



Building the Plumbing
Workforce of the Future

Angela Moody
Commissioner and Chair
Queensland Productivity Commission
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Dear Commissioner,


QPC Interim Report – *Opportunities to improve the productivity of the construction sector*

Thank you for the opportunity to provide feedback on the Queensland Productivity Commission's (QPC) Interim Report into opportunities to improve productivity in the construction sector (the Inquiry).

This submission is from the Plumbing and Fire Protection and HVAC industry (the Industry) as represented by the Plumbing and Pipe Trades Employees Union (PPTU), National Fire Industry Association (NFIA), Air Conditioning and Mechanical Contractors Association of Australia (AMCA) and the Plumbing Industry Climate Action Centre (PICAC). Collectively these stakeholders represent essential training and trades across the plumbing, fire protection, heating, ventilation, air conditioning (HVAC) and mechanical services sectors in Queensland and nationally.

The Industry made a comprehensive submission to the QPC when its inquiry into construction sector productivity in Queensland commenced in June this year. Industry indicated that it welcomed the Inquiry and the policy focus on ensuring that the regulatory settings for construction in Queensland are current and effective, particularly in terms of meeting their core objective of increased community and worker safety. We note that several of the issues raised by Industry in its June submission have been referenced in the Interim Report.

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In its previous submission, Industry made the point about the critical and catalytic nature of plumbing and fire protection work, both in terms of the Queensland economy and as an enabler of climate change adaptation. Industry also described the nature and extent of the significant risks attached to plumbing and related work, and the associated need for high quality, current and well enforced regulatory safeguards. These include robust occupational licensing systems, supported by entry level standards which necessarily restrict certain work to only those who have been properly trained and are demonstrably competent to do the work safely and effectively.

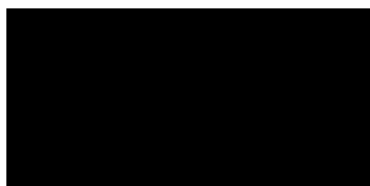
Industry's overarching point is that plumbing and fire protection work is dangerous, high risk, and relies on a highly skilled workforce. Left to its own devices the free market will not deliver buildings, houses or infrastructure to the standards or levels of safety, quality and amenity the community expects and needs. In order to protect the community from a wide range of risks, hazards, diseases, toxic materials, volatile substances like gas and hydrogen, fire, flood and more, the people responsible for working on plumbing, heating, cooling, ventilation and fire protection systems must be trained and competent. Occupational licensing for plumbing, HVAC and fire protection work is necessary and important, and we submit, must be retained. There is always scope to make the licensing frameworks more effective, and more reflective of the modern Industry, and we would support any reform activity focused on modernising the current suite of license scopes which apply to our sector.

The other key point Industry would make to the QPC is that the Industry has experienced rapid transformation over the past decade, and the pace of that change continues to accelerate. Many of the reform direction themes outlined in the Interim Report, about things like the use of AI, the adoption of technological advances in design, IT based and guided construction methods, new and innovative products and installations, are already a feature of the Plumbing and Fire Protection Industry. These developments have combined to re-shape the way major commercial plumbing and related work is undertaken. A current productivity related challenge for the Industry moving forward is to ensure the workforce keeps pace with these advances. Key to this is developing contemporary training and embedding the skills development and training pathways that deliver a pipeline of skilled plumbers and fire protection practitioners with the current skills to take full advantage of these innovations.

The Interim Report is divided into four key parts, with specific reform directions and preliminary recommendations relating to each part. In the attached submission, the main focus of Industry's feedback is on parts C and D, relating to regulation and the labour market, including apprenticeship pathways, respectively. Industry also makes some comments relating to part A and the extent to which procurement policy can be improved and better leveraged to drive productivity improvements.

Industry would welcome the opportunity to engage further with the QPC as the Inquiry progresses. Should you wish to discuss this submission further, please do not hesitate to contact myself via email: [REDACTED] or mobile: [REDACTED].

