Department of Planning and Environment

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NSW water operations workforce and training analysis

Summary report

September 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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NSW water operations workforce and training analysis: summary report

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Acknowledgements

Balmoral Group Australia is acknowledged for its fuller analysis of water operations workforce and training issues, on which this summary report is based.

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Front cover photograph

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Introduction

The NSW Department of Planning and Environment has partnered with NSW local water utilities and the wider water sector to implement the Town Water Risk Reduction Program. The program aims to strengthen risk management and strategic planning in town water systems to better safeguard public and environmental health in regional NSW communities.

The program is focused on identifying barriers to effective, strategic town water planning and risk management. It will also help develop and implement long-term solutions to those barriers.

A key component of the program is a water industry skills and training action plan to address a critical shortage of formally trained water operators in NSW. This shortage increases the risk of water quality safety incidents, which in turn puts public and environmental health at increased risk, increases the risk of water service delivery failure and creates organisational liabilities for water utilities.

To better understand water operator employment and training issues, and support both the water and training sectors with information, the department commissioned Balmoral Group Australia (BGA) to analyse the NSW water operations workforce and its access to training. BGA drew on a range of data sets to complete this analysis and construct a preliminary picture of water operator training across the state.

This report is a summary of BGA's analysis. This summary provides an accessible, general reference for water and training sector stakeholders and government partners. It gives initial insights into workforce pressures, training levels and training access and supply issues in the water operations industry and offers directions for further investigation and action.

BGA's analysis and this report provide a useful initial snapshot – a starting point for better understanding the water operations workforce and training market. Due to issues with the completeness, consistency and accuracy of available data, there are limitations to the information presented. However, we will continue to work with the water and training sectors to refine and build on this information over time to inform improvements in water operator training, workforce development, workforce planning and associated policy settings.

Water operations workforce

Key points

- The water operations workforce in NSW is relatively small, somewhat older and male dominated.
- There is a lack of data on Indigenous participation in the workforce.
- The average water operator salary is significantly less than the average salary of other stationary plant operators around Australia, and less than the average salary across all industries nationwide.
- There are staffing and turnover pressures within NSW water utilities.

Data sources

BGA investigated the size and demographics of the water operations workforce in NSW, average water operator salaries, and staffing within regional water utilities. BGA generated the information summarised in this section through analysis and integration of data from:

- Australian Bureau of Statistics
- Australian Government's Job Outlook Survey
- National Centre for Vocational Education Research
- NSW Public Sector Industry Training Advisory Body water operators skills census
- Department of Planning and Environment's Local Water Utility performance reporting
- NSW Health
- NSW Environment Protection Authority
- a representative sampling of local water utilities
- stakeholder consultation
- original research.

Results of analysis

Workforce size

- There are approximately 2,500 individuals, equal to 1,200 full-time equivalent staff, working as water operators in regional NSW.

- About half of the workforce are water and sewage treatment plant operators and the remainder are network operators.

Workforce demographics

- Some 57% of water operators are aged 45 and over, with 30% aged between 45 and 55 years and 27% aged 55 years and older.
- The water operator workforce is 94% male and 6% female. No other genders have been reported.
- There is no direct data on the number or percentage of Indigenous people employed as water operators. However, it is possible to extrapolate from training data sets to estimate there are about 170 Indigenous water and/or sewage treatment plant operators in NSW.

Salaries, staffing and support

- Water operator salaries in NSW fall within a tight remuneration band, from an estimated minimum of about $53,000 per annum to an estimated maximum of about $73,700 per annum.[1] The estimated average water operator salary is about $56,500 per annum. In contrast, the average annual income of an employee under the 'Other Stationary Plant Operators' category in the Australian Government's Job Outlook Survey is about $98,100. The average across all industries in Australia is about $90,300.
- The annual turnover in the water operator workforce is 19% per annum, or 218 operators per year based on the current workforce population. This includes the retirement of an estimated 65 operators per year on average.
- There are concerns about staff shortages and overtime hours in local water utilities. Anecdotally, the number of operators in many utilities is only sufficient to operate the plant in normal conditions, with limited capacity to accommodate staff illness and leave.
- According to the Australian Government's Job Outlook Survey, water operators see management support and training as particularly important to their employment satisfaction.

[1] The estimates for water operators are based on BGA's analysis of 23 examples of typical salaries for water operators across NSW.

Water operations training attainment

Key points

Overall, there is a lack of fundamental data on training attainment across the water operations workforce. The information that is available suggests:

- water operators receive varying levels of training
- the distribution of training between some operator cohorts may also vary.

