



AUSTRALIAN
INDUSTRY
STANDARDS

WATER IRC WORKPLAN



**SECTOR
OVERVIEW**



EMPLOYMENT



**SECTORAL
INSIGHTS**



**SKILLS
OUTLOOK**



**TRAINING
PRODUCT
REVIEW PLAN
2016-17 – 2019-20**



**IRC
SIGNOFF**



WATER IRC WORKPLAN

This Four-Year Workplan has been submitted by the Water Industry Reference Committee (IRC) to Australian Industry and Skills Committee (AISC) for approval.

The Workplan identifies the priority skill needs of the Water industry following a research and stakeholder consultation process conducted by Australian Industry Standards on behalf of the IRC.

Once approved by the AISC the Workplan informs the development of a four year rolling National Schedule for development and review work of the NWP National Water Training Package. More information on the National Schedule can be found at: www.aisc.net.au/content/national-schedule

This Workplan was agreed to by the Water IRC Chair on Monday, 26 September 2016:

A handwritten signature in black ink, appearing to read 'John Harris'.

John Harris
WATER IRC CHAIR

HOW TO USE THIS DOCUMENT



This document contains links to assist the reader to navigate efficiently through the content of the Workplan. The tiles on the cover page, and the divider pages will link to the relevant content when clicked with a mouse, or touched on a tablet device.

The tiles at the bottom of pages can be clicked to return to the beginning of each section, or the front page of the Workplan as required.



WATER INDUSTRY REFERENCE COMMITTEE

The Water Industry Reference Committee has been assigned responsibility for the Water Training Package.

The NWP National Water Training Package provides the only nationally recognised Vocational Education and Training (VET) qualifications for occupations involved in: water industry operations (generalist, treatment, networks, source, irrigation, hydrography, trade waste), treatment (drinking water, waste water) and irrigation.

More information about the Water IRC and its work can be found here:

<http://www.australianindustrystandards.org.au/committee/water-industry-reference-committee/>

Name	Organisation
Brendan Hill	Sydney Water Corporation
Darren Clarke	South Australia Water
David Scott	United Services Union/Australian Service Union
George Wall	Water Industry Operators Association of Australia (WIOA)
Jeff Rigby	Coliban Water
John Harris	Wannon Water
Jonathan McKeown	Australian Water Association
Kate Blizzard	TasWater
Kim Moore	Unity Water
Michelle Hill	Queensland Water
Neil Hooley	Water Corporation
Peter Gee	Water Services Association of Australia
Robert Allen	Icon Water
Stephen Wilson	Water Industry Training Consultants
Sue Earle	Power and Water Corporation

WATER

SECTOR OVERVIEW



**WATER
INDUSTRY
OVERVIEW**



**TRAINING
PACKAGE
OVERVIEW**



**BUSINESS
ANALYSIS**



**KEY
STAKEHOLDERS**



**INDUSTRY
CHALLENGES AND
OPPORTUNITIES**

FRONT PAGE



WATER INDUSTRY OVERVIEW

The Water industry in Australia has an estimated annual revenue of \$11.1 billion, adding \$7.1 billion to the Australian economy in 2015-16. The industry employs more than 30,600 people across its sub-sectors: water supply, sewerage, drainage services and pipeline transport (water). Occupations involved in these sectors cross a spectrum of activities including Water industry operations (generalist, treatment, networks, source, irrigation, hydrography, trade waste), treatment (drinking water, waste water) and irrigation.

The NWP National Water Training Package provides the only nationally recognised Vocational Education and Training (VET) qualifications for occupations involved in: water industry operations (generalist, treatment, networks, source, irrigation, hydrography, trade waste), treatment (drinking water, waste water) and irrigation.