Yours sincerely



Shayne La Combre
Chief Executive Officer

Queensland Productivity Commission

Interim Report

Opportunities to Improve the Productivity of the Construction Sector

Plumbing and Fire Protection Industry Submission

Part A – Procurement

The QPC contends that government procurement practices, particularly Best Practice Industry Conditions (BPICs), have created unnecessary inefficiencies in the way government projects are constructed. These inefficiencies are being observed beyond government projects, with BPIC-like conditions now seemingly embedded in the broader industry through the Enterprise Bargaining Agreements (EBAs) of most Tier 1 firms and many sub-contractors. The Interim Report states that in the view of the QPC, these conditions have reduced productivity.

The discussion in the Interim Report about procurement is centered around the BPICs, and the extent to which the BPICs have impacted productivity in the commercial construction sector in Queensland. Industry notes the arguments outlined in the Interim Report, about the costs and benefits of the application of BPICs, the alleged contagion effect across the economy and so on. We note that the QPC recommends its permanent abolition based on the rationale that BPICs impose significant costs and that there is no evidence of a corresponding improvement in safety.

Industry supports measures which drive up efficiency and productivity, but only where those improvements can be made without compromising safety. Industry notes that the analysis in the Interim Report about safety looks at deaths and serious injuries (Figure 6.2). It assumes that because these rates have not decreased since BPICs were introduced in 2018, BPICs have been ineffective in terms of improving safety. Industry notes that according to Queensland Treasury figures, the number of Queenslanders working in construction has increased from approximately 236,000 in 2018, to approximately 278,000 in 2024. Given more people are working in the sector, maintaining a status quo result in terms of fatalities and serious injuries could suggest the BPICs have had a positive effect. Also, Industry would caution here that

fatalities and serious injuries are one measure, but there are likely many other instances where safety incidents have been avoided because of BPIC like conditions. As noted in the Interim Report, *“there appears to be a consensus on the need for government, industry and unions to develop mechanisms for reviving site productivity without compromising safety outcomes”* (page 18). Industry would welcome that consultative and collaborative approach when it comes to making any changes to the procurement rules for major government projects in Queensland.

Part C – Regulation of building activities

Consumer protection and risk should be primary consideration

Industry’s strong view is that any discussion about productivity, and how best to regulate the Plumbing and Fire Protection Industry in Queensland or anywhere else in Australia, needs to be **framed around risk**.

As well as being costly to rectify, in plumbing and fire protection, instances of non-compliance can be deadly. Safety, for consumers, for workers and for the community, is at the core of why plumbing and fire protection work is regulated. And safety is why all plumbing work, whether constructed off site or on, or as a standalone unit or as a subset of a larger one, should only be undertaken by suitably skilled and qualified people.

Plumbing is a series of connections and cross connections, an ecosystem which is only as safe and robust as its weakest link. Risk, for workers and the community, is associated with every element of plumbing, be it gas installation and the associated carbon monoxide and other gas related poisoning hazards; water borne bacteria and disease outbreaks including legionella; scolding risks from not fit for purpose taps or fittings; lead leaching out of corroding pipes; or the obvious risks associated with ineffective or non-functioning fire protection systems.

Effective and safe plumbing (products and practices) is the first line of protection (for households, community facilities, offices, schools, hospitals and so on) against a wide range of potential risks and hazards. The very life blood of our community and our economy, our ability to access abundant, unadulterated water, is plumbing and plumbing products dependent.

Plumbing and water treatment failures can be catastrophic. They can result in mass casualties as occurred after an outbreak of severe acute respiratory syndrome (SARS) in Hong Kong last decade, which saw 321 people infected by SARS resulting in 65 deaths. Investigations into the outbreak found that poor plumbing design coupled with faulty plumbing materials caused the loss of a water barrier seal in a U-shaped water trap. The water barrier seal evaporated allowing air to escape from within the sanitary drainage system and into the building. The economic cost of the SARS outbreak in Hong Kong was \$60B. In the city of Flint Michigan in the United States, thousands of people were impacted by lead contaminating the city’s water supply, a problem directly attributable to corrosive pipework. In Australia we have had issues

with serious water contamination also. Such as in Western Australia where lead in the water prevented the new Perth Children's Hospital from opening.

Good hygiene, so much in focus following the global COVID-19 pandemic, is also plumbing dependent. Poorly or inappropriately constructed plumbing systems can mean sterility of pipework and therefore hygiene can be compromised.

Full costs and benefits need to be considered

In that context, Industry supports the premise that regulations should have a strong rationale, be well designed and administered, and be effective in terms of addressing an underlying problem or market failure. And the benefits of regulation should outweigh any costs that arise.

