

Department of Planning and Environment

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Water operations skills and training action plan

December 2022





Acknowledgement of Country

The Department of Planning and Environment acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Front cover photograph

Operator Josh Charles doing sample testing at Griffith water Reclamation Treatment Plant. Supplied by Griffith City Council

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Skills and training in the NSW water industry

The NSW Government is taking a leadership role in water industry workforce development to increase the skills and capacity of the water sector to reduce operational risks, increase jobs and ensure safe and reliable water and sewerage services for NSW communities.

The NSW Department of Planning and Environment, in partnership with Training Services NSW and the water utility and training sectors, is implementing this 2-year water operations skills and training action plan. The action plan aims to address a critical shortage of trained water operators in NSW and establish a sustainable water operations training market in the state.

Skill shortages and workforce development are critical issues facing the water industry for the continued provision of safe, reliable and water and sewerage services. There is a critical shortage of trained water operators in regional NSW which poses an unacceptable risk for NSW communities and the NSW Government's \$2.1 billion investment in regional water infrastructure.

Water operators work in water utilities operating and maintaining water supply and sewerage assets to ensure the safe and efficient provision of water supply and sewerage services to the community. Water operator roles include water treatment, sewage treatment and network management.

To better understand water operations skills shortages, the department commissioned an analysis of the NSW water operations workforce and its access to training. A [summary report \(PDF, 420.89 KB\)](#) of the analysis provides baseline data for use and further development by the local water utility and training sectors and government partners. A summary of the analysis in the report is at Figure 1.

The analysis indicates that over the next 4 years there is an expected deficit of 1,476 water operators' qualifications and a shortfall of up to 21 trainers and assessors to deliver training. This limits the capability in operations and maintenance of water infrastructure, posing an unacceptable risk to regional towns and undermines the value of the current investment by the NSW Government and local councils in water infrastructure.

NSW water operations workforce and training analysis summary

September 2022

The NSW water utility sector faces a critical shortage of formally trained water treatment, sewage treatment and network operators. This shortage increases the risk of water safety incidents that could compromise public and environmental health. An analysis of available data has been completed to estimate workforce and training gaps.

Current workforce



The current estimated regional water, sewage and network operator population

Training



Decline in training completions from 2016 to 2019

2,144

qualifications need to be delivered over the next 4 years



Analysis findings

- Critical shortage of registered training organisations
- Critical shortage of qualified trainers and assessors

2 RTOs to provide training at present
 up to 21 New trainers needed over the next 4 years
 369 Training gap of qualifications per year

- Increased risk of plant failure
- Lack of a regulatory driver for training
 Currently, there is no regulatory requirement for an operator to be trained

Constrained operator capacity | Operator wellbeing under pressure

6% Female



94% Male
 (Australia Bureau of Statistics)



57% over 45
 (Australian Government Job outlook survey)

Figure 1: NSW water operations workforce and training analysis summary

The shortage of formally trained water operators has several causes, which together result in a poorly functioning water operations training market (see Table 1). The limited supply of water operations training in NSW is largely the result of low participation by registered training organisations (RTOs). In NSW, there are only 2 accredited RTOs offering subsidised accredited Water Industry Operations training under the National Water Training Package. Moreover, these RTOs only offer a limited number of units of competency and qualifications in a limited number of training locations.

Table 1: Causes of the poorly functioning water operations industry training market in NSW and resulting shortage of formally trained water operators.

Causes of low DEMAND for water operator training	Causes of low SUPPLY of water operator training
<ul style="list-style-type: none"> • The lack of any mandatory requirement for water operators to complete accredited training or hold qualifications 	<ul style="list-style-type: none"> • Few registered training organisations offering water operations training
<ul style="list-style-type: none"> • Low uptake of available nationally accredited water operations training 	<ul style="list-style-type: none"> • Shortage of accredited trainers, and lack of a pathway for existing trainers to maintain training and technical skills
<ul style="list-style-type: none"> • Difficulty attracting new operators to local water utilities, and retaining existing skilled operators 	

The department has an extensive history of delivering competency-based training in water operations. As a result, there is an opportunity for the department to align its resources and expertise and strengthen its role and capabilities to broker training delivery. The department is ideally placed to communicate the needs of the market to registered training organisations to ensure that local water utilities can deliver the essential services to their communities, reducing unacceptable risk to regional towns and maintaining the value the current investment by the NSW Government and local councils in water infrastructure.

