WATER IRC

ANNUAL UPDATE TO INDUSTRY SKILLS FORECAST AND PROPOSED SCHEDULE OF WORK 2020

IRC Skills Forecast and Proposed Schedule of Work (ISF) are required once every three years. In the intervening years SSOs will report on the research questions listed below.

SSOs can also include additional cases for change to training packages as necessary. This will require evidence on why additional proposal(s) should be considered during an intervening year between the full ISFs (see item 4).

It is important that SSOs work with IRCs and other relevant stakeholders to provide *evidence* demonstrating to the AISC the veracity of claims. Where possible, *statistical data* should be used as an evidential basis.

SECTION A

1. Inform the AISC of any new industry workforce, skills developments or trends to emerge since the submission of a full ISF.

Digital Technologies and Automation

Technological innovations continue to play an ever-increasing role in the Water industry. These technologies offer multiple benefits such as: forecasting the behaviour of the water network; tracing water quality evolution; predicting and locating leaks in the system; and reducing energy costs.[1] Underground monitoring technology is eliminating manual techniques by providing real time data through devices that can operate for months without maintenance and collect data about any anomaly in water quality.[2] In the short term, the Water industry will be placing significant emphasis on shifting the skills profile toward digital Skill Sets and away from manual and procedural modes of work.

Digital technologies deliver a large volume of data which offers immense scope to lift the efficiency of the Water industry if appropriately skilled staff can be recruited and retained. New software can process data to optimise and automate water distribution across the supply network, automate production scheduling, and manage the distribution where water is most

[1] Ibid.
[2] Australian Water Association. "CSIRO Masters Real-Time Groundwater Monitoring with New Tool." Retrieved from https://watersource.awa.asn.au/technology/innovation/csiro-masters-real-time-groundwater-monitoring-with-new-tool/

needed.[3] The New South Wales Government is already using Big Data analytics to predict supply and demand availability to ensure water security.[4]

Digital Water Metering (DWM) has been successfully trialled in Victoria and Queensland.[5] Automated meter reading technologies offer the opportunity to enhance the customer experience through deepened knowledge of water consumption patterns. However, these benefits can only be achieved with a workforce capable of analysing and understanding more detailed customer data.

Further trials at Hunter Water highlight the scope for innovative fusions of technology with acoustic monitoring being used in conjunction with the Internet of Things (IoT) monitoring of water pressure and flow.[6] These efforts continue to see the Water industry move away from manual meter reading and towards ever greater automation. While historically, many job roles in the Water industry have concentrated on data collection, focus is shifting towards strengthening skills in data monitoring, comparative analysis of information and the strategic decision making which support sustainable water usage. Retraining and up-skilling will be needed to ensure the workforce is well-informed of emerging technologies.

Virtual Reality (VR) and Artificial Intelligence (AI) are also being used to continually improve safety and minimise risks in the Water industry for operators working with dangerous equipment. The use of VR allows the acquired skills to be more efficiently transferred to the real environment. Machine learning is being used to collect and aggregate data from large datasets and predict water network issues, such as sewage blockage or water bursts, before they occur, thereby helping the industry to become more proactive in asset maintenance. These innovations will play an important role and the workforce needs to be appropriately skilled to understand and operate these technologies.

Industry-specific cyber-security

The industry has recently added smart metering technologies, Advanced Metering Infrastructures (AMIs), and Supervisory Control and Data Acquisition (SCADA) systems to leverage cloud and mobile technology. The increasing use of these technologies, which collect and consolidate large amounts of data, bring efficiencies, but also increase cyber security risk. The implementation of Information Technology (IT) in Water infrastructure is relatively new compared to other industries and the industry is undergoing a significant shift in skill development in response to this. In the coming year, the Water industry will need to focus on contingency planning and the development of tailored cyber security training programs to not only inform the workforce of the nature and examples of the Water industry cyberattacks, but also give them the skills and competencies to resolve them.