Industry also agrees that, in broad terms, the more complex and unwieldy the regulatory framework becomes, the more it risks impeding productivity and can see value in a review of the legislation and regulations which comprise Queensland's building regulatory framework as proposed in the Interim Report. The critical element of this program of review work is to ensure that the "costs" associated with any regulation subject to review, include a consideration of the costs associated with its removal. It makes sense to review and keep all the regulations current, and to consider their effectiveness individually and as a whole.

However, Industry would caution against a narrow focus on compliance costs and stress the need for the full costs and benefits of any proposed change to be considered.

In occupational licensing for example, there are clear costs attached to a licensing framework, for practitioners and for government in terms of administering the scheme. These costs add to the overall cost of engaging a plumber or an electrician or HVAC professional. However, the costs avoided (litigation, re-work, non-compliant work which is dangerous, fire damage, water ingress and flooding, etc) by ensuring only competent people work on plumbing, or fire protection or HVAC, are incalculable, and dwarf any compliance costs attached to the licensing scheme. Occupational licensing also delivers a benefit in terms of consumer confidence, because it provides a means by which consumers can gauge and evaluate practitioner competence. **There may be sectors of the economy where occupational licensing amounts to over regulation and could be re-considered, however plumbing and fire protection is not one of them.**

Section C of the Interim Report also raises issues about the effectiveness of regulatory oversight in Queensland, and of the operating approach and efficiency of the Queensland Building Codes Board (QBCC). Industry agrees that a critical aspect of productivity is ensuring regulations are well enforced and that the lines of communication between the regulator and the regulated parties are transparent. As noted in the submission to the previous round of consultation by AMCA and the NFIA, a more collaborative and educative approach from the QBCC, coupled with robust action against genuinely non-compliant or unlicensed operators, would foster greater industry productivity. We note and bring to the attention of the QPC the extensive policy work

currently underway in Victoria and NSW where new holistic Plumbing and Building Commission regulatory models are currently being developed and updated. There may be opportunities for some benchmarking of the performance of the QPCC against that of its interstate counterpart entities, and/or to share knowledge and information about best practice regulation.

National regulation – NCC and Standards

Also covered in section C of the Interim Report is the productivity impact on Queensland of those parts of the regulatory framework which are national, in particular the National Construction Code (NCC) and Australian Standards. As the Interim Report notes, the NCC, Australia's single national, performance-based building and plumbing code, has delivered significant economic benefits through nationally consistent requirements, improved productivity, increased flexibility and the ability to use new and innovative materials. As the Australian Productivity Commission noted (2025), the NCC is "sound in principle".

However, it has become complex and challenging to comply with. And there is a lack of regulatory consistency across the national sector, and, as discussed later in this Paper, there is scope for the Australian Building Codes Board to play a greater role in terms of facilitating and driving regulatory harmonisation. The proposal in the Interim Report to pause the application to Queensland of any future changes to the NCC is understandable in that context and aligns with the broad national position agreed by sector leaders at the Federal Treasurer's Productivity Roundtable in August 2025.

With respect to Australian Standards, there is strong evidence to back calls for greater levels of access and affordability, which is currently a prohibitive barrier to productivity and compliance, particularly for Small to Medium Enterprises (SMEs). In fire protection for example, accessing the legally mandated library of Australian Standards imposes a prohibitive cost on practitioners. The NFIA estimates this cost to be between \$15,625 and \$22,500 for a single small business. This includes 50-75 current standards, up to 100 historical standards for servicing existing buildings, and multiple historical versions of the NCC.

This issue has been independently verified by national bodies. The Australian Government's Productivity Commission has repeatedly criticised this "paywalled" model, labelling it a **"tax on compliance"** and recommending that any standard referenced in law be made freely and publicly available online to reduce costs and improve adherence (Productivity Commission, 2017). The high cost creates an information asymmetry between large firms and SMEs. Evidence provided to a 2024 Senate inquiry confirmed that this barrier contributes to non-compliance and defects, as practitioners may be disincentivised from verifying technical requirements or unknowingly work from outdated information (Senate Standing Committees on Economics, 2024).

