WATER IRC
SKILLS FORECAST
KEY FINDINGS DISCUSSION PAPER 2017
The purpose of the paper is to provide industry stakeholders with a summary of the key findings from the recent industry intelligence gathering activities overseen by the Water Industry Reference Committee (IRC). The key findings will be used by the IRC in the development of the Water IRC Skills Forecast and Proposed Schedule of Work for the NWP Water Training Package. Once approved by the Australian Industry and Skills Committee (AISC) the Skills Forecast will replace the 2016 Water IRC Workplan.

Several targeted strategies were employed to collect industry intelligence about the opportunities and challenges for the Water workforce and any Training Package review work necessary to meet these industry needs. These included:

- A Call for Submissions process inviting stakeholder responses about key issues affecting skills and workforce development;
- An IRC Skills Forecast Survey seeking information on priority skill needs, skill shortages and issues relating to workforce training and;
- A comprehensive review of Data and Research Sources nominated by the Water IRC

Australian Industry Standards has been tasked by the IRC to collect feedback from interested stakeholders about these issues on its behalf.

HOW TO PROVIDE FEEDBACK

Stakeholders are invited to submit their comments on the findings outlined in this paper by close of business on March 17th 2017.

It is acknowledged that the information provided about issues in this paper is deliberately brief. The purpose of this paper is to validate and confirm the findings, which will inform the advice the Water IRC will provide to the AISC.

In considering the key issues and themes identified in this paper, we are keen to have any feedback that either confirms your issue has been covered, or else raises an issue you feel should be addressed in the Proposed Schedule of Work (FY17/18–FY20/21) for the NWP Water Training Package to be submitted to the AISC on April 28th 2017.

Responses can be emailed to enquiries@australianindustrystandards.org.au

For further information please contact:

Klausch Schmidt
Industry Manager
P (03) 9604 7223
M 0417 568 967
The Water industry in Australia has an estimated annual revenue of $22.16 billion, adding $12.85 billion to the Australian economy in 2016. The industry employs almost 31,000 people across its subsectors: 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.

**WATER INDUSTRY METRICS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue ($b)</td>
<td>22.16</td>
</tr>
<tr>
<td>Profit ($m)</td>
<td>5,101</td>
</tr>
<tr>
<td>Average Wage ($ per year)</td>
<td>99,651.62</td>
</tr>
<tr>
<td>No of Businesses</td>
<td>804</td>
</tr>
<tr>
<td>Employment Growth (% to 2022)</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Scope: Water Supply, Sewerage and Drainage Services

**KEY FACTS:**

- **76,423 gigalitres of water consumed in Australia** in 2014-15
- **57 per cent of Australia’s water is used for irrigation agriculture**
- **50 per cent productivity gains in the past 15 years** achieved through reform in the water industry
- **Highest per-capita surface water storage capacity** in the world
- **444 million litres of water processed per day** at Australia’s largest desalination plant in Melbourne
83.33 per cent of employers reported experiencing a skills shortage in the last 12 months\(^7\). The occupations reported as being in shortage were:

1. Water & Sewerage Operators
2. Wastewater Operators
3. Educators
4. Maintenance Operators
5. Hydrographic Surveyors

Employers identified the following reasons for the shortage with the most frequent response listed first.

### Reasons for shortage

- Shortage of skilled/qualified personnel
- Remuneration/employment conditions
- Geographic location of the vacancy
- Ageing workforce/current staff retiring
- Shift/weekend work

---

\(^7\) Australian Industry Standards. February 2017. IRC Skills Forecast Survey.
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 managed 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.

It has been acknowledged that digital technologies have the capacity to positively affect operations and asset management, leading to increased efficiencies. Providers have also made use of such technology to improve service delivery, accomplishing substantially decreased turnaround times as a result. On this basis, digital literacy will be important for companies as they seek appropriately trained staff to work with new technologies.

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.

Recent studies have contended that better overall performance can be achieved with gender diversity in management positions. Enhancing gender parity may assist with future shortages in the workforce that will arise from generational shifts.
KEY WATER SKILL ISSUES

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.

