

Water industry training in non-metropolitan NSW

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Water industry training in non-metropolitan NSW

Safe and reliable drinking water and effective wastewater services are fundamental to the health of our communities. The provision of these services relies on a skilled and competent workforce to meet community expectations, government requirements and changing technologies. Ongoing, high-quality training is essential to develop and maintain the skills required to meet these challenges.

This brochure describes the water and wastewater treatment and trade waste regulation training courses conducted by the NSW Department of Industry ('the department'). The courses have been developed to provide training that equips NSW local water utility officers with the necessary skills and knowledge to effectively carry out their respective functions. The courses are fully aligned with the national vocational training package.

National Water Training Package

The development of vocational training packages is an Australian Government initiative. The National Water Training Package was developed specifically for the water industry and covers a broad range of specialisations, including:

- networks
- source
- treatment (drinking water, wastewater)
- trade waste
- hydrography
- irrigation.

NSW Department of Industry

The department (and its predecessor agencies) has provided high-quality training for more than 50 years, focusing on water and wastewater treatment and trade waste regulation. The department tailors course design, structure and assessment methodologies to ensure that local water utility (LWU) operators have the necessary skills to safely and effectively operate water and sewage treatment works in regional NSW.

Other training courses, software and guidelines provided by the department for NSW LWUs include Dam Safety Surveillance conducted by the NSW Dam Safety Committee and Fluoridation of Public Water Supplies—NSW TAFE—OTEN Course No. 17233.

The department also provides software and guidelines to assist LWUs in developing appropriate, integrated water cycle management plans, water supply and sewerage strategic business plans, financial plans, water supply tariffs, sewerage tariffs, liquid trade waste fees and charges, developer charges, asset management plans (capital works plan, operation plan and maintenance plan), asset valuation, greenhouse gas calculation and trade waste regulation policies.

All of the department's trainers have a high level of expertise, years of experience and extensive knowledge of the subject matter. The department's courses meet all of the requirements of the National Water Training Package and also cover important additional areas that are specifically tailored to meet the needs of LWUs in NSW.

Water and wastewater treatment

The water and wastewater treatment courses conducted by the department were initially developed in the 1960s and have been evolving since then to provide best-practice training for LWUs.

The comprehensive technical, advisory and regulatory courses are designed to complement the support provided by the department through its water and sewerage inspection program under section 61 of *Local Government Act 1993*.

Water and wastewater treatment courses leading to a Certificate III in Water Industry Treatment are divided into two parts. Part 1 addresses basic treatment principles while Part 2 concentrates on advanced operations. Completion of both parts usually takes one to two years.

At the end of each part, LWU officers undertake a practical assessment at their own treatment works, overseen by a Water and Sewerage Treatment Officer from the department. This is one of the strengths of the department's courses as it allows LWU officers to operate treatment facilities and demonstrate hands-on competency in their own work environment.

Operators are required to have relevant on-site experience and to have received some operational instruction at their own workplace prior to attending these courses.

Other water and wastewater courses held that provide continuous development for LWU officers include:

- Water and wastewater update seminars
- Water distribution systems
- Water treatment for engineers
- Fluoridation of public water suppliers (NSW TAFE Course No. 17233).

Trade waste regulation

The trade waste regulation course was developed in the mid-1990s to support LWUs in the regulation of liquid trade waste discharges to sewer.

The course is aligned with the *NSW Best-Practice Management of Water Supply and Sewerage Framework* and the requirements of the National Training Package.

This course has been developed for LWU trade waste officers, environmental health officers, and wastewater engineers involved with the regulation of trade waste discharges. The course is designed to provide LWU staff with necessary skills in the regulation of trade waste discharges. This includes policy and pricing development and implementation, trade waste approvals, monitoring and coaching of trade waste dischargers to assist them to comply with their approval conditions, as well as enforcement provisions to address any persistent non-compliance.

The assessment process includes written examinations and projects to be completed within nine months of course completion.

Qualifications from Department of Industry training courses

Course	Qualification
Water Treatment Operator Part 1—Chemical Dosing Systems	NSW Department of Industry Certificate
Water Treatment Operator Part 2—Water Treatment Operations	NSW TAFE awards Certificate III in Water Industry Treatment (Drinking Water)
Wastewater Treatment Operator Part 1—Wastewater Treatment Operations	NSW Department of Industry Certificate
Wastewater Treatment Operator Part 2—Wastewater Advanced Treatment	NSW TAFE awards Certificate III in Water Industry Treatment (Wastewater)
Trade Waste Regulation	NSW TAFE awards Certificate IV in Water Industry Operations (Trade Waste)
Update Seminars	NSW Department of Industry Certificate
Water Distribution Systems	NSW Department of Industry Certificate
Water Treatment for Engineers	NSW Department of Industry Certificate

Benefits of Department of Industry training courses

Complete skill set

The water and wastewater operator training courses have been developed to provide the necessary skills to safely and effectively control water or sewage treatment works.

The course content of the water and wastewater treatment works courses is outlined in Appendices A and B, respectively.

The courses also provide comprehensive coverage of the entire treatment system.

Training in emerging technologies

The training courses are periodically updated to accommodate new and innovative technologies. The water and wastewater training courses have recently been updated in recognition of the increasing sophistication and environmental requirements of new treatment facilities.

Training specific to needs of NSW non-metropolitan LWUs

The courses have been developed to meet the needs of LWUs in non-metropolitan NSW. The courses meet all of the requirements of National Water Training Package and also cover important additional areas that are specifically tailored to meet the needs of LWUs in NSW.

Water and wastewater training courses relate to the water and sewage treatment works technologies utilised by LWUs.

The Trade Waste Regulation course is designed to suit the requirements of NSW water utilities which are set out in the *Best-Practice Management of Water Supply and Sewerage Framework (BPMF)*.

The BPMF requires LWUs to have:

1. sound trade waste regulation policy, assessment and approval conditions for each application
2. commercial water and sewerage charges
3. full cost recovery with appropriate water, sewer usage charge and trade waste fees and charges, including non-compliance trade waste usage charges and non-compliance excess mass charges
4. monitoring, mentoring and coaching of dischargers to assist them to comply with approval conditions
5. enforcement
6. disconnection of a trade waste service in the event of persistent failure to comply with the approval conditions

It is important to note that currently the majority of the above items are either not covered or only partially covered in the National Water Training Package.

The course content of the Liquid Trade Waste Regulation course is described in Appendix C.

Alignment with the National Water Training Package

The water operator, wastewater operator and trade waste regulation training courses are fully aligned with the National Water Training Package. The above courses are now nationally accredited through NSW TAFE (see qualification table on page 3 above).

Industry delivered

All of the department's courses are conducted by respected industry experts who have the necessary knowledge and experience to answer the broad range of questions raised by utility officers.

Further information on courses, seminars and, qualifications is provided on the department's website:

<https://www.industry.nsw.gov.au/water/water-utilities/training-courses>



Appendix A—Water treatment operator courses

Certificate III in Water Industry Treatment (*Drinking Water*) issued by NSW TAFE

Water treatment units of competency

Core units

1. NWPGEN001 - Apply the risk management principles of the water industry standards, guidelines and legislation.
2. NWPGEN004 - Assess, implement and report environmental procedures.

Elective units* (prescribed)

1. AHCCHM101A - Follow basic chemical safety rules
2. CPCCM1015A - Carry out measurements and calculations
3. NWPGEN007 - Sample and test drinking water
4. NWPGEN009 - Perform complex testing
5. NWPGEN013 - Apply principles of chemistry to water systems and processes
6. NWPTRT015 - Operate and control coagulation and flocculation processes
7. NWPTRT031 - Operate and control sedimentation and clarification processes
8. NWPTRT041 - Operate and control granular media filters
9. NWPTRT052 - Operate and control hypochlorite disinfection processes

Or

- 9a. NWPTRT013 - Operate and control liquefied chlorine gas disinfection.

* Some specialised units may be awarded based on specific treatment works facilities.

Additional course content provided by NSW Department of Industry

In addition to the above two core units and nine elective units, the following additional skills and knowledge are covered in the water treatment courses:

- | | |
|---|---|
| 1. Roles and responsibilities of operators | 12. Lagoon processes |
| 2. Hydrological cycle, groundwater and surface water | 13. DAF processes |
| 3. Risk management principles of the ADWG | 14. Membrane processes |
| 4. Characteristics of water | 15. Activated carbon process |
| 5. Microbiology | 16. Ion exchange and softening processes |
| 6. Aeration processes. | 17. Dosage calculations: dry feed systems |
| 7. Sludge lagoons | 18. Dosage calculations: solution feed systems |
| 8. Reticulation system | 19. Drop tests and calibration curves for dry and solution feed systems |
| 9. Iron and manganese removal processes | 20. Chemical treatment costs |
| 10. Alternative disinfection processes: UV, ozone, chlorine dioxide, chloramination | 21. Treatment works performance and maintenance records. |
| 11. Algae management & toxins treatment | |

Appendix B—Wastewater treatment operator courses

Certificate III in Water Industry Treatment (**Wastewater**) issued by NSW TAFE

Wastewater treatment units of competency

Core units

1. NWPGEN001 - Apply the risk management principles of the water industry standards, guidelines and legislation.
2. NWPGEN004 - Assess, implement and report environmental procedures.

Elective units (prescribed)

1. AHCCHM101A - Follow basic chemical safety rules
2. NWPGEN008 - Sample and test wastewater
3. NWPTRT053 - Operate and control UV processes
4. NWPTRT061 - Operate and control wastewater processes
5. NWPTRT071 - Operate and control pre-treatment processes
6. NWPTRT081 - Operate and control activated sludge processes
7. NWPTRT082 - Operate and control nutrient removal processