Australian Industry and Skills Committee

CONSTRUCTION WATERPROOFING DESIGN & SURVEY

Case for Change

Construction, Plumbing and Services Industry Reference Committee
Artibus Innovation

October 2021

1. Administrative information

*For a list of the products proposed to be reviewed as part of this project, please see **Attachment A**.*

Name of IRC(s):	Construction, Plumbing and Services
Name of SSO:	Artibus Innovation

1.1 Name and code of Training Package(s) examined to determine change is required

The CPC Construction, Plumbing and Services Training Package was examined.

2. The Case for Change

*For information on the job roles to be supported through the proposed qualifications updates, enrolments data, completion rates, and the number of RTOs delivering these qualifications please see **Attachment C**.*

2.1 Rationale for change

- A *Certificate IV in Construction Waterproofing Design and Survey* is proposed to provide a more skilled workforce able to interpret and implement the specifications included in regulated designs.
- The development of the modern construction industry has seen an evolution of both the type of structures to be waterproofed and the technologies available for waterproofing. New developments bring unprecedented and, in many cases, complicated problems.
- The need for a post trade qualification focused on the skills and knowledge needed to be a waterproofing consultant was raised in 2018 during the review and update of the Certificate III in Construction Waterproofing. The Certificate III provides the hands-on skills and knowledge required by water proofers to apply membranes and special coatings to protect the structural integrity and content of simple builds. It does not provide the necessary skills for practitioners to understand all aspects of waterproofing.
- Waterproofing seeks to achieve the redirect and removal of water from the internal and external areas of a building. It involves understanding the structural information, product information, design competencies and hydrology.
- Many buildings today are multi-unit, multi-storey with features such as basements deep underground, swimming pools, roof top gardens, planter boxes and balconies. There is a lack of training to design, inspect and test the waterproofing systems required for more complex situations.
- The Certificate III in Waterproofing Construction does not cover in detail the Australian Standards, nor the National Construction Code requirements for waterproofing. It does not address design principles, the movement of water to egress points, moisture management or the more advanced skills and knowledge needed to design and remediate waterproofing systems.
- The current standard of product knowledge and waterproofing application principles throughout Australia is poor. Widespread industry practise is to treat waterproofing tasks as an application of a membrane. Products are often misused, and manufacturers installation requirements not followed. This approach also fails to consider the wet area service conditions, site-specific complexities and the overall design of a waterproofing system (e.g., consideration for structural deflection).
- Inadequate training in the designing of the waterproofing, and the selection of the waterproofing methods and materials best for the job, in addition to lack of training in inspection and test plans, has contributed to widespread failures in waterproofing.
- Research into building defects in residential multi-owned properties undertaken by Deakin and Griffiths Universities [1] found that:

- the most common defects in new residential apartment buildings relate to cladding (40%), fire protection (13.26%) and waterproofing (11.46%)
- defects in waterproofing were highly correlated to structural defects and defects in building fabric and cladding, and roof and rainwater disposal.
- 50-60 per cent of defects are attributed to design issues, the remainder arise during construction
- 85 per cent of all new residential apartment buildings have at least one defect across multiple locations.
- overall, water ingress and moisture were identified as the most prevalent consequence and contributor to building defects.

- At the beginning of July 2021, the NSW Building Commissioner issued a prohibition order banning residents from occupying the Imperial Towers complex in Parramatta citing defects including waterproofing issues, the load bearing component of the building and fire safety. Government inspectors also found drainage and ventilations issues with the cladding at the base of the walls and at the window and door openings. [2]
- Problems with waterproofing are found worldwide. Leaky Building Syndrome (LBS) has caused widespread and expensive damage to homes in Canada and New Zealand over the last 20 years [3], and LBS is of increasing concern in Australia.
- LBS impacts buildings, often without eves, which have monolithic cladding (fibre cement sheet or stucco plaster). Water penetrates the building envelope and is held between the interior and exterior skins causing mould and structural damage. A carefully designed cavity system incorporating drainage and ventilation is needed to prevent moisture penetration. [3]
- Another form of LBS is associated with high rise buildings where the balconies are the same level as the internal floors. Without an adequate sloping gradient of the balcony away from the building, water damages balcony joinery and invariable leaks into the apartments.[4]
- In response to the 2018 report, *Building Confidence – Improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia* [5], and to increase the rigour of the design and construction of multi-storey, multi-unit residential buildings, NSW has introduced the *Design and Building Practitioners Act 2020* (the Act).
- Riddell and Ragg [6] explain that the Act aims to provide greater regulation of practitioners involved in building and construction. Under the Act, a 'registered building practitioner' cannot start building work unless they have obtained all 'regulated designs' from the 'registered design practitioners', who have lodged the necessary compliance declarations on the NSW Planning Portal.
- As outlined on the NSW Fair Trading web page, *New obligations – designs and declarations*, waterproofing is one of five building elements considered a regulated design, that must be declared for compliance with the Building Code of Australia and other relevant standards before building work can start. (The other building elements are fire safety systems, building structure, building enclosure, and building services).
- Regulated designs are designs (including a plan, specification or a report detailing a design) that is prepared for a building element, or for a performance solution for building work. Skilled and capable practitioners are required to develop the regulated designs for waterproofing, to inspect the quality of waterproofing installations and to recommend remedial action if necessary.
- This new qualification would provide more relevant skills for individuals already working in waterproofing and upskilling for those in related occupations such as tilers, builders, building surveyors, plumbers and building designers.

- Not introducing a *Certificate IV in Construction Waterproofing Design and Survey* qualification would have serious implications. The failure would contribute to the perpetuation of the current situation in the building industry where faulty waterproofing is associated with the majority of residential building defects.
- The costs of rectification and remediation of waterproofing failures are substantial. Not only is waterproofing one of the biggest dollar-item claims according to the insurance industry[7]. There are also negative health consequences for the building occupants due to psychological stress, and illness caused by dampness and mould.

[1] Johnston, N. and Reid, S., 2019, *An Examination of Building Defects in residential Multi-owned Properties* accessed online 20/07/2021 https://www.griffith.edu.au/__data/assets/pdf_file/0030/831279/Examining-Building-Defects-Research-Report.pdf

[2] https://www.abc.net.au/news/2021-07-01/nsw-parramatta-twin-towers-development-defects/100255704?utm_campaign=news-article-share-control&utm_content=link&utm_medium=content_shared&utm_source=abc_news_web accessed online 02/08/2021

[3] Lovegrove, K., 2017, *Leaky Building Syndrome Will Australia be the next to suffer?* accessed online 16/07/2021 http://lclawyers.com.au/leaky-building-syndrome-will-australia-next-suffer/

[4] *Leaky Building Syndrome*, accessed online 16/07/2021 https://weepa.com.au/knowledge-centre/leaky-building-syndrome/

[5] Shergold, P. and Weir, B., 2018, *Building Confidence – Improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia* accessed online 19/07/2021 https://www.industry.gov.au/sites/default/files/July%202018/document/pdf/building_ministers_forum_expert_assessment_-_building_confidence.pdf

[6] Riddell, R. and Ragg, J., 2021 *Design and Building Practitioners Regulation 2021: The Classes of Registration for Design and Building Practitioners* access online 26/07/2021 https://piperalderman.com.au/insight/design-and-building-practitioners-regulation-2021-the-classes-of-registration-for-design-and-building-practitioners/

[7] Kyriakou, D., 2018 *Is it really waterproof?* accessed online 01/08/2021 https://buildingconnection.com.au/2018/02/19/1775/

2.2 Evidence for change

- The proposed Case for Change - Construction Waterproofing Design and Survey, is informed by research and consultation facilitated through the Australian Institute of Waterproofing, the peak body for the industry. Research shows that defects in waterproofing are highly correlated to structural defects and defects in building fabric and cladding, and roof and rainwater disposal. Overall, water ingress and moisture were identified as the most prevalent consequence and contributor to building defects.[1]
- Stakeholders consulted were very concerned that there is a major skills gap in waterproofing design and survey leading to failures in waterproofing systems, which in turn contribute significantly to building defects. Stakeholders agreed that a *Certificate IV in Construction Waterproofing Design and Survey* is needed to provide industry with the skills and knowledge to:
    - scope the design of waterproofing systems taking into account the expected use and service conditions of the wet area
    - determine the interaction with other building components including moisture and condensation management
    - undertake inspection and testing of works in progress to quality assure compliance with manufacturer instructions, relevant Australian Standards and the National Construction Code, and to advise on remediation of defective works.
    - undertake inspection and certification of completed works.

- Employment data relating specifically to waterproofing is not available as it is not an occupation listed in the ANZSCO.
- Waterproofing is not a licensed occupation except in NSW and QLD. The *Certificate III in Construction Waterproofing* is the qualification requirement, which, as outlined in section 2.1, is not adequate to provide the skill and knowledge requirements of waterproofing more complex builds.
- Without strong regulator drivers waterproofing is being applied by trades people who do not fully understand the functionality of waterproofing materials or the correct installation methods. There is a lack of test and inspect to quality assure compliance with manufacturer instructions, Australian Standards and the NCC. The consequences of poor workmanship in waterproofing are evident in the many major building defects in the Australian construction and property industries.
- It is likely that other states and territories will follow NSW's lead and introduce their own legislation for compliance and certification of waterproofing installation similar to the *Building and Design Practitioners Act 2020.*
- The proposed *Certificate IV in Construction Waterproofing Design and Survey* could provide the skills and knowledge required by those working in conjunction with building designers and architects developing and signing off the regulated waterproofing designs in NSW.
- The NCC 2019 Volume One, Part A5 Documentation of design and construction refers to an 'appropriately qualified person recognised by the appropriate authority as having qualifications and/or experience in the relevant discipline in question'.
- The NCC 2019 also calls on 'Expert Judgement' and defines this as 'the judgement of an expert who has the qualifications and experience to determine whether a Performance Solution or Deemed-to-Satisfy Solution complies with the Performance Requirements'.
- The proposed *Certificate IV in Construction Waterproofing Design and Survey* would be designed to fulfill the NCC qualification requirements for an 'appropriately qualified' person to provide 'expert judgement' in relation to waterproofing, which would grow the demand for the qualification.

[1] ibid

2.3 Consideration of existing products

- A search of existing training products was undertaken to identify products similar to the proposed *Certificate IV in Construction Waterproofing Design and Survey*. A broad search of training.gov.au for units on 'inspect', 'survey' and 'design' yielded 215, 19, 519 results respectively across numerous training packages from AUR Automotive Retail, Service and Repair, MEA Aeroskills, UEE Electrotechnology, MSM Manufacturing, ICT Information and Communications Technology, CUA Creative Arts and Culture and RII Resources and Infrastructure. No units were specific to waterproofing.
- Another search was undertaken to identify potentially related qualifications. Eleven qualifications and associated units were interrogated. This review is summarised below, and Attachment B provides more detailed information.
    1. *CPC31420 Certificate III in Waterproofing* has eight waterproofing specific units. Of these, seven relate to the hands-on application of waterproofing processes, and not the design or inspection of waterproofing systems:
        - CPCCWP2001 Handle waterproofing materials and components
        - CPCCWP2002 Use waterproofing tools and equipment
        - CPCCWP2004 Prepare surfaces for waterproofing application
        - CPCCWP3001 Apply waterproofing system to below ground level wet areas
        - CPCCWP3002 Apply waterproofing process to internal wet areas

- CPCCWP3003 Apply waterproofing process to external above-ground wet areas
- CPCCWP3004 Apply waterproofing remedial processes

One unit, CPPCWP3005 Assess construction waterproofing processes is relevant to the inspection of waterproofing systems and will be considered further in relation to the proposed Certificate IV.

2. *CPC31320 Certificate III in Wall and Floor Tiling* has one unit on waterproofing, CPCCWF3009 Apply waterproofing for wall and floor tiling.
3. *CPC40920 Certificate IV in Plumbing and Services* includes 11 units on the design of sanitary plumbing and drainage, sewerage, hot and cold water, gas, heating and cooling systems, stormwater and roof drainage. None of the units are specific to waterproofing.
4. *CPC50620 Diploma of Hydraulic Services* includes 19 design units that extend those in the *Certificate IV in Plumbing and Services* and address additional services for grey water, solar water heating, trade waste, irrigation and pump systems. None of the units are specific to waterproofing. There is one inspection unit, CPCPPS5015 Inspect plumbing and drainage systems
5. *CPC40120 Certificate IV in Building and Construction* includes two units on applying building codes and standards to construction, which make general mention of waterproofing. The one unit on preparing specifications, and one unit on preparing a design brief do not refer to waterproofing.
6. *CPC50220 Diploma of Building and Construction (Building)* includes two units potentially relevant to the inspection of waterproofing systems. *CPCCBC5013 Manage professional technical and legal reports on building and construction projects,* relates to inspection of a build for defects. *CPCCBC5004 Supervise and apply quality standards to the selection of building and construction materials* relates to materials being fit for purpose. However, waterproofing is not specifically mentioned in either of the units.
7. *CPC50320 Diploma of Building and Construction (Management)* also includes the potentially relevant units identified above in the *Diploma of Building and Construction (Building).*
8. *CPC60220 Advanced Diploma of Diploma of Building and Construction (Management)*. None of the units refer to waterproofing.
9. *CPP50921 Diploma of Building Design* includes two units on building design, *CPPBDN5102 Produce compliant designs for Class 1 and 10 buildings* and *CPPBDN5103 Produce compliant designs for Class 2-9 buildings up to two storeys.* These units are not specific to, nor do they refer to, the design of waterproofing systems.
10. *CPP60421 Advanced Diploma of Building Design.* None of the units refer to waterproofing design or inspection.
11. *CPC60121 Advanced Diploma of Building Surveying.* The qualification includes four units related to inspection and two units on which contain minor references to waterproofing.

2.4 Approach to streamlining and rationalisation of the training products being reviewed

- Streamlining and rationalisation of training products was a primary consideration in determining the most appropriate approach to addressing the skills gap in Construction Waterproofing Design and Survey.
- The potential of adding new units of competency to an existing qualification was interrogated to minimise adding a qualification to the stock of training products. Similarly, the suitability of a Skill Set to provide the occupational outcome was investigated.

- It became apparent that major waterproofing defects in building construction were associated with a lack of specialised skills and knowledge that would best be addressed by a new qualification, as now proposed, a *Certificate IV in Construction Waterproofing Design and Survey.*
- In the development of the proposed qualification for Construction Waterproofing Design and Survey existing units of competency will be included where appropriate.

3. Stakeholder consultation

3.1 Stakeholder consultation undertaken in the development of Case for Change

*For a full list of industry-specific stakeholders that actively participated in the stakeholder consultation process undertaken to develop the Case for Change, please see **Attachment D**.*

- Artibus had email communication and/or conducted telephone discussions with 43 industry stakeholders, including:
    - three regulatory bodies, the Victorian Building Authority, the NSW Building Commission and the Queensland Building and Construction Commission
    - three representatives from the Australian Institute of Waterproofing (AIW), the peak industry body
    - a representative from the Building Designers Association of Australia
    - two representatives from the Housing Industry Association
    - three representatives from the Master Builders Association
    - a representative from the Royal Institute of Chartered Surveyors
    - eight waterproofing practitioners involved in the working group for the review of the *Certificate III in Construction Waterproofing*
    - five waterproofing consultants
    - four manufacturers of waterproofing products
    - eight RTOs
    - the Victorian Curriculum Maintenance Manager - Building and Construction.
- Artibus also used its communication channels comprising newsletters and social media to inform its stakeholders in the construction and property services industries of the proposed project and to invite any feedback. Three email responses were received expressing support for the proposal.
- The consultation findings unanimously supported the development of a national qualification in construction waterproofing design and survey to:
    - address serious workforce training gap in this area
    - to improve the standards of workmanship associated with complex waterproofing systems and simultaneously reduce the incidence of building defects attributed to waterproofing failures
    - provide a career pathway for individuals already working in waterproofing and upskilling for those in related occupations such as tilers, builders, building surveyors, plumbers, building designers and architects.

3.2 Evidence of Industry Support

*For a list of the issues raised by stakeholders during consultation and the IRC's response to these, please see **Attachment D.***

- Stakeholders involved in the case for change consultation process contributed to the scoping of the technical skills and knowledge required by those working in construction waterproofing design and survey. The intent and coverage of new units required are indicated by the titles listed in Attachment A.
- Industry representatives have offered their ongoing involvement in refining the development of the training products.
- The Victoria Building Authority have indicated that they would incorporate a qualification in Construction Waterproofing Design and Survey into their regulatory arrangements and NSW Fair Trading has indicated that 'a recognised design qualification could assist with any future regulatory considerations'.
- Employers of water proofers and manufacturers of waterproofing products voiced strong support of a qualification to provide more advanced skills for waterproofing and indicated they would use it if one was available for the formal training and upskilling of workers.
- Sixteen stakeholders have provided letters or emails in support of the proposed qualification:
    - Ardex - a global construction materials leader with offices in over 100 countries, five Australian state-based offices / production facilities, Ardex is renowned for research and development of products. It also invests heavily in providing education to assist the installing contractors and product retailers with the necessary knowledge and skills to achieve quality outcomes. Waterproofing development being a key focus.
    - Armont Rectification Builders and Consulting – a consultancy that specialises in waterproofing defect investigation and remediation.
    - Australian Institute of Waterproofing – peak body representing the interests of the total industry which has its main aim to raise the standard of waterproofing in Australia.
    - Australian Waterproofing Consultants – a consultancy working directly with architects/ engineers to provide peer review of existing designs, reports on waterproofing failures, remedial design solutions, supervision of the repair phase as well as being an expert witness in litigation cases concerning waterproofing.
    - Building Designers Association of Australia (BDAA) is the not-for-profit, peak industry association representing Australian Designers involved in, or associated with, the built environment. Our role is to educate and raise awareness of designers nationally.
    - Fluid Industries Hydraulic Consultants are hydraulic designers based in Queensland, mainly working in the commercial sector assisting large corporate clients with asset design and maintenance.
    - Mapei Australia is part of the Mapei Group, an Italian company founded in 1937 in Milan Italy. It is a quality endorsed company and the world leader in the production of adhesives, sealants and chemical products, including waterproofing systems for the building industry.
    - Master Builders Australia is the peak building and construction industry association representing over 33,000 businesses nationwide across all three sectors of the industry - residential, commercial, and civil construction.
    - NSW Fair Trading is the licensing body for tradespersons in NSW.
    - Office of the NSW Building Commissioner, leading and advocating for reforms in the building and construction industry with regulation and compliance as the centrepiece.
    - Paynters is privately owned construction entity which has been servicing a diverse range of clients across Australia for 60 years. The organisation provides insurance repair work to loss adjusters and insurance companies within the commercial retail and industrial sectors.
    - RTO Trainer - North Metro TAFE WA.

- The Victorian Building Authority (VBA) is regulator of the Victorian Building and Construction industry.
- Waterproofing Consultants - specialising in waterproofing design and installation.
- Waterproof Awareness – a design and specification consultancy for construction waterproofing.

3.3 Proposed stakeholder consultation strategy for project

Note: For a full list of industry-specific stakeholders who are planned to be contacted to participate in the stakeholder consultation process undertaken for this project, please see ***Attachment E****.*

- The Construction, Plumbing and Services IRC will nominate a member to be the project chair for the development of the proposed *Certificate IV in Construction Waterproofing Design and Survey*.
- The Artibus Innovation project manager, in consultation with the IRC project chair, will develop a project governance plan and stakeholder communication and engagement plan.
- Information about the project will be disseminated using the Artibus newsletter, social media, and website; industry channels including the AIW, and other related industry associations (e.g., Master Builders Association, BDAA, HIA, and the Master Plumbers) relevant union, industry training advisory bodies in each state and territory to assist in identifying rural and regional stakeholders.
- Stakeholder consultation activities will include:
  - an information webinar to launch the project and explain how stakeholders can contribute to the development of the proposed training products.
  - a consultation webinar at the first draft – for stakeholders to provide direct feedback on the training product development.
  - in addition to the consultation webinars feedback will be invited via an online tool available on the Artibus website, written submissions, online meetings convened as necessary and, where possible, face to face meetings.
- Validation stage of the project, webinar to inform stakeholders of proposed training products and gather final feedback.

4. Licencing or regulatory linkages

There are regulatory arrangements for waterproofing in three jurisdictions Victoria, NSW and Queensland, which specify the Certificate III in Construction Waterproofing as the qualification requirement.

The scope of works involves the application, installation and repair of waterproofing membranes or systems, which may be applied to the interior, exterior, below ground and remedial areas of a building. The design and survey of waterproofing systems is not covered.

There are no regulatory linkages yet as the proposal is to create a new qualification, a *Certificate IV in Construction Waterproofing Design and Survey.*

However, Victoria and NSW regulators have provided support for the proposed *Certificate IV in Construction Waterproofing Design and Survey*.

Victorian Building Authority (VBA)

When consulted about a proposed *Certificate IV in Construction Waterproofing Design and Survey*, the VBA provided this information about imminent changes to legislation in Victoria.

'In late 2018, the Victorian Government made amendments to the *Building Act 1993* to introduce a new registration and licensing scheme for tradespeople. The scheme aims to reduce non-compliant building work, enhance industry accountability, and encourage skills formation. Changes will be implemented for carpentry first, with other trades to follow in subsequent implementation stages.

Waterproofing has been identified as a priority trade and will likely be the next trade after carpentry to have a registration scheme in Victoria.

Whilst the legislation is not yet finalised, two levels of trade practitioners are expected to be introduced for each trade (similar to the Plumbing registration and licencing scheme in Victoria): a registered practitioner who can undertake the work and a registered practitioner who can supervise and 'sign off' on the quality of the work undertaken.'

'Currently, there is only nationally accredited training at a Certificate III level. Not all waterproofing practitioners undertake this qualification and there is currently no formal training for supervisors of waterproofing practitioners.

As such, the VBA strongly supports this introduction of a Certificate IV in Construction Waterproofing Design and Survey as we believe it will:

- **Support the intended trades registration scheme and career pathways that this new scheme will provide to existing waterproofing practitioners**
- **Provide continuing professional development (CPD) for existing waterproofing practitioners who wish to seek the intended higher level registration as waterproofing supervisor'.**

NSW Fair Trading:

When consulted about a proposed *Certificate IV in Construction Waterproofing Design and Survey*, NSW Fair Trading responded that:

- 'NSW Fair Trading supports standing up the proposed qualification, Certificate IV in Construction Waterproofing Design and Survey
- A recognised design qualification could assist with any future regulatory considerations
  - similar to design obligations for certain fire safety systems under the EP&A Regulation
  - Consider UOC(s) around integration with other trades/designers work.
  - Coordination of designing waterproofing to work with other elements is essential.'