Providing for the safe adoption of MMC

As noted in the Interim Report, the prefabricated (or off-site construction or MMC) building products market is large and growing across the sector, including in plumbing and fire protection. Industry is seeing an expanding range of plumbing systems being created and assembled somewhere other than on-site. These include bathroom pods, but also commercial scale heat pump systems for heating and cooling and a growing range of other products which combine multiple plumbing elements. Ensuring the regulatory settings can accommodate these new products and systems, and protect consumers, is critically important.

The regulatory challenge is that regulatory models at a state and territory level, including in Queensland, have been set up to regulate the point of installation, not manufacture. Industry has been working productively with relevant regulatory and policy agencies in NSW and Victoria with a view to developing the right regulatory settings to safely accommodate MMC that provides licensed plumbers with the opportunity to meet their regulatory obligations and satisfy themselves that the plumbing work is compliant.

Those consultations have been focused on several key principles including:

- Consumer protection, and the health and safety of building occupants and the wider community should be the primary consideration.
- Transparency of information so that consumers are aware when prefabricated systems are used.
- Liability of builders and developers should be the same as on-site construction.
- Clear accountability and chain of responsibility through appropriate certification from design through to installation and commissioning of pre-fabricated plumbing products.
- Design, manufacture, installation and commissioning of prefabricated plumbing products should be carried out only by appropriately licensed or registered practitioners.
- Prefabricated plumbing systems entering the market are fit for purpose and compliant.
- Replacement/repair access and costs are factored in design decisions, especially when complexity increases or when 'built in'.
- Clear regulatory framework and oversight applicable for all prefabricated plumbing.
- Appropriate insurance coverage and warranties when prefabricated plumbing is involved (product warranties are not sufficient protection).

Potential regulatory approaches are being developed which would align with those principles. They would make it explicit that, for example:

- Off-site plumbing work for pods should only be done by registered plumbers or apprentices under the supervision of a licensed plumber.
- Off-site constructed plumbing systems, including pods, would require a Compliance Certificate or similar (one per pod, not batched)
- Pods would have a unique identifier visible when installed, to help with traceability and any mass recalls.

- Each pod is covered by insurance

Part D – Labour markets

Occupational licensing and AMR

Occupational licensing is covered again in this section of the Interim Report. As well as recommending all occupational licensing be paused and reviewed, which we cover in our response to Part C, the Interim Report advocates for the greater utilisation of national licensing models and / or Automatic Mutual Recognition (AMR). From a Plumbing, Fire Protection and HVAC Industry perspective, there are some critically important points of context to keep in mind when considering the movement of workers across borders. These include:

Community safety

Well-functioning and effective plumbing and fire protection systems are the community's first, and often only, line of defence against a range of hazards and risks. Professionally installed and maintained systems keep the public safe from a range of diseases, such as legionella and toxic and volatile substances like gas and carbon monoxide. The safety and health of the community, the amenity of the built environment, and our collective ability to manage water and use energy efficiently, are all inextricably linked to, and dependent upon, high quality, safe and reliable plumbing and related systems.

The primary way to ensure the safety of plumbing and related systems is to ensure the competence of those who install and maintain, service and test these systems. This is the key reason occupational licencing/registration exists in the Industry. Occupational licence/registration supported by additional compliance measures including inspection, audit or other means to ensure the plumbing system is both fit for purpose and of a standard that protects the health and welfare of the broader community.

Australia maintains the highest levels of sanitary drainage and water supply requirements in the world and is recognised internationally for its work in water efficiency and re-use and onsite treatment of sanitary waste and stormwater to achieve environmentally sound disposal. Fire sprinkler systems and other protection measures, installed by trained, qualified and licensed fire protection practitioners save countless Australian lives every year. Just over 25 years ago, in 2000, 15 backpackers lost their lives in the devastating fire at the Childers Palace Backpackers Hostel. The Queensland Coroner found that the building had no functioning fire sprinkler system and no working smoke alarms.

As these systems become increasingly more complex, more integrated and co-dependent, there is an imperative to ensure suitably trained and qualified individuals are carrying out this work. The rapid pace of innovation and technological change in energy systems means new energy products are entering Australia and becoming available to consumers who may lack an understanding of product safety risks.

