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Construction Plumbing Services Training Package

Building & Construction Project Background Paper

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**Building and Construction Background Paper**

## **Project Aims**

The Construction, Plumbing and Services IRC is updating the Building and Design components in the CPC training package to address:

* current vocational outcomes
* increase in older workers
* digitisation in construction practices
* demand for smart and green construction
* 2012 Standards for Training Packages
* COAG Industry and Skill Council directives
* Minister’s priorities

The qualifications under review are:

CPC40110 Certificate IV in Building and Construction (Building)

CPC40208 Certificate IV in Building and Construction (Contract Administrator)

CPC40308 Certificate IV in Building and Construction (Estimating)

CPC40408 Certificate IV in Building and Construction (Sales)

CPC40508 Certificate IV in Building and Construction (Site Management)

CPC40611 Certificate IV in Building and Construction (Specialist Trades)

CPC40708 Certificate IV in Building and Construction (Trade Contracting)

CPC50210 Diploma of Building and Construction (Building)

CPC50308 Diploma of Building and Construction (Management)

CPC60212 Advanced Diploma of Building and Construction (Management)

The suite of Building and Construction qualifications need to be updated to keep in line with current and future industry best practice as a result of the key drivers for change, policy and regulation.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
| **Reform** | **Action to address reform** | **Evidence of reform being addressed** |
| Remove obsolete and superfluous qualifications from the system | Update 7 qualifications and 44 units of competency:1. CPC40110 Certificate IV in Building and Construction (Building) 2. CPC40208 Certificate IV in Building and Construction (Contract Administrator) 3. CPC40308 Certificate IV in Building and Construction (Estimating) 4. CPC40508 Certificate IV in Building and Construction (Site Management) 5. CPC50210 Diploma of Building and Construction (Building) 6. CPC50308 Diploma of Building and Construction (Management) 7. CPC60212 Advanced Diploma of Building and Construction (Management) Delete 3 qualifications and up to 17 units of competency:1. CPC40408 Certificate IV in Building and Construction (Sales) 2. CPC40611 Certificate IV in Building and Construction (Specialist Trades) 3. CPC40708 Certificate IV in Building and Construction (Trade Contracting)Consultation with industry stakeholders is required to determine if the vocational outcomes of these individual qualifications are still relevant or if an integrated qualification could be designed.  |  |
| Make more information about industry’s expectations of training delivery available  | Gathering information on industry expectations of the training delivery will be a focus of consultation. The training package components will be written to reflect industry expectations and the Companion Volume Implementation Guide will be updated with additional information targeted at training providers and consumers. |  |
| Ensure the training system better supports individuals to move easily from one related occupation to another  | The design of qualifications will be adjusted to strengthen pathways to related sectors including building design, home sustainability and access consulting. |  |
| Improve the efficiency of the training system at a unit level | There is duplication between Certificate IV qualifications, with low enrolments in some units of competency. A generic Certificate IV could be considered, with specialisations offered through skill sets/streams.Any deletion of units should consider the impact on other qualifications which share or import these units.These will be confirmed for deletion in consultation with industry. Where appropriate, relevant cross industry and cross sector units will be imported to minimise the duplication of units in the system. |  |
| Foster greater recognition of skill sets | Skill sets will be investigated especially for upskilling the existing workforce in new materials and technologies. |  |

 |

This paper provides the Technical Advisory Group (TAG) with research from secondary sources about the qualifications and their impact in the Building and Construction Industry. This information is essential to informing design considerations for the 10 qualifications under review. It aids in the identification of skills and knowledge gaps, emerging trends, challenges and drivers of change, and provides questions for Artibus Innovation’s industry consultation.