5. Project implementation

5.1 Prioritisation category

- It is proposed that this product development is progressed as a routine project to be completed within a 12-month timeframe.
- The 12-month timeframe is necessary to canvas and share the views of the different stakeholders involved and to address the competency requirements for the design and survey of complex waterproofing systems.
- The result will be more informed training product development. It also reduces the risk of dissenting views arising toward the end of the project.
- The industry/Artibus interaction over the span of the project is an important opportunity to foster greater industry ownership of the qualification and to build stakeholder understanding of the VET system.

5.2 Project milestones

- Key project milestones include:
    - *AISC project approval –November 2021*
    - *DESE commissioned Activity Order –December 2021*
    - *Training product development and engagement with subject matter experts –December February 2021*
    - *Draft 1 consultation/feedback –March 2022*
    - *Feedback on draft 1 incorporated to produce draft 2 –April 2022*
    - *Stakeholder consultation for validation of draft 2 –May 2022*
    - *Quality Assurance – June 2022*
    - *Final consultation with states and territories – July 2022*
- *Case for Endorsement submitted for approval September 2022.*

5.3 Delivery or implementation issues

- As the proposed *Certificate IV in Construction Waterproofing Design and Survey* is new, RTOs would need to apply to have it added to scope. The 43 RTOs with the *CPC31420 Certificate III in Construction Waterproofing* on scope and the RTOs with related qualifications such as CPC31320 Certificate III in Wall and Floor Tiling (71 RTOs), Building Design (12 RTOs), Building Surveying (9 RTOs) and Building Construction (Certificate IV -135 RTOs) already on scope will be informed throughout the project so that they will be well positioned to apply for scope should they wish.
- At this stage, no implementation issues have been raised by stakeholders.

6. Implementing the Skills Minister's Priority reforms for Training Packages (2015 and October 2020)

- The unit of competency Elements and Performance Criteria will be developed in consultation with industry and RTOs to ensure that current industry skills, knowledge and contemporary work practices are reflected. The articulation of assessment requirements in the Performance Evidence and Knowledge Evidence will reflect employer expectations of the skills and knowledge graduates would bring to the job.
- The stakeholder engagement strategy will include informing and involving RTOs at all stages in the development of the new training products for construction waterproofing design and survey. The aim is to build an understanding of the coverage and outcomes of the training products so that RTOs will be well positioned to assist consumers make informed course choices.
- The proposed qualification will include a range of electives to provide breadth and depth of choice supporting individuals to move between related occupations and industry sectors. For example, it is envisaged that the Certificate IV in Construction Waterproofing will provide a pathway for graduates of the Certificate III in Construction Waterproofing. Some units within the proposed qualification may also be attractive to building designers, building surveyors, registered builders and plumbers wanting to develop specialist skills and knowledge in the design and survey of waterproofing.
- The development of units of competency will consider their application in as broad a context as possible so that they might be used across industry sectors and thus improve the efficiency of the training system.

- The development of skill sets will be considered at each stage of the project to support worker employability, career progression or movement between related occupations. Artibus will promote the benefits of skill sets, including:
- 'chunking' training into smaller job-related components to provide the learner with initial success and motivation to undertake further training
- for workers in other occupations to reskill and enter the industry
- to engage more enterprises and their employees in nationally recognised training by overcoming barriers to training such as time sensitivities, arduous paperwork requirements or a qualification that exceeded requirements.

This Case for Change was agreed to by the Construction, Plumbing and Services IRC

Name of Chair	Stuart Maxwell
Signature of Chair	
Date	12 October 2021

Attachment A: Training Package components to change

SSO: Artibus Innovation

Contact: Wendy McLeod, Operations Manager

Submitted: 12 October 2021

Project number	Project Name	Qualification Unit / Skillset	Code	Title	Details of last review *(endorsement date, nature of this update transition, review, establishment)*	Change Required
TBA	Construction Waterproofing Design and Survey	Qualification	CPC4XXXX	Certificate IV in Construction Waterproofing Design and Survey	Establishment	New
			CPCCWPxxxx	Design internal wet area waterproofing	Establishment	New
			CPCCWPxxxx	Design external above ground waterproofing	Establishment	New
			CPCCWPxxxx	Design external below ground waterproofing	Establishment	New
			CPCCWPxxxx	Survey waterproofing systems	Establishment	New
			CPCCWPxxxx	Diagnose a waterproofing failure	Establishment	New
			CPCCWPxxxx	Prepare a report for remedial waterproofing	Establishment	New

Attachment B: Consideration of existing training products

The units of competency in this table have been considered for suitability for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey*. Most are too sector specific and have limited relevance to the design and inspection of waterproofing systems.

Existing training product reviewed	Comment on suitability
CPC31420 Certificate III in Construction Waterproofing	The Certificate III addresses the application of waterproofing membranes. It does not develop the skills and knowledge required to: • design more complex waterproofing systems considering the site conditions and system compatibilities • produce design documentation for builders, designers, and surveyors to follow and manage the waterproofing process through installation to completion.
CPCCWP2001 Handle waterproofing materials and components	These units address basic skills and knowledge for preparatory and routine waterproofing tasks. The more advanced skills and knowledge for the design and survey of waterproofing systems are not addressed.
CPCCWP2002 Use waterproofing tools and equipment	
CPCCWP2004 Prepare surfaces for waterproofing application	
CPCCWP3001 Apply waterproofing system to below ground level wet areas	These units address the application of waterproofing processes according to work and manufacturer instructions. They do not address the design and documentation of the waterproofing system.
CPCCWP3002 Apply waterproofing process to internal wet areas	
CPCCWP3003 Apply waterproofing process to external above-ground wet areas	
CPCCWP3004 Apply waterproofing remedial processes	

CPCCWP3005 Assess construction waterproofing processes	This unit addresses inspection of waterproofing processes and materials in different types of wet areas in varying building situations. It will be considered for inclusion in the proposed Certificate IV.
CPC31320 Certificate III in Wall and Floor Tiling	
CPCCWF3009 Apply waterproofing for wall and floor tiling	This unit addresses the application of waterproofing processes according to work and manufacturer instructions. It does not address the design and documentation of the waterproofing system.
CPC40920 Certificate IV in Plumbing and Services	This qualification reflects the role of an experienced plumbing service operator with advanced technical skills and/or responsibility for project design and supervision; or a hydraulic consultant responsible for designing hydraulic components and systems that meet client requirements and help in effective water management in domestic, commercial and industry contexts. It does not address the design of waterproofing systems.
CPCPGS4011 Design and size consumer gas installations	While a unit such as roof drainage systems relates to weatherproofing and is important to prevent water ingress into a building, it does not relate specifically to waterproofing systems. However, it and the other sector specific units, may provide guidance structuring a unit for the design of waterproofing systems.
CPCPDR4013-Design and size domestic treatment plant disposal systems	
CPCPWT4011 Design and size heated and cold-water services and systems	
CPCPRF4011 Design and size roof drainage systems	
CPCPDR4011 Design and size sanitary drainage systems	
CPCPSN4011 Design and size sanitary plumbing systems	
CPCPDR4012 Design and size stormwater drainage systems	
CPCPMS4023 Design compressed air systems	

CPCPFS4024 Design residential fire sprinkler systems	
CPCPPS5033 Design vacuum drainage systems	
CPCPMS4011 Design, size and lay out heating and cooling systems	
CPC50620 Diploma of Hydraulic Services	This qualification reflects the role of a specialist hydraulic design consultant who designs plumbing and services systems in domestic, commercial, and industrial contexts. The qualification includes the skills and knowledge to design complex hydraulic systems. This qualification reflects the occupation of a hydraulic design consultant. The proposed qualification for Construction Waterproofing Design and Survey aims to reflect the occupation of a waterproofing design consultant.
CPCPMS5011 Design air conditioning and ventilation systems	These units do not relate specifically to waterproofing systems. However, they may provide guidance structuring a unit for the design of waterproofing systems.
CPCPCM5013 Design complex (non-solar) heated water systems	
CPCPCM5011 Design complex cold water systems	
CPCPCM5010 Design complex sanitary plumbing and drainage systems	
CPCPCM5012 Design complex stormwater and roof drainage systems	
CPCPFS5011 Design fire sprinkler systems	
CPCPPS5002 Design gas reticulation systems	
CPCPPS5025 Design grey water re-use systems	
CPCPMS5013 Design hydronic heating and cooling systems	
CPCPPS5027 Design irrigation systems	

CPCPPS5030 Design pump systems	
CPCPPS5026 Design rainwater collection, storage, distribution and re-use systems	
CPCPPS5032 Design siphonic stormwater drainage systems	
CPCPPS5023 Design solar water heating systems	
CPCPMS5012 Design sound attenuated hydraulic services	
CPCPMS5010 Design steam generation and distribution systems	
CPCPPS5028 Design trade waste pre-treatment systems	
CPCPPS5033 Design vacuum drainage systems	
CPCPPS5015 Inspect plumbing and drainage systems	
CPC40120 Certificate IV in Building and Construction	This qualification reflects the role of builders, site managers and managers of small to medium-sized building businesses who apply knowledge of structural principles, codes, standards and legal requirements to Class 1 and 10, to a maximum of two storeys and Class 2 to 9 Type C constructions, and who plan and supervise safe building and construction work, prepare and administer contracts, and who apply quality principles to building and construction projects and manage deployment of contract specialised skills. The builder or site manager is likely to rely on a contracted trade water proofer for the waterproofing systems. The Certificate IV in Building and Construction does not include a specific focus on waterproofing. Waterproofing is addressed broadly in the units listed below.