Water operations skills and training action plan

This skills and training action plan addresses each of the causes of the currently poorly functioning training market. The actions are summarised in Table 2 and are detailed in this action plan.

Table 2: Water operations skills and training action plan

Action	Responsible	Delivery	
Addressing the lack of any mandatory requirement for water operators to complete accredited training or hold qualifications			
1	Establishing a minimum training requirement for NSW water operators	Department of Planning and Environment	Consultation, recommendation by September 2023
2	Provide guidance to local water utilities on appropriate skills and competencies for staff, including position descriptions and model training plans.	Department of Planning and Environment	June 2023
Addressing the low uptake of accredited water operations training in the NSW water industry			
3	Allocation of fee free training subsidies for water industry operations (funding available, allocated to water industry) <ul style="list-style-type: none"> School based traineeships (100 per year) Elsa Dixon Program for school-based traineeship (5 per year) Pre-employment skills (50 per year) Certificate III Traineeships for new water operators (200 per year) Barranggira – skilling for employment initiative (5 per year) Trade pathways for experienced workers (250 per year) Skill set pathway – Part qualification for specific skill set (250 per year) Certificate IV and Diploma (30 per year) 	Training Services NSW	January 2023 – January 2024

Action	Responsible	Delivery	
Addressing local water utilities' difficulty attracting and retaining skilled staff			
4	Increase marketing to attract new trainees and school leavers to the water industry	Department of Planning and Environment	2 targeted media campaigns over 18 months to June 2024
5	Support the conversion of the Certificate III Water Industry Operations to a trade qualification	Department of Planning and Environment	December 2024
6	Strategies to support utilities to optimise their use of group training organisations to meet training plans in traineeships and apprenticeships	Department of Planning and Environment	December 2024
Addressing the lack of registered training organisations offering water operations training			
7	Raise RTO awareness of the market opportunity in the water utility sector with information generated by the Town Water Risk Reduction Program quantifying training needs across NSW and the scope of training delivery needed, particularly for regional and remote NSW towns now and in the next 4-5 years	Department of Planning and Environment	December 2024
8	Reduce the costs of RTO market entry of by making quality training resources available nationally to all RTOs	Department of Planning and Environment as part of a national approach	December 2024
Addressing the shortage of accredited trainers and the lack of pathways for existing trainers to maintain training and technical skills			
9	Investigate options to make department trainers available to support nationally accredited training. Provide incentives to current operators and employers to become trainers	Department of Planning and Environment	June 2023

Addressing the lack of any mandatory requirement for water operators to complete accredited training or hold qualifications

Establishing a minimum training requirement for NSW water operators

There are currently no mandatory requirements for water treatment, sewage treatment or network operations staff in NSW water utilities to have completed any accredited training or qualifications. This is inconsistent with the responsibility water operators have for safeguarding public and environmental health. It is also out-of-step with the legal requirements applying to many other types of work and trades that involve significant risks to the community and the environment.

As a result of the lack of a mandatory training or competency requirement, training levels among NSW water operators vary considerably, with up to a quarter of currently employed operators reporting they have received no accredited training at all. These circumstances increase the risk of human error leading to water safety incidents that could negatively impact public health, environmental outcomes and/or water service delivery. Moreover, the lack of a training requirement undermines the effective operation of the vocational training market, inhibiting supply and making access to training difficult for those who do seek it out.

There is strong consensus across the water industry that a primary driver to increase both the demand and supply of training for water operations would be a government-mandated training or competency standard for water operators.

As part of the Town Water Risk Reduction Program's investigation of gaps and minimum performance standards for local water utilities, the lack of minimum standards for the skills and training of water operators will be considered.

Provide guidance to local water utilities on appropriate skills and competencies for staff

The Town Water Risk Reduction Program undertook a successful training pilot project to assist 12 water utilities in Far West NSW. Working together with the Orana Water Utilities Alliance and its member utilities, the pilot project undertook a training 'audit' to assess utilities' training needs and identify their critical training gaps. The project was highly valued by the Alliance and they plan to aggregate the training gap analyses to take to the training market to tailor a training program to their specific needs.

The data that was generated in the training pilot enabled the development of:

- model role descriptions – detailing the training and skills required for supervisors, operators and relief operators
- gap analysis for supervisors, operators and assistant/relief operators
- requirements for supervisors, operators and assistant/relief operators listing rationally recognised vocational training requirements.