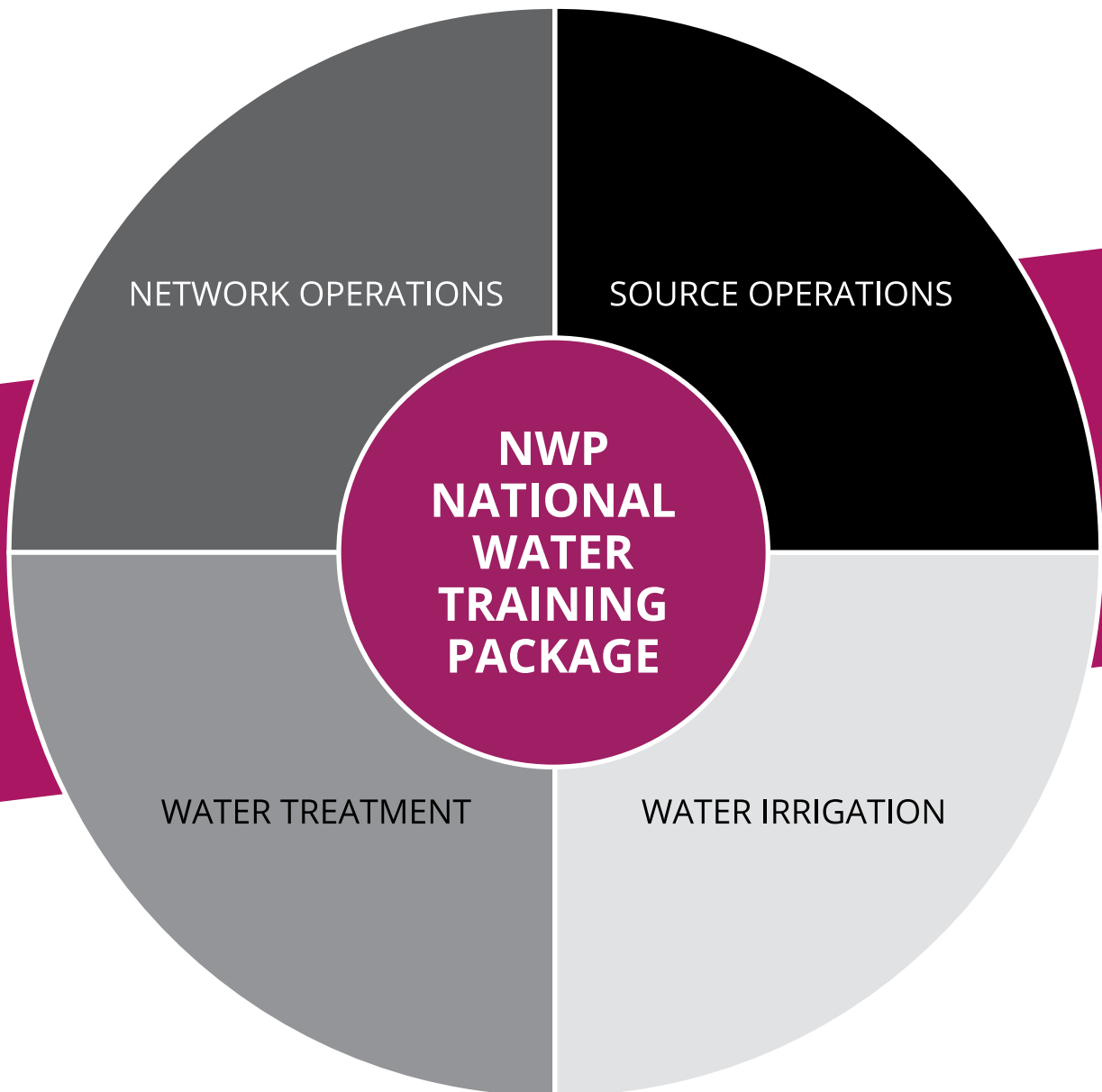
The NWP National Water Training Package comprises seven qualifications, 10 skill sets, 148 units of competency and associated assessment requirements and covers: water supply, sewerage, drainage services and pipeline transport (water).

The NWP National Water Training Package contains the following qualifications:

- Certificate II in Water Industry Operations
- Certificate III in Water Industry Irrigation
- Certificate III in Water Industry Treatment
- Certificate III in Water Industry Operations
- Certificate IV in Water Industry Treatment
- Certificate IV in Water Industry Operations
- Diploma of Water Industry Operations



