

Case Study

In-house refresher training programs for water industry operators



Introduction

Introduction – In-house, skills-based refresher training in the water industry

This case study demonstrates a practical approach to the application of the **70:20:10 Learning and Development (L&D) model**, in the context of water industry operations. This is illustrated through Wannon Water's operator Refresher Training Program and how it has been implemented to support the **continuing professional development (CPD)** of drinking water operators.

A key feature of Wannon Water's program is the focus on mapping skills-based operational refresher training to specific **units of competency** from the **National Water Package (NWP)**. Key challenges in maintaining the currency of skills and knowledge for water industry operators is; having a structured approach to training course development for those skills which need to be refreshed and updated, as well as ensuring that you have the most suitable and experienced trainers to deliver the refresher. The implementation of the training program at Wannon Water sites has offered an opportunity to demonstrate how this can be achieved in a practical and effective way.

Wannon Water

Wannon Water is Victoria's second largest regional urban water corporation by service area, and is a statutory corporation constituted on 1 July 2005 under the Water Act 1989. Their operational region extends over 23,500 square kilometres and covers a population of over 100,000.

Wannon Water supplies water and sewerage services to a permanent population of more than 83,000 people, including residential, commercial, industrial and rural customers. Services include water collection, storage, treatment and delivery; sewage and trade waste collection and treatment; and water recycling.

Covering a number of towns and municipalities, Wannon Water manages around \$769 million worth of water infrastructure and assets, including:

- 1,970 kilometres of water mains
- 937 kilometres of sewers mains
- 196 pumping stations
- 11 filtration treatment plants
- 8 disinfection treatment plants
- 17 sewage treatment plants
- 2 recycled water plants

Wannon Water is a major employer in south-west Victoria, employing just over 200 operational, engineering, financial, environmental and administrative employees. This includes 30 water and wastewater operators.

Key program drivers

Wannon Water aim to demonstrate industry leadership in operator competency, particularly through the development of fit-for-purpose in-house refresher training.





Figure C4.1: Wannon Water, key service statistics

Key Driver 1: Linking operator competency to organisational success

Wannon Water has recognised that the success of their organisation is directly influenced by the professionalism, capability and effectiveness of its workforce. In terms of employee learning and development. As an organisation Wannon Water has a commitment to:

- Creating a supportive learning culture
- Job satisfaction and motivation
- Improving workplace productivity
- Career and personal development, and
- Recognising and encouraging good employee performance

Key Driver 2: establish an L&D program suited to the needs of the operator workforce

The concept of continuing professional development (CPD) is a very common one across a range of professions such as accountancy, health care and engineering.

However managing CPD can be challenging to water businesses, particularly in times where cash flow is tight and operational budgets are under scrutiny. Some of the challenges that have been identified by Wannon Water include:

- Enough flexibility in refresher training programs to fit into the workflow and rosters of operators, operations supervisors, engineers and assets and maintenance staff.
- Comprehensive enough to facilitate accumulation of sufficient CPD points for operator accreditation schemes, such as the National Certification Framework (NCF)
- Fosters the skills and knowledge for operators and other technical staff to safely and competently perform their duties.

Key Driver 3: Recognition of the importance of operator competency in ensuring public health outcomes

Wannon Water commits to delivery of safe drinking water to the community. Wannon believe having technically competent operators is an assurance for quality in delivering water and wastewater services. Adoption of formal accreditation of operators, through schemes such as the National Certification Framework (NCF), is not only a recognition of the professionalism of operators, but also a boost to public confidence of the quality of service provided to customers.

The Program – skills-based refresher training using in-house technical experts

In-house refresher training for water industry operators

The idea of CPD in the water operations context is to recognise that operators play a critical role in protecting public health and safety, through the competent operation of drinking water plants. Wannon Water's approach to CPD for operators has been to leverage the large amount of site-specific and technical knowledge and skills that they have within their own teams and use this to deliver high quality operational refresher training. There has been a cultural shift from simply sending operators away to attend courses, to incorporating training and professional development into the local operational activities and schedules. Wannon Water have taken greater control over CPD management and delivery, and included a new and innovative range of in-house refresher training courses.

Wannon reached out to Victorian training providers to develop a partnership model for delivery of in-house refresher training mapped to NWP units of competency. This resulted in an agreement with the Water Industry Training Consultants (WITC), based in Geelong, Victoria. The in-house refresher training modules have been developed in cooperation between Wannon Water and WITC.

