomes.

The UK’s redesign of the Apprenticeship Levy into the Growth and Skills Levy is directly relevant to Australia’s own debate about training funding flexibility. The levy mechanism itself is unchanged — 0.5% of payroll above £3 million — but from April 2026 employers can spend part of it on short training units of 30 to 140 hours rather than full apprenticeships alone. It is a reform of what the money may buy, not of how it is raised, and it opens up exactly the shorter, targeted training that the previous apprenticeship-only model locked out. The principle — that a training levy should fund the full range of skill needs, not just formal apprenticeships — is one Australia has not yet resolved, despite persistent industry pressure to do so.

England’s experience reinforces something that applies equally in Australia: national standards matter, particularly where public safety and licensing are involved. But the system also needs flexible mechanisms for existing worker upskilling, specialist pathways and trainer currency. The two can be in tension, and pretending otherwise helps no one.

3.2.6 Scotland: Modern Trades, Retrofit and the Tension Between Tradition and Reform

Scotland provided a particularly valuable lens on trade identity, apprenticeship structures and the challenge of modernising construction skills without weakening occupational standards.

A key theme was the tension between traditional full-scope trade models and emerging specialist skill needs. Many established trades are built around comprehensive apprenticeships that prepare workers for a broad occupational role, and this has real strengths: depth, identity, safety, quality and portability. But clean economy transition, retrofit, MMC and digital technologies are creating skill needs that don’t fit neatly into traditional trade pathways.



Retrofit was a major theme. Existing housing stock, energy efficiency, heat pumps, fabric-first approaches and building performance all require coordinated skill responses. Retrofit work often crosses traditional trade boundaries and requires systems thinking. Workers need to understand how building fabric, heating, ventilation, electrical systems, controls, moisture and occupant behaviour interact.

The carpenter will put the airtight barrier around it, and the next day the electrician turns up and literally just bangs his fist through it. Not my job, mate. We just destroyed the performance of that building.

— South Lanarkshire College participant, Scotland, 22 October 2025 (on siloed trades undermining thermal performance)

The challenge is not to “dumb down” trades. Rather, it is to consider whether modern trade pathways can be built to the same standard of competence, but with different structures. This may include core capabilities, specialisations, stackable skill sets and pathways that reflect contemporary work.

Wind farms don't require clean energy skills. They require civil contracting skills. There's one electrician that connects it.

— South Lanarkshire College participant, Scotland, 22 October 2025 (on misconceptions about clean economy workforce needs)



Competence and compliance carry particular weight in Scotland in the aftermath of major building safety failures. Training reform there is inseparable from public safety, building quality and regulatory confidence.

The “Pathways to Productivity” report, published in March 2026, provides one of the most comprehensive recent analyses of construction workforce development available internationally. Commissioned by Skills Development Scotland on behalf of the Construction Accord’s Skills and Workforce Group, it projects the Scottish construction workforce growing to approximately 214,500 by 2029, with around 8% needing to be replaced annually due to attrition — a replacement challenge on top of growth. Its six shared measures of success — workforce capacity, competence, employer confidence, sector culture, workforce composition and long-term continuity — offer a framework that Australian workforce planning currently lacks at national level.

BE-ST launched its Low Carbon Passport in August 2025 — a structured, stackable credentialling program for construction workers developing skills in low carbon and energy-efficient building. It is exactly the kind of fast, accessible, industry-anchored response to the retrofit skills gap that Australia needs to develop. The Passport sits alongside Scotland's National Retrofit Centre, hosted at BE-ST's Innovation Campus, which provides practical demonstration and training environments for retrofit technologies. Together they amount to an integrated response: data and strategy (Pathways to Productivity), applied training environments (National Retrofit Centre) and portable credentials (Low Carbon Passport).

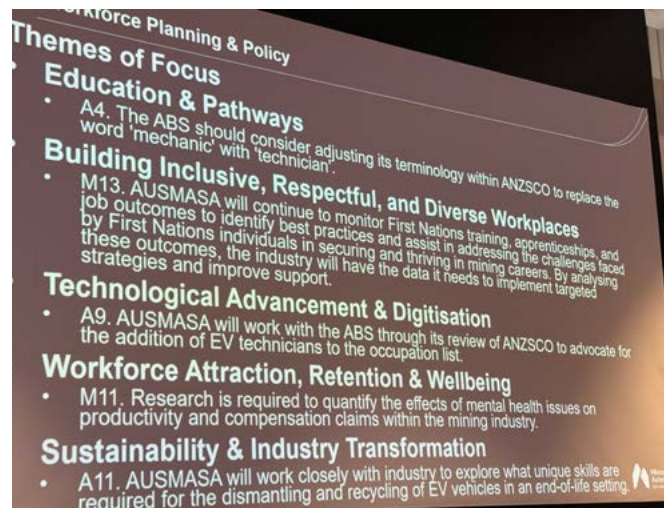
Scotland reinforced my view that Australia needs a more mature conversation about the future of trades. We should absolutely protect the value and integrity of licensed trades. But we also need to build credible modern pathways for work that doesn't fit neatly into traditional apprenticeship models — retrofit, energy systems, offsite manufacturing, digital compliance.

3.3 Comparison with the Victorian/Australian System

Across all six countries, the Fellowship confirmed that Australia faces challenges common to many comparable economies: skills shortages, housing pressure, slow qualification reform, fragmented industry structure, and difficulty coordinating policy levers. This is itself a significant finding — Australia is not alone in struggling with these issues, but it is also not yet drawing on the full range of international responses available to it.