NWP NATIONAL WATER TRAINING PACKAGE ARCHITECTURE



SECTOR OVERVIEW

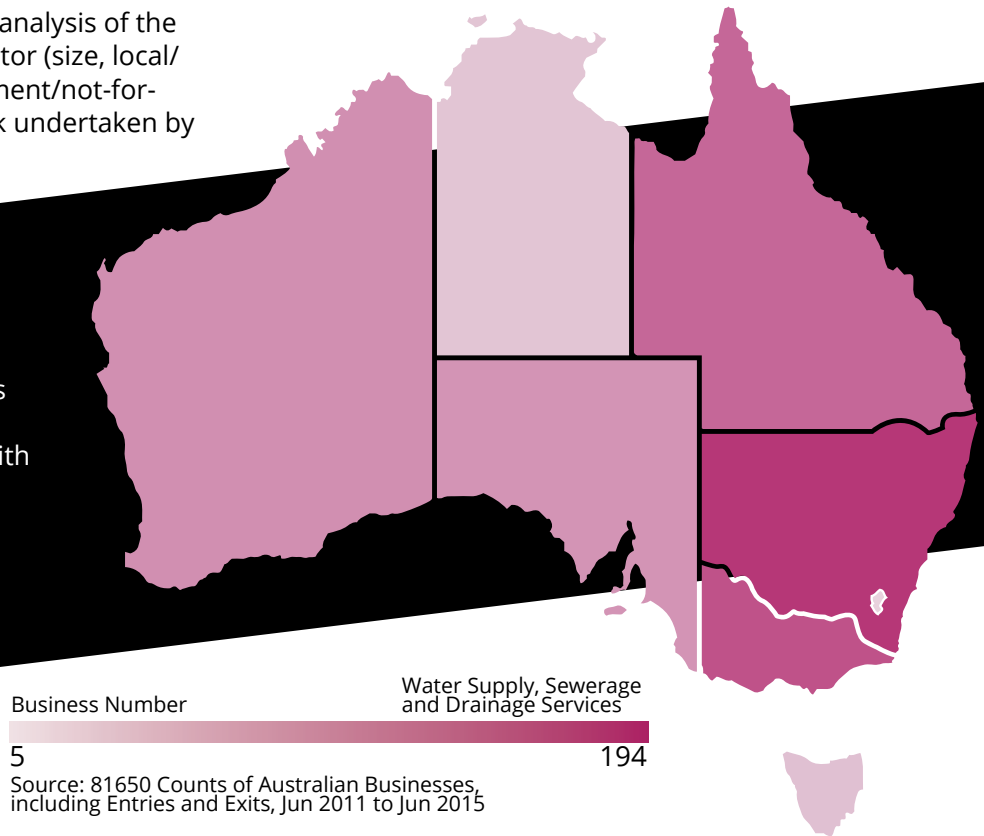
FRONT PAGE



WATER BUSINESS ANALYSIS

The following image provides analysis of the businesses involved in the sector (size, local/state/national/global, government/not-for-profit/for-profit, scope of work undertaken by those businesses).

The distribution of enterprises around the country matches the population distribution, with the exception of a slight over-representation in SA.

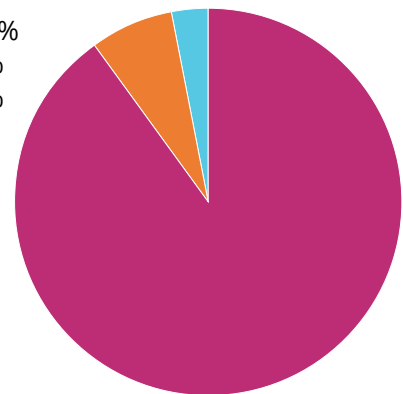


Business Analysis Metrics

Revenue (\$ m)	11,133.90
Profit (\$ m)	3600
Average Wage (\$)	79,577.46
No. of Businesses	606
Employment Growth (% to 2021)	3%

Business Size (Composition)

Small	90%
Medium	7%
Large	3%





KEY WATER STAKEHOLDERS

Stakeholder Category	Organisation	
Employers	Coliban Water Icon Water Power and Water Corporation - NT South Australia Water Sydney Water Corporation	Tas Water Unity Water Wannon Water Water Corporation
Employer Representatives	Australian Water Association <i>qldwater</i> (Queensland Water Directorate) Water Directorate - NSW	Water Industry Operators Association Water Services Association of Australia
Employee Representatives	United Services Union/Australian Service Union	Australian Workers Union
Licensing/Regulatory	Environmental Protection Authorities	
Government	Federal, State/Territory Departments Department of Agriculture and Water Resources	
Industry Advisory	Public Sector Training Advisory Board - NSW Utilities, Engineering, Electrical, Automotive - WA	Industry Skills Advisory Council - NT VicWater
Training Organisations	TAFEs, Private RTOs, Enterprise RTOs	

The NWP National Water Training Package is in the Scope of Registration of 22 Registered Training Organisations.



INDUSTRY CHALLENGES & OPPORTUNITIES

TECHNOLOGY CHANGE

Technology is enabling more innovative approaches to water systems management, from improvements within the home to on-farm/water catchment management solutions.

Drones are already making an impact on the way that waterways and assets are monitored and managed¹ and in some cases, can reduce the risk posed by manual inspections of elevated assets.

Automation of plant and water delivery will likely have a substantial impact on the industry, particularly due to retraining requirements. Increasingly, workers are required to interact with new devices and operating systems. Data capture and remote system operations via tablets and smart phones is becoming more common.

Digital literacy will be important for companies as they seek appropriately trained staff to work with new technologies.

CLIMATE CHANGE / ENVIRONMENTAL MANAGEMENT

The impacts of climate change are already being felt in Australia as we see more extreme weather conditions with longer and more intense bushfire seasons, more severe and unpredictable wet seasons, warmer global temperatures and extreme drought. These weather patterns require proactive management of water resources to ensure that resources are monitored and available regardless of the challenges presented by climate variables.

As governments plan for and implement these changes, the operating environment will also change, which will have a flow-on effect to the workforce skill requirements. A focus on the development of planning and forecasting skills will be required.

INFRASTRUCTURE DEMANDS

The Water industry is infrastructure heavy, with many ongoing maintenance and renewal requirements. The Commonwealth Government recently announced \$2 billion in concessional loan funding for national water infrastructure. Another \$9.5 million will be provided for the National Water Infrastructure Development Fund².

The ongoing development of water infrastructure, maintenance and upkeep has implications for the workforce as companies seek appropriately skilled labour and management skills to oversee these projects.



BIG DATA

Big Data capture and analysis is transforming the management of water in Australia³. Examples include the collection of data from pumping stations, treatment plants and reservoirs to manage operations remotely, but also for research and planning. Big data helps with real-time operations' decision-making and improved customer relationships and communications, land use optimisation in urban and rural settings, and safety management systems (e.g.: flood warnings). The industry will need support to upskill the existing workforce to use these tools to maximise productivity.