The critical impact of climate change and drought has been noted by industry; revised water demand models and solution-based strategies with a focus on assets will prove vital in effective management of this issue. As governments plan for and implement changes to combat climate change and drought, the operating environment will be required to evolve, having 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. Given this reliance, ageing infrastructure and increasing urbanisation present complications that must be addressed. Water security and the implementation of new approaches such as Integrated Urban Water Management (IUWM) and Water Sensitive Urban Design (WSUD), are also areas of concern.

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 Australia\textsuperscript{17}. Examples include the collection of data from pumping stations, sewage plants and reservoirs to manage operations remotely, but also for research and planning. Big data helps with real-time operations’ decision-making, 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.

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 associated increases in documentation requirements. Moreover, the development of skills to assist with the improved functionality of water markets – as well as further knowledge of bans, limitations and effectiveness thereof – will be beneficial\textsuperscript{18}.

\begin{flushleft}
\end{flushleft}
The priority skills results are drawn from Water stakeholder responses to the IRC Skills Forecast survey conducted in February 2017. In order of priority to the industry, the following skills were identified as the most important for the Water workforce within the next three to five years.

**SKILL CATEGORY**

- Treatment
- Organisational/Planning
- Supply
- Risk management
- Catchment/dam management

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

**GENERIC SKILL**

- Managerial/Leadership
- Science, Technology, Engineering, Mathematics (STEM)
- Design mindset/Thinking critically/System thinking/Solving problems
- Customer service/Marketing
- Environmental and Sustainability
- Technology
- Data analysis
- Learning agility/Information literacy/Intellectual autonomy and self-management
- Language, Literacy and Numeracy (LLN)
- Communication/Virtual collaboration/Social intelligence
- Financial
- Entrepreneurial
INDUSTRY REFERENCE COMMITTEES

New arrangements for training product development commenced in January 2016. These arrangements consider the needs of employers of all sizes, across all industry sectors, and ensure the delivery of high quality Training Packages that are nationally endorsed and internationally regarded.

Industry References Committees (IRCs):

• Provide a forum for industry engagement.
• Direct the review, development and implementation of training package content relevant to the industry sectors they cover.
• Act as a conduit for industry feedback to the Australian Industry and Skills Committee (AISC) and governments on industry trends.

IRCs are composed of individuals and industry members with the experience, skills and knowledge of their particular industry sector. IRCs are supported by independent and professional Skills Service Organisations (SSO) to develop and review Training Packages, and to inform Training Package development priorities.

IRCs have a direct relationship with the AISC, and are charged with identifying industry’s skills needs, developing business cases setting out the case for change, and providing the sign off on training products before they go to the AISC for consideration.

Each IRC will perform the following functions;

• Gather intelligence for their industry sectors to inform advice on Training Package development and review.
• Direct the work of its SSO in the development of industry proposals, cases for change and cases for endorsement.
• Oversight the development and review of Training Packages in line with the requirements of the AISC.
• Provide sign off for industry proposals, cases for change, cases for endorsement and other submissions for consideration by the AISC.
• Direct the work of the SSO in preparing the support materials where funding for additional activities is provided.
• Report to the AISC on progress of its work.
• Promote the use of Vocational Education and Training (VET) in the sectors they represent.
WATER INDUSTRY REFERENCE COMMITTEE

The Water Industry Reference Committee (IRC) has been assigned responsibility for the NWP Water Training Package.

Chair: John Harris, Wannon Water

Deputy Chair: George Wall, Water Industry Operators Association of Australia (WIOA)


The NWP 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 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 Water Training Package is in the Scope of Registration of 27 Registered Training Organisations.

IRC SKILLS FORECAST & PROPOSED SCHEDULE OF WORK

The IRC Skills Forecasts focus on the prioritisation of the skill needs of the industry sectors each IRC has responsibility for. They are developed and reviewed annually in consultation with industry stakeholders, and submitted on behalf of the IRC to the Australian Industry and Skills Committee (AISC) for approval.

IRCs are required to consult broadly with stakeholders to ensure a whole-of-industry view about the opportunities and challenges for the workforce and the Training Package review work necessary to meet industry needs.

The IRC Skills Forecast is submitted to the AISC inform the development of a four-year rolling National Schedule for Training Package development and review work. More information on the National Schedule can be found at: www.aisc.net.au/content/national-schedule

BACKGROUND INFORMATION
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 eleven allocated IRCs which also cover the Gas, Electricity, Electrotechnology, Corrections, Public Safety (including Police, Fire and Emergency Services, Defence), 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.