Data sources

BGA assessed levels and distribution of training among NSW water operators. BGA derived the information summarised in this section from an analysis of data from:

- National Centre for Vocational Education Research
- Department of Planning and Environment
- NSW Public Sector Industry Training Advisory Body water operators skills census
- Australian Bureau of Statistics.

Results of analysis

Training levels

- It is uncertain how many water operators in NSW have received formal training. Available data sets do not capture this information.
- The information that is available indicates training levels vary across the workforce:
  - Between 2016 and 2019, 624 individuals in NSW received formal training and a qualification in water operations consistent with the National Water Training Package. Of these qualifications, 67% were Certificate III, 17% Certificate II, 10% Certificate IV and 6% Diploma.
  - A further proportion of water operators have attended the department's training courses (both accredited and non-accredited) without completing a qualification (our subsequent analysis of our data suggests about 400 operators have joined this cohort since 2016).
  - A quarter of current water operators (about 630 individuals) report they have not received any formal training.
- There was a decline in qualification completions between 2016 and 2020.

Training distribution

- Of water operators undertaking formal training:
  - 4% are aged 15 to 19 years
  - 28% are aged 20 to 29 years
  - 49% are aged 30 to 49 years
  - 17% are 50 to 59 years
  - 2% are 60 to 64 years.
- About 7% of water operators who received a water operations qualification between 2016 and 2020 were Indigenous (an average of 46 individuals per year in the period).
- Of all the qualifications awarded between 2016 and 2019, 33% of training was completed in major cities, 63% in inner and outer regional areas, 4% in remote and very remote parts of NSW.

Water operations training demand, capacity and gap

Key points

- Current water operators without formal training and new operators entering the workforce create demand for water operations training.
- Only a small number of registered training organisations (RTOs) and qualified trainers deliver accredited water operations training in NSW.
- There is likely to be a training supply deficit over the next 4 years, with a shortage of up to 21 trainers and assessors and unmet demand for nearly 1,500 qualifications.

Data sources

BGA estimated water operator training demand, supply capacity and the current training gap. It based these estimates on information sourced from:

- National Centre for Vocational Education Research
- Department of Planning and Environment
- NSW Public Sector Industry Training Advisory Body water operators skills census
- Safe and Secure Water Program
- stakeholder consultation
- original research.

Results of analysis

Current and future training demand

- An estimated 848 individuals in NSW require formal water operator training in 2022, comprising the 630 current water operators who have received no formal training and the estimated annual turnover of 218 operators.
- If half of those requiring training in 2022 (424 operators) require a Certificate II, and all 824 operators require a Certificate III, then there is an underlying demand for 1,272 of these qualifications today.[2]

[2] These proportions are based on BGA assumptions.

- If the current turnover rate of 218 operators per year continues over the next 4 years, creating a demand for 872 additional qualifications over that period, then a total of 2,144 qualifications will be needed (or 536 per year over the next 4 years, on average).
- There will likely be additional demand for water operator training and 'micro-credentialing' as the current pipeline of new and upgraded water and sewerage treatment infrastructure is delivered across NSW.

Current training supply capacity

- There are currently 2 accredited RTOs in NSW offering water industry operations training – Fusion Training Solutions and TAFE NSW. However, currently only Fusion Training Solutions can deliver the new (2019) National Water Training Package and is approved for NSW Smart and Skilled training subsidies. TAFE NSW is developing training materials consistent with the new National Water Training Package requirements so it can resume its offerings. Historically TAFE NSW has delivered most of the water operations training in NSW (94% between 2016 and 2020).
- Fusion Training Solutions and TAFE NSW are only planning to offer Certificate II and Certificate III qualifications under the new National Water Training Package. Training to Certificate IV and Diploma levels will not be available.
- At least one additional private organisation may be working toward becoming an accredited RTO and qualifying for subsidies to deliver water operations training in NSW.
- At times, NSW water operators seek out formal water and sewage treatment training from Queensland-based providers Simmonds & Bristow, although this training is not eligible for NSW subsidy funding.
- The department previously provided accredited water operator training through a partnership with TAFE NSW. That partnership ended in 2019, and we now provide unaccredited training (we are the only organisation to do so in NSW). Since 2010, we have delivered over 1,800 courses in water treatment, sewage treatment and networks, including 294 qualifications. Sixty-four of these courses were delivered after 2019 and were unaccredited.
- The total number of qualified trainers in (or soon likely to be in) accredited RTOs is 9 (3 in Fusion Training Solutions, 5 in NSW TAFE, and one in Murray Thompson Water Services, which is expected to partner with an RTO to deliver training). The department has 15 staff who are qualified trainers and undertake training as a part-time function of their position, however they are currently unable to deliver accredited training.
- It is estimated that 9 trainers can deliver training for a maximum of 167 qualifications per year (or 668 qualifications over the next 4 years). This estimate is based on:
  - each trainer having capacity to train on 68 days per year, or the 9 trainers providing 612 days of training in total (this excludes time spent on administrative tasks such as compliance, class preparation and assessment)
  - each class having a minimum of 6 students, such that the total number of student training days for all 9 trainers is 3,672
  - each qualification requiring 22 days of training, such that the total number of qualifications the 9 trainers can deliver in a year is 167.