SECTOR OVERVIEW

FRONT PAGE

EMPLOYMENT

**EMPLOYMENT
STATISTICS**

**WORKFORCE
CHALLENGES AND
OPPORTUNITIES**

FRONT PAGE



EMPLOYMENT

EXPLANATORY NOTES

Workforce

The size of an industry's workforce is established by the Australian Bureau of Statistics (ABS) using two different approaches. The Labour Force survey, which provides a 30-year view of the industry, assigns each industry category based on the main job of the respondent. The Australian Industry dataset (which the Workforce Projections charts are based on), uses a top-down approach where industries are primarily classified by the single predominant industry class associated with a business' ABN. An industry's workforce therefore is bounded in the first instance by the occupations of workers and in the second by the primary business of an enterprise. The different approaches can therefore result in quite different workforce figures.

AIS has chosen to distinguish these approaches using the terms **Workforce – Occupation based** and **Workforce – Employer based**.

Enterprise size

Industry definition by ABN also applies to the Counts of Australian Businesses data (size and distribution). Furthermore, low level values in these tables are subject to perturbation to anonymise the data. This may result in some areas with a low level value being perturbed to zero.

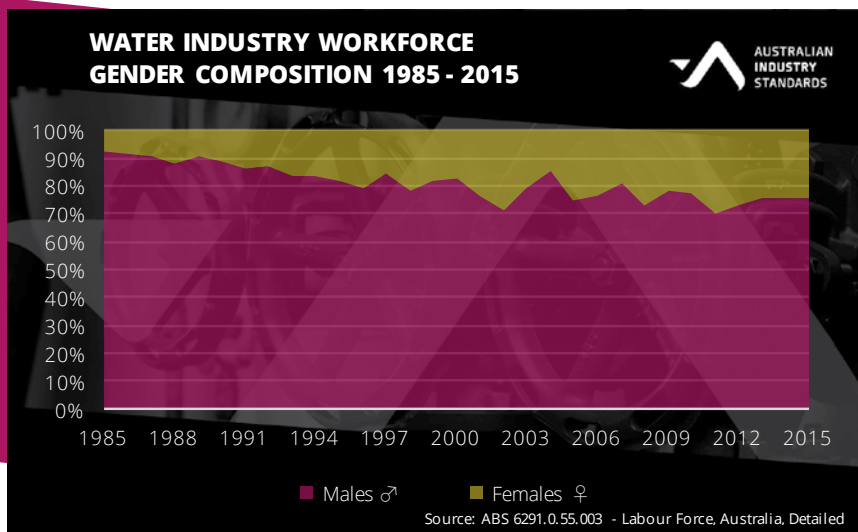
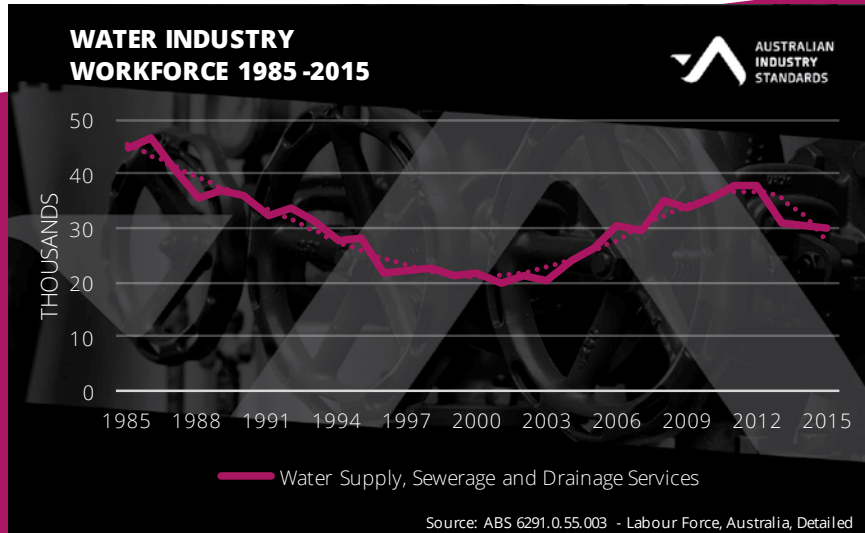
Exemptions

The scope of the Labour Force Survey is limited to the civilian population of Australia and therefore members of permanent defence forces are excluded from the survey.



EMPLOYMENT HISTORY - OCCUPATION BASED

The Water industry workforce (as part of wider Sewerage and Drainage Industry) declined 55% to the year 2000, recovering steadily until 2012 before falling back to 1994 levels by 2015.

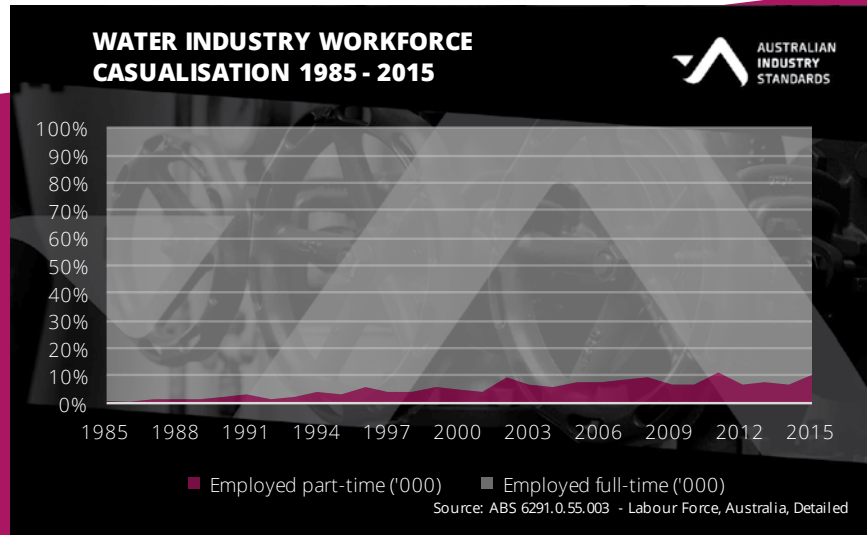


While the number of males in the industry has declined by 45%, females have doubled to one in four today.

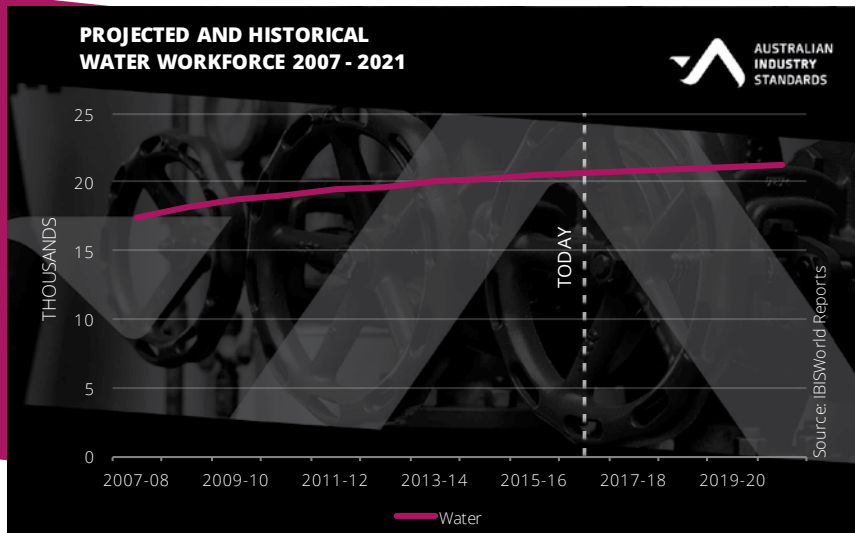
**EMPLOYMENT
FRONT PAGE**



Part-time work has increased almost four-fold from less than 1% to 10.7%



EMPLOYMENT PROJECTION - EMPLOYER BASED



The Water industry workforce is expected to grow by 3% in the coming five years.

**EMPLOYMENT
FRONT PAGE**



WORKFORCE SUPPLY-SIDE CHALLENGES AND OPPORTUNITIES

REGULATORY AND TECHNOLOGICAL CHANGES

Federal and state governments have increased the regulation and reporting requirements for water utilities. This has a flow on effect to operational staff that are required to document, operate and respond in an increasingly regulated environment.

The pace of technological change and the capacity for the existing older workforce to adopt the new technology presents a challenge for the Industry. Workforce planning requires the need to balance employing the 'tech savvy' younger generation, while ensuring accumulated corporate knowledge of the more experienced Water industry workers is maintained.

The increasing skill requirements of operational staff are not only limited to new technologies, they also involve greater workplace complexity, changes in WHS, environmental management and associate increases in documentation requirements.

AGEING WORKFORCE

The Water industry has a high proportion of workers over the age of 55, with many workers planning to retire in the near future. Recruitment of new employees, with mentoring by experienced staff, will help companies to retain industry knowledge as people leave the industry.

Companies may need to look at how they promote careers in the industry, particularly in entry level roles, where there is a lot of turnover. Making the industry an attractive and rewarding place to work is imperative.

SKILLS OUTLOOK



**INTERNATIONAL
/ NATIONAL
WORKPLACE
TRENDS**



PRIORITY SKILLS

FRONT PAGE



SKILLS OUTLOOK

INTERNATIONAL / NATIONAL WORKPLACE TRENDS

Workplace and job design trends in the Water industry continue to be shaped by technology. Particular influences are the home to on-farm/water catchment management solutions; drones being used for waterways and assets monitoring as well as the automation of plant and water delivery. All jobs have an increasing interaction with new devices and operating systems bringing with this skill demand a need for digital literacy in terms of readability as well as analysis and problem identification and solving.

The impacts of climate change and new weather patterns require proactive management of water resources to ensure that resources are monitored and available regardless of the challenges presented by climate variables. A focus on the development of planning and forecasting skills will be required as jobs are redesigned to meet these demands.

FUNDING

Variations in jurisdictional funding and traineeship arrangements are reported as impacting the viability of delivering training, in particular for narrow markets and in specialist technical areas. Longer-term this situation may lead to capacity constraints for employers and training organisations alike. These conditions also present challenges for RTOs and when considering future investment in training infrastructure and equipment, particularly those involved in new technology.



PRIORITY SKILLS

WATER TECHNICAL SKILLS

Australian Industry Standards has developed this list of technical skills from analysis of the qualifications in the NWP National Water Training Package.