The following points of comparison emerged consistently:

- Policy coordination: European countries are further advanced in coordinating regulation, procurement, training funding and industry capability programs as an integrated policy response. Australia tends to treat these as separate domains.
- Existing worker upskilling: The Netherlands, England and Scotland all have more structured approaches to upskilling the existing workforce than Australia, including funded CPD models, skills passports and employer-linked training programs.
- Trainer currency: Swedish and Dutch VET systems have stronger mechanisms for maintaining trainer industry currency, including industry immersion programs and structured partnerships with employers.
- Applied learning environments: The Netherlands and Scotland have invested in demonstration and innovation environments where VET providers, employers and students engage in practical learning connected to real construction challenges.
- Micro-enterprise support: European policy pays much greater attention to the needs of small and micro businesses. Australia's training system tends to be designed for larger employers with greater administrative capacity.
- VET status: In Sweden, the Netherlands and Scotland, vocational education carries greater social status and public esteem than in Australia, supported by industry advocacy, quality assurance and career pathway visibility.



3.4 Implications for Victoria and Australia

The international comparisons suggest that Australia's current approach to construction skills — while having important strengths in qualification consistency and apprenticeship structure — is insufficiently responsive, inadequately funded for existing worker upskilling, and too narrowly focused on formal qualifications rather than the full skills ecosystem.

The most important implication is not to adopt any single country's model, but to draw on multiple examples to build a more agile, applied and industry-connected skills system in Australia. The following chapter identifies priority areas for change and specific recommended actions.

3.5 Critical Reflection

Each country visited operates within its own political, economic and cultural context. Sweden's sustainability culture is embedded across industry, government and civil society in ways that are not simply replicable in Australia. The Netherlands' public-private partnership model in VET reflects decades of institutional development. Scotland's approach to retrofit is shaped by specific housing stock, climate targets and political context.

Conditions that would need to be in place for Australian adaptation include: sustained government commitment beyond single election cycles; genuine social partner engagement between industry, unions and government; investment in demonstration and applied learning environments; and a reframing of VET's public identity and institutional status.

04

System Change Opportunities and Recommendations

This chapter draws together the key findings from the Fellowship and translates them into priority areas for change and practical recommendations. It consolidates the findings, VET implications, policy analysis and areas for consideration from the study tour into an integrated set of recommended actions for government, industry, unions and VET institutions.

4.1 Priority Areas for Change

The following nine findings identify the priority areas where change is needed in the Australian construction skills system. Each finding is grounded in the international evidence gathered through the Fellowship and confirmed by the Australian context.

Finding 1: Construction is not one workforce

A single construction skills policy will not meet the needs of the sector. The workforce spans multiple labour markets, including civil infrastructure, commercial construction, residential construction, renovation, building services, offsite manufacturing, property services and facilities management.

Each segment has its own skill needs, business structures and transition pressures. Civil infrastructure leans on digital surveying, machine control and large-project coordination; residential renovation on customer advisory skills, energy efficiency knowledge and small business capability; commercial construction on BIM, digital compliance and subcontractor coordination; offsite manufacturing on production systems, robotics, quality control and design for manufacture.

Policy and training responses must therefore be segmented rather than generic.

Offsite manufacturing and modern methods of construction represent one of the most underserved segments in Australian skills policy. The prefabAUS Industry Roadmap 2023–2033 put Australia at less than 5% of total construction output using prefabrication or smart building methods at the time of its 2023 baseline. By contrast, 22% of homes delivered under Homes England's Affordable Homes Programme use modern methods of construction, against an estimated 6–10% across the UK housing market as a whole — a reminder that concentrated public demand is what has moved the number.

The prefabAUS roadmap sets a target of 30% of Australian construction by 2033, projecting economy-wide annual benefits of at least \$9 billion if that target is achieved. The workforce skills required for offsite manufacturing — production systems, digital fabrication, quality control, design for manufacture and assembly, and new multi-skilled trade pathways — are distinct from those needed in conventional site-based construction. This segment is growing but is not yet adequately served by Australia's national training system.

Finding 2: The clean economy transition is a systems challenge, not just a technical training challenge

Clean economy skills are often described as if they involve discrete new technologies. In practice, the transition requires systems thinking across the lifecycle of buildings and infrastructure.

Workers and businesses need to understand how design, product selection, installation, sequencing, commissioning, maintenance and occupant use affect performance. For tradespeople, this may involve understanding why correct installation matters, how to avoid waste, how to preserve building envelope performance and how to communicate with clients about options.

Scotland's Built Environment — Smarter Transformation (BE-ST), visited during the Fellowship, takes this approach explicitly in its net zero retrofit skills curriculum: installers are taught to understand the performance chain from design intent through to commissioning, so that on-site decisions are made with awareness of whole-building consequences, not just to immediate specification. The goal is not to make installers into designers, but to ensure they understand where their work determines whether the building performs as modelled.

For designers, engineers, builders and project managers, clean economy capability may involve embodied carbon, circular economy, procurement, whole-of-life cost, energy modelling, compliance evidence and integration of multiple building systems.

Sweden's mandatory climate declarations for new buildings — in force since January 2022, covering construction-stage emissions for the load-bearing structure, building envelope and interior walls — have made carbon a routine part of procurement and design practice rather than a specialist add-on. The scope is deliberately partial: building services, interior finishes, the use stage and end-of-life all sit outside the current requirement, and Boverket has proposed extending both the scope and binding limit values from 2027. What matters for skills is that even a partial mandate changed professional behaviour. Discussions in Sweden during the Fellowship confirmed this had shifted professional culture as well as technical practice: cross-disciplinary systems fluency is now a baseline expectation across design, engineering and project management, not a differentiator.

Finding 3: The highest-impact decisions often occur before work reaches the tools

Finding 2 describes the challenge for all workers across the built environment value chain. Finding 3 sharpens one implication of that: the highest-leverage interventions may sit upstream of the tools entirely, in design, specification and procurement decisions that trades workers do not control.

Many tradespeople do not select the products they install or make the major decisions that shape building performance. In high-rise or major project environments, trades often install what has already been specified, purchased and sequenced.

Greater clean economy impact may sit with clients, designers, engineers, architects, quantity surveyors, procurement teams, builders, project managers, building surveyors and asset owners. VET and workforce

policy must therefore extend beyond traditional trades and consider the broader built environment value chain.

Finding 4: Digital capability must be contextualised by role and business size

Digital transformation means different things in different parts of construction. A large contractor may need BIM integration, digital twins, project analytics and compliance platforms. A small builder may need digital quoting, scheduling, client communication, photo evidence, product information and accounting tools. A tradesperson may need to use tablets, apps, QR codes, digital plans and evidence capture.

My costs for legal fees have gone down by 80% with AI.

— Owner of a scaffolding firm (around 200 employees), reported by the Swedish Construction Federation, Stockholm, 29 September 2025

Training should therefore avoid both extremes: assuming every worker needs advanced digital training, or assuming digital skills are irrelevant to trades. The right question is: what digital capability does this role need to perform better, safer, more productively and in line with future compliance requirements?

England's Construction Skills Certification Scheme (CSCS) and Sweden's ID06 industry identification and credentialing system are both built on role-differentiated credential structures, with competencies registered by occupation and training context rather than against a generic 'digital worker' baseline. In the Netherlands, SBB (the collaborative organisation for vocational education and business, visited during the Fellowship) is a partner in the developing CompetentNL national skills taxonomy, which maps competency requirements explicitly by role. The design principle in each case is the same: digital capability only becomes a trainable, assessable and portable skill when it is described in the context of what a specific role actually does, not in the abstract.

Finding 5: Qualification reform is too slow to be the only response

National qualifications remain important, particularly for licensed trades and portable occupational recognition. However, formal qualification reform is not agile enough to respond to rapid change on its own.

A layered response is needed:

- national qualifications for occupational foundations
- updated curriculum for contemporary delivery
- short-form training for immediate skill needs
- CPD for licensed and experienced workers
- vendor-supported training for new technologies
- micro-credentials or skill sets for emerging capabilities
- trainer professional development
- demonstration projects that connect learning to real work

Finding 6: Existing workers are the main transition workforce

Apprenticeships shape the future workforce, but existing workers deliver today's work. If the existing workforce is not upskilled, the transition will be slow and uneven.

This is especially important because apprentices spend much of their time in workplaces. If workplaces do not understand contemporary practice, apprentices may be exposed to old methods, outdated assumptions and resistance to change. Existing worker upskilling is therefore also an apprenticeship quality issue.

Finding 7: Trainer capability is transition infrastructure

Training systems cannot deliver future skills if trainers are not current. Trainer capability must be treated as core infrastructure for clean economy and digital transition.

This includes:

- industry immersion for trainers
- access to contemporary tools and equipment
- partnerships with employers and vendors
- professional learning in sustainability and digital technologies
- communities of practice across providers
- curriculum resources that can be updated quickly

Finding 8: SMEs and micro-firms need specific support

Much of construction is delivered by small and micro businesses. These firms often have limited time, administrative capacity and capital to invest in training, technology and compliance systems.

What these smaller companies ask for is not a whole education — they want it in smaller bits. They don't have a lot of time; they need the certifications.

— ROC Midden-Nederland account manager, Utrecht, 9 October 2025

Transition policy must be designed for these businesses. Training needs to be practical, accessible, affordable and clearly linked to business value. Government procurement and regulation should be accompanied by support that helps smaller firms build capability rather than excluding them from future markets.

Finding 9: Workforce attraction requires a new story about construction

Construction needs more workers, but recruitment campaigns alone will not solve the shortage. The sector needs a better story — one about technology, sustainability, entrepreneurship, problem solving and public purpose.

Construction is not a site. Construction satisfies cities. Cities power economies. If we do not start presenting construction as modern and digital, the next generation won't see themselves in it.

— Stephen Bunner, Composite Consult, Future of Construction Talent panel, UAE Leaders in Construction Summit, 18 September 2025

The built environment offers young people the chance to shape how their communities live: housing, infrastructure, climate resilience, energy systems, public space. That story belongs at the centre of school engagement, career advice and workforce attraction.

4.2 Proposed Actions

The following recommended actions are organised by audience. They are framed as practical, actionable steps within the scope of the Fellowship and grounded in international evidence. Each draws on specific examples from the countries visited.

4.2.1 For State and Federal Government

Strengthen alignment between clean economy, digital construction and skills reform

Governments should treat construction skills reform as a strategic component of clean economy and digital transition policy — not a separate education policy question. A national clean and digital construction skills framework should coordinate regulation, procurement, training funding, industry capability programs and consumer information in a coherent transition agenda.

International example: The European Commission's approach to integrating renovation skills targets with energy efficiency policy provides a model for coordination across domains.

Expand support for existing worker upskilling

Current investment in construction skills is heavily weighted toward apprenticeships and new entrants. Governments should develop structured, funded pathways for existing worker upskilling, including practical CPD models for licensed trades, short-form training for emerging technologies, and recognition of informal learning.

International example: Scotland's Low Carbon Passport provides a structured, stackable credentialling model for workers developing low carbon skills outside of formal qualifications.

Support faster curriculum refresh within existing VET architecture

Without waiting for full qualification reform cycles, governments should support VET providers to refresh curriculum, teaching resources and delivery approaches through dedicated funding and a fast-track mechanism for curriculum updates.

International example: Several European systems maintain national curriculum frameworks that allow faster update cycles than formal qualification reform.

Treat trainer capability and industry currency as transition infrastructure

Governments should fund dedicated programs for trainer industry immersion, professional learning in sustainability and digital technologies, and trainer communities of practice. Trainer currency should be treated as a system investment, not a provider cost.

Use public procurement and public projects as workforce development platforms

Government procurement strategies and major public projects should be designed to build industry capability, create training demand and support skills development in clean economy and digital construction. This includes embedding skills requirements in contract conditions and using public housing and infrastructure investment to support workforce transition.

International example: the Netherlands' TDI500 consortium, led by TNO, set a concrete workforce target — 500 additional hybrid heat pump installations per day — and linked it to coordinated training investment.

Develop targeted support for SMEs and micro-firms

Most policy and training investment is designed for larger employers. Government should develop specific support for small and micro businesses, including practical and affordable training, grant and subsidy arrangements, and administrative support for compliance with clean economy requirements.

Align regulation, training and consumer information

Policy levers need to be coordinated. Regulation that requires new skills should be paired with training investment and lead time. Consumer information should support demand for quality construction and renovation work.

Continue repositioning VET as applied tertiary education

Governments should continue the work of reframing VET as applied tertiary education that is central to national productivity, housing supply and clean economy outcomes. This supports improved career advice, stronger school-to-work pathways, better recognition of trades and technical roles, and improved parity of esteem.

Prioritise occupational licensing harmonisation as the foundation for workforce mobility and skills portability

Australia's construction workforce operates under a state-based occupational licensing regime in which each jurisdiction sets its own requirements, categories and competency standards. This creates significant friction for labour mobility at precisely the moments it is most needed — during housing and infrastructure surges when demand exceeds local supply. The national Automatic Mutual Recognition (AMR) scheme, introduced in 2021, was designed to address this, but has significant gaps: Queensland — with one of the country's largest construction workforces — remains entirely outside the scheme; the ACT has excluded construction occupations until 2027; and Victoria maintains exemptions for building surveyor classes and licensed plumbing classes, which preserve the burden of case-by-case assessment — now by the Building and Plumbing Commission, which replaced the Victorian Building Authority on 1 July 2025. The Productivity Commission's National Competition Policy analysis (2025) examined this territory and reached a deliberately cautious conclusion: it found that introducing national licensing for high-risk occupations may not significantly affect productivity or GDP, and that any effect was too small to estimate robustly. Its recommendation was to evaluate how the existing Automatic Mutual Recognition scheme is actually working before building anything new on top of it. That caution is worth taking seriously. The argument for harmonisation made here does not rest on a modelled GDP dividend; it rests on the practical friction that a fragmented licensing base creates for workers, employers and any future portable credential.

International example: The effectiveness of England's CSCS digital skills passport and Sweden's ID06 system depends in part on those countries operating within single-jurisdiction or harmonised licensing environments. A digital skills passport built on a fragmented licensing base cannot achieve the same mobility outcomes. Licensing harmonisation is the prerequisite for digital infrastructure to follow.

4.2.2 For Industry and Unions

The Victorian Skills Authority Construction, Property and Mining Industry Advisory Group (IAG) is a direct channel for connecting this Fellowship's findings with government policy advice. As an advisory body to the VSA, the IAG is well-placed to facilitate cross-sector thinking and deeper engagement with the workforce challenges identified here — convening industry, unions, training providers and government around shared evidence. This Fellowship will support the IAG's ongoing work to develop shared narratives across the construction sector, build cross-sector understanding of the clean economy and digital transition, and strengthen advocacy to government for the investments and reforms the international evidence supports.

Build a shared narrative for the future construction workforce

Industry and unions should continue building a shared narrative that presents construction as a modern, skilled, technology-enabled and sustainability-focused sector. This narrative matters for workforce attraction, retention, career advice and public understanding of the sector's importance.

International example: Sweden's approach to connecting construction's industry identity with sustainability outcomes provides a model for narrative-building at a sector level.

Support a mature conversation about modern trade pathways

The Fellowship reinforces the value of full-scope trades and occupational standards, particularly where licensing, safety and public confidence are involved. At the same time, emerging work in retrofit, electrification and MMC requires consideration of whether modern trade pathways, specializations and stackable skill sets can be developed without weakening occupational identity.

Strengthen employer responsibility for workplace learning

High-quality workplace learning is essential to apprenticeships and existing worker development. Employers should strengthen expectations and support for on-the-job learning, including ensuring that apprentices are exposed to contemporary clean economy and digital practices during their training.

Continue embedding CPD and lifelong learning

Industry and unions should support practical CPD models for licensed trades, builders, supervisors, technical workers and professionals. CPD should be practical, relevant and linked to real work. Priority areas include building performance, electrification, retrofit, digital tools and compliance documentation.

International example: Scotland's Low Carbon Passport and BE-ST's credentialling program offer models for structured, stackable skills recognition outside formal qualifications.

Strengthen industry engagement through the VSA Construction, Property and Mining Industry Advisory Group

The IAG is well-placed to test and refine advice on clean economy and digital construction skills, connect industry knowledge with VET policy, and advocate for the sector-specific investments identified in this Fellowship.

4.2.3 For VET Institutions

Treat curriculum as a live and responsive product

TAFEs and RTOs should treat curriculum, learning resources and delivery design as products that can be updated more frequently than formal qualification reform allows. This includes integrating contemporary industry knowledge, new materials, technologies and practices into teaching without waiting for unit of competency review.

Build deeper industry partnerships around transition priorities

VET providers should develop partnerships with employers, industry associations, unions, suppliers, technology vendors, public agencies and applied research organisations. These partnerships can support trainer currency, provide access to contemporary equipment and practices, and connect learning to real industry needs.

International example: Dutch vocational institutions are active partners in industry transition — not just qualification delivery machines. Australian TAFEs and RTOs can build similar relationships through Skills Labs, Centres of Excellence and industry engagement programs.

Expand practical short-form training for transition skills

Short courses, skill sets and CPD programs can complement qualifications by helping existing workers and businesses respond to immediate skills needs. Such training is most effective when it is practical, modular, accessible and developed with industry input.

Invest in applied learning and demonstration environments

Applied learning environments are critical for clean economy and digital construction skills. Priority environments could include retrofit demonstration houses, energy systems labs, digital construction labs, MMC and offsite construction facilities, and circular economy demonstrators.

International example: BE-ST in Scotland operates demonstration and innovation environments that connect training providers, employers and students in practical learning.

Strengthen trainer communities of practice

Trainer networks and communities of practice support faster sharing of resources, examples and emerging industry knowledge. These networks are particularly valuable in clean economy and digital areas where industry practice is changing rapidly.

4.3 Role of the Fellow

This Fellowship has not positioned Jeremy Rose as an external critic of current activity. Rather, it has strengthened his capacity to support work already underway across the VET and construction sectors. Specific contributions include:

- Supporting the VSA Construction, Property and Mining Industry Advisory Group to test and refine advice on clean economy and digital construction skills.
- Serving on the advisory committee for the Future Housing Centre of Excellence, supporting applied research and curriculum responses to Australia's housing supply and quality challenges.
- Assisting government and industry stakeholders to segment construction workforce issues more clearly across civil, commercial, residential, renovation, MMC and property services contexts.
- Contributing international insights to Skills Lab, Centre of Excellence and TAFE network discussions.
- Supporting the development of practical pilots in retrofit, MMC, digital compliance, SME capability and clean economy skills.
- Developing policy briefs, discussion papers and dissemination materials based on Fellowship findings.
- Contributing to the artificial intelligence and skill needs project across the built environment sector, developed in partnership with Melbourne Polytechnic.

4.4 System-Level Impact

Implemented together, the proposed changes would make training more contemporary and relevant to actual industry conditions, extend capability-building to the existing workforce rather than new entrants alone, and create faster feedback loops between industry practice and training design.

4.5 Role of Key Stakeholders

Victorian Skills Authority: Set strategic direction for construction skills transition; coordinate government levers; fund trainer capability programs; support demonstration projects and applied learning environments; strengthen the IAG's role in sector advice.

Training providers (TAFEs and RTOs): Update curriculum and delivery against contemporary industry practice; build employer partnerships; invest in applied learning environments; support trainer professional development and industry currency.

Industry bodies and employers: Engage with workforce planning and skills policy; strengthen workplace learning; support trainer currency through industry partnerships; co-invest in demonstration environments and applied research.

Unions: Advocate for existing worker upskilling; support CPD models for members; participate in skills policy development; champion workforce attraction and narrative-building.

Government (state and federal): Coordinate policy levers; fund transition investment; use procurement to drive change; support SME capability; continue repositioning VET in the tertiary landscape.

4.6 Implementation Considerations

Enablers

- Sustained political commitment to construction skills reform as a strategic national priority.
- Genuine social partner engagement between industry, unions, government and education.
- Investment in demonstration environments and applied learning infrastructure.
- Coordination across government departments (skills, housing, energy, infrastructure, procurement).
- Reframing of VET's public identity and institutional status.

Barriers and Risks

- Short political cycles undermining long-term investment in skills infrastructure.
- Fragmented industry structure making coordinated engagement difficult.
- Qualification reform cycles that are too slow to match industry change.
- Trainer attraction and retention challenges in a sector where industry wages are higher than teaching wages.
- SME capacity constraints limiting uptake of training and compliance requirements.
- Siloed policy development across energy, housing, skills and industry portfolios.
- Fragmented occupational licensing across states and territories, limiting workforce mobility and constraining the effectiveness of any future national skills passport or portable credentials system.

4.7 Next Steps

Immediate actions that can be taken include:

- Present Fellowship findings to the VSA Construction, Property and Mining Industry Advisory Group.
- Brief the Victorian Skills Authority on Fellowship findings and recommended actions.
- Contribute Fellowship insights to the artificial intelligence and skill needs project.
- Develop a short policy brief for government and industry stakeholders.
- Identify two or three pilot opportunities in retrofit, MMC or digital compliance skills where Fellowship findings can be tested in practice.

Longer-term opportunities for reform include:

- Advocating for a national clean and digital construction skills framework.
- Supporting the development of a structured CPD model for licensed construction trades.
- Contributing to Skills Lab and Centre of Excellence program design informed by international models.
- Developing trainer professional development resources drawing on international examples.
- Advocate for a national digital skills passport for the Australian construction sector, drawing on operational models from England, Sweden and Scotland.

Several countries visited have moved from paper-based credentials toward portable, verified digital skills records that travel with the worker. England's Construction Skills Certification Scheme (CSCS) launched its 'My Skills' digital skills passport in May 2025 — integrated into the existing My CSCS app, with around 2.3 million CSCS-logo cards now in circulation. Workers store their CSCS card alongside all additional qualifications, CPD certificates and role-specific training; employers and site managers verify credentials in real time via the CSCS Smart Check platform. CSCS positions the platform as supporting Building Safety Act compliance, giving the digital passport a regulatory anchor that drives adoption. Scotland's Energy Skills Passport takes a just-transition focus: it maps oil and gas workers' existing qualifications onto offshore wind roles, identifying mutual recognition of training and avoiding duplication, and was supported by £3.7 million of Scottish Government Just Transition funding. Uptake in its first year was modest, which is itself instructive: a well-designed credential still needs employer demand and clear role pathways behind it to gain traction. Sweden's ID06 Kompetensdatabas — now holding over 1.8 million registered skills records, with approximately 26,000 added each month — automatically links training completions to each worker's site-access card the moment an accredited training provider registers them, removing the need for self-reporting entirely.

Australia's National Skills Passport is at consultation stage, with \$9.1 million committed by the Australian Government for a business case and broad stakeholder engagement. The construction sector has a compelling case for a sector-specific layer within a national framework: BuildSkills Australia has identified that 116,700 workers beyond business-as-usual projections are needed to meet the National Housing Accord target of 1.2 million new homes by 2029, and workforce mobility across state lines is a significant constraint. A digital skills passport, combined with meaningful occupational licensing harmonisation, could reduce friction for workers moving between states for housing and infrastructure projects, support clean economy reskilling by making transferable skills visible, and provide employers with instant, legally defensible verification of worker competence. BuildSkills Australia is well-placed to develop a construction-specific layer within a national framework, drawing on the CSCS and ID06 models as operational precedents.

