

DEVELOPING A NATIONAL BENCHMARK TO SUPPORT WATER INDUSTRY OPERATIONS

Marty Hancock, *Research Manager*, Water Research Australia

Kathy Northcott, *Technical Specialist - Water*, Veolia Australia New Zealand

ABSTRACT

The value and benefits of an appropriately trained and competent operator workforce and the current state of training and support for operators was reported in *The Value of Operator Competency* (Bartlett, 2019). The report concluded that there is currently no consistent national approach that delivers the necessary competency required to undertake water industry operator roles. Key challenges include: diverse approaches to operator training, confusion over competency requirements, workforce challenges, no clear pathway for career development and remuneration, portability of skills within the industry, and accessing ‘fit for purpose’ training in rural and remote communities.

This current project is bringing industry and regulators together, to develop a nationally recognised technical competency benchmark that includes the alignment of training to roles and responsibilities with the water quality risks managed. The benchmark will provide reference to relevant accredited and non-accredited training needed to achieve minimum water industry operator technical competency requirements.

Phase 1 of the project included a survey and interviews with industry and regulators to identify training needs, and current challenges. The second phase reviewed the national and international training programs, to inform the requirements of the benchmark. The Benchmark has now been developed and will be trialled in a range of utilities before being refined and then shared with the water industry.

Operators also play a critical role in responding to incidents including extreme events such as fires, floods and droughts. *The Value of Operator Competency* reported that at the core of many water quality incidents is inappropriate training and competency, leading ultimately to human error. This project also investigates the experience of senior operators, to better understand good decision making and how best to support and train water industry operators.

1.0 INTRODUCTION

The critical role that water industry operational staff play in protecting public health and the environment is well understood by the water industry, although not always recognized or supported through comprehensive learning and development programs. In 2019 Water Research Australia released the report ‘*The Value of Operator Competency*’ (Bartlett, 2019) which reviewed the value and benefits of an appropriately trained and competent water industry operator workforce and the current state of training and support for operators.

The report concluded that there is currently no consistent national approach that delivers the necessary competency required to undertake water industry operator roles. Key challenges include: diverse approaches to operator training, confusion over competency requirements, workforce challenges, no clear pathway for career development and remuneration, skills portability within the industry, and accessing ‘fit for purpose’ training in rural and remote communities.

2.0 DISCUSSION

The Value of Operator Competency report made the following recommendations:

1. Regulators review water industry operator training and competency provision, using agreed minimum competency benchmarks.
2. Targeted communication campaign to improve understanding of water industry operator competency requirements across the industry.
3. Industry to drive a nationally consistent governance approach to the provision of water industry operator training and competency with defined minimum competency standards for water industry operator roles.

The Australian Drinking Water Guidelines (ADWG) framework follows a preventive management approach that encompasses all steps in production from catchment to consumer. The Australian Guidelines for Water Recycling provides a similar framework for the management of recycled water.

Element 7 of the framework covers Employee Awareness and Training. However, there is currently no consistent national approach to meet the requirements of the guidelines and this has resulted in inconsistent approaches by utilities to operator training and competency. The National Water Training Package (NWP) provides qualifications and units of competence however there is no requirement for utilities to use the package for training and some utilities use unaccredited training or do not provide any formal training. Access to accredited training has also been challenging for regional and remote communities due to the suitability, cost, and availability.

In 2008 the Water Industry Skills Taskforce (WIST) was established to concentrate on developing approaches aimed at addressing a growing skills shortage in the Australian water industry. The task force identified the need for operators to be trained in the process units that they operated. A Certification Framework for Operators within Drinking Water Systems (2016) was developed through a thorough industry consultation process undertaken in 2011. In 2018, WIST was disbanded, with a new group, the Water Industry Operator Certification Taskforce (WIOCT) formed to manage the Framework. The Water Industry Operators Association of Australia (WIOA) was then appointed as a national Certifying Body and has developed Acuario, a web accessible solution to administer the national scheme: Water Industry Operator Certification Framework 2018: Drinking Water, Wastewater, Recycled Water. Now renamed the Water Industry Operator Registration Framework 2021: Drinking Water, Wastewater, Recycled Water.

WIOA also developed The Technical Competency Handbook: Knowledge, skills and competency development for water industry operations staff, (Northcott, 2019). This was developed to assist water utilities to develop processes and practices designed to deliver a technically competent water industry operational workforce.