Wannon Water build the refresher training into their annual training calendar, such that at least one training module can be delivered across the operational teams over a number of dates. Refresher training can be delivered in one day, and time is allocated in staff schedules and rosters to make availability to as many staff as possible. Each training session generally involves around 6 operators, and the training lasts 7 to 8 hours involving reviewing tasks and completing an assessment. The assessments are sent to WITC for validation and issue of a Statement of Attendance. Operators who do not pass the assessment are required to re-enrol for the refresher training.



Table C4.1 shows the current refresher training courses Wannon water have on offer to their staff. Table C4.2 gives an example of the Chlorine refresher training course outline.

The Importance of Recognition, Recording and Reporting on L&D

Wannon Water's People & Wellbeing team are responsible for keeping all information related to the operator CPD program. Every month, the appropriate L&D staff and line managers meet up to check the progress of operator L&D and arrange refresher training days where necessary. The one-day training provides sufficient flexibility and reduces difficulties and complexity of scheduling technically focused training, a significant benefit for ongoing L&D management.

The In-house refresher training approach facilitates the simplification of collection of evidence and documentation relating to refresher training undertaken. Key pieces of documentation that can be used for maintaining records of operator CPD include:

- Training course outlines/agendas, copies of powerpoint slides
- Training attendance registers and training evaluation/feedback
- Copies of statements of attendance of operator refresher training

The above evidence, in combination with each operators completed CPD records, is a simple and straightforward way for operators to keep track of their learning and development.

Table C4.1: Refresher training courses that have been developed by Wannon Water and WITC

Refresher Training Course	Mapped to NWP Unit of Competency
Chlorine Disinfection	TRT013 – Operate and control liquefied chlorine gas disinfection TRT052 - Operate and control hypochlorite disinfection processes
Coagulation/Flocculation	TRT015 - Operate and control coagulation and flocculation processes
Granular Media Filtration	TRT041 - Operate and control granular media filters



Table C4.2: Example of the course outline for Chlorine refresher training

Topic	Details
SECTION 1 - NEED FOR DISINFECTION	What is Disinfection, Microbiology , Pathogens , Bacteriology , Faecal Contamination , Surveillance of Water Supply Systems , Testing for Faecal Contamination , Water Quality Guidelines, Viruses, Protozoa
SECTION 2 - THEORY OF CHLORINATION	Methods of Application of "Chlorine", Available Chlorine, Properties of Chlorine, The Chemistry of the Application of the Various Types of Chlorine, pH and its Effect on Hypochlorous Acid, Reactions with Ammonia, Reactions with Inorganic Material, Turbidity and its effect on "Chlorine", The Effect of Sunlight, Chlorine Demand and Chlorine Residuals, Breakpoint Chlorination, Free Residual Chlorination
SECTION 3 - SAMPLING PROCEDURES	Rules of Sampling, Types of Samples, Location of Sampling Points, Frequency of Bacteriological Sampling, Bacteriological Sampling Procedures
SECTION 4 - SAFE HANDLING OF LIQUEFIED CHLORINE GAS	Legal Aspects and Australian Standards, Production of Liquefied Chlorine Gas and Its Properties, Handling Requirements for Containers, Safety Equipment For Chlorine Storages, Cylinder Changeover Procedures, Emergency Procedures, First Aid
SECTION 5 - SAFE HANDLING OF SODIUM HYPOCHLORITE	Production of Sodium Hypochlorite, Properties of Sodium Hypochlorite, Health Effects of Sodium Hypochlorite Exposure, Safe Handling Issues, Personal Protection Equipment, Emergency Procedures, Delivery of Sodium Hypochlorite in Bulk
SECTION 6 - CHLORINE FEED RATE CALCULATIONS	Chlorine Gas Calculations, Hypochlorination Calculations
SECTION 7 - CHLORINE USAGE CALCULATIONS	Calculation of Sodium Hypochlorite Usage, Metric-Imperial Conversion Table, Metric-Metric Conversion Table

19/5/08



CERTIFICATE of COMPLETION

this is to certify

[REDACTED]

has successfully completed the following refresher training-

Chlorine Disinfection

Signatory *[Signature]*
Student Id [REDACTED]
Date: 29/11/2016

Water Industry Training Consultants Pty. Ltd.
ABN: 93 607 183 066
P.O. Box 3027 BAREESE VIC 3226
Tel: 03 5227 2305
www.witc.com.au

Figure C4.2: Example of certificate of completion issued for Chlorine Refresher Training

Formal Recognition of Operator CPD Through Certification

In September 2010 the Victorian Department of Health and Human Services issued the “Victorian Framework for Water Treatment Operator Competencies – Best Practice Guidelines” (the guidelines). An important aspect of the guidelines is an Operator Certification Scheme which formally recognises the skills and experience of drinking water operators. Currently WIOA has the first water industry operations certification scheme in Australia, officially launched in Victoria in December 2012.