CPCCBC4001 Apply building codes and standards to the construction process for Class 1 and 10 buildings	The emphasis of this unit is on construction and fire protection compliance requirements. The Performance Evidence refers to NCC performance requirements in relation to the design and construction of the building and includes a dot point on damp and weatherproofing.
CPCCBC4053 Apply building codes and standards to the construction process for Class 2 to 9 Type C buildings	The emphasis of this unit is on construction and fire protection compliance requirements. The Performance Evidence refers to the NCC performance requirements in relation to the design and construction of the building and includes a dot point on health and amenities. This section of the NCC includes waterproofing. The Knowledge Evidence includes two dot points in relation to below ground construction - water ingress and waterproofing. Waterproofing is mentioned very generally.
PCCBC4028 Prepare design brief for construction works	The design brief is the layout of the structure and does not include the design and specifications for waterproofing.
CPCCBC4015 Prepare specifications for all construction works	This unit of competency specifies the skills and knowledge required to prepare clearly understood specifications for construction works that may range from an outline to a more detailed specification. It includes establishing the level of detail required in inherent contractual obligations and developing the work specifications. Again, the requirements of waterproofing systems are not addressed.
CPC50220 Diploma of Building and Construction (Building)	This qualification reflects the role of building professionals who apply knowledge of structural principles, risk, and financial management, estimating, preparing and administering building and construction contracts, selecting contractors, overseeing the work and its quality and managing construction work in building projects including residential and commercial.
CPCCBC5013 Manage professional technical and legal reports on building and construction projects	This unit may have relevance for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey* as it relates to

	inspection of a quality of the work in progress. However, the unit does not mention waterproofing systems.
CPCCBC5004 Supervise and apply quality standards to the selection of building and construction materials	This unit may have relevance for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey* as it relates to construction materials being fit for purpose. It does not mention waterproofing materials specifically.
CPP50921 Diploma of Building Design	
CPPBDN5102 Produce compliant designs for Class 1 and 10 buildings	These units are not specific to, nor do they refer to, the design of waterproofing systems.
CPPBDN5103 Produce compliant designs for Class 2-9 buildings up to two storeys.	
CPC60121 Advanced Diploma of Building Surveying	
Performance solutions CPCCBS6112 Conduct and report on initial construction inspections of Class 1 and 10 buildings to three storeys	This unit may have relevance for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey*. Waterproofing is addressed in PC1.5 Identify wall and substrate construction methods and materials and interpret compliance requirements for wet areas and waterproofing and there is a dot point on waterproofing in the Knowledge Evidence.
CPCCBS6113 Conduct and report on initial construction inspections of Class 2 to 9 buildings to three storeys	This unit may have relevance for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey.* Waterproofing is addressed in PC1.5 Identify wall and substrate construction methods and materials and interpret compliance requirements for wet areas and waterproofing and there is a dot point on waterproofing in the Knowledge Evidence.
CPCCBS6114 Conduct and report on advanced and final inspections of Class 1 and 10 buildings to three storeys	This unit may have relevance for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey* as the Performance Evidence includes compliance of health and amenity

	(which includes waterproofing) against approved drawings, NCC and regulatory requirements. The waterproofing of wet areas is a dot point in the Knowledge Evidence.
CPCCBS6115 Conduct and report on advanced and final inspections of Class 2 to 9 buildings to three storeys	This unit may have relevance for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey* as the Performance Evidence includes compliance of health and amenity (which includes waterproofing) against approved drawings, NCC and regulatory requirements. The waterproofing of wet areas is a dot point in the Knowledge Evidence.
CPCCBS6116 Assess and advise on performance solutions for Class 2 to 9 buildings to three storeys	This unit may have relevance for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey* as the Performance Evidence includes assessing, advising, and certifying compliance of health and amenity (which includes waterproofing) Damp and weatherproofing is a dot point in the Knowledge Evidence.
CPCCBS6118 Assess and advise on performance solutions for Class 1 and 10 buildings to three storeys in the Performance Evidence.	This unit may have relevance for inclusion in the proposed *Certificate IV in Construction Waterproofing Design and Survey* as the Performance Evidence includes assessing, advising, and certifying compliance of health and amenity (which includes waterproofing) Damp and weatherproofing is a dot point in the Knowledge Evidence.

Attachment C: Job role, enrolment information, the number of RTOs currently delivering these qualifications

Please set out the job roles to be supported through the updated qualifications, enrolment data over the past three years in which data is available for each qualification, completion rates for each qualification, and the number of RTOs delivering these qualifications.

Job role	Qualification to be updated to support the job role	Enrolment data (for the past three years)	Completion rates (for the past three years)	Number of RTOs delivering (for the past three years)
There are two components to the job roles associated with the proposed qualification: • Waterproofing Design Consultant providing specialist waterproofing design support to the principal designer, builder, developer, or project manager. It includes considerations of the site conditions and suitability of waterproofing systems methods and materials for the design and compliance with Australian Standards and the NCC. • Waterproofing Surveyor providing independent inspections throughout the key stages of the waterproofing system installation to support the principal building surveyor /certifier. The Waterproofing Surveyor provides assessments against the design specified, manufacturer requirements, and compliance with the NCC and Australian Standards.	New qualification: *Certificate IV in Construction Waterproofing Design and Survey*	Not applicable	Not applicable	As the qualification is to be newly created no RTOs have it on scope. RTOs that may be interested in adding the qualification to scope include: 43 RTOs with the Certificate III in Construction Waterproofing on scope. RTOs with related qualifications on scope such as: CPC31320 Certificate III in Wall and Floor Tiling (71 RTOs), Building Design (12 RTOs), Building Surveying (9 RTOs) and Building Construction (Certificate IV - 135 RTOs)

Attachment D: List of stakeholders that actively participated in the consultation process of the Case for Change

Name of stakeholder	Title	Organisation	Organisation type (e.g. Employer, peak body, union, RTO, regulator)	Jurisdiction/town/city (e.g. NSW/Sydney)
Adam Liddell	Building Inspector	Jim's Building Inspections	Employer	St Kilda East, Victoria
Andrew Golle	Managing Director	Armont Rectification Builders and Consulting	Employer	Longford, Tasmania
Ben Heaton	Training Manager	Everthought Education	RTO	Salisbury, QLD
Bill Spencer	Trainer	Technical Institute of Victoria	RTO	Newport, Vic
Brett O'Loughlin	Account Manager General Construction and Remedial Specialist	Ardex	Employer	Vic/Tas
Byron Landeryou	Consultant	Waterproof Awareness	Employer	Torquay, Vic
Chris Bulmer	Consultant	Australian Construction Quality Group	Employer	NSW

Denis Gray	National Product Manager Building Line	Mapei Australia	Employer	National
Corey Vassallo	State Manager	Spanos	Employer	QLD
Craig Deakes	Team Leader - Construction	North Region TAFE NSW	RTO	Kingscliff NSW
Dan Wilson	Managing Director	Set Tiling	Employer	QLD
David Previte	Managing Director	Waterproofing Integrity Compliance and Testing Services	Employer	NSW
Erika Berzins	Manager, Manager Business Operations, Performance and Assurance	Better Regulation Division, Department of Fair Trading NSW	Regulator/Licensing	NSW
Frank Moebus	Principal Consultant	Australian Tiling and Waterproofing Consultants	Employer	QLD
Gary Stick	Manager Technical Standards Unit	Queensland Building and Construction Commission (QBCC)	Regulator	QLD
Glenn Raine	Trainer/course writer	TAFE Qld	RTO	QLD
Ian Bassett	Policy Officer	Building Designers Association of Australia	Industry Association	NSW, but national
Ian Jennings	Executive Manager	Paynter Dixon Insurance	Employer	NSW

Iain Middleton	Tiling Lecturer	South Metropolitan TAFE	RTO	Rockingham, WA
Jennifer Lawrence	Senior Adviser Industry Policy	Master Builders Association (MBA)	Industry Association	ACT
Jennifer Mason	Senior Policy Officer	Victorian Building Authority (VBA)	Regulator	Vic
Jill Brookfield	CEO	Association of Australian Certifiers	Industry Association	NSW
Jim Ashenden	Lecturer Building Trades	North Metropolitan TAFE	RTO	WA
John Groom	Quality Assurance Officer	Hutchinson Builders	Employer	QLD
Karl Wootton	Senior Technical consultant and trainer	Australian Waterproofing Consultants	Employer	Vic
Kelvin Cuskelly	Assistant Director Building Services	Housing Industry Association (HIA)	Industry Association	Qld
Kieran Biber	Market Field Manager Waterproofing and Roofing	Sika	Employer	Qld
Kylie Fletcher	RTO Manager	Queensland Master Builders Association	RTO	Qld
Lorian Fosdick	Sales Manager	Bayset	Employer	Vic

Mark Jewell	Director	McNab Relationship Builders	Employer	Sunshine Coast, Qld
Matt Press	Director Construct NSW	Office of the Building Commissioner NSW	Regulator	NSW
Matthew Pollock	Executive Director	Master Builders Association Tasmania	Industry Association	Tas
Max Rafferty	National Technical Manager	Master Builders Association	Industry Association	Act
Nick Collett	National Building Finishes Manager	Sika	Employer	Qld
Nick Hudson	Business Development Manager	Royal Institute of Chartered Surveyors (RICS)	Industry Association	NSW
Paul Buckley	National Ceramic Manager	Mapei	Employer	Vic
Phil Scardigno	Managing Director	Gripset	Employer	Adelaide, SA
PhilipTruebody	State Manager	Tremco Construction Products Group	Employer	Qld
Robert Rose	Trainer/course writer	TAFE NSW	RTO	NSW

Rolf Offerhaus	Regional Technical Director Asia Pacific,	Ardex	Employer	NSW
Samantha Adrichem	Manager Research and Evaluation	Victorian Building Authority (VBA)	Regulator	Vic
Stephen Scimonello	Professional Development Manager	Australia Institute of Building Surveyors (AIBS)	Industry Association	NSW
Stephen Walker	Hydraulic engineer/trainer	Fluid Industries Hydraulic Consultants	Employer and Consultant	Bundaberg, Qld
Steven Baker	Operations Manager	Bravada Waterproofing	Employer	Vic
Tim Ferrari	General Manager Training,	Housing Industry Association	Industry Association	NSW
Vincent Digges	Trainer	TAFE NSW	RTO	NSW

Attachment E: Issues Raised by Stakeholders during consultation on the development of the Case for Change

Stakeholder Type	Issues Raised	IRC's Response to Issues Raised
Industry Reference Committee (IRC) Representatives		The Construction IRC commissioned this Case for Change to identify the gaps in training and establish the components required to fill the gaps.
Peak Industry Bodies	The Building Designers Association is fully supportive of the introduction of the proposed Waterproofing Design and Survey qualification Design for the waterproofing of buildings, both for internal wet areas and for the building fabric is major issue for the construction industry as waterproofing failure is of major concern, especially in multi -storey residential buildings. The existing Certificate III is mainly aimed at applicators who do not have the necessary design skills for ensuring that the waterproofing details are fit for purpose. There is a lack of documentary support for designers and building surveyors to follow and there is no continuity throughout the construction sequence from design to installation to certification. The lack of advanced skills needed to design complex waterproofing systems and to perform quality assurance inspections at critical points in the waterproofing installation has led to waterproofing failures that are both difficult and expensive to correct. The proposed qualification will go a long way toward addressing a skills gap in waterproofing design and survey.	

Employers (Non-IRC)	We have firsthand experience where waterproofing installations are left to Certificate III applicators. Without design guidelines to follow ad hoc methods are employed which eventually fail. Documentation for waterproofing systems needs to be developed at the design stage to enable integration with building structure and services. Lack of documentary support for designers, surveyors and builders leads to: • poor planning of the construction process • no continuity throughout construction sequence from design/construct to inspect and certify.'	
	Disasters occur due to the construction industry in general (builders, designers, architects, engineers, and developers) not understanding waterproofing to the required level. Waterproofing failures are predominately design issues, construction faults or poor installation techniques by inadequately trained people. The introduction of a Certificate IV in Construction Waterproofing Design and Survey will assist the industry greatly.	
	The current certificate III in construction waterproofing qualification is inadequate to progress the industry further and is really a base level entry point into the industry. The installation of waterproof membranes and proper understanding of waterproofing design and surveying to buildings are miles apart. So, an upgraded qualification that has a strong focus on the design component would be a big step forward to improve the current state of play in the construction industry. The application of simplified products to complex tasks is the industry norm, which is why more advance training is needed in construction waterproofing design and survey.	