The Technical Competency Benchmarking project brings industry and regulators together, to develop minimum standards for technical competency that facilitates a more consistent approach towards technical competency and the implementation of Learning and Development (L&D) programs for water industry operations. It was developed to address the significant water industry operator workforce challenges for the industry.

2.1 Training Needs Assessment

The project commenced by consulting broadly to determine water industry training needs and requirements and existing programs. This involved surveys to regulators/government departments and water utilities and interviews with water associations. The task was to

elicit the core needs and shared pathway and commitment towards an industry-wide training and competency benchmark.

Surveys were distributed in December 2022 to all project partners. This included all state and NT regulators (7 responses) and water utilities from Qld, WA, Tas, SA, Vic and NT (11 responses). The water industry associations (WIOA, AWA, Qld and NSW water directorates, Vic Water) were surveyed through an online interview (3 responses).

The survey consisted of a series of 24 key technical competency questions under three main themes:

- Theme 1: Technical competency systems and processes
- Theme 2: Developing and maintaining technical competency
- Theme 3: Addressing specific training needs and challenges

The survey responses showed a strong alignment among regulators and water utilities and associations of the main challenges (Table 1). The responses clearly highlight the major challenges facing utilities as they strive to provide safe water to the public and protect the environment.

Table 1: *Industry training main challenges*

Regulators	Water Utilities
Poor access to training courses and RTOs, lack of trainers.	Lack of RTOs.
Perceived organisational barriers for prioritising operator training.	No agreed minimum standards and no industry mandate for technical competency.
Lack of training budget for water utilities.	The tyranny of distance & location of sites, is an issue for all operators.
Lack of knowledge within water utilities of the skills, knowledge and competency needed by operators.	Attraction, recruitment, knowledge sharing, succession planning.
Receipt of irrelevant, generic training from training providers.	Lack of trainers.
Access to training for operators based in remote locations.	Budget: Training is expensive, and many smaller utilities and councils do not have sufficient budget.
Special training requirements such as culturally appropriate training or English is not their primary language.	Time: It takes a long time to acquire the skills of an operator and it is difficult to compress this time owing to the value of experience and exposure to a wide variety of situations.

Regarding what the industry can do to address the issues and challenges identified there was also strong alignment among regulators and water utilities and associations. However there were some differences of perspective. The overall lack of accredited trainers and training resources was a common need. The most vital things needed to address the current issues and challenges associated with water industry operator training and competency are summarised in Table 2.

Table 2: *Industry training possible solutions*

Regulators	Water Utilities
Some in favour of minimum mandated training requirements.	Programs to encourage more RTOs in the market.
Initiatives to increase (water utilities) awareness of technical competency requirements.	Ensuring RTOs have adequate training staff.
Defining clear competency standards and defined skills sets for operators – ideally linked to VET system.	Targeted consistent industry wide framework for technical competency, agreed minimum standards.
Improved legislative requirements.	Sustainable approach to industry training and skills refreshers to ensure skills maintenance.
Encouraging more RTOs in the market.	Programs to target funding and training budgets.
Advocating funding to support initial and refresher training.	Workforce resources to allow for training, overcoming tyranny of distance to attend training.
Standardised, and translatable (training).	
Programs to encourage more qualified and suitable trainers, better support for trainers.	
Culturally appropriate training, training for operators with ESL	
Better pay levels.	
Monitoring and reporting of skills and competency.	

2.2 Learning and Development Programs Review

L&D programs, in the water industry, are aimed at the development of appropriate systems, processes and practices to deliver a technically competent water industry operator workforce. L&D programs must also include ongoing professional development to maintain and build competence.

The L&D framework review commenced with a study of the existing national and international frameworks. This included a review of the Australian Water Industry Operator Registration Framework and USA, Canadian and New Zealand frameworks. Lessons from these were then used to inform the development of a draft Technical Competency Benchmark, comprising three key themes with supporting elements. Each theme and its supporting elements were shaped through a series of three L&D Programs industry workshops.

Theme 1 - Technical competency systems and processes

These are the systems and processes needed to underpin and support successful development, delivery and maintenance of technical competency. This includes: regulatory requirements, business strategy and objectives, HR systems for tracking training, developing a learning culture and implementing a cycle of planning and delivery of L&D programs.