A lesson from the Netherlands is instructive here. Discussions during the Fellowship about Dutch experience with digital skills passports made a consistent point: the passport itself is less transformative than the structured professional development conversation it prompts between worker, employer and trainer. On its own the credential functions largely as a mirror — it reflects a worker's position without changing it. What gives it force is the conversation it obliges people to have. The credential is a tool for dialogue and shared ownership of development, not a substitute for it. The most effective implementation of a skills passport will pair the digital infrastructure with guided career conversations and CPD frameworks, rather than treating it simply as a document management system.

05

Impact of Fellowship

5.1 Professional Practice

Stepping outside the Australian system for an extended period made the familiar strange again. Challenges that had become routine — slow qualification reform, the dominance of apprenticeship funding, the difficulty of maintaining trainer currency — became visible as structural issues, not just operational problems.

The Fellowship sharpened the view that the construction skills conversation must move beyond a narrow focus on trades. Trades remain fundamental, but they sit within a much larger built environment value chain where skills, decisions and outcomes are distributed across many roles and organisations.

It reinforced the importance of existing worker capability. Policy makers often focus on apprenticeships as the primary skills lever. The Fellowship confirmed that this is insufficient: the existing workforce is the main transition workforce, and investment in their upskilling must be treated as a strategic priority.

The Fellowship also deepened understanding of the relationship between policy ambition and industry capacity. Governments can set targets for electrification, housing, circular economy and retrofit, but those targets depend on a workforce that has the skills, tools and knowledge to deliver them.

Perhaps most importantly, the Fellowship strengthened the commitment to reframing VET as applied tertiary education. In conversations across Europe and the UK, the status of vocational education, apprenticeships and technical work emerged as a factor shaping both workforce supply and the quality of industry capability.

5.2 Organisational Impact

The Fellowship has direct implications for work through Artibus Innovation and in the role supporting the Victorian Skills Authority Construction, Property and Mining Industry Advisory Group.

For Artibus Innovation, the Fellowship has strengthened the organisation's strategic focus on vocational education reform, built environment workforce development and the skills implications of clean economy and digital transition. It has also helped clarify where Artibus can add most value: not simply describing new technologies or emerging policy priorities, but helping governments, industry and providers to understand the skills implications and act on them.

For the VSA Construction, Property and Mining IAG, the Fellowship provides a richer evidence base for advice to government. It supports a more nuanced conversation with industry about the clean and digital transition, with a clearer framework for asking the right questions:

- Which part of the construction and property value chain are we discussing?

- Are we talking about civil infrastructure, commercial construction, residential construction, renovation, offsite manufacturing, property services or facilities management?
- Are the relevant skills technical, digital, business-related, compliance-related, supervisory, advisory or sustainability-focused?
- Is the priority new entrants, apprentices, existing workers, supervisors, employers or trainers?
- What is the right training response and what policy lever will create demand for it?

A specific example is the project on artificial intelligence and skill needs across the built environment sector, developed in partnership with Melbourne Polytechnic and approved through the VSA. This project draws directly on Fellowship findings about digital transformation, the need to contextualise digital skills by role and business size, and the importance of grounding AI discussions in occupational reality.

5.3 System Contribution

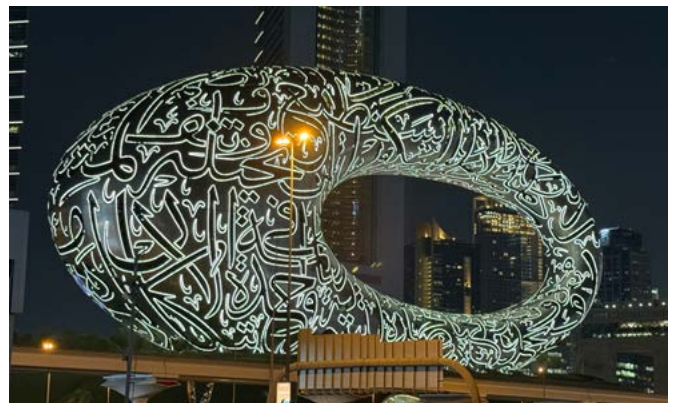
The Fellowship has several implications for the Australian VET sector. These are summarised here and set out in full in Chapter 4.

- A more agile relationship between national training products and local curriculum — maintaining qualification integrity while enabling faster curriculum response.
- Treating trainer capability as a strategic priority, with dedicated investment in industry currency and professional learning.
- Strengthening existing worker training as a core system function, not an afterthought to apprenticeship policy.
- VET providers playing a stronger role in applied innovation — acting as partners in industry transition, not only qualification delivery organisations.
- Repositioning VET in the tertiary landscape as applied learning that is central to productivity, housing supply and clean economy outcomes.

5.4 Future Impact

The Fellowship's impact will continue through dissemination, policy engagement and the development of practical skills responses that support the construction sector's clean and digital transition. Expected longer-term outcomes include:

- A stronger evidence base for IAG advice to the Victorian Skills Authority on construction skills reform.
- Influence on the design of Skills Labs, Centres of Excellence and applied learning environments for the construction sector.
- Contribution to national conversations about existing worker upskilling, trainer capability and modern trade pathways.
- Development of practical pilots in retrofit, MMC, digital compliance and clean economy skills informed by international examples.
- Potential scaling of successful models — such as skills passports, demonstration environments or fast curriculum refresh mechanisms — across the broader VET system.



06

Sector Engagement and Influence

6.1 Sharing and Contextualising Fellowship Learnings

The value of a Fellowship lies in what happens after the travel. The findings from this Fellowship will be shared through a combination of formal reporting, policy briefings, industry presentations and practical engagement with stakeholders across the VET and construction sectors.