## **Industry Overview**

##### **Residential Building and Non-Residential Building Construction**

The Residential Building and Non-Residential Building Construction sectors primarily involve the construction of houses or other residential buildings and non-residential buildings such as hotels, hospitals, prisons, or other buildings. Also involved in this sector is carrying out alterations, additions or renovations to these buildings and managing these tasks.[[1]](#footnote-1)

In residential construction, the four largest home building companies (Metricon, ABN Group, BGC and Simonds Homes) contribute to less than 10% of annual industry revenue. In apartment and townhouse construction, the four largest companies are expected to account for only 21.6% of industry revenue in 2017-18 (Probuild, Multiplex (BHCA), Meriton Apartments, Dyldam).[[2]](#footnote-2) Businesses in residential building are location based and service local and regional populations. Most companies are domestically owned, but there is a growing level of foreign ownership in apartment and townhouse construction.[[3]](#footnote-3) Typically, businesses in the industry operate in narrow regional markets.[[4]](#footnote-4)

The non-residential building construction industry operates in areas such as industrial, commercial and institutional building construction. In 2017, the four largest companies generated less than 10% annual revenue for commercial and industrial building (LendLease, Multiplex, CIMIC Group and Probuild Contractors) and the four largest companies in commercial building generated less than 20% industry revenue (CIMIC Group, Lendlease, CCCI and BHCA Pty Limited).[[5]](#footnote-5) The industry is characterised by small-scale businesses, though it also contains some of the country's largest building firms.[[6]](#footnote-6) While the industry sector has a significant amount of foreign ownership, the industry is still mostly Australian owned.[[7]](#footnote-7)

Residential construction revenue projections are varied. After unprecedented activity since the 2000s, multi-apartment and townhouse construction has experienced a deep downturn in response to oversupply and reductions in overseas investment, which is likely to be sustained in the short term. However, this is predicted to recover in response to population growth and the associated demand for new housing.[[8]](#footnote-8) Revenue is predicted to grow at 9.1% annualised over the next five years. Single-unit house construction has lost ground to multi-apartment and townhouse construction industry. While still affected by the housing downturn, it is predicted to increase at 1.6% per year over the next five years.[[9]](#footnote-9) Both sectors will be driven by population increases, but are vulnerable to deteriorations in mortgage affordability, such as unstable employment and loan conditions.

Institutional building construction in Australia is currently funded primarily by the private sector. It has grown with investment in aged-care facilities and declined with the contraction of government funding of healthcare and education building construction. Industry revenue is forecast to increase at 2.2% a year over the next five years.[[10]](#footnote-10)

***Design Considerations***

*Q. Would a generalist qualification with optional streams meet industry needs?*

*Q. Would commercial and residential subsectors, such as aged care, benefit from their own qualifications?*

*Q. Should we consider skill sets for specialised professional development pathways?*

**Regulation and Licensing Regulation**

This sector operates in a highly regulated environment, which includes licensing and registration requirements for workers, state and local government building standards, approvals and zoning regulations, pollution controls and workplace health and safety standards.[[11]](#footnote-11)

The Australian Building Codes Board provides a national approach to ensuring uniform building requirements through the National Construction Code (NCC), although it is administered through the legal frameworks of state and territory jurisdictions. The National Construction Code (NCC):

provides the minimum necessary requirements for safety and health; amenity and accessibility, and sustainability in the design, construction, performance and liveability of new buildings (and new building work in existing buildings) throughout Australia. It is a uniform set of technical provisions for building work and plumbing and drainage installations throughout Australia whilst allowing for variations in climate and geological or geographic conditions.[[12]](#footnote-12)

Builders and construction contractors are individually licensed in each state and territory, with each jurisdiction specifying training and qualifications builders must hold, often by construction type.[[13]](#footnote-13)

***Design Considerations***

*Q. How will the qualifications integrate varying regulatory regimes, structurally, within the packaging rules?*

*Q. Is the aim a generalist qualification which meets common regulatory requirements across all states/territories (lowest common denominator), or a full qualification which leads standards irrespective of local licensing requirements?*

### **Key Drivers of Change: Industry Trends and Emerging Challenges**

The industry is experiencing a range of workplace changes, with skills replacement gaps predicted as workers exit the industry.[[14]](#footnote-14) Some of the major challenges and opportunities include new technologies, increased demand for smart and green construction and an ageing workforce. These are likely to impact on job processes, tasks, and materials and potentially result in skill replacement shortages.

In Australia, skills shortages are identified through labour market analysis of existing shortages.[[15]](#footnote-15) There are three main ways of responding to skills shortages:

* Importing skilled labour through temporary and permanent migration[[16]](#footnote-16)
* Retraining local workers and providing industry incentives through apprenticeship subsidies and loans, such as the Australian Apprenticeships Incentives Programme[[17]](#footnote-17) and VET Student Loans scheme[[18]](#footnote-18)
* Integrating technology into current work practices to make industries less labour reliant and more accessible to groups not traditionally found in these industries.

**VET Student Loans (Courses and Loan Caps) Determination 2016[[19]](#footnote-19)**

The following CPCBC qualifications were included in loan cap band 2 of the VET Student Loans (Courses and Loan Caps) Determination 2016:

* CPC50210 Diploma of Building and Construction (Building)
* CPC50308 Diploma of Building and Construction (Management)
* CPC60212 Advanced Diploma of Building and Construction (Management)

### Social

***Increase in Older Workers, Underrepresentation of Women***

The construction industry is an industry with a declining proportion of workers aged 30-49. This crucial succession cohort has declined by 6.7% in the last 20 years.[[20]](#footnote-20) It is unclear if workers in this cohort are exiting the building and construction industry entirely, and if so, for what reasons. The decline in their numbers poses a risk that the industry will lose vital skills as older workers retire with proportionally fewer younger workers in the industry to replace their skills. This is especially relevant to senior level skills such as management and leadership, which are projected to be more in demand in the future construction industry.[[21]](#footnote-21) There is a need to not only attract new workers, but also retrain and upskill current workers. The priority for training package development is to complete trade level work and then focus on higher-level skills supporting career progression.

*Design Considerations: Retaining and developing workers*

*Q. Do current qualifications have a vocational training pathway that supports career progression?*

*Q. Do current qualifications provide professional development pathways and support career progression?*

Attracting and retaining workers to this industry will mean ensuring that the employment conditions and pathways are accessible, viable and competitive with other industries. Automation and new technology may provide a solution to a smaller workforce, but with this comes the training need to upskill and re-skill the older population of construction workers to use new technologies and automated processes.[[22]](#footnote-22)

A potential pool of workers are women, who are under-represented in this industry. At present, only 11.7% of employees in the construction industry are female, the lowest proportion of female employees and the highest proportion of male employees (88.3%) of any Australian industry sector.[[23]](#footnote-23) The industry has traditionally been male dominated, this is increasing. In 2006, women accounted for 17% of the construction industry workforce,[[24]](#footnote-24) however in 2018, women only account for 11.6% of the workforce.[[25]](#footnote-25) A 2016 study by UNSW into gender disparity in the construction industry noted that men dominate senior roles, while women are more likely to be in junior, support roles and non-fee-earning professions such as human resources and marketing.[[26]](#footnote-26) Additionally, women experience relative disadvantage in regards to development and promotional opportunities, as well as inequality in pay. These experiences result in women leaving the construction industry almost 39% faster than men.[[27]](#footnote-27)

In order to increase recruitment and retention of women, the report by UNSW recommends that:

* construction companies review the cultures of their workplaces to determine if they are gendered and exclusionary,
* even out how men and women are recruited – through both formal and informal channels,
* provide pathways and training for women to further their construction careers, and
* introduce more flexibility in the workplace so parental leave does not hinder women’s’ careers.[[28]](#footnote-28)

*Design Considerations*

*Q. Can the training package provide post trade training that increases access within the building and construction industry?*