The key elements are:

- 1.1 Alignment [of technical competency] with Acts, Regulation, Guidelines.
- 1.2 Alignment with organisational goals and strategy.
- 1.3 Integration with organisational HR systems and processes.
- 1.4 Fostering a ‘culture of learning’.
- 1.5 A cycle of Technical Competency management.

Theme 2 - Developing and maintaining technical competency

This theme defines the roles and responsibilities of water industry operators, and developing and delivering fit-for-purpose knowledge and skills for them to safely and competently perform their jobs.

The key elements are:

- 2.1 Definition of water industry operator roles and responsibilities
- 2.2 Minimum skills and knowledge requirements
- 2.3 Performance evaluation and training gap analysis
- 2.4 Site specific competency evaluation.
- 2.5 Operator self-evaluation and professional development

Theme 3 Addressing specific training needs and challenges.

Theme 3 identifies the specific issues and barriers for individual operators to gain the knowledge and skills they need, and finding solutions to overcome these. It also addresses the challenges of sourcing appropriate trainers, RTOs and training funding, to deliver water industry operator vocational training.

The key elements are:

- 3.1 Process to evaluate and identify specific training needs.
- 3.2 Selecting and engaging RTOs and training providers
- 3.3 Planning and budgeting for skills and training
- 3.4 Technology to support delivery of technical competency.
- 3.5 Complete staff coverage for water industry operations

2.3 Technical Competency Benchmark

Following the industry workshops the L&D program review report was refined into a draft Technical Competency Benchmark. The elements in the Benchmark are arranged into a series of tables (according to themes), which include a rationale, assessment criteria and supporting information for implementation of the element. The benchmarking tables have also been colour coded as **required**, **supporting** or **desirable** elements, to provide guidance on the priority of implementation of each element (Table 3).

Table 3: *Colour coding of benchmarking tables, indicating priority of elements*

Colour	Priority
Red	A Required Element, which should already have a system in place or is a high priority for imminent implementation
Orange	A Supporting Element, for one or more of the Required Elements
Green	A Desirable Element

The Benchmark is intended as a continuous improvement tool for water utilities, to guide the development and delivery of technical competency programs for water industry operators. It is also intended for regulators to review (through regulatory audits) and assess the efficacy of technical competency programs for water industry operators.

The Benchmark is supplemented with an auditing tool. This consists of a checklist of questions to map water utilities technical competency program alignment with the Benchmark, and record evidence and comments. The auditing tool can be used by water utilities for self-assessment of performance of technical competency programs for water industry operators. It can also be used by regulatory auditors to audit water utility compliance obligations to training and competency according to regulations and guidelines.

3.0 CONCLUSION

This project has brought together industry and regulators to develop a nationally recognised technical competency benchmark that includes the alignment of training to roles and responsibilities. The benchmark has provided reference to relevant accredited and non-accredited training and certification, needed to achieve minimum water industry operator technical competency requirements.. The Benchmark will now be trialled nationally in a range of utilities including urban, regional and remote utilities. The Benchmark will then be further refined with industry and regulator guidance before being released via the WaterRA website. It is hoped the Benchmark and auditing tool will support the critical role that water industry operators play in protecting public health and the environment, through more appropriate and consistent training and technical competency programs and activities.

4.0 ACKNOWLEDGEMENTS

We would like to thank Water Research Australia for managing the project, Veolia Australia New Zealand for leading the research and all project partners: Qld Health, Qld DRDMW, Qld Water, Seqwater, NSW Health, NSW DPE, NSW Water Directorate, WA Health, Water Corporation, Tas Water, Tas Health, SA Health, SA Water, Vic Health, Vic Water, Coliban Water, Barwon Water, East Gippsland Water, Greater Western Water, SE Water, NTHealth, PowerWater and WIOA

5.0 REFERENCES

Sallyanne Bartlett (2019) Value of Operator Competency, report prepared by WaterQPlus for Water Research Australia, Adelaide, Australia.

Kathy Northcott (2019) The Technical Competency Handbook, Knowledge, skills and competency development for water industry operations staff, Prepared in collaboration with VicWater and WIOA, Shepparton, Australia.

Qldwater (2021) Water Industry Operator Registration Framework 2021: Drinking Water Wastewater Recycled Water, prepared by the Queensland Water Directorate (qldwater) in conjunction with Water Industry Operators Association of Australia (WIOA), Brisbane, Australia.