	Typical directions on plans provided are to install waterproofing according to Australian Standards or manufacturers specifications. Waterproofing applicators are given no direction as to expected finishes or service requirements, such as frequency of exposure to water, ambient weather influences, condensation risk; protection of critical building elements; use of area as wet/damp/dry environment; compatibility with other finishes; consequences of defects; and expected feasibility of repairs or maintenance. A specialised waterproofing designer will assess site risks, conditions and service requirements and provide documentation of systems, design, and scopes to the principal designer. Building surveyors and regulatory inspectors are not specialised in their knowledge base to assess waterproofing application for compliance with design or to identify defects. A specialised waterproofing surveyor will have the experience and knowledge base to provide stage inspections and final inspections in support of the principal surveyor/certifier.	
	Waterproofing needs curriculum regarding the sequence of construction and the requirements for providing a robust substrate onto which any waterproofing membrane will be applied. Work needs to centre more on the manager/ owner of the Waterproofing business by assisting them to learn more about how to: • read and interpret Australian standards, the Building Code, specifications, and data sheets to ensure they are conforming to the relevant supplier/ manufacturer requirements • carry out an inspection to determine if a substrate is suitable for a particular membrane system	

	• understand construction of a roof, balcony, internal wet area and basement and what a waterproofing manager/ owner should be looking for (part of risk management) • interpret a waterproofing contract, legal responsibilities, basic chemistry of waterproofing materials – liquid, sheet, integral waterproofing products.	
	• a significant knowledge gap regarding waterproofing design and installation currently exists in the building industry resulting in waterproofing failures that lead to asset degradation • structured training is needed based on our experience as well as industry figures on waterproofing failures due to incorrect design and/or installation • a Certificate IV – Construction Waterproofing – Design and Survey should be a prerequisite for specifiers, assessors, and professionals of waterproofing systems.	
Regulators	Victorian Building Authority 'Currently, there is only nationally accredited training at a Certificate III level. Not all waterproofing practitioners undertake this qualification and there is currently no formal training for supervisors of waterproofing practitioners. As such, the VBA strongly supports this introduction of this qualification as we believe it will: • Increase the overall knowledge of waterproofing practitioners • Reduce the number of waterproofing defects and major failures • Support the intended trades registration scheme and career pathways that this new scheme will provide to existing waterproofing practitioners	

	• Provide continuing professional development (CPD) for existing waterproofing practitioners who wish to seek the intended higher-level registration as waterproofing supervisor • Better support the industry in understand the Victorian Regulatory Framework, which includes being able to read and interpret: the National Construction Code (NCC), relevant Australian Standards, relevant VBA guidelines and manufacturers guidelines • Allow us to prescribe this qualification in our regulatory framework for trades registration.'	
	The Better Regulation Division and teams from Policy and Compliance NSW Fair Trading support the proposed qualification. Feedback recommended that: • the Case for Change reference to 'complex waterproofing systems' be qualified as complex systems may relate to other building works such as weatherproofing, hydraulics, structure and cladding and remedial work • a focus on compliant waterproofing designs in all scenarios would be beneficial • include 'water shedding' and the integration of waterproofing with an adjoining building system.	

Registered Training Organisations (RTOs)	The design of waterproofing seems to be ad hoc and will often rely on manufacturers details and not looking from first principles and having regard to the end use. Designers will simply lift standard details from manufacturers installation recommendations. Similarly, and where there is no formal specification and drawings details, the application of waterproofing is often less than diligent. It is important that proper inspection and testing of waterproofing be carried out. This is often not done. Testing in particular is neglected. Details of testing and recording need to be more stringent, not to apportion blame in the event of a failure, but to encourage accountability at the time of installation. Waterproofing defects are a problem in WA, particularly basements, retaining walls and masonry planters. There is no regulation for waterproofing in WA therefore, no incentive for people to do training. Tilers do a lot of waterproofing but do not have adequate skills and knowledge.	
Training Boards/Other	No feedback received at this stage.	

State and Territory Training Authorities (STAs)	'The Victorian STA recognises the importance and evolving role of waterproofing in the construction industry and welcomes the introduction of new units. • Given the strong interest from the VBA and the likely outcome that the new units will form part of their regulatory framework, it will be essential that the two projects progress in continued collaboration in regard to content and timing to avoid a mismatch of requirements. • From the information provided in the proposal it appears that a Skillset may address the needs of industry in terms of upskilling or for those working in related occupations. It would be useful in the next phase of the project to include a stronger rationale if it proceeds as a Certificate IV.'	
	'Skills Tasmania supports the Case for Change Construction Waterproofing Design and Survey, provided any issues raised by Tasmanian stakeholders are addressed.' Artibus Innovation informed Skills Tasmania that a waterproofing consultant based in Tasmania has contributed actively to the Case for Change.	

	'The WA STA supports the Case for Change however acknowledges the following:
	• Currently there is no regulation of waterproofing in WA
	  ○ There are no mandatory inspection requirements in WA after waterproofing work has been completed
	  ○ There is no take up of the Certificate III in Waterproofing in WA
	• Feedback suggests that there is a need for regulation in this sector and understands that the training products developed as part of this project may or may not be the mechanism to initiate licensing/regulation for Waterproofing Design and Surveying in WA.	

	• WA Stakeholders, including the Construction Training Fund look forward to participating in and facilitating further and more robust industry consultations if the Case for Change process is approved by the AISC.'	
	The NT STA supports the Construction Waterproofing Design & Survey Case for Change progressing to the November meeting of the AISC for consideration.	
	The NSW STA supports the case for change. The waterproofing skills in the building and design industry are changing rapidly, this Training package is anticipated to address the skills gap in waterproofing design and remediation in the industry.	
Unions	No feedback received at this stage.	

Attachment F: List of stakeholders to be contacted as part of the development of the Case for Endorsement

In addition to stakeholders contacted as part of the development of the Case for Change, the following people will be informed:

Name of Stakeholder	Title	Organisation	Organisation type (e.g. Employer, peak body, union, RTO, regulator)	Jurisdiction/town/city (e.g. NSW/Sydney)
Adam Smith	Project Manager	Construction Training Fund	Industry Training Advisory Body	WA
Brian Richards	Design Director	Built	Employer	National
Dave Higgon	Manager Employee Relations	Multiplex	Employer	National
David Beslich	Executive Director	Hansen Yuncken	Employer	National
David Cremona	National Director of Construction	Meriton	Employer	National
David Roberts	Building Services	Hutchinson Builders	Employer	National
Graeme Mauger	National EHS Operations Manager	Lendlease	Employer	National
Grahame Vile	President	Australasian Concrete Repair and Remedial Building Association (ACRA)	Industry Association	NSW, but national

Kate Moore	National Manager Education and Research	Australian Institute of Architects	Peak Body	National
Kevin Swarts	Industry Liaison Officer	Keystone Tasmania	Industry Training Advisory Body	Tasmania metro – and regional
Neda Aleksic	Training Product Development	Industry Skills Advisory Council	Industry Training Advisory Body	Northern Territory – metro and regional
Nick Soden	Director	The Association of Hydraulic Services Consultant	Peak body	National
Vince Ball	Executive Director	Construction Industry Training Council	Industry Training Advisory Body	ACT
RTOs The 43 RTOs with the *CPC31420 Certificate III in Construction Waterproofing* on scope and the RTOs with related qualifications such as, Building Design (12 RTOs), Building Surveying (9 RTOs) and Building Construction (Certificate IV -135 RTOs)				

Attachment G Letters of Support

1st October 2021

AUSTRALIAN INSTITUTE OF

Frances Lamb
Project Manager
Artibus Innovation
PO Box 457 North Hobart
Tasmania 7002

EMAIL: info@waterproof.org.au
Web: www.waterproof.org.au

Dear Francis,

RE: Case for Change Construction Waterproofing Design Survey

The AIW is in full support of improving the Design of waterproofing in the construction industry. The builder would benefit greatly from greater clarity from authorised design bodies, even D-t-S projects.

As such we offer our support to your submission.

The Australian Institute of Waterproofing is a national association body in a 'not-for-profit' basis. Members in each State cover a mix of Consultants, Contractors, Manufacturers' and Resellers.

The industry has many problems as the failure in building defects; particularly in water related damage continues to grow. Part of the solution relates to improving the education of waterproofing design and better understanding of application options for trades people. The NCC and Australian Standards are not prescriptive and only cover the minimum requirements.

Kind regards,

David Hepworth
Secretary

BUILDING DESIGNERS
ASSOCIATION OF AUSTRALIA

PO Box 856
NORTH SYDNEY NSW 2059
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Phone 1300 669 854
admin@bdaa.com.au

Waterproofing Design and Survey Training Package Endorsement

Who We Are

The Building Designers Association of Australia (BDAA) is the not-for-profit, peak industry association representing Australian Designers involved in, or associated with, the built environment nationally for 60 years. Our role is to educate and raise awareness of designers within the industry, to build and sustain relations with the key stakeholders, and to provide services to our members.
Our membership includes residential, commercial, and industrial building designers, architects, landscape architects, engineers, planners, specifiers, thermal performance assessors and design students.

Our Endorsement

The Building Designers Association is fully supportive of the introduction of the proposed Waterproofing Design and Survey training package.

Design for the waterproofing of buildings, both for internal wet areas and for the building fabric is major issue for the construction industry as waterproofing failure is of major concern, especially in multi-storey residential buildings. Th existing Certificate III is mainly aimed at applicators who do not have the necessary design skills for ensuring that the waterproofing details are fit for purpose. There is a lack of documentary support for designers and building surveyors to follow and there is no continuity throughout the construction sequence from design/installation/certification.

The lack of advanced skills needed to design complex waterproofing systems and to perform quality assurance inspections at critical points in the waterproofing installation lead to waterproofing failures that are both difficult and expensive to correct. Risk aversion is a key platform in the design of buildings, especially residential developments, under the recently introduced Class 2 Registration Regulations in NSW.

The failure of façade, roofing structures and membranes from water infiltration is a major area of complaint from building owners, and the correct documentation and assessment of these risks would assist in resolving these problems before they become an insurmountable issue for property owners. Before they become a problem, we need to have suitably qualified assessors to prepare detailed reports that can assist in the design of buildings to address the risks water penetration and provide competent advice on methods to minimise the consequences of these risks in buildings.

There is a known gap in the market for suitably trained and qualified assessors and the introduction of a definitive training package will provide designers and surveyors with the tools to provide quality advice and designs, rather than owners relying on poor quality designs provided by designers who have not undertaken the necessary skills training.

The BDAA stands behind this initiative and offers our full support for its introduction.

Regards

Ian Bassett

Life Fellow BDAA

Director Policy & Professional Development
Building Designers Association of Australia
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ENGINEERED SOLUTIONS
FOR TILING, FLOORING & WATERPROOFING

LETTER OF SUPPORT

CERTIFICATE IV – CONSTRUCTION WATERPROOFING – DESIGN AND SURVEY

As an industry leader in the manufacture and supply of waterproofing materials, Ardex Australia supports the proposed Certificate IV – Structural Waterproofing.

Being a global construction materials leader with offices in over 100 countries, 5 Australian state-based offices / production facilities, Ardex is renowned for research and development of products that meet the requirements of the vast geographical and sectors of the construction industry.
Ardex also invests heavily in providing education at its training academies, off-site courses, online training resources, supplying materials to other educational institutions and construction site support. A significant portion of this support is to assist the installing contractors and product retailers with the necessary knowledge and skills to achieve quality outcomes. Waterproofing development being a key focus.