These skills can be grouped into six categories:

1. Hydrography
2. Irrigation
3. Water Network
4. Water Source
5. Wastewater
6. Water Treatment

An overwhelming number of IRC responses indicated that Water Technical Skills were the highest priority for the Industry.

GENERIC SKILLS

Ranking of the 12 generic workforce skills in order of importance to the Water industry.

Skill	Priority
Technology	1
Managerial / Leadership	2
Environmental and Sustainability	3
Customer service / Marketing	4
Science, Technology, Engineering, Mathematics (STEM)	5
Language, Literacy and Numeracy (LLN)	6
Design mindset / Thinking critically / System thinking / Solving problems	7
Communication / Virtual collaboration / Social intelligence	8
Data analysis	9
Learning agility / Information literacy / Intellectual autonomy and self-management	10
Financial	11
Entrepreneurial	12

9 per cent of Water IRC responses indicated that Generic Skills were more important than Technical Skills



CROSS-SECTORAL SKILLS

The list of cross sectoral skills below is based on survey responses from the Water Industry Reference Committee.

The cross sectoral skills are listed below in order of importance to the Water industry.

Skill	Priority
Irrigation	1
Hydrography	2
Water Source	3
Wastewater	4
Water Network	5



WATER SKILLS - RELATED INSIGHTS

In a country as large and diverse as Australia, ensuring consistent, high-quality water resources is vital. The Australian Water industry and workforce are responsible for ensuring that quality supply, and face a number of challenges including training and teaching to use automation in network, supply, treatment, hydrography; proper skills training; and the use of technology to improve safety.

The Australian Water industry employs more than 30,600 people and has an estimated annual revenue of \$11.1 billion, adding \$7.1 billion to the Australian economy in 2015-16. The Water industry has four main sub-sectors: water supply, sewerage, drainage services and pipeline transport (water).

The Water industry Reference Committee (IRC) has overwhelmingly indicated that Water Technical Skills are the highest priority for the Industry to prepare the workforce to meet current and future challenges. Technical skills focus on areas related to Hydrography, Irrigation, Water Network, Water Source, Industrial Waste Water and Water Treatment.

The industry has further indicated the need to broaden recruitment activity and pathways, to attract and retain a workforce, ensure proper take up and training of technology and consumer education, particularly regarding environmental management.

Industry stakeholders also noted the growing demands for clean and potable water and the need to ensure that the current and future workforces have the skills and training to meet those demands amid increasing technological change.

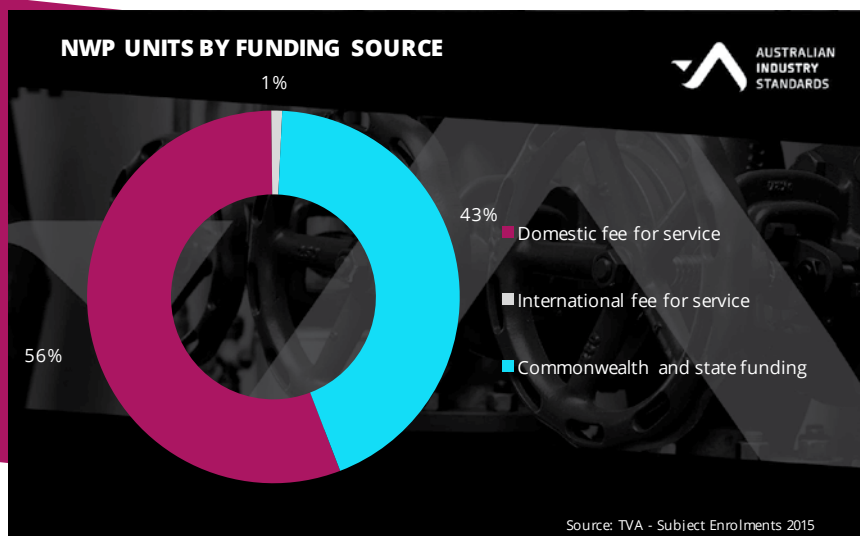
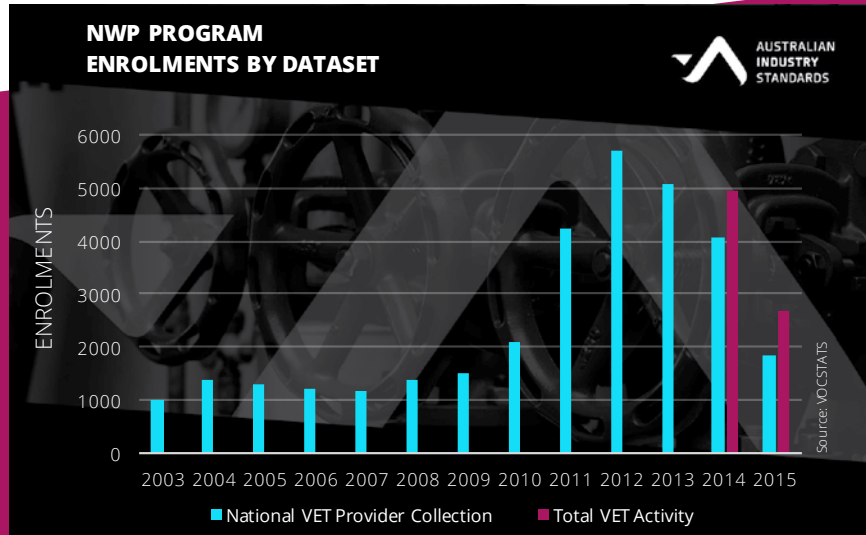
Technology is already having a major impact on the management and maintenance of water systems and infrastructure. Big Data capture and analysis is transforming the management of water in Australia, allowing more monitoring and operations to be conducted remotely. Drones are already enabling the monitoring and management of water assets.