Sharing the learnings will involve contextualising them for the Australian and Victorian VET environment — not presenting international models as ready-made solutions, but identifying what is transferable, what conditions are required and how Australian institutions and stakeholders can adapt and build on international experience.

6.2 Engagement with Key Stakeholders

Key audiences for Fellowship findings include:

Educators and VET providers: TAFEs, RTOs and their curriculum and professional development staff. The Fellowship findings on trainer currency, applied learning environments and fast curriculum refresh are directly relevant to this audience.

Industry bodies and employers: Construction and built environment industry associations, employers and peak bodies. The Fellowship's findings on segmentation, existing worker upskilling and SME support are particularly relevant.

Government and policymakers: Victorian Skills Authority, Jobs and Skills Australia, state and federal departments responsible for housing, energy, skills and infrastructure. The Fellowship's recommendations on policy coordination and procurement are relevant to this audience.

Union representatives: Construction unions with an interest in workforce transition, skills standards and member upskilling.

Training product developers: BuildSkills Australia and those involved in national training package development and qualification reform.

6.3 Methods of Dissemination

Proposed dissemination activities include:

- Presentation of findings to the VSA Construction, Property and Mining Industry Advisory Group.
- Briefing to the Victorian Skills Authority.
- Engagement with BuildSkills Australia and national training system stakeholders.
- Presentations to TAFE and RTO networks.
- Industry association briefings.
- Union and employer roundtables.
- Contribution to Melbourne Polytechnic Skills Lab and the advisory committee for the Centre of Excellence in Future Housing.
- Development of a short policy brief for government and industry, summarising key findings and recommended actions.
- Possible webinar involving international contacts to present comparative perspectives.

6.4 Influencing System Settings

The Fellowship findings are timed well relative to a significant period of policy and investment activity in construction workforce development at both state and federal levels. Several active programs and processes provide immediate opportunities for engagement; others represent areas where the Fellowship's arguments push beyond current policy settings and make the case for new investment.

Immediate engagement opportunities

The Victorian Skills Plan 2025 into 2026 explicitly prioritises construction, clean economy and digital skills, projecting demand for 64,500 new construction workers between 2025 and 2028. The Victorian Skills Authority Construction, Property and Mining Industry Advisory Group is the primary vehicle for translating Fellowship findings into advice to the Minister, and the Fellow's role as Executive Officer of that group positions these findings for direct influence. The Future of Housing Construction Centre of Excellence at Melbourne Polytechnic — a \$50 million joint federal-state investment of which the Fellow is an advisory committee member — is a direct platform for applying international models of applied learning, industry partnership and trainer currency to Australia's residential construction challenge. BuildSkills Australia's active reviews of the CPC, CPP and RII training packages in 2025–2026 provide a structured process for contributing international evidence on clean economy skills integration and faster curriculum refresh mechanisms.

At national level, the Australian Government's commitment to develop a business case for a National Skills Passport, and the broader clean energy workforce investment across recent federal budgets, provide frameworks within which the Fellowship's international evidence on skills portability, credential verification and clean economy transition models can be directly applied. A short policy brief drawing on the Fellowship's comparative analysis — particularly the English CSCS and Swedish ID06 systems — would be a timely contribution to the National Skills Passport development process. Jobs and Skills Australia's workforce analysis, including its Clean Energy Capacity Study, identifies construction trades as among the most critical occupations for the clean energy transition, directly validating the Fellowship's core argument.

Where the Fellowship makes new arguments

Not all of the Fellowship's recommendations align with existing funded programs. The case for dedicated investment in existing worker upskilling, for treating trainer industry currency as a system asset rather than a provider cost, and for SME-accessible clean economy training that goes beyond apprenticeship-weighted funding models — these represent areas where current investment is insufficient. Federal construction workforce investment remains heavily weighted toward apprenticeships and new entrants. In these areas, the Fellowship's international evidence is not simply supporting what already exists; it is making the case for a different set of priorities. These arguments are best advanced through the IAG, through BuildSkills' workforce planning processes, and through direct engagement with Skills Ministers at state and federal level.

6.5 Sustaining Momentum

The work of this Fellowship will continue beyond the formal reporting period through ongoing engagement with the VSA IAG, Artibus Innovation's strategic work in the built environment sector, and participation in Skills Labs, Centres of Excellence and national VET policy processes.

The most useful next step is not to treat the Fellowship findings as a standalone report, but to use them as a framework for structured engagement. The findings can help organise conversations with governments, industry, unions and providers around the questions that matter most: which segment of construction are we talking about? Which workers? Which skills? What policy lever will create demand for them? And what does the international evidence suggest about the most effective response?

07

Conclusion

The clean and digital transformation of construction is already underway. Governments are setting ambitious targets — for housing, infrastructure, electrification, energy efficiency, circular economy and digital productivity — and whether those targets are met depends, in significant part, on whether the construction and built environment workforce has the skills, tools and support to deliver them.

This Fellowship confirms that vocational education has a central role to play, but only as part of a broader skills ecosystem rather than a standalone intervention. Apprenticeships, qualifications and formal training are necessary but not sufficient. The transition also needs faster curriculum refresh, real investment in existing worker upskilling, current and capable trainers, workable support for small businesses, and policy levers that stop operating in silos.

The international evidence gathered through this Fellowship — from the UAE, Sweden, Belgium and the EU, the Netherlands, England and Scotland — confirms that Australia faces challenges common to many comparable economies. It also reveals that other systems are further along in developing coordinated, practical responses. Australia can learn from these experiences without simply copying them.

The transition also requires a new story about construction. The built environment is where climate policy becomes real, where housing targets are delivered, where infrastructure is built, where circular economy principles are applied at scale. It is a sector that offers careers spanning trades, technology, design, management, sustainability and entrepreneurship. That story needs to be told more compellingly — to young people, to parents, to career advisers and to policymakers.

The core argument of this report is straightforward: Australia should treat construction workforce development as a strategic national transition task, not a peripheral skills policy question. This requires coordinated investment, a more agile training system, a reframed narrative about vocational education, and sustained commitment from government, industry, unions and providers working together.

08

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09

Appendices

Appendix A: Fellowship Visits, Organisations and Links

The following list records the Fellowship visit list and relevant web links. Some entries reflect target or reference organisations used to inform the Fellowship, rather than confirmed in-person meetings.

United Arab Emirates — 16 to 21 September 2025

Leaders in Construction UAE Summit / Construction Week. Construction leadership, market trends, workforce, productivity and digital transformation.

Dubai Municipality. Municipal regulation, urban development, construction quality, smart and sustainable city policy.

Heriot-Watt University Centre of Excellence in Smart and Sustainable Construction. Smart construction, net zero, digital transformation and industry-academia-government collaboration.

UAE Ministry of Education. National education policy context.

National Qualifications Centre. Qualifications framework, lifelong learning and national recognition architecture.

American University of Sharjah. Engineering, built environment and technical education in the UAE context.

Sweden — 23 to 29 September 2025

Skolverket (Swedish National Agency for Education). National education, school and vocational education policy context.

RISE Research Institutes of Sweden. Applied research, innovation, sustainability and industry transition.

Smart Built Environment Sweden. Digitalisation, sustainable built environment innovation and sector transformation.

Chalmers University of Technology. Built environment research, sustainability, materials, buildings and urban systems.

BYN (Swedish Construction Industry Training Board). Construction vocational training, apprenticeships and social partner governance.

Byggnads (Swedish Building Workers' Union). Union perspective, construction workforce conditions and skills.

Swedish Construction Federation (Byggföretagen). Employer perspective on construction skills, business capability and digital adoption; met 29 September 2025.

Belgium and the European Union — 30 September to 7 October 2025

European Builders Confederation 35th Anniversary Conference. Construction SMEs, micro-firms, renovation, skills, jobs and business models.

European Commission Joint Research Centre. Evidence-based policy, innovation and science for EU policy development.

FIEC (European Construction Industry Federation). European construction industry representation, policy and skills.

Constructiv. Belgian construction sector training, education support, safety and workforce development.

Embuild (formerly Confederatie Bouw). Belgian construction industry association, training, sustainability and sector support.

Netherlands — 8 to 12 October 2025

ROC Midden Nederland — Technology Campus, Utrecht and Nieuwegein. Regional vocational college; energy transition and digital construction curriculum, employer co-creation and short-form training for SMEs; visited 8 and 9 October 2025.

HU University of Applied Sciences Utrecht. Applied higher vocational education, industry-originated applied research and student involvement in demonstrator projects; visited 9 October 2025.

SBB (Samenwerkingsorganisatie Beroepsonderwijs Bedrijfsleven). VET-business cooperation, workplace learning quality and qualification-labour market alignment.

TNO (Netherlands Organisation for Applied Scientific Research). Applied research in sustainable living, infrastructure and built environment innovation.

Volandis. Construction and infrastructure workforce safety, wellbeing and occupational health.

Bouwend Nederland. Construction and infrastructure employers' association, industry capability and policy advocacy.

Techniek Nederland. Technical services industry: electrical, climate and sustainable technology installers.

England — 13 to 21 October 2025

CITB (Construction Industry Training Board). Apprenticeships, grants, skills and employer support in the English construction sector; workforce forecasting through the Construction Workforce Outlook.

BRE (Building Research Establishment). Built environment research, standards, sustainability and safety.

Buildoffsite. Offsite construction, MMC, pre-manufactured solutions and industry adoption.

Digital Construction Week. BIM, AI, robotics, digital construction and sustainable built environment technology.

GMB union (Engineering and Construction). Union perspective on engineering and construction workforce issues.

Unite (Construction, Allied Trades and Technicians). Union perspective on construction trades, industrial relations and workforce conditions.

Scotland — 22 October 2025

BE-ST (Built Environment – Smarter Transformation). Scotland's national innovation centre for construction and the built environment, net zero, skills and collaboration.

CITB Scotland (Construction Industry Training Board). Apprenticeship delivery, levy arrangements and construction workforce skills planning specific to Scotland.

Skills Development Scotland (SDS). National skills agency; construction workforce planning, careers services, qualification reform and learner transition pathways.

South Lanarkshire College. Further education college; retrofit and renovation curriculum, trade pathway design and existing worker upskilling.

Appendix B: Interview Questions

The following questions were used to guide semi-structured interviews and discussions during the Fellowship:

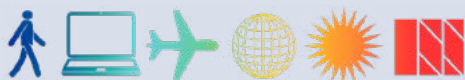
- What are the main drivers of change in your construction sector?
- How are clean economy and digital transformation changing skills needs?
- Which roles are most affected?
- How are emerging skills identified?
- How does your education or training system respond to emerging skills?
- How are apprenticeships being modernised?
- How are existing workers upskilled?
- How is trainer or teacher currency maintained?
- What role do industry bodies, unions and employers play?
- What policy levers are most effective?
- What lessons would you suggest for Australia?

Appendix C: Thematic Coding Framework

The following themes were used to organise and analyse evidence gathered during the Fellowship:

- Clean economy transition
- Digital transformation
- Existing worker upskilling
- Apprenticeships and new entrant pathways
- Trainer capability and currency
- VET status and tertiary pathways
- SMEs and micro-firms
- Public procurement and policy levers

- Regulation and compliance
- Workforce attraction and narrative
- Retrofit and building performance
- MMC and offsite construction
- Circular economy
- Business capability
- Industry engagement and social partnership
- Skills passports and portable credentials



International
Specialised
Skills
Institute



est. 1991