### Technological

**Construction Materials & Processes**

The building construction industry is characterised as having core technologies and systems of construction that have remained stable over time.[[29]](#footnote-29) Incremental changes in the materials used, management of construction processes, and construction design, however, are likely to make considerable differences to construction practices, construction location, onsite waste managements, and overall costs.[[30]](#footnote-30) The trend toward ‘easier to handle materials’ has coincided with the limited supply of construction timber, and the need to adapt to non-traditional alternatives, such as engineered wood, steel, plastics and concrete products.[[31]](#footnote-31)

***Design Considerations***

*Q. Do the current qualifications and units of competency provide adequate skills and knowledge for working with non-traditional construction materials?*

*Q. Does working with new and emerging construction materials and processes need to be a standalone Core or Elective unit?*

*Q. What performance evidence is required for working with new, emerging and non-traditional construction materials?*

**Digitisation & Emerging Technologies**

Technologies relating to automation, such as computer-aided design (CAD), computer-aided manufacturing (CAM), building information modelling (BIM), modular construction and pre-fabrication are having an impact on the many construction processes, methods and jobs.[[32]](#footnote-32) The major technological advances that will most likely affect the CPC training package are in business applications, automation, BIM and pre-fabrication. (An expanded discussion of BIM and pre-fabrication is included in Appendix G.)

***Design Consideration***

*A functional analysis of the Building and Design qualifications under review revealed there are 12 units with functional outcomes for Building Science and Technology.*

*Q. Are the current units of competency sufficient to meet emerging technology requirements?*

*Q. Are these units fit for purpose? Are there enough to provide adequate competencies? What should be included in them (e.g. BIM)?*

Automation technology and changed employment models are likely to disrupt traditional work practices, in complex ways. Rather than automate jobs entirely, it is “more likely that workers spend more time on other tasks that cannot be automated.”[[33]](#footnote-33) From a training package perspective, there is a need to respond to emerging technologies by ensuring pathways for both current workers and new entrants to develop the skills to engage with and manage these technologies efficiently and effectively.

The use of building technologies and consumer demand for detailed costings may decrease overall building costs, physical labour input, while also improving quality of construction.[[34]](#footnote-34)

***Design Considerations***

*Q. Do the current units of competency prepare workers adequately for working with and communicating about emerging building technologies?*

### Economic

The residential construction industry is showing early signs of a period of downturn, following a period of unprecedented activity. Revenue decline is expected to be short term, due to demographic pressure to increase residential builds in key states (Queensland, New South Wales, Victoria).

The institutional construction industry is currently driven by investment in aged care development, which reflects demographic trends. This follows a sector downturn after the end of the Building Education Revolution stimulus package and the completion of major healthcare projects.[[35]](#footnote-35) In May 2018, the Australian Government released *Strengthening Australia’s cities and regions*, a 10 year plan for $75 billion dollar investment in national infrastructure.[[36]](#footnote-36)

***Design consideration***

*Q. How can the CPC training package meet the needs of the Australian Government infrastructure investment plan?*

*Q. Are there construction specialisations required to meet the needs of developing projects? What, if any, connections do these have with other qualifications?*

### Environmental

There are two key environmental drivers of change in this area. The first is the impact of climate change on building construction. The second is the demand for smart and green homes.

***Climate Change Events***

Climate change events, such as Victoria’s 2009 Black Saturday and Brisbane’s 2011 floods, have been described as ‘one-off’ stimulants to the residential construction industry.[[37]](#footnote-37) The intensity, regularity and extent of the impact of these climate change events are still emerging, although it is clear that governments will heavily regulate building construction in the aftermath of such events. This means that although building construction technologies have only changed incrementally over time, new requirements are likely to be added over time in response to changing environment conditions and threats.

***Design Considerations***

*There are no units on restoring building or reconstructing after natural disasters, and the associated requirements in the National Building Code.*

*Q. Should competencies in rebuilding after natural disaster be incorporated across building and construction qualifications?*

***Demand for Green Construction***

Buildings have a high carbon footprint, as they account for about 40% of global energy consumption.[[38]](#footnote-38) This opens large opportunities for the construction industry to provide innovative solutions to reduce this – one way to achieve this is through green and smart construction.