Water literacy

There is an increasing need for the Water industry to play an active role in advocacy on water management issues in both urban and regional areas, and amongst both business and household consumers. To achieve this, the Water industry will need to strengthen skills in

[3] Sustainability Matters. (2019). "Optimisation Software to Boost Melbourne's Water Network." Retrieved from https://www.sustainabilitymatters.net.au/content/water/news/optimisation-software-to-boost-melbourne-s-water-network-766823127
[4] Baker. D, et al. (2018). "A Novel Data Driven Approach to Ensuring Water Security, via Data Analytics and Visualisation." *AWA Journal.* Vol. 3, Issue 2
[5] KMPG. (2018). *Digital Water Metering: The Time is Now*.
[6] Booth. E. (2019). "Hunter Water Trials New Devices to Find and Fix Leaks Quicker." Retrieved from https://utilitymagazine.com.au/hunter-water-trials-new-devices-to-find-and-fix-leaks-quicker/

community engagement, advocacy and education in order to improve communities' water literacy, defined as the knowledge about water resources, water management, and water-related issues. The industry needs to continue to raise the awareness of water quality and communities' expectations, and provide specialised skills to achieve the quality standards, driven by governance or Level of Service expectations. Promoting awareness among both community and decision-makers, such as councillors, General Managers, etc., can lead to more water-saving initiatives and controlling drinking water risks, environmental risks and business continuity.

Fire retardants and water contamination

The recent bushfire activity presents the Water industry with a range of pressing contamination challenges, which will require careful mobilisation of the workforce. Steps taken to combat and suppress the spread of fire are accompanied by their own risks. In 2019-20, thousands of tonnes of fire retardant were dropped across NSW. Subsequent rains washed chemical residues, ash, and charcoal from burned trees into water catchments and river systems. Countermeasures need to be taken to reduce the impact these activities have on water supply and aquatic life. To assist in this process, the Water industry workers will need to be sufficiently skilled to manage and ameliorate the risks posed by these environmental contaminants.

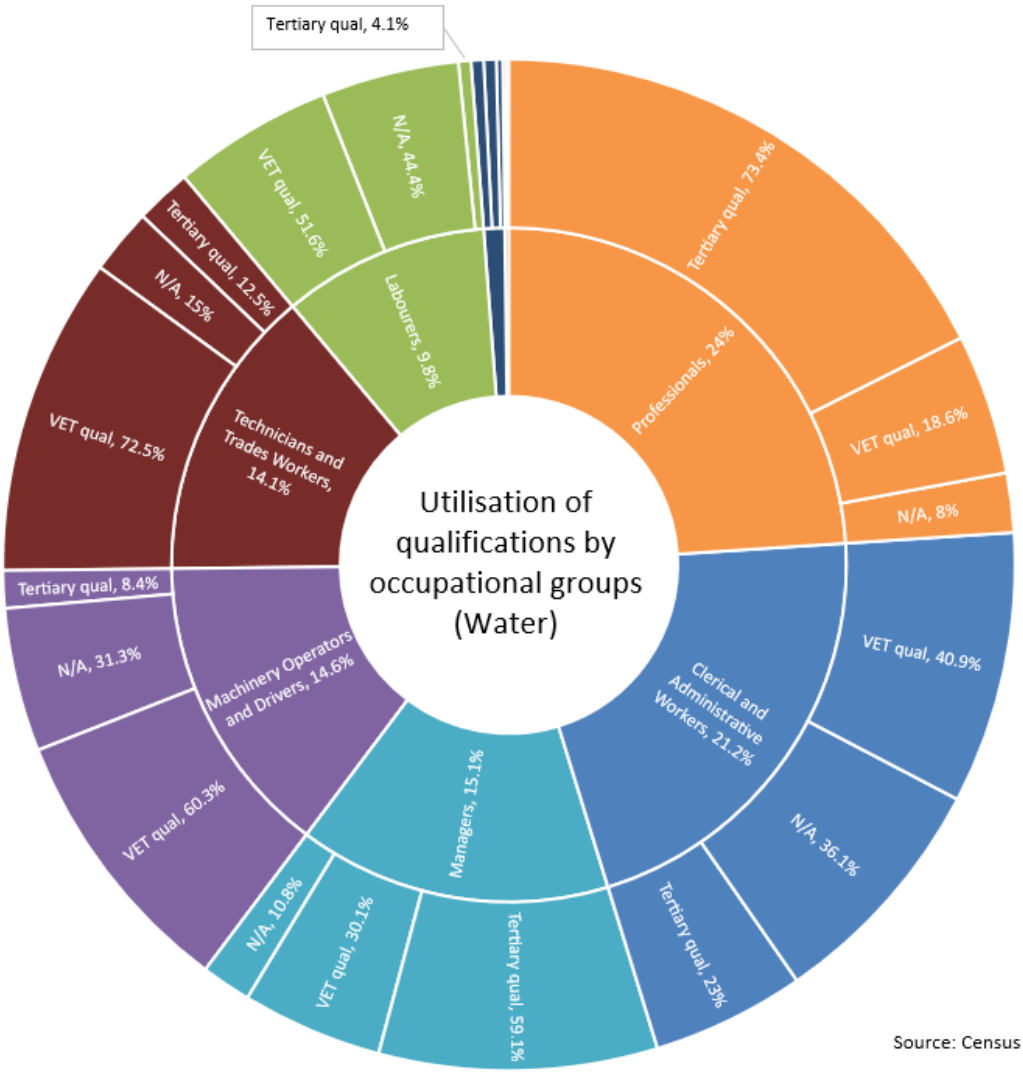
2. Qualification utilisation:

Identify circumstances in which employers:

- employ people with VET qualifications
- do not employ people with VET qualifications

Qualification utilisation by occupational group

Accounting for nearly a quarter (24%) of the Water industry workforce, Professionals comprise the largest occupational group in the industry. The group is mainly made up of Engineers, Scientists, Planners, Analysts and Administrative Professionals. Nearly three quarters of this group (73.4%) hold tertiary qualifications and 18.6% hold VET qualifications. Just over a fifth of the workforce (21.2%) are counted among Clerical and Administrative Workers who are almost twice as likely to hold a VET qualification (40.9%) than a tertiary qualification (23%). Just under a sixth of the workforce are Managers (15.1%), who are almost twice as likely to hold a tertiary qualification (59.1%) as a VET qualification (30.1%). Machinery Operators and Drivers and Technicians and Trades Workers make up about equal parts of 28.7% of the Water workforce. Machinery Operators and Drivers, which is largely dominated by Waste Water or Water Plant Operators (77.5%), have a VET qualification rate of 60.3%, which again is about twice the rate of workers with no qualifications (31.3%). Technicians and Trades Workers, largely made up of Fitters, Plumbers and Science Technicians, have the highest rates of VET qualifications in the industry at 72.5%. Labourers, which make up 9.8% of the industry, have a majority of workers that hold VET qualifications (51.6%). Each of the remaining occupational groups comprises 1% of the workforce or less and hold qualifications outside of the NWP Training Package.



Source: Census 2016

3. Are employers using training outside the national system and if so, why?

There is training that occurs outside the national system and this generally relates to various enterprise policies and procedures. Other training outside the national system is specific training relating to using fluoride, this is in NSW. Training may increase outside of the national system as there is a shortage of specialised trainers who are accredited in the national system, and RTO's with Water qualifications on scope; therefore, industry finds it difficult at times to find a provider.

4. Identify qualifications with low and no enrolments. Provide reasons and evidence for the need to retain/delete these qualifications.

NWP zero enrolment materials

There are 8 units with zero enrolments over a four-year period in the NWP training package. Four of these units were updated in 2018 to improve industry relevance and NWPIRR034 and NWPSOU026 are currently in draft undergoing a similar review.