Training gap

- If the average demand for water operator training over the next 4 years is 536 qualifications per year (2,144 total) but the current training supply capacity is 167 qualifications per year (668 total for the next 4 years[3]), there is a training supply deficit of 369 qualifications per year for the next 4 years (1,476 total). This equates to a deficit of 8,118 student training days and a shortage of up to 21 trainers and assessors.

[3] BGA's analysis included an assumption there would be no training capacity in 2022. This was based on uncertainty created by the end of 2 third-party arrangements between TAFE NSW and qualified trainers, and by the suspension of offerings by TAFE NSW while it updated its training materials. This means that while the calculation of training demand over 4 years (2023 to 2026) incorporated the underlying demand in 2022, the calculation of training capacity only included capacity for 2023 to 2026.

Water operations training challenges – stakeholder feedback

BGA consulted with a range of organisations as part of its water operations workforce and training analysis (see Appendix A). These stakeholders offered quite consistent views on the causes of the training gap and shortage of formally trained operators across the workforce. Key themes from stakeholder consultation were:

- lack of a regulatory requirement

  The absence of any specific legal requirements for water operators to complete training or qualifications means the demand for training across the state is unpredictable, which makes profitability for RTOs uncertain and limits the supply of training to the market.
- lack of RTOs

  In addition to uncertain demand for training, other factors deterring RTOs from participating in the water operations training market include: the cost of developing training materials consistent with the National Water Training Package (i.e., $20,000 to $30,000 per unit of competency or up to $5 million for all 160 units); and the cost and process of complying with the requirements of the Australian Skills Quality Authority (the national vocational education regulator).
- lack of trainers

  The number of student places RTOs can offer is constrained by the number of qualified water operations trainers able to work with or in those RTOs.
- lack of training facilities

  Facilities suitable for water operations training are limited in number and location, restricting RTO supply of training and water operator access to training.
- limited operator availability

  Staff shortages in water utilities prevent water operators from being released for training, further undermining the predictability of training demand. There is little guidance on ideal staffing levels across different facility types in NSW.

Conclusions

BGA's analysis and this summary report provide a preliminary picture of water operator workforce characteristics and training issues across NSW. This picture includes some overarching insights, for instance that:

- the sustainability of the NSW water operations workforce may be subject to several vulnerabilities such as retirement rates, recruitment barriers associated with relatively low wages, and turnover driven by staffing and workload pressures
- there is need to significantly improve data gathering on water operator training, including to better understand possible barriers to training within different parts of the workforce.

A critical insight from this initial work is that there is likely to be a significant deficit in the supply of water operator training in NSW over coming years. An insufficient supply of training would worsen the existing shortage of formally trained water operators across the state.

As a final step in its analysis, BGA completed a very high-level economic cost-benefit assessment of improving water operator workforce competency. Several simplifying assumptions and generalisations had to be made, which lead BGA to put caveats on the results. However, the overall observation was that as the risks of water safety incidents increases with the number of untrained plant operators, so too do the public health costs associated with water borne illness. In each of BGA's basic scenarios, there were material net economic benefits from investing in and implementing an effective water operator training program.

The aims of the Town Water Risk Reduction Program include working with the water and training sectors to support such investment and implementation, to safeguard public health and the environment in regional NSW communities. Part of this work will be to continue to refine and build on the data set summarised in this report to inform ongoing decision-making.

Appendix A – Scope of consultation

BGA consulted with the following organisations:

- Central NSW Joint Organisation
- Federation Council
- Fusion Training Solutions
- Hunter Water Corporation
- Leeton Shire Council
- Local Government NSW
- Murray Thompson Water Services
- Muswellbrook Shire Council
- NSW Department of Education — Training Services NSW
- NSW Department of Planning and Environment, including the Water Utilities Branch, Aboriginal Communities Water and Sewerage Program and Safe and Secure Water Program
- NSW Health
- NSW Public Sector Industry Training Advisory Body
- NSW State Emergency Service
- NSW Water Directorate
- Orange City Council
- qldwater (Queensland Water Directorate)
- Riverina Water County Council
- Simmonds & Bristow
- TAFE NSW
- TRILITY
- WaterNSW
- Water Industry Operators Association of Australia
- Water Services Association of Australia.