Consumer driven and policy demand for green and smart construction is likely to result in changes in construction practices and principles. As a result, there is a need for current and new construction industry workers to be trained and upskilled in energy-efficient building and retrofitting, water conservation, wastewater recycling and treatment and the renewable energies sector.

***Design Considerations***

*The current qualifications include units of competency on sustainable design and thermal efficiency.*

*Q. How can current and future environmental challenges and consumer expectations be included in vocational qualifications?*

*Q. Should competencies in environmental building be incorporated across building and construction qualifications?*

***Smart Cities***

The Australian Government has invested $50 million in the Smart Cities and Suburbs program, which will provide “technology-based solutions to urban challenges”.[[39]](#footnote-39) Discussions of ‘the’ smart city assume a technological determinism, when smart cities might take different forms depending on how selectively and purposefully the technology is taken up. In its prescriptive built form, the smart city ‘prescribes how people should use the spaces they inhabit’. In its coordinating form, smart construction ‘high-tech coordinates but does not erase messier activities’ in the social environment.[[40]](#footnote-40) These contrasting models underpin emerging smart cities around the world, including South Korea’s Songdo and Abu Dhabi’s Masdar. It is unclear which choice of smart construction will drive building construction in Australia.

***Design Considerations***

*The current qualifications include units of competency on smart buildings and cities?*

*Q. How can policy programs about smart cities and buildings be included in vocational qualifications?*

*Q. Should competencies in smart buildings be incorporated across building and construction qualifications?*

### Educational

There are two changes affecting building and construction education:

* Expanded role of technology-assisted tasks and the need for higher skill levels among existing and new workers
* Relationship of higher education qualifications to related VET qualifications and the articulation arrangements between them

Technology is transforming the way businesses operate. Automation is predicted to complement and assist jobs of higher skill levels but substitute those of routine and lower skill levels. This means that a significant portion of the industry will need to be up-skilled and new workers trained for technology-assisted jobs, as there will be a need to learn how to use new machines, computers, software and applications.

**The IRC is proposing to review and update Certificate IV and above in the Building and Construction qualifications to meet this need**.

Articulation relationships between post trade VET qualifications and higher education are unclear and require further research. Initial research found that VET qualifications were entry requirements to higher education, with credit for prior learning assigned on a case by case basis. Further research is needed to identify institution-specific articulation arrangements which are in place.

***Design Consideration***

*How can we package the qualifications to optimise articulation arrangements to higher education?*

|  |  |  |
| --- | --- | --- |
|  **Qualification Name** | **Institution** | **State** |
| Bachelor of Applied Science (Construction Management) | Curtin | WA |
| Bachelor of Construction | CQUniversity | QLD |
| Bachelor of Construction Management | UniSA | SA |
| University of Canberra | ACT |
| Western Sydney University | NSW |
| Bachelor of Construction Management - Building (Honours) | University of Newcastle | NSW |
| Deakin University | Vic |
| CQUniversity | QLD |
| Victoria University (VU) | Vic |
| RMIT University | Vic |
| Bachelor of Construction Management and Economics | Holmesglen Institute, TAFE VIC | Vic |
| University of South Australia | SA |
| Bachelor of Construction Management and Quantity Surveying | Bond University | QLD |
| Bachelor of Construction Project Management | UTS | NSW |
| Bachelor of Applied Science(Architectural Science) | Curtin | WA |
| Bachelor of Applied Science(Interior Architecture) | Curtin | WA |
| Associate Degree in Construction | USQ | QLD |
| Graduate Certificate in Construction Project Management | UNSW | NSW |
| Master of Construction Management | University of Melbourne | Vic |
| University of Adelaide | SA |
| Source: *The Good Universities Guide*[https://www.gooduniversitiesguide.com.au](https://www.gooduniversitiesguide.com.au/) |

### Political

Domestic and international political change is likely to impact on the building construction industry, particularly commitments to meeting international climate obligations, investment in national infrastructure and smart cities, increasing requirements for energy efficient buildings, and responses to emerging climate conditions. Other political drivers include responding to demographic trends, such as population increases, and the allied need for residential dwellings and institutional buildings.

## **Relevant Qualifications**

This project involves the following qualifications:

CPC40110 Certificate IV in Building and Construction (Building)

CPC40208 Certificate IV in Building and Construction (Contract Administrator)

CPC40308 Certificate IV in Building and Construction (Estimating)

CPC40408 Certificate IV in Building and Construction (Sales)

CPC40508 Certificate IV in Building and Construction (Site Management)

CPC40611 Certificate IV in Building and Construction (Specialist Trades)

CPC40708 Certificate IV in Building and Construction (Trade Contracting)

CPC50210 Diploma of Building and Construction (Building)

CPC50308 Diploma of Building and Construction (Management)

CPC60212 Advanced Diploma of Building and Construction (Management)

### **Jobs Related to Qualifications**

The qualifications lead to occupations with the following ANZSCO classifications.

|  |  |  |
| --- | --- | --- |
| **Qualification** | **ANZSCO Identifier** | **Classification Value** |
| CPC40110 Certificate IV in Building and Construction (Building) | 312112 | Building Associate |
| CPC40208 Certificate IV in Building and Construction (Contract Administrator) | 511111 | Contract Administrator |
| CPC40308 Certificate IV in Building and Construction (Estimating) | 312114 | Construction Estimator |
| CPC40408 Certificate IV in Building and Construction (Sales) | 612112 | Property Manager |
| CPC40508 Certificate IV in Building and Construction (Site Management) | 312112 | Building Associate |
| CPC40611 Certificate IV in Building and Construction (Specialist Trades) | 312112 | Building Associate |
| CPC40708 Certificate IV in Building and Construction (Trade Contracting) | 312112 | Building Associate |
| CPC50210 Diploma of Building and Construction (Building) | 133112 | Project Builder |
| CPC50308 Diploma of Building and Construction (Management) | 133112 | Project Builder |
| CPC60212 Advanced Diploma of Building and Construction (Management) | 133111 | Construction Project Manager |

### **What the Qualification Covers**

A functional analysis was conducted of the competency outcomes across all ten Building and Construction qualifications under review. Each unit of competency was allocated to competency outcome using the Australian Standard Classification of Education (ASCED, 2001).[[41]](#footnote-41) This analysis identified 151 units of competency supported 28 competency outcomes. As shown in the following matrix, existing qualifications vary in the competency outcomes and the number of units of competency which support any given competency outcome. Further detail about specific units of competency in each of the qualifications is available in Appendix B.

|  |  |
| --- | --- |
| **Competency Outcomes** | **Number of Units** |
| **Accounting** | 2 |
| **Bricklaying and Stonemasonry** | 2 |
| **Building Construction Economics** | 6 |
| **Building Construction Management** | 26 |
| **Building Science and Technology** | 12 |
| **Building Services Engineering** | 6 |
| **Building Surveying** | 8 |
| **Business Management** | 12 |
| **Environmental Engineering** | 3 |
| **Human Resource Management** | 2 |
| **Industrial Relations** | 1 |
| **Management Training** | 1 |
| **Marketing** | 2 |
| **Occupational Health and Safety** | 6 |
| **Organisation Management** | 2 |
| **Plant and Machine Operations** | 5 |
| **Practical Computing Skills** | 5 |
| **Project Management** | 8 |
| **Quality Management** | 2 |
| **Real Estate** | 3 |
| **Sales** | 13 |
| **Scaffolding and Rigging** | 6 |
| **Secretarial and Clerical Services** | 1 |
| **Specialist Agriculture, Environmental and Related services** | 3 |
| **Specialist Building Services** | 5 |
| **Systems Analysis and Design** | 1 |
| **Teacher Education: Vocational Education and Training** | 1 |
| **Work Practices Programmes** | 7 |
| **Total** | 151 |