To ensure that certified drinking water operators keep their skills up-to-date the WIOA Certification Scheme has a process requiring certification to be renewed every five years. Certified operators need to show that they have remained active in the industry and that they have taken steps to keep up-to-date with new technology. They do this by accruing 15 CPD points in each certification cycle under the NCF.

The benefit of Wannon Water partnering with a professional training provider, is that under the WIOA operator recertification CPD points scheme;

- training delivered with a Registered Training Organisation (RTO),
- mapped to NWP units of competency, with an appropriate assessment component, and
- with a statement of attendance issued

Can be recognised and awarded 4 CPD points to operators who attend each course.

The Statement of Attendance and a copy of the course outline/agenda can be used as evidence for CPD for operators to be recognised for 4 recertification points per course attended. Additionally, attendees receive course notes and PowerPoint presentation as resources for useful reference material for their day-to-day work

So far, refresher training for Chlorine Disinfection, Coagulation/Flocculation and Media Filtration have been developed, as they comprise the most common treatment processes used at Wannon Water drinking water treatment facilities. Upon completion of these three refresher training courses Operators can accrue a total of 12 of their 15 required points towards recertification in any given recertification cycle.

Discussion

Challenges of Operator CPD

Wannon Water has identified a number of challenges when developing a suitable program for operator professional development, including:

- The lack of opportunities for remote and regional operations to access CPD through networking activities such as site visits and giving presentations to other water utilities or to visitor groups.
- Internal training, without partnership with an appropriate professional training provider, does not provide for adequate quality control in the development and delivery of refresher training courses for operators.
- Most of the Wannon Water operators are fully qualified and trained, hence ongoing accredited training is not always a desirable solution for ongoing CPD.
- Due to cost and rostering only a few operators are able to attend conferences. Even fewer are prepared to write papers or do presentations.

Having up to 30 operators to be recertified through the NCF, but with lack of alternative opportunities, it is challenging to arrange 15 points worth of CPD within the five year certification timeframe.

Wannon Water believe that they have found solutions to many of the above challenges, using operator certification as a key driver for innovation and improvement in organisational learning and development.

Benefits of Operator CPD

It should be noted that the perceived cost of operator CPD has been a major driver for innovation within Wannon Water. The overall benefit has been of innovation in training delivery arising from the adoption of operator certification. This has resulted in ongoing and significant savings to the business in training and professional development.

One key factor with the successful implementation of the refresher training program is the participation of in-house technical experts to deliver the training courses. The trainers are able to relate their knowledge with real scenarios according to their own work-related experience and of direct relevance to attendees. Use of staff is a significant cost saver for the organisation. Finally the delivery of refresher training provides a valuable opportunity to technical staff in their own professional and career pathway development.

Conclusion

From a team culture perspective, Wannon has found participation in the implementation of operator certification to be a beneficial exercise. Feedback from certified operators has been that they appreciate the recognition of their skills and knowledge, and are receptive to the increased focus on their role as custodians of public health.

Further benefits have been the establishment of Wannon Water's reputation as an industry leader in development of targeted technical training programs. Through their refresher training program they have built up an extensive knowledge and expertise for delivery of high quality industrially-relevant learning and development. As a result they have been able to point the way for other water businesses with their professional development requirements. These have contributed to the on-the-job learning requirements of operators across the industry and enhanced Wannon Water's standing in the water sector.

Acknowledgements

The authors would like to acknowledge the support of Wannon Water, for contributing this case study to the Technical Competency Handbook. Special thanks to John Harris, Anthony Evans and Kerrie Gibb for providing their knowledge and expertise and participating in the case study development interviews.

References

- Wannon Water, 2012, *Wannon water region landscape*, Schematic containing service statistics for Wannon Water, <http://www.wannonwater.com.au/about-us/profile.aspx>, sourced 12th October 2018.
- Victorian Department of Health and Victorian Water Industry Association, 2010, *Victorian Framework for Water Treatment Operator Competencies – Best Practice Guidelines*, 31pp.
- WOIA, 2011, *Water Industry Operator certification Scheme*, Water Industry Operator Association, Shepparton, Vic, 14pp.
- Water Industry Operators Association of Australia, 2018, *WIOA - Water Industry Operator Certification Scheme, Continuing Professional Development (CPD) Activities and Points for Recertification*, July 2018, 12pp.



Technical Competency Project Supporters