As the nature of change increases in respect of plumbing products, systems and installations, so does the requirement to constantly develop competency. In this context, Industry strongly supports the reform directions as proposed relating to expanding and better utilising **Continuous Professional Development** (CPD) training. The Industry is changing rapidly, and the days when a point in time qualification was adequate to ensure ongoing practitioner competency are long gone. Industry's view is that errors stemming from outdated knowledge invariably led to rework, which is a primary source of lost productivity on construction sites. Implementing mandatory CPD is therefore framed as an economic imperative to reduce defects, minimise disputes, and support efficient project delivery.

Scopes of work are not always directly comparable

Despite having a nationally recognised training package delivering qualifications that are largely the same in every state or territory, differences exist between the defined scopes of work across jurisdictions. Some works, such as roofing and stormwater, which is regulated work in Victoria, are not within the scope of regulated work in other jurisdictions. An occupational licence may be required to do that work in other jurisdictions, but not necessarily a plumbing licence/registration. Fire protection work is registered work in some jurisdictions (Victoria and Queensland), but not in others (Western Australia).

There is also a lack of regulatory comparability with respect to mechanical services and air conditioning work across the jurisdictions. Medical gas work, for example, is regulated work in some jurisdictions and not others, as are other specialised aspects of plumbing, like backflow prevention.

There are a range of historical and practical reasons for these differences. They include climatic and geographical differences between northern states and southern states in terms of temperature and rainfall patterns, leading to different stormwater and water management approaches in different jurisdictions.

Different jurisdictional regulatory models

Although the various licensing systems all act to protect the health and safety of the people within each jurisdiction, they are often incompatible with each other. For example, in Victoria, plumbers work under a system of self-certification, a requirement to lodge certificates and hold appropriate insurance cover. In Victoria the regulator (Building and Plumbing Commission, BPC) provides oversight on plumbing practitioners and audits and inspects a proportion of plumbing work each year taking a risk-based approach.

If non-compliant work is identified, a rectification notice is issued to the licensed plumber responsible who must rectify that work at no cost to the consumer. This differs from other jurisdictions which assume compliance responsibility for most of the work carried out by plumbers and often have a separate entity (separate to the licensing or registration body) responsible for this. For example, in New South Wales, local councils assume some of this responsibility for certain types of plumbing work.

Another difference with other jurisdictions is that Victoria has the broadest scope of regulated plumbing work, including work not regulated in other jurisdictions, such as stormwater drainage, metal roofing and above ground stormwater drainage, mechanical services, refrigerated air conditioning and all scopes of fire protection.

Whilst there are significant cross jurisdictional differences, there are also commonalities. For some scopes of plumbing work, including water supply, sanitary and drainage, there are few if any major differences between states. Work in these scopes is regulated plumbing work in all Australian jurisdictions (requires a license) and is carried out in mostly the same way according to the same Australian Standards right across Australia. In the context of national licensing, an option to consider is whether a national plumbing license restricted to these scopes may avoid some of the past roadblocks and have a better chance of success.

In other parts of the sector, there are also potential opportunities to identify areas of consistency which could underpin a national model. In HVAC for example, the potential exists to define three distinct work scopes: refrigeration and air conditioning (RAC), mechanical services plumbing and duct installation, and develop consistent licencing scopes for each class of work. The NSW Building Reform Program is working towards this type of approach, which could be used as a basis for a national model.

Regulatory harmonisation the first step

Industry is broadly supportive of the objective of developing a national licencing framework to plumbing HVAC and fire protection work in Australia. There could be considerable worker mobility and other benefits from a national occupational licensing system for plumbing and related occupations. Under current arrangements there are licensed plumbers who need to hold an individual license in every state of Australia and New Zealand and must pay license fees each year to each regulator. This situation is clearly inefficient and could be improved. This is particularly the case in “cross border” locations where plumbers in their normal course of operation find themselves working in multiple jurisdictions requiring, in most cases, separate licenses.

Industry’s key point is that a national licensing model, and AMR, would make sense and could be effective if there was an existing level of regulatory harmonisation across the states and territories, upon which the national license could be based. The problem is that currently in the Industry, requisite level of regulatory harmonisation across jurisdictions does not exist.