**Is the qualification relevant to current jobs?**

On the face of it, the qualifications’ competencies appear a good match with contemporary job requirements.[[42]](#footnote-42) The most sought-after requirements were relevant qualifications and relevant industry experience. Some caution is needed as most of the job advertisements in this area were brief (compared to other industries, such as security), with a higher proportion of vocational teacher jobs advertised than might be representative of the broader building construction industry. This is possibly because these jobs are more likely to be advertised, while construction and building roles are filled by word-of-mouth or direct recruiting by large construction firms.

### **Qualification Enrolment and Completion Numbers**

Enrolments and completions are presented in tables on the following pages. Enrolments and completions are high and sustained in:

* CPC40110 Certificate IV in Building and Construction (Building)
* CPC50210 Diploma of Building and Construction (Building)

These two qualifications[[43]](#footnote-43), highlighted in green, lead to the occupational outcomes of builder and are linked to licensing requirements in some States and Territories. The majority of enrolments and completions in these two qualifications are in New South Wales, Victoria and Queensland.

The three qualifications with low and declining enrolment and completion numbers, highlighted in red, are:

* CPC40408 Certificate IV in Building and Construction (Sales)
* CPC40611 Certificate IV in Building and Construction (Specialist Trades)
* CPC40708 Certificate IV in Building and Construction (Trade Contracting)

***Design consideration***

*Q. Should these three qualifications be deleted?*

*Q. If deleted, should they be retained as specialist skill sets, or included as elective streams?*

The remaining five qualifications, highlighted in orange, have low to moderate enrolments and completions, which have remained relatively stable from 2014-2017.

**Building and Construction Enrolments, 2014-2017**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qualification**  | **Occupational Outcome** | **2014 enrolment** | **2015 enrolment**  | **2016 enrolment** | **2017 enrolment\*\*** |
| CPC40110 Certificate IV in Building and Construction (Building) | Building Associate | 17,604 | 22,557 | 23,579 | 22,317 |
| CPC40208 Certificate IV in Building and Construction (Contract Administrator) | Contract Administrator | 143 | 402 | 443 | 373 |
| CPC40308 Certificate IV in Building and Construction (Estimating) | Construction Estimator | 373 | 736 | 704 | 652 |
| CPC40408 Certificate IV in Building and Construction (Sales) | Property Manager | 15 | 4 | 0 | 0 |
| CPC40508 Certificate IV in Building and Construction (Site Management) | Building Associate | 387 | 515 | 504 | 337 |
| CPC40611 Certificate IV in Building and Construction (Specialist Trades) | Building Associate | 353 | 105 | 47 | 6 |
| CPC40708 Certificate IV in Building and Construction (Trade Contracting) | Building Associate | 17 | 20 | 0 | 6 |
| CPC50210 Diploma of Building and Construction (Building) | Project Builder | 10,942 | 13,808 | 13,681 | 11,962 |
| CPC50308 Diploma of Building and Construction (Management) | Project Builder | 907 | 1180 | 1,474 | 965 |
| CPC60212 Advanced Diploma of Building and Construction (Management) | Project Manager | 254 | 303 | 288 | 346 |

\* Source: NCVER VOCSTATS, *TVA subject enrolments 2014-2017 (Embargoed),* Unit of competency by Year and State/territory of training organisation, Counting: Enrolments.