The department will provide guidance to small councils that are not necessarily familiar with the National Water Training Package for model role descriptions and training requirements for common or typical water infrastructure configurations across NSW. This will support those utilities to determine what units of competency are required to their infrastructure.

Addressing the low uptake of available nationally accredited training

Allocation of fee free training subsidies for water industry operations

In partnership with Training Services NSW, the department has identified programs and initiatives to provide fee free training for full or part qualifications in Water Industry Operations. This will reduce the time and cost barriers for water utilities seeking to train existing workers or new workers for the operation of drinking water treatment plants, sewerage treatment plants and water distribution systems. Programs identified have existing funding which can be re-allocated to Water Industry Operations, there is no new money needed with Ministerial endorsement.

This funding is re-directed to meet the acute need for water operators across NSW. In December 2021, 200 new traineeships for Certificate III in Water Industry Operations were made available. About 80% of traineeships were taken up in the first year, demonstrating the demand for new traineeships by water utilities. This program will continue for 2023 and 2024.

The Trade Pathways for Experienced Workers program provides the fastest track for water utilities to reduce their operational risks and demonstrate the competency of existing water operators. This program will provide funding to assess the prior skills, training and experience of an operator and provide additional gap training to achieve Certificate III in Water Industry Operations.

Other funding programs are available that target pre-vocational, school-based training, provision of training for entry level to advanced level qualifications and supports upskilling of existing workers into water operations. Initial consultation with the NSW water utility sector has provided support for these programs. Collectively these programs provide utilities greater flexibility to train their existing staff, attract new entrants and address their specific staffing needs to reduce operational risk. A summary of the funding programs and allocations is provided in Table 2.

The National Water Training Package attracts about half the funding under the NSW Government's Smart and Skilled program as a comparable industry training package. The department is working with Training Services NSW to consider options for increasing the funding available for the water operations qualifications. This would incentivise RTOs to deliver the Certificate III in Water Industry Operations (water and wastewater elective stream).

Recognising Certificate III in Water Industry Operations as a trade qualification (see 2.6 below) would also support the increase in Smart and Skilled subsidies.

The department will continue to engage with Training Services NSW and take a leadership role as a specialist water industry liaison so that the training needs of NSW water utilities are met by the training sector.

Table 2: Summary of funding programs and allocation to water operations

Program <i>Funded fee free training</i>	Number of places per year for 2023 and 2024	Skilling goal
School based traineeships	100	School based training pathway to launching a career: Certificate II
Elsa Dixon Program	5	Aboriginal Business Advisory Program
Pre-employment skills	50	Attracting new or existing workers to consider to water operations– limited skill set
Certificate III Traineeships for new water operators	200 places <i>Continues current program</i>	Attracting new trainees for Certificate III in Water Industry Operations qualification
Barranggirra – Skilling for employment initiative	No limit	Support for Aboriginal and Torres Strait Islander learners ensure successful retention and completion of training and improved post-training employment outcomes
Trade pathways for experienced workers	250	Experienced workers are upskilled - prior skills, unaccredited training and experience are formally recognised and additional gap training provided to achieve Certificate III in Water Industry Operations
Skill set pathway - Part qualification for specific skill set	250	Upskilling existing workers with flexible access to specific units of training to meet needs of water utilities
Certificate IV and Diploma	30	Upskilling existing workers for career advancement
TAE skillset program to address trainer shortage	10	Upskill DPE staff to assist with delivery and assessment of existing workers

Addressing local water utilities' difficulty in attracting and retaining skilled people

Increase marketing to attract new trainees and school leavers to the water industry

To attract a future workforce, the water industry needs to find ways to engage future job candidates (such as students and those not actively looking to change jobs) and to communicate the career opportunities and benefits of working in the water industry.

Following development of resources and an initial marketing campaign by the Town Water Risk Reduction Program working with Local Government NSW, the department will further develop resources and run 2 targeted campaigns over 18 months to June 2024. The resources will be multi-purpose and useful for careers advisors, employment agencies, schools, parents, councils and water industry associations.

Targeted marketing materials and campaigns to emphasise the critical role of providing essential water services. Water operators protect public health and the environment. The marketing campaign will be used to attract younger and non-traditional job seekers to the sector.