With an ever increasing number of specifiers, designers, consultants and other industry professionals reaching out to material suppliers regarding design compliancy of waterproofing and the varying performances of waterproofing systems available, Ardex is also providing base level education to a sector of the market that is high priority in asset protection and long-term structural integrity.
It is remiss to expect that with no requirement of formalized education or qualification, that key waterproofing specifiers, assessors and construction specialists will make informed decisions on not only the prevention of asset degradation but the direct health and well-being of its occupants.

In similar fashion to the Certificate III in Construction Waterproofing systematically improving the standard and competency of installing contractors, obtaining a core level of knowledge and skills. A Certificate IV – Construction Waterproofing – Design and Survey should be a prerequisite for specifiers, assessors and professionals of waterproofing systems.

Regards

Brett O'Loughlin
Waterproofing Account Manager
Ardex Australia

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WATERPROOF
AWARENESS
www.waterproofawareness.com
ABN 87 626 060 491

2nd September 2021

To whom it may concern,

My name is Byron Landeryou and l am the Founder/ CEO of Waterproof Awareness. My business activities consist of design and specification consulting for construction waterproofing and developing educational resources for both the accredited and non - accredited training sectors. Over the last 7 years, waterproof awareness has conducted training to over 1500 students in waterproofing applications to the National Construction Code and Australian standards for waterproofing requirements. I am also currently a committee member of Australian Institute of Waterproofing.

Due to poor waterproofing practices. Australia is now faced with a Leaky building syndrome that will likely see rectification of buildings cost our economy billions of dollars over the next 20 years period. This situation is attributed to a lack of understanding of correct design and installation of waterproof membranes. Which has stemmed from a lack of formal licencing for waterproofing installers, poor training, and a general lack of understanding of the fundamentals.

Being a former teacher of Certificate III in construction waterproofing and understanding the course format. The current certificate III in construction waterproofing qualification is inadequate to progress the industry further and is really a base level entry point into the industry. The installation of waterproof membranes and proper understanding of waterproofing design and surveying to buildings are miles apart. So, an upgraded qualification that has a strong focus on the design component would be a big step forward to improve the current state of play in the construction industry.

Some of the reasons l endorse this qualification are:

- Many designs on plans are either left off or incorrect
- The current skillset of many waterproofer's is inadequate and this qualification can raise their knowledge base to assist in the design process
- Overall, the entire industry from engineers, architects, builders and developers will greatly benefit from a course that is design focused.

Kindest regards,

Byron Landeryou

WATERPROOFING CONSULTANCY
A Division of Stockley Industries Pty Ltd
ABN 75 095 757 905

1st September 2021.

To whom it may concern

My name is Martin Peter Stockley, and I am a building technician that has specialised in waterproofing design and installation for over 40 years. In addition to my formal training, I hold a Certificate III in waterproofing, a QBSA waterproofing Contractor's license & QBSA waterproofing supervisor's license. I currently own and operate Waterproofing Consultancy assisting clients in the development of compliant successful waterproofing systems.

The waterproofing industry accounts for a significant number of claims for defects each year. A trade certificate is required to properly train the waterproofing sector. It is ludicrous that one of the most crucial areas of construction has no trade qualification.

The current Cert III is fine for wet area applications but not for other areas requiring different expertise. Disasters occur due to the following:

- The construction industry in general does not understand waterproofing to a required level.
- Construction managers, site supervisors and other trades do not totally recognise the critical nature of waterproofing often making decisions that compromise the waterproofing.
- The current Certificate III applicators should be restricted to internal wet area waterproofing only until they become adequately trained and competent to control the installation of all waterproofing systems.
- Waterproofing failures are predominantly either design issues, construction faults or poor installation techniques by inadequately trained people in all areas.

The reasons I support this qualification are:

1. It will provide a level of expertise by experienced required using well-trained waterproofing professionals able to assist in the design and installation of systems reducing defect.
2. It could act as an interim measure for assessments of design & installation by inspection. d.
3. There is a lack of understanding by all parties about waterproofing requirements with many architects, engineers, builder, and developers freely admitting they are not competent with this area. Providing a certificate IV in Construction Waterproofing Design and Survey will assist all parties greatly.
4. This will raise the level of awareness by utilising the existing experience of long-term employees of the waterproofing area for designers and installers. A full apprenticeship should still be the goal.

Your faithfully,

Martin Peter Stockley

Senior Consultant

Waterproofing Consultancy

0417 595 746

WC

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27th August 2021

To whom it may concern,

RE: Mapei support for a Cert IV in Construction Waterproofing Design and Survey

Mapei Australia is part of the Mapei Group, an Italian company founded in 1937 in Milan Italy. As a quality endorsed company, we believe that quality in construction work is what makes the difference. That is why we are the world leader in the production of adhesives, sealants and chemical products, including waterproofing systems for the building industry.

Mapei supports continual improvement and agree that a significant knowledge gap regarding waterproofing design and installation currently exists in the building industry. Our support for the development and introduction of a structured training and qualification system is based on our personal experience as well as industry figures on waterproofing failures due to incorrect design and/or installation.

Such a qualification would address the many areas of the industry currently contributing to defects and provide a benchmark for training in design, inspection and testing to ensure compliance with the standards and the NCC and ultimately raise the quality of workmanship.

Regards,

Denis Gray
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MASTER BUILDERS
AUSTRALIA

14 September 2021

Frances Lamb
Project Manager
Artibus Innovation
frances@artibus.com.au

Dear Frances

Master Builders Australia supports the development of a Certificate IV in Structural Waterproofing Design and Survey.

Master Builders Australia is the nation's peak building and construction industry association and the only one to represent all three sectors of the industry – residential, commercial and civil construction. Over our 131 year history, the movement has grown to represent over 33,000 businesses nationwide. We are committed to fostering excellence and quality in the industry.

Structural waterproofing design and survey are areas of considerable concern in residential and commercial building and defects can lead to serious structural damage. The incidence of waterproofing defects in new construction is unacceptably high and over half of defects relate to design issues.

At present the only education and training specific to waterproofing is the Cert III in Construction Waterproofing. To realise the benefits of this trade level qualification, the industry needs building designers with the specialist knowledge to design waterproofing systems and surveyors that can test and certify waterproof compliance.

The development of a specialised qualification and skill sets in structural waterproofing design and survey will address the current education and training gap, enable existing workers to upskill, provide a career pathway into waterproofing, and most importantly lift the quality of waterproofing design and survey in the building and construction industry.

Yours sincerely

Denita Wawn
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NSW Fair Trading feedback - Waterproofing Design and Survey Case for Change

Thank you for the opportunity for NSW Fair Trading to provide comment / input to the *Case for Change Construction Waterproofing Design and Survey.*

We have sought input from our Policy and Compliance teams with particular expertise in building construction and waterproofing, with comments provided below.

- NSW Fair Trading supports standing up the proposed qualification, Certificate IV in Construction Waterproofing Design and Survey
- It is noted that *Case for Change* identifies the job roles (not as 'tradies') rather as waterproofing consultants and waterproofing surveyors.
- Draft *Case for Change* refers to 'complex waterproofing systems' without qualifying what this means.
    - Complex systems may relate to other related building works such as weatherproofing, hydraulics, structure and cladding, and remedial work and special needs for adaptable housing.
    - In NSW Fair Trading's experience, water penetration issues are not necessarily a failure of the actual waterproofing, but rather a failure of the integration of waterproofing with other components.
- Qualification may benefit from a focus on compliant waterproofing designs in all scenarios
- Waterproofing vs weatherproofing – is there an opportunity to raise 'water shedding' which deals with the integration of waterproofing with an adjoining building system
- A recognised design qualification could assist with any future regulatory considerations
    - similar to design obligations for certain fire safety systems under the EP&A Regulation
    - Consider UOC(s) around integration with other trades/designers work.
    - Coordination of designing waterproofing to work with other elements is essential.
- It was also noted that the current Cert III in Waterproofing does not include detailed learning on the various Australian Standards and that qualifications should be built around those standards.
- We also note that the Office of the Building Commissioner has also provided input to this project.

We would value the opportunity to provide more detailed input during the qualification and unit drafting processes as waterproofing is a key area of concern for NSW Fair Trading.

Feel free to reach out to myself or Michael should you need any further information at this preliminary stage, and we look forward to seeing the outcome of the AISC's decision regarding this project.

Regards,
Erika

Erika Berzins
Manager Business Operations, Performance and Assurance

Better Regulation Division | Department of Customer Service N

Tile Reglue Injection Method ®
" ..positive re-fixing without removal.."

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HIA MEMBER
MASTER BUILDERS AUSTRALIA

Date: 1st September,2021. Pages: 3

To: Frances Lamb Artibus

From: Andrew Golle

Ref: **A proposed *Certificate IV in Construction Waterproofing Design and Survey***

Frances,

I register my support for the development and recognition of a Certificate IV level qualification in Structural Waterproofing – Design and Survey.

As a qualified Certificate III Construction Waterproofer, with 30 years industry experience, I specialise in waterproofing defect investigation and remediation. I have investigated and provided scoping and implementation of waterproofing systems and defect rectification throughout Australia.

Needless to say, that I am kept busy, as waterproofing defects have been an ongoing industry problem for the extent of my career to date.

I am a committee member of the Australian Industry of Waterproofing (AIW), representing

Tasmania. I am a Certificate III waterproofing trainer and assessor, conducting Cert III courses for Qld Master Builders and deliver training for MBA Tasmania, HIA and have trained for MBA NSW.

I am a sitting member on Australian Standards Committees BD 038 (AS 3740 Waterproofing of Domestic Wet Areas) and BD 044 (AS 3958.1 Installation of Ceramic and Stone Tiles) representing Master Builders Australia.

I am a member of QMBA Renovation and Technical Committee and QMBA Institute of Building Consultants.

I am a registered builder in QLD, NSW and Tasmania.

Although I hold a qualification as a Certified Surveyor in Structural Waterproofing (CSSW UK), this qualification is currently not recognised in Australia.

The Need for Change:

Industry requires a higher level of recognised qualification to support the development of skills and knowledge in construction waterproofing design and survey.

- Waterproofing defects are ranked as one of the highest throughout industry. This is spread throughout all sectors and affects domestic, commercial, renovation and remedial installations. The fact that this issue is throughout all sectors is testament to a systemic failure in the

application of waterproofing systems that are functional and meet the service requirements of building use.