\*\* Preliminary total

**Building and Construction Completions, 2014-2017**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Qualification**  | **Occupational Outcome** | **2014 completion** | **2015 completion**  | **2016 completion** | **2017 completion\*\*** |
| CPC40110 Certificate IV in Building and Construction (Building) | Building Associate | 6,083 | 7,400 | 6,907 | 5,859 |
| CPC40208 Certificate IV in Building and Construction (Contract Administrator) | Contract Administrator | 73 | 41 | 118 | 109 |
| CPC40308 Certificate IV in Building and Construction (Estimating) | Construction Estimator | 74 | 130 | 115 | 183 |
| CPC40408 Certificate IV in Building and Construction (Sales) | Property Manager | 2 | 0 | 0 | 0 |
| CPC40508 Certificate IV in Building and Construction (Site Management) | Building Associate | 105 | 46 | 88 | 110 |
| CPC40611 Certificate IV in Building and Construction (Specialist Trades) | Building Associate | 112 | 156 | 0 | 0 |
| CPC40708 Certificate IV in Building and Construction (Trade Contracting) | Building Associate | 0 | 13 | 0 | 0 |
| CPC50210 Diploma of Building and Construction (Building) | Project Builder | 1,942 | 2,261 | 2,804 | 2,233 |
| CPC50308 Diploma of Building and Construction (Management) | Project Builder | 130 | 380 | 572 | 161 |
| CPC60212 Advanced Diploma of Building and Construction (Management) | Project Manager | 161 | 146 | 138 | 113 |

\* Source: NCVER VOCSTATS, *TVA subject enrolments 2014-2017 (Embargoed),* Unit of competency by Year and State/territory of training organisation, Counting: Enrolments.

\*\* Preliminary total

### **Unit of Competency Enrolment Numbers**

Mapping of the unit composition of the qualifications identifies similar problem areas as at the qualification enrolment and completion level.[[44]](#footnote-44)

At the Certificate IV level, there is:

* Considerable duplication between the Certificate IVs
* Enrolments of 100 or less in units Certificate IV specialisations related to Sales, Heritage Restoration, Crane Operations, and Rigging
* Enrolments of 100 or less in units about the building of swimming pools and spas. These units are not specified as core or electives in the qualifications under review here.

***Design Considerations***

Q. *Would a generalist qualification with optional streams meet industry needs?*

*Q. Should we consider skill sets for specialised professional development pathways?*

*Q. Where should units of competency relating to building swimming pools and spas be located within the training package?*

## **Further Design Considerations**

The above research and enrolment numbers lead to the following design considerations for the review of the Building Construction qualifications.

**Enrolment and completion numbers**

Notable details in the enrolment and completions data are:

* **CPC40611 - Certificate IV in Building and Construction (Specialist Trades)** Enrolments and completions are absent or declining in all regions. It is unclear why states with enrolments in 2014-2015 declined in 2016-17.
* **CPC40708 - Certificate IV in Building and Construction (Trade Contracting)** With the exception of a small number of enrolments in Victoria and Queensland, and some completions in Queensland in 2015, has minimal uptake. Could the skills distinct to this qualification be offered as electives within other qualifications at the Certificate IV level, or be packaged as a skillset for those already in the building construction industry? The latter option may meet the continuing development required of holders of some state licenses.

***Design Consideration***

*Consultation with stakeholders is needed to determine if qualifications with zero, low, or geographically uneven current enrolments can be deleted and/or transitioned to skills sets.*

**Licencing and Regulatory Environment**

Australian states and territories have policy and legislative frameworks covering the licensing of builders, in addition to the National Construction Code which seeks to standardise building construction across Australia (Appendix A). The qualification requirements of licensing correspond with some (but not all) enrolment patterns, and there is an emerging trend to higher qualifications for licences with supervisory or more complex building environments, particularly in the eastern states. For example, strong enrolments and completions in **CPC50308 - Diploma of Building and Construction (Management)** appear to be driven by Victorian licensing requirements.

***Design Consideration***

*Q. What is the best way to meet licensing requirements across states/territories – by minimum or maximum standards?*

**Disruption and Uncertainty**

As noted in the trends and emerging challenges section, automation, technology and new employment practices, pose challenges for vocational education in building construction.

***Design Consideration***

*Q. How can emerging technologies (BIM), environmental requirements (green homes) and anticipated demand for smart buildings be included in the training package?*

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