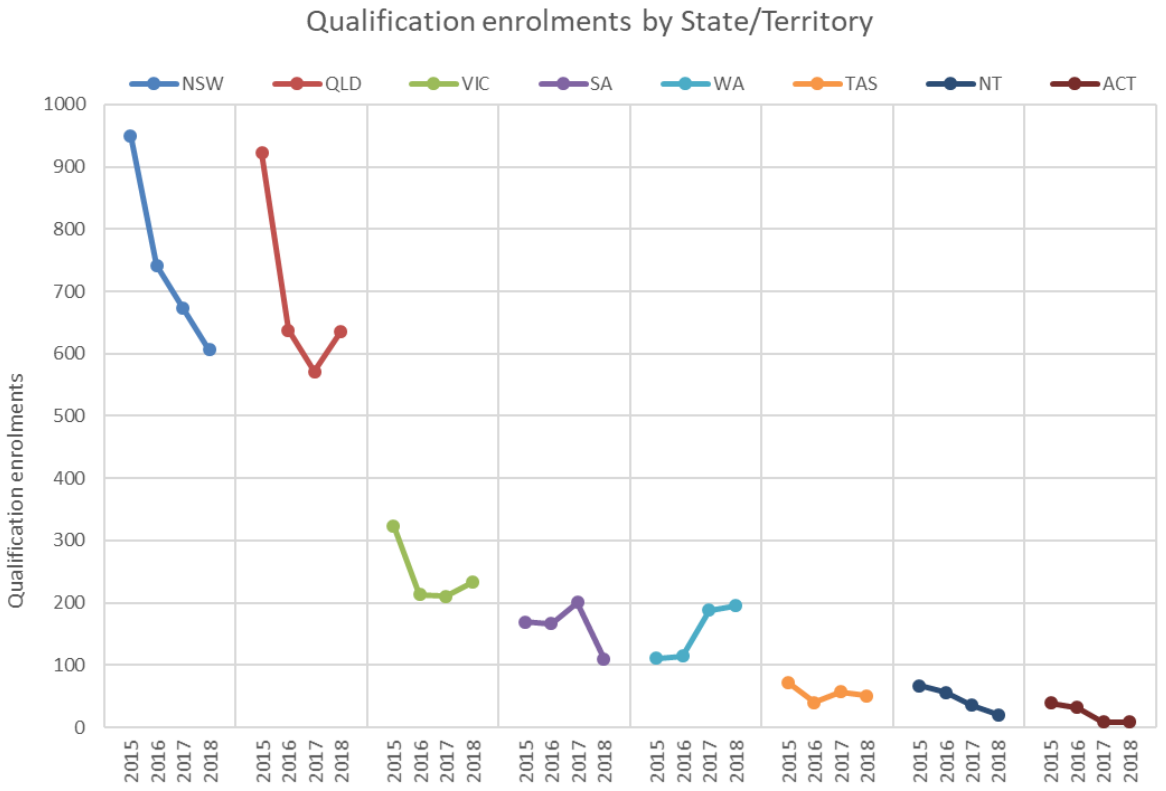
The following Units were revised as part of the NWP Release 3:

- NWPTRT055 now NWPTRT025
- NWPIRR021 now NWPIWS005

Code	Title	Release date
NWPIRR021	Maintain and repair irrigation channels and drains	7/12/2015
NWPIRR034	Coordinate and monitor surface water systems	7/12/2015
NWPSOU026	Implement dam safety plans	7/12/2015
NWPTRT055	Operate chlorine dioxide processes	7/12/2015
NWPHYD004	Plan water resource management	21/12/2018
NWPIRR006	Develop and review an irrigation system plan	21/12/2018
NWPIRR008	Implement and coordinate an irrigation delivery system plan	21/12/2018
NWPSOU006	Develop and manage a flood plan	21/12/2018

Qualification enrolments by state/territory

The only State or Territory not to have declined since 2015 is Western Australia where enrolments have increased by 75.7% since 2015. The largest declines have been in New South Wales and Queensland which fell by 36.2% and 31% respectively in that period. Declines in these States accounted for 81% of nationwide declines.