- Waterproofing systems specifications cannot be left to Cert III applicators without design requirements. Cert III qualified waterproofing applicators are capable of applying a waterproofing system to a specific task. They assess site conditions and problem solve on site with materials and processes available to them. The missing link in the equation is the provision of design and formulation of systems for the waterproofing applicator to follow.
    - Waterproofing application to assigned construction tasks has taken a misdirection over many years. As a technical trade, waterproofing has been simplified to the basic application of a selected membrane following examples set by associate applicators without understanding site and system compatibilities.
    - The application of simplified products to complex tasks is the industry norm. Waterproofing product selection requires a system to accommodate wet area service conditions and site specific needs. A systems approach is needed which requires design direction and identification of site needs. This is not being done.
- Lack of documentary support for designers and surveyors and for builders to follow. No continuity throughout construction sequence from design/construct/certify.
    - Typical directions on plans provided are to install waterproofing according to Australian Standards or manufacturers specifications. This does not address site requirements or expected service conditions of the building.
    - Waterproofing applicators are given no direction as to expected finishes or service requirements. This includes: identification of specific wet area treatment; expected service conditions such as frequency of exposure to water, ambient weather influences, condensation risk; protection of critical building elements; use of area as wet/damp/dry environment; compatibility with other finishes; consequences of defects; and expected feasibility of repairs or maintenance. A specialised waterproofing designer will assess site risks, conditions and service requirements and provide systems, design and scopes to the principal designer.
    - Waterproofing quality assurance is generally relegated to self-certification through provision of statuary declarations or where works are not checked through building approvals. This is not working. In states such as NSW where waterproofing inspection is a mandatory inspection stage, surveyors and regulatory inspectors are not specialised in their knowledge base to assess waterproofing application for compliance with design or to identify defects.
    - A specialised waterproofing surveyor will have the experience and knowledge base to provide stage inspections and final inspections in support of the principal surveyor/certifier.

Expected Outcomes:

- Reduction in the high rate of waterproofing defects needs to start at design stage, where site specific needs are addressed at desk top assessment. Specific design support to the principal designer is the expected job role. Concentrating on remedial design only is, simply, locking the gate and waving at the horse.
- Self certification, fraudulent statuary declarations and stage inspections by unqualified surveyors are not working. The waterproofing surveyor's job role is to: provide independent stage inspections throughout the waterproofing system installation and assess against the design provided and manufacturers requirements; to assess and confirm viability of site needs and problem solving practices as proposed by the waterproofing applicator; to provide final installation inspection and compliance with design and specifications. These services would be in support of the principal surveyor/certifier.

- Waterproofing design and survey specialists will provide defect investigative services and provide design and scope remedial systems.
- Certificate IV level qualification will place this level of attainment within reach of experienced Cert III applicators with an aptitude towards consultancy roles. It will be within reach of other associate trades such as Cert III plumbing and Cert III wall and floor tiling. It will be within reach of Cert IV qualified builders, construction managers and site supervisors. It will broaden the scope and provide specialist opportunities for existing designers, engineers and surveyors.
- Certificate IV level design has already been proven as an industry accepted model where Cert IV roof plumbers design and install water harvesting and storm water management systems.
- Current waterproofing quality management and compliance relies completely on construction practices. There is no current link between design/construct/certify. This qualification will provide a complete link throughout the process and provide industry with a framework to manage the complete process.
- As a nationally recognised qualification, the Cert IV in design and survey will provide standardised outcomes and recognition of skills. Scope exists to provide advanced units of competency or skill sets to Diploma and Advanced Diploma levels. This initiative should not be relegated to state regulatory bodies or industry associations who cannot recognise or provide qualifications at this level.

Conclusions:

- Waterproofing defects cost 10 to 20 times the initial installation cost of a waterproofing system. A bathroom waterproofing system installation may cost $1200.00, where rectification of a leaking bathroom costs $20 000.00. An external deck may cost $3 000.00 to waterproof and $ 40 000.00 to rectify when it fails. Excavation and remediation of below ground failed waterproofing often runs into tens of thousands, to hundreds of thousands of dollars to rectify. Often it is too late or impractical to fix after building completion.
- Current Cert III training and expectations do not meet industry requirements where a chain of support is required from design, through construction and to certification.
- Certificate IV level of nationally recognised qualification will provide access to existing industry trades with an aptitude for consultancy and broaden the scope of existing designers and surveyors.
- Qualified risk assessment of this high risk building activity is required by specialised design professionals in order to achieve a systems approach. Checks and balances by experienced and skills recognised specialist surveyors are the desired outcome to bring back a level of confidence within the building industry.
- Quality assurance should not just be a catch phrase. We should be able to back QA up with tangible practices and quantifiable outcomes – the reduction of waterproofing related defects.

Yours Sincerely,

Andrew Golle’

Certified Surveyor in Structural Waterproofing. (CSSW UK)

A proposed Certificate IV in Construction Waterproofing Design and Survey

Date 2/9/21

To whom it may concern

I am a waterproofing consultant, and my skills are focused on the waterproofing sector of residential, commercial and infrastructure waterproofing of belowground, above ground and internal wet areas.

I provide design advise both as a design consultant working with architects/ engineers directly and I provide peer review of existing designs. I provide reports regarding waterproofing failures, and I provide remedial design solutions and supervision the repair phase. I am involved in reporting for lawyers in litigation cases and appear in court as an expert witness.

Industry currently has a Certificate III course to introduce contractors to the concepts of waterproofing but does not provide a robust enough in-depth curriculum regarding the sequence of construction and the requirements for providing a robust substrate onto which any waterproofing membrane will be applied.

With respect to cert IV in my opinion the work needs to center more on the manager/ owner of the Waterproofing business by assisting them to learn more about:

- Reading and interpreting Australian standards
- Reading and interpreting Building code as it relates to waterproofing
- How to implement quality standards for their employee to follow
- How to read and interpret a specification and data sheet in order to ensure they are conforming to the relevant supplier/ manufacturer requirements
- How to carry out an inspection.
- How to determine if a substrate is suitable for a particular membrane system
- How a roof, balcony, internal wet area and basement are constructed and what should a waterproofing manager/ owner be looking for (part of risk management)
- How to interpret a waterproofing contract
- Legal responsibilities
- Basic chemistry of waterproofing materials – liquid, sheet, integral waterproofing products.

I find there is a disconnect between the skills learnt in Cert III and the more indepth skills required to execute and manage the process of waterproofing.

Having a more advanced set of skills will help to provide a more robust understanding of the process to reduce on site failures with poor installation and management practices.

A Certificate IV course will set a higher benchmark of skill that would benefit the smaller contractor and larger contractor alike.

In my opinion 75% of defects are caused by poor installation practices by contractors who simply do not understand the principles of construction and the effects of movement of structures. This course would help to provide a clearer understanding of what creates a waterproofing failure and how to avoid them.

In my opinion 23% of failures would be design defects where a designer has not accounted for all of the parameters that may impact a membrane over time and have not provided a sufficiently robust or well documented and detailed design.

Lastly in my opinion 2% of failures could be attributable to inferior or defective products.

This course should aim to reduce the incidence of failures caused by poor work management practices and poor installation failures by managers and owners of waterproofing businesses.

Regards

Karl Wootton

Senior Technical Consultant

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Jennifer Mason 8 Sept 2021,

Hi Frances.

VBA: Support for Certificate IV in Construction Waterproofing Design and Survey

Thank you for inviting me to review the proposal to establish the above qualification.

The Victorian Building Authority (VBA) is regulator of the Victorian Building and Construction industry.

Currently in Victoria, waterproofing is not a registered trade. In late 2018, the Victorian Government made amendments to the Building Act 1993 to introduce a new registration and licensing scheme for tradespeople. The scheme aims to reduce non-compliant building work, enhance industry accountability and encourage skills formation. Changes will be implemented for carpentry first, with other trades to follow in subsequent implementation stages. Waterproofing has been identified as a priority trade and will likely be the next trade after carpentry to have a registration scheme in Victoria. Information about the new registration scheme can be found on this Engage Victoria webpage: https://engage.vic.gov.au/registration-and-licensing-building-trades . Whilst the legislation is not yet finalised, two levels of trade practitioners are expected to be introduced for each trade (similar to the Plumbing registration and licencing scheme in Victoria): a registered practitioner who can undertake the work and a registered practitioner who can supervise and 'sign off' on the quality of the work undertaken.

In addition, the VBA has identified that poor waterproofing is a commonly identified in our inspection and audit scheme. It is also a common cause of insurance claims for structural defects in Victoria. The VBA is currently undertaking research into waterproofing defects and will make a number of recommendations on the outcome of this research. This research includes and analysis of information provided to the VBA by the insurer VMIA on insurance claims where it was identified that waterproofing defects were the root cause for the insurance claim. The VBA will be happy to provide Artibus with this research once completed. Poor waterproofing results in a number of issues including, but not limited to:

1. Mold
2. Health and hygiene issues for occupiers and residents of affected buildings
3. Expensive repairs – often including structural repairs
4. Drives up insurance costs

Currently, there is only nationally accredited training at a Certificate III level. Not all waterproofing practitioners undertake this qualification and there is currently no formal training for supervisors of waterproofing practitioners.

As such, the VBA strongly supports this introduction of this qualification as we believe it will:

- Increase the overall knowledge of waterproofing practitioners
- Reduce the number of waterproofing defects and major failures
- Support the intended trades registration scheme and career pathways that this new scheme will provide to existing waterproofing practitioners

- Provide continuing professional development (CPD) for existing waterproofing practitioners who wish to seek the intended higher level registration as waterproofing supervisor
- Better support the industry in understand the Victorian Regulatory Framework, which includes being able to read and interpret: the National Construction Code (NCC), relevant Australian Standards, relevant VBA guidelines and manufacturers guidelines
- All us to prescribe this qualification in our regulatory framework for trades registration

The VBA would welcome the opportunity to be part of the Training Advisory Group (TAG) should this project be approved.

Regards

Jennifer

Jennifer Mason

Senior Policy Advisor, Education & Training | Knowledge & Experience Assessment

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2 September 2021

Hi Francis

I am a lecturer at North Metro Tafe in Perth after being in the industry for over 40 years. My observation is that because our climate is not continually wet, the importance of waterproofing is not part of the workplace "culture". In Perth, it is almost expected that basement car parks will have leaky roofs. It need not be that way.

Below are a few unedited thought bubbles. I am interested in assisting in change.

The design of waterproofing seems to be adhoc and will often rely on manufacturers details, and not looking from first principles and having regard to the end use. Designers will simply lift standard details from manufacturers installation recommendations.

Similarly, and where there is no formal specification and drawings details, the application of waterproofing is often less than diligent.

Because of the importance of waterproofing, it is important that proper inspection and testing be carried out. This is often not done. Testing in particular is neglected. How for example do you test the integrity of a waterproofing applied to a retaining wall. Details of testing and recording need to be more stringent, not to apportion blame in the event of a failure, but to encourage accountability at the time of installation.

Suppliers will have approved applicators, but they will not warrant the application. Almost useless in practice. The suppliers blame the applicator and the applicators are often able to avoid the cost of repair. Its beyond their financial capacity to pay for repairs and consequential damage.

There is little control over work not falling under the requirements of building permits or where "maintenance" builders do work with little view to the future.

Most visible in Perth is the number of retaining walls and masonry planters which not only crack do to poor design but also leak. its a double whammy and is not considered unusual.

Cheers

Jim

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Paynters

31 August 2021

To whom it may concern

Background

I am currently a Director of Rizon Pty Ltd, Remeed Solutions Pty Ltd, Corvex Pty Ltd, and an Executive Manager of Paynters Pty Ltd.

Rizon is an insurance repair builder which is appointed to several major insurance company's repair panels throughout Australia. It has a solid history in the insurance repair, general construction, and building maintenance sectors providing insurance repair services in the domestic and light to medium commercial environments. Remeed is a property damage restoration business that provides services to commercial, industrial, and retail properties, as well as historical buildings throughout the east coast of Australia. An Corvex is an expert leader in the Asbestos industry. Corvex provide cost-effective solutions for all Hazmat removal situations. It removes and disposes of any type of material from any location; residential, commercial, or industrial friable or non-friable. Its services are asbestos removal, silica dust, lead base paint removal and mould remediation and contaminated soil remediation.