The lack of national regulatory harmonisation was the major roadblock when the national licencing scheme (NOLS) proposal was under consideration over a decade ago, and that situation has not changed. Whilst there are some areas of consistency and convergence (for example, core elements of plumbing like, water supply, sanitary and drainage), there are also significant differences and gaps. Over a decade on from NOLS, the state and territory regulatory schemes for plumbing and fire protection work still differ considerably in terms of the:

- broad regulatory approach adopted across jurisdictions (self-certification versus staged inspections).
- lack of direct alignment and consistency of scope of licenses across the various streams of plumbing and fire protection work in the different jurisdictions.
- licensing qualification criteria which apply (some jurisdictions require additional pre-licence competency verification steps, such as exams, others do not).
- different approaches individual jurisdictions take to addressing the risks associated with different plumbing activity (for example, stormwater drainage is regulated in some jurisdictions and not others).

The level of regulatory harmonisation has not changed substantially since the last national licencing push and there has been no real progress made towards addressing the challenge. As a result, it is reasonable to anticipate that the roadblock that stopped NOLS will be a blocker again. In the absence of a platform of regulatory harmony, there is a risk that the pursuit of common ground reduces the national licensing exercise to a lowest common denominator approach. This could have the effect of lowering standards, increasing community risk and driving up sector costs (remediation and repairs). The Industry is moving at great pace, with new products and innovations entering the sector all the time. Currency of skills is critical to being able to embrace, utilise and take best economic and environmental advantage of these new and emerging products and systems.

Any moves which resulted in a lowering of entry level requirements, or a narrowing of licensed work scopes to align with the lowest common position upon which jurisdictions can agree could leave the workforce under-skilled. This could compromise Australia's ability to meet the challenges of decarbonisation (under skilled workforce), achieve national housing targets, and mitigate and respond to climate change and its impacts.

From the perspective of seeking productivity improvements, the QPC could consider whether the right national policy and regulatory architecture and systems are in place to drive cross border harmonisation and capture all the associated productivity benefits.

For example, the Australian Building Codes Board (ABCB), whose responsibilities include "regulatory reform in the construction sector" has not demonstrated a great appetite for driving national harmonisation. Other national bodies which have national remits could, but

have not, taken steps to build a platform for national licencing by driving regulatory harmonisation. The Building Ministers' Meeting (BMM), which oversees policy issues affecting Australia's building and construction industries has not sought to tackle regulatory harmonisation. Standards Australia, for example, or quasi or "splinter" regulatory bodies like the Australian Refrigeration Council (ARC) tend to be focused on their own operations, including commercial operations, rather than on opportunities to streamline the national regulatory landscape.

Industry is strong in its view that there is real potential and opportunity to improve productivity through greater regulatory harmonisation. We have seen the national approach successfully adopted in the training sector, where there is a national training framework in place with students in all jurisdictions completing the same entry level qualification of a *Certificate III* in plumbing or fire protection or HVAC etc. However, driving up regulatory harmonisation requires a level of leadership and policy intent which has not been evident to date.

Apprentices and Trainees

The Industry strongly welcomes the focus on training and apprenticeships in the Interim Report, which covers well many of the current challenges, including systemic, financial and social. Industry strongly agrees with the QPC that the Queensland Government should establish a collaborative process with industry and relevant government organisations and agencies to identify problems, reform opportunities and priorities to improve the training and apprenticeship system for the construction industry in Queensland. Issues that should be considered include the attraction and retention of prospective students and apprentices, including the efficacy of pre-apprenticeship and mentoring programs; the design, capacity and quality of the training system, and how these can be improved to meet the needs of industry and prospective and existing workers and development pathways to encourage a career in construction. Industry provided extensive comments in its submission of June 2025, describing a range of initiatives Industry is progressing to improve pathways to VET sector training.

Increasing female participation rates is a key focus for Industry going forward. Industry recently received significant grant funding from the Federal Government through its 'Building Women's Careers' (BWC) Program. PICAC, along with its key industry partners, looks forward to expanding on the above initiatives through the recently launched BWC project, *Breaking the Barriers for Women in the Plumbing Industry*, through delivery of a national framework for employers, education and training for individuals and a national awareness campaign.

Project research to date shows successful programs must address both structural and cultural barriers in a coordinated approach. As the Minister for Skills and Training, the Hon Andrew Giles MP said when launching the project, rapidly increasing the number of women in key trades is not only an equity issue, but also a critical economic issue. Women represent a largely untapped resource of skilled labour that the economy of Queensland, and Australia, needs.