Source: NCVER VOCSTATS

5. Reasons for non-completion of qualifications and skill sets (including micro-credentials). Where students complete qualifications or skill sets, what was the purpose of undertaking them (e.g. finding employment, upskilling)?

Data on reasons for non-completion are unfortunately not available at the qualification and Skill Set level in Total VET Activity (TVA) data. Our analysis relates to the study reason of students that passed, failed or withdrew from units of competency.

The first point to note is the very high pass rate in 2018, where students were more than 165 times more likely to pass a subject than fail. Even when taking withdrawn subjects into account, a pass rate of 96% is still very high. More than 62% of student results recorded 'a requirement of my job' as the primary reason for studying which was by far the most popular reason given. Comparatively, the next highest reason, 'extra skills for my job', was chosen by only 14% of students.

Study reason	Passed	Failed	Withdrawn
It was a requirement of my job	3760	29	168
I wanted extra skills for my job	845	4	17
Other reasons	530	4	6
To get a better job or promotion	316	0	18
To get a job	226	0	0
To get into another course of study	222	0	8

To develop my existing business	114	0	4
For personal interest or self-development	76	0	0
To try a different career	22	0	2
To start my own business	0	0	0

Feedback also suggests that when operators move between treatment plants, often there is a requirement to complete additional Units of Competency to gain certification on different plant and equipment. The Unit/s required may be contained in either a Skill Set or Qualification and state funding may influence the method in which the Units of Competency are undertaken. Often if it's in a qualification, this results in partial completion of a qualification, as some may only complete the units required to obtain certification.

6. Identify, where possible, opportunities for use of cross-sector units developed by the AISC.

Below are the currently endorsed Cross Sector units

- BSBXCM301 - Engage in workplace communication
- BSBXCM401 - Apply communication strategies in the workplace
- BSBXCM501 - Lead communication in the workplace
- BSBXDB301 - Respond to the service needs of customers and clients with disability
- BSBXDB401 - Develop and implement recruitment processes that are inclusive of people with disability
- BSBXDB501 - Support staff members with disability in the workplace
- BSBXDB502 - Adapt organisations to enhance accessibility for people with disability
- BSBXTW301 - Work in a team
- BSBXTW401 - Lead and facilitate a team

TAEXDB401 - Plan and implement individual support plans for learners with disability

TAEXDB501 - Develop and implement accessible training and assessment plans for learners with disability

There is no current review in the NWP Training Package that would allow for the above units to be incorporated. In saying that, there is an opportunity in the future to include these in the NWP Qualifications that will allow for NWP Units of Competency to be replaced with some of these Units of Competency.

7. If there are jobs that have experienced changes in skill requirements, provide evidence for these changes and their impact.

The NWP Training Package in the last three years has been reviewed and is current with the practices used in industry. Digitalisation is advancing at a tremendous pace and will mean that the Training Package will have to be reviewed as the new digitalisation trends are adopted by industry. Also, recent change include the change in governance requirements such as demonstration of compliance with legislated Drinking Water Management Systems, complex reporting systems, and the increasing sophistication in Asset Management principles including planned and reactive maintenance, predictive failure systems, more sensors, monitoring and automation.

8. Identify barriers to employers hiring apprentices and trainees. Are employers using alternative pathways/labour strategies to address these barriers?

The Water industry's biggest barriers to hiring trainees is that there are very few RTO's with the required qualifications on scope. Often the remote locations where the training is required is a barrier to enterprises putting staff into traineeships. The funding assistance within States is limited to RTOs that work within that State, and the lack of coordinated State and Federal strategies to promote trainees is a further challenge. Third party trainers (subject matter experts) are finding it difficult to obtain or maintain accreditation as trainers under auspicing arrangements with an RTO.