The automation of infrastructure and water delivery means the workforce needs to be retrained or trained to operate new devices and operating systems, such as tablets and smart phones. The industry will need to ensure the existing and future workforce is properly skilled to utilise use these tools.

The industry is supported by the NWP National Water Training Package consisting of qualifications for Water industry operations, treatment and irrigation. VET enrolments have declined since 2012 and there is a need to attract, train and retain newcomers into the workforce.



The fall in enrolments since 2012 is corroborated by the recent decline in TVA data.



The Water industry supported 56% of training in 2015



The Water Supply workforce declined 55 per cent between 1985 and 2000, recovering steadily until 2012 before falling back to the higher 1994 levels. The workforce is forecast to grow by 3 per cent through to 2021.

The workforce is ageing, with a high proportion of workers over the age of 55 – and many workers planning to retire in the near future. It will be important to involve experienced staff in mentoring and training new recruits to the workforce, as there is a high turnover rate among entry level roles.

Part-time work has increased almost four-fold over 30 years from less than 1 per cent in 1985 to 10.7 per cent today. While the number of males in the industry has declined by 45 per cent in the same period, females have doubled to one in four.

The impacts of climate change are already being felt in Australia. Changing weather patterns require proactive management to ensure that water resources are monitored and available irrespective of the climate variables.

Governments and industry planning for these changes will have a flow-on effect to the workforce skill requirements, requiring a focus on the development of planning and forecasting skills.

The Water industry is infrastructure heavy, with many ongoing maintenance and renewal requirements. Planning for future water infrastructure, maintenance and upkeep has implications for the workforce as companies seek appropriately skilled labour and management skills to oversee these projects.

EXPLANATORY NOTES

The Training Enrolments charts compare two datasets; the **National VET Provider Collection** and the **Total VET Activity (TVA)** dataset. The primary distinction between the two is that Total VET Activity data is collected from all types of providers and not only those in receipt of Commonwealth or state funding. TVA data collection commenced in 2014.

Exemptions

Where the submission of training data to TVA conflicts with defence or national security legislation, or jeopardise the security or safety of personnel working in defence, border protection, customs or Australian police departments, an exemption from reporting training data is available.

Organisations that deliver training for vital services to the community (such as emergency, fire, first-aid and rescue organisations) may have received an exemption to submit data to TVA. From 1 January 2016 however, the exemption from reporting will apply only in respect of training activity not delivered on a fee-for-service/commercial basis.



REFERENCES

INDUSTRY CHALLENGES AND OPPORTUNITIES

¹ Melbourne Water “Drones soar high to collect data over Thomason”. Accessed August 2016. <http://www.melbournewater.com.au/aboutus/news/pages/drones-soar-high-to-collect-data.aspx>

² Budget 2016: http://www.awa.asn.au/AWA_MBRR/Publications/Latest_News/Budget_2016_2_billion_for_national_water_infrastructure.aspx

³ University of Queensland Momentum Magazine. Accessed August 2016. <https://www.business.uq.edu.au/momentum/big-dataaction-water-industry>



NATIONAL WATER TRAINING PACKAGE REVIEW PLAN 2016/17 - 2019/20

REVIEW PLAN – TIMING AND PRIORITISATION

The Training Package Workplan review priority will be constantly monitored and formally reviewed annually by the IRC allowing the Workplan to remain at the forefront of the IRC priorities and have the flexibility to respond to the industry needs as they arise. In particular the technology advancement in the sector is rapidly changing the skills required to maximise these benefits to industry.

2016 – 2017

There has been an Activity Order issued for the development of a business case for the review and development of the Diploma of Water Industry Operations in the 2016 - 2017 Workplan. The maintenance of the imported units will be addressed in ongoing consultation with the relevant Skills Service Organisation (SSO).

2017 – 2018

The training products requiring review and development to address identified stakeholder concerns or industry skill needs will be in this year of the review plan. The review and development of the qualifications require widespread stakeholder consultation. The appropriateness and flexibility of the current qualifications will be reviewed and required developments identified, including specific Regulator/Legislative requirements for these training products.

Training Package review and development in year two consists of:

- NWP20115 - Certificate II in Water Industry Operations
- NWP30215 - Certificate III in Water Industry Operations
- NWP30315 - Certificate III in Water Industry Treatment

2018 – 2020

The remaining three qualifications, and ten skill sets not reviewed between 2016-2018 will be reviewed in this period.