Paynters is a privately-owned construction entity which has been servicing a diverse range of clients across Australia for 60 years. It has completed iconic repairs, restoration and new build projects ranging from $1,000 to $50 million, including multiple award-winning projects. The organisation provides insurance repair work to loss adjusters and insurance companies within the commercial, retail, and industrial sectors.

Prior to joining Rizon and Paynters in 2014, I was the CEO of the Queensland Building Services Authority (BSA), now known as the Queensland Building and Construction Commission (QBCC) for 13 years. This entity regulated the Queensland building and construction industry and provided home warranty insurance to the Queensland community.

I am passionate about guiding communities and industry, developing community-based policy, and driving better building practises within the building and construction industry and community. Any reforms that will lead to a reduction in the number and extent of defects within the building and construction industry will be a benefit to the industry and overall community. As such I am very supportive of the work that Artibus Innovation has been carrying out with the waterproofing industry to develop a Certificate IV in Construction Waterproofing Design and Survey and fully endorse this proposal.

Industry Issue

Building and Construction defects are a major concern for the building and construction industry in that it can cause the value of a building to decrease and can lead to major losses to building practitioners. It is well known that the causes of such defects can either be because of poor design, or low-quality workmanship due to the poor knowledge of the contractors or trades, or that the building was not constructed in accordance with the design, or because it has been subject to factors not allowed for in the design or poor supervision. More and more we are seeing that building and construction defects are affecting our society at large due to possible danger posed and they can result

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in direct and indirect cost in repairs, abnormally they can lead to high maintenance dispute and possible the loss of the whole building.

When I led the QBCC the most common defects were:

- Painting
- Joinery
- Floor tiling
- Roof cladding
- Drainage
- Internal wet areas waterproofing membranes
- Driveways and paths
- Lining wall internal
- Lining ceiling internal
- External waterproofing membranes i.e., decks, balconies, rooftops, podiums etc.

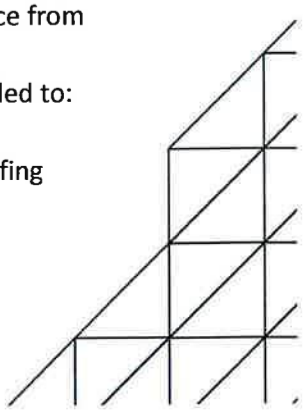
These types of defects have not changed for several years, and it is interesting to note that these themes are still common within the building and construction industry and across Australia. An interesting point is that both internal and external waterproof membrane issues have consistently been within the common defects for a number of years. Appropriate action is needed to reduce these types of defects as the failure of a waterproof membrane can be determinately and costly for all parties. Rectification of defective waterproofing does incur significant costs with repairs and major consequential damage. There are a number of mechanisms and strategies that can prevent waterproofing defects from consistently occurring, these include

- Design (compatibility)
- Specification (compatibility & installation)
- Membrane application (thickness and detailing)
- Adherence to specification and standards
- Common sense

Overall, all these issues can be prevented with appropriate training and development being provided to contractors. Contractors' knowledge needs to be increased. As such I am a big supporter of the Artibus Innovation initiative working with the waterproofing industry to prepare a proposal for the development of a Certificate IV in Construction Waterproofing Design and Survey.

The industry is in desperate need of a qualification that supports the development of skills and knowledge in construction waterproofing design and survey. The industry needs

- Water proofing applicators to understand the design requirements. The qualification is expected to increase the knowledge of applicators on the design documents, and this will provide confidence to designers, surveyors, and builders that applicators are aware of design issues. It presents there is no continuity throughout construction sequence from design/construct/certify.
- Waterproofing failures can be attributed to industry lacking advanced skills needed to:
    - design complex waterproofing systems
    - perform quality assurance inspections at critical points in the waterproofing installation.



Industry Solution

As such I am extremely supportive of the proposal for the development of a Certificate IV in Construction Waterproofing Design and Survey. The industry needs to increase its knowledge in the design aspects for waterproofing applicators to tackle the following areas:

- Design internal wet area waterproofing
- Design external above ground waterproofing
- Design external below ground waterproofing
- Survey waterproofing systems
- Diagnose a waterproofing failure
- Prepare a report for remedial waterproofing

It is envisaged that such development and qualification would be a huge benefit to the industry

- reduce defects in waterproofing
- provide a benchmark for training in design of waterproofing systems, testing of waterproofing work in progress, and inspection and certification of completed works were compliant with the standards and NCC.
- raise the quality of workmanship, providing Continual Professional Development and career pathways in the waterproofing industry.

If you require any further clarification, please do not hesitate to contact me on 0428401118.

Ian Jennings
Executive Manager
Paynters

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Office of the Building Commissioner

Frances Lamb

Project Manager

Artibus

By email: frances@artibus.com.au

Re: Certificate IV in Waterproofing

Dear Frances,

Thank you for the opportunity to provide feedback on the case for change to introduce a Certificate IV qualification in relation to waterproofing.

This type of qualification could be highly beneficial for new and established waterproofing contractors, helping to ensure Australia has a modern construction workforce that is equipped to produce trustworthy building outcomes.

Waterproofing has been identified by numerous studies to be one of the largest contributors to defects in residential apartment buildings. In NSW, Fair Trading's audits of class 2 buildings under construction have identified waterproofing-related defects in around 40% of inspections conducted since September 2020.

In our view, a major cause of waterproofing-related defects in class 2 buildings is the use of approaches which manage water ingress primarily by the specification and installation of membranes and sealants (complimentary systems). Unfortunately these approaches ignore the fundamental design practices necessary to produce resilient waterproofing outcomes – managing water through collection, redirection and drainage. It is therefore relevant to highlight that the *Design and Building Practitioners Act 2020* (the DBP) recently implemented in NSW requires that waterproofing-related 'issue-for-construction' designs are produced by Architects and Designers. This approach was taken as Architects and Designers are the only practitioners

with the appropriate skills, knowledge and qualification to be able to design resilient waterproofing outcomes.

There is a clear industry need to modernise the qualification that supports waterproofing contractors and consultants. The current qualification does not provide the skills and knowledge necessary in the modern construction workforce. Establishing a Certificate IV qualification would help to upskill all practitioners tasked with analysing, scoping and implementing waterproofing-related building work.

It would be beneficial to the industry for the new qualification to provide the following outcomes:

- understand the role of primary approaches (e.g. redirection or drainage) and how they interact with complimentary approaches (e.g. membranes)
- provide design-related knowledge and technical skills so that waterproofing practitioners can contribute to the regulated 'issue-for-construction' designs being signed-off by Architects and Designers, and
- understand how to select, install and certify waterproofing-related products and installations to ensure suitability and compliance amongst the challenges of ongoing product innovations and global supply chains.

We wish to highlight that it is unlikely that NSW would apply the Certificate IV to establish waterproofing as a new category of design practitioner under the DBP. However, it is likely that the Certificate IV could be considered suitable to be recognised as a mandatory qualification for licensing waterproofing contractors under the *Home Building Act 1989*.

Thank you for sharing this important proposal.

Kind regards,

Matt Press

Director, Office of the NSW Building Commissioner

21 September 2021

To whom it may concern
ARDEX are an independent family-owned company and for over 70 years have been an industry leader within the construction industry. Offering engineered products and systems within the areas of floor leveling and adhesives, tile and natural stone systems, general construction, and waterproofing systems. Each product and system are the careful result of research and development, this allows ARDEX to ultimately supply complete system solutions which include market leading, high quality products and services to our valued customers.

There are several possible factors as to why defects within waterproofing systems are caused. Some of these factors include but are not limited to poor design practices, poor building quality, substandard waterproofing application, incorrect choice of waterproofing membrane, and the inability to identify or understand possible problem areas prior to membrane application.

An accredited waterproofing contractor, for example, who attains the knowledge and understanding of potential design issue(s) accompanied with the knowledge and ability to correctly detail waterproofing membranes will overcome project design faults and lead to creating solutions and identifying weaknesses.

Providing industry related documentation may allow the project design stage and waterproofing application stage to produce a more uniform, consistent, efficient, and effective waterproofing installation. A fairly recent LinkedIn post from David Chandler OAM stated of the 500 buildings surveyed within the last 6 years, waterproofing defects lead the list accounting for 25% of total defects.

Overall benefits to the industry:

- Provide a uniform and consistent project design and waterproofing application.
- Greatly reduce, or eliminate, fundamental mistakes by following a proven thought-out detail and design practices.
- Ensure design and survey is compliant to appropriate Australian Standards and NCC requirements.
- Reduce waterproofing defects leading to decreased remediation works, ultimately decreasing financial risks for multi-level residential housing.
- Supports project ownership throughout all stages of the project, leading to increasing industry profile, trustworthiness, and integrity of the trade.
- Potentially outline waterproofing inspection requirements post-application to identify possible issues.
- Potentially increase waterproofing as a ‘trade of choice’ next to other trades such as carpentry, plumbing, electrician etc.
- Improve current waterproofing tradesmen knowledge, skills and abilities and ensure the next generation of trades follow a more uniform and consistent design and survey practice.

Kind Regards

Rolf Offerhaus
Regional Technical Director Asia Pacific

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Re; 1009 8/8/2021

Australian Industry Skills Committee

Subject

Certificate IV in Construction Waterproofing Design and Survey

To whom it may concern

1:

Fluid Industries Hydraulic Consultants are hydraulic designers based in Queensland, we mainly work in the commercial sector assisting large corporate clients with asset design and maintenance. In this endeavour we have come across numerous needless failures of building water proofing systems. We believe there needs to be more effective design stage input of water proofing systems for the construction industry.

2:

To achieve more effective design stage input to buildings systems we believe the industry needs a design qualification to support the development of skills and knowledge in construction waterproofing design and survey. Reasons include:

- From our research and authority briefings we understand the major problems across the construction industry caused by defects in waterproofing systems rank in the top three across Australia.
- We have firsthand experience where waterproofing installations left to Certificate III applicators without design guidelines lead to dead ends in the construction process where ad hoc methods are employed at the last minute which eventually fail.
- Without design documentation being developed at design stage, building services/structural integration is not possible. This Lack of documentary support for designers and surveyors and for builders leads to; poor planning of the construction process, no continuity throughout construction sequence from design/construct to certify.
- Lack of design process leads to waterproofing failures attributed to industry lacking advanced skills needed to:
  - design complex waterproofing systems
  - perform quality assurance inspections at critical points in the waterproofing installation.
  - No Integrate with other design consultants to coordinate design documentation
  - No understanding of adaptions to the construction process which will be required at the time of application of water proofing systems.
  - Ad hoc methods being employed due to lack of planning and correct preparation.

3:

We support the development of a water proofing design qualification to assist with:

- the industry will benefit by producing better quality construction at less cost.
- Water proofing systems defects will be reduced.
- The provision of design qualifications will provide a benchmark for training in design of waterproofing systems, testing of waterproofing work in progress, and inspection and certification that completed works were compliant with the standards and NCC.
- raise the quality of workmanship, provide CPD and career pathways in the waterproofing industry.

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