Increasing the attraction of staff to water operations by investigating conversion of the Certificate III Water Industry Operations to a trade qualification

The department will partner with the water industry to investigate opportunities for recognising Certificate III in Water Industry Operations (NWO30219) as a trade qualification. This would increase skills, create a clear career pathway for operators and assist in the with attraction of new workers and retention of existing workers. A trade qualification has greater status and is more appealing for jobseekers.

An increase of up to 30% in the attraction and retention of jobseekers was demonstrated in similar industries such as gas and electrical sectors, when qualifications were recognised as a trade.

Strategies to support utilities to optimise their use of group training organisations to meet training plans under traineeships and apprenticeships

Feedback to the Town Water Risk Reduction Program from the water industry and skills industry about group training organisations was varied.

Supporting council-owned local water utilities to use of group training organisations will allow councils more efficiently and effectively meet traineeship training plan obligations under the *Traineeship and Apprenticeship Act 2001*.

The department proposes testing the group training organisation (GTO) model with a regionally based GTO and regional grouping of local water utilities with a critical need for operators, over August 2023 – August 2024.

Addressing the lack of registered training organisations offering water operations training

Raise RTO awareness of the market opportunity in water utility sector

The department undertook analysis quantifying training needs across NSW and the scope of training delivery needed, particularly for regional and remote NSW towns now and in the next 4-5 years. A [summary report \(PDF, 420.89 KB\)](#) of the analysis provides much-needed baseline data for use and further development by the water utility sector, training sector and government partners.

The department will continue to monitor training in the water utility sector and make information available to the market to raise RTO awareness of the opportunity to participate in the market.

Reduce the costs of RTO market entry by making quality training resources available to all RTOs

A major impediment to RTOs entering the training market or expanding their training offerings is the cost of entry, particularly the high cost of developing teaching, learning and assessment materials aligned with the National Water Training Package. Due to the relatively small size of the NSW water operator workforce (about 2,500 individuals) and its unpredictable demand for training, RTOs have been reluctant to invest in developing and maintaining these materials.

The department's recent analysis of the NSW water operations workforce and its access to training estimated it costs between \$20,000 and \$30,000 on average to develop these resources per unit of competency. An RTO would therefore need to spend up to \$1.2 million to develop teaching, learning and assessment materials for the estimated 40 units of competency required to meet the needs of NSW local water utilities or up to \$5 million to develop materials for all 160 units of the National Water Training Package. These levels of investment are not financially viable for RTOs.

NSW is not alone in its shortage of formally trained water operators and constrained supply of water operator training. Water utility workforce, skills and training deficits exist nationally.

The NSW Government supports a nationally coordinated approach to the development of water operations training resources and recently published a position paper [Promoting a national approach to water operations training materials \(PDF, 616 KB\)](#).

A national approach to the development and management of training materials for water operator training can be justified on both market and workforce grounds. First, low supply and inconsistent quality of water operator training is increasing drinking water and sewage safety risks across the country. A major impediment nationally to RTOs entering the market or improving their offerings is

the availability of appropriate training resources. Also, nationally consistent training would create economies of scale for RTOs which would likely attract more national providers into the market. In addition, nationally consistent training has the potential to improve skill transferability and workforce mobility between jurisdictions, which may improve the attractiveness of and recruitment to water operator jobs.

To incentivise a national approach to water operator training resources, the department supports co-ordinated intergovernmental seed funding, including a NSW Government contribution. An initial public investment is appropriate given the public health and environmental risks the initiative would address. It would also be justified on the basis of market failure – in this case the failure of the water operator training market to provide a service essential to public health.

The department has an existing technical and training knowledge base that it uses to support its unaccredited water operations training. The department will transition its training materials to support accredited training.

Addressing the shortage of accredited trainers and the lack of pathways for trainers to maintain skills

Investigate options to make department trainers available to support nationally accredited training and provide incentives to current operators and employers to become trainers

The water utilities sector has very few Training and Education (TAE) qualified water industry experts with an understanding of the diverse needs of regional NSW. There is an expected deficit of 21 trainers over the next four years. The majority of current TAE qualified water industry trainers are employed by the department (11 trainers) however, the department only provides unaccredited training.

The department will investigate options to make department trainers available as assessors and trainers for accredited water industry operations training, and to incentivise water utilities to develop a pipeline of suitable trainers. The investigation will consider the business model for making trainers in state and local government available, including commercial arrangements with RTOs when trainers are available and under what terms, and addressing probity matters.