The review will involve consultation with stakeholders, including regulatory bodies, on the appropriateness of the current qualifications particularly in terms of packaging rules.

This process may uncover additional needs of industry and the regulator and consequently may identify work to be done to these qualifications, skill sets and units of competency.

Units of competency that are in multiple qualifications or skill sets will only be reviewed once in a four-year period, unless there is a regulatory requirement or urgent attention required to meet specific industry requirements.



The Water IRC has not identified any training product development or review work that is expected to be contentious or lengthy in development causing industry issues.

The Water IRC has identified no major industry adjustments in this four-year period.

LEGISLATIVE /REGULATORY REQUIREMENTS

As legislation or regulations are updated the NWP National Water Training Package and Companion volume will need to be updated to reflect the change in legislative or regulatory requirements to meet generally the effective date of these changes.

Changes, amendments and the implementation of new regulations have an associated effect on Training Package products that are aligned to this regulatory framework.

Any legislative or regulatory change requirements identified, would take precedence over other reviews planned as these are often associated with higher workplace risk.

INTERDEPENDENCIES

NWP National Water Training Package qualifications include imported units of competency, within core and elective qualification packaging rules. Industry sector interdependencies that will potentially initiate future NWP qualification and/or skill set reviews include imported units from 19 separate Training Packages (inclusive of predecessors).

The NWP National Water Training Package has interdependencies with 19 other Training Packages.

These include:

- AHC10 - Agriculture, Horticulture and Conservation and Land Management
- BSB - Business Services Training Package
- CHC - Community Services
- CHC08 - Community Services Training Package
- CPC08 - Construction, Plumbing and Services Training Package
- CPP07 - Property Services Training Package
- FSK - Foundation Skills Training Package
- LGA04 - Local Government Training Package
- MEM05 - Metal and Engineering Training Package
- MSA07 - Manufacturing Training Package
- MSL09 - Laboratory Operations Training Package
- MSS11 - Sustainability Training Package
- PMA08 - Chemical, Hydrocarbons and Refining Training Package
- PMB07 - Plastics, Rubber and Cabling Training Package
- PSP04 - Public Sector Training Package
- RII - Resources and Infrastructure Industry Training Package
- TAE10 - Training and Education
- TLI10 - Transport and Logistics Training Package
- UEE11 - Electrotechnology Training Package

One other Training Package has interdependencies on the NWP National Water Training Package:

- RII - Resources and Infrastructure Industry Training Package

IRC Training Product Review Plan – 2016/17 – 2019/20
Water Industry Reference Committee
Contact details: GM IRC Operations, Australian Industry Standards
Date submitted: 30 September 2016

Planned review start (Year)	Training Package code	Training Package name	Qualification code	Qualification name	Unit of competency code	Unit of competency name
2016 - 2017	NWP – National Water Training Package		NWP50715	Diploma of Water Industry Operations		An Activity Order has been issued to develop a Business Case for including a previously deleted occupation stream with specialist skills.
2016 - 2017	NWP – National Water Training Package		NWP50715	Diploma of Water Operations		Develop or import units in relation to Backflow Prevention enabling the changing job roles and technologies within this sector to be provided for within the qualification.
2017 - 2018	NWP – National Water Training Package		NWP20115	Certificate II in Water Industry Operations		Review the qualification to align to the emerging skills and technologies within this sector to be provided for within the qualification.
2017 - 2018	NWP – National Water Training Package		NWP30215	Certificate III in Water Industry Operations		Review the qualification to align to the emerging skills and technologies within this sector to be provided for within the qualification.
2017 - 2018	NWP – National Water Training Package		NWP30315	Certificate III in Water Industry Treatment		Review the qualification to align to the emerging skills and technologies within this sector to be provided for within the qualification.
2018- 2020	NWP – National Water Training Package		A review of three remaining qualifications and 10 skill sets within the NWP Training Package that have not been reviewed within the four-year period, will be reviewed.			



AUSTRALIAN INDUSTRY STANDARDS

Australian Industry Standards (AIS) provides high-quality, professional secretariat services to the Water Industry Reference Committee, in our role as a Skills Service Organisation.

AIS provide services to 11 allocated IRCs which cover the Gas, Electricity, Electrotechnology, Corrections, Public Safety (including Police, Fire Services, Defence), Water, Aviation, Transport and Logistics, Rail and Maritime industries. AIS supports these important industry sectors using our world-class in-house capability and capacity in technical writing, quality assurance, project management and industry engagement in the production of Training Packages.

AIS was established in early 2016, 20 years after its predecessor the Transport and Logistics Industry Skills Council (TLISC) was established in 1996. More information about AIS can be found at www.australianindustrystandards.org.au

- We support industry growth and productivity through our modern innovative approach to establishing skills standards.
- We provide high-quality, professional secretariat services to help our allocated industry reference committees develop the skills that industry needs.
- We partner with industry to shape the workforce of the future.



AUSTRALIAN
INDUSTRY
STANDARDS

AUSTRALIAN INDUSTRY STANDARDS

P (03) 9604 7200

E enquiries@australianindustrystandards.org.au
Level 2, 31 Market Street South Melbourne 3205

FRONT PAGE

© Australian Industry Standards Ltd.