9. Other relevant activities.

N/A

SECTION B

ONGOING STAKEHOLDER CONSULTATION

An extensive consultation process has been undertaken in the development of the Skills Forecast and Proposed Schedule of Work.

Stakeholders involved in the consultation process;

- **14** IRC Members
- **440** AIS NWP National Water Training Package subscribers
- **8** State Training Authorities

Ongoing Consultation

The AISC seeks to ensure SSOs undertake broad and meaningful (e.g. face-to-face) industry consultation, including rural, regional and remote stakeholders.

Provide details of employers and businesses for each sector and state that SSOs have met with as part of:

1. ongoing engagement and validation with industry and stakeholders
2. collection of industry intelligence
3. promotion of the VET system
4. cultivating and maintaining networks and partnerships with industry including engagement in rural and regional areas.

Entity Name	Sector	State	Rural/Regional/Remote	Activity
Veolia	Water	National	Rural/Regional/Remote	1,2,3,4
Australian Hydrographers Association	Water	National	Rural/Regional/Remote	1,2,3,4
Best Practice Training	Water	Multi-State	Rural	1,2,3,4
Coliban Water	Water	State	Rural/Regional	1,2,3,4
Department of Industry	Water	National	Rural/Regional/Remote	1,2,3,4
Department of Planning, Industry and Environment	Water	National	Rural/Regional/Remote	1,2,3,4
Flinders University	Water	Multi-State	Rural/Regional	1,2,3,4
Hunter H2O	Water	State	Rural/Regional	1,2,3,4
Icon Water	Water	State	Rural/Regional	1,2,3,4
Logan City Council	Water	State		1,2,3,4
Melbourne Water	Water	State		1,2,3,4
National Water Centre	Water	National	Rural/Regional/Remote	1,2,3,4

NSW Dams Safety Committee	Water	State	Rural/Regional/Remote	1,2,3,4
NSW Department of Primary Industries	Water	State	Rural/Regional/Remote	1,2,3,4
NSW Health	Water	State	Rural/Regional/Remote	1,2,3,4
NSW Water Directorate, Riverina Water County Council	Water	State	Rural/Regional/Remote	1,2,3,4
Pump Industry Australia Inc.	Water	State	Rural/Regional/Remote	1,2,3,4
QLD Water Directorate	Water	State	Rural/Regional/Remote	1,2,3,4
Queensland Urban Utilities	Water	State		1,2,3,4
R. J. Allen's Training & Assessment Services	Water	Multi-State	Rural/Regional	1,2,3,4
SA Water	Water	State	Rural/Regional/Remote	1,2,3,4
Simmonds & Bristow Pty Ltd	Water	National	Rural/Regional	1,2,3,4
Streamline Learning	Water	State		1,2,3,4
Sydney Water	Water	State		1,2,3,4
TAFE QLD, Skillstech	Water	State	Rural/Regional	1,2,3,4

TAS Water	Water	State	Rural/Regional/Remote	1,2,3,4
Unity Water	Water	State		1,2,3,4
Victorian Water Industry Association	Water	State	Rural/Regional/Remote	1,2,3,4
Wannon Water	Water	State	Rural/Regional	1,2,3,4
Water Corporation	Water	State	Rural/Regional/Remote	1,2,3,4
Water Corporation WA	Water	State	Rural/Regional/Remote	1,2,3,4
Water Industry Operators Association of Australia (WIOA)	Water	National	Rural/Regional/Remote	1,2,3,4
Water Industry Training Consultants	Water	Multi-State	Rural/Regional	1,2,3,4
Water Research Australia	Water	National	Rural/Regional/Remote	1,2,3,4
Water Training Australia	Water	National	Rural/Regional	1,2,3,4

SECTION C

PROPOSED NEW WORK

2020-21

Currently there are no NWP National Water Training Package products currently identified by the Water IRC for review or development during this forecast period. Where imported Units of Competency are identified as either deleted or superseded, the IRC may elect to revise the affected qualification(s) through the IRC minor upgrade process.

2021-24

NWP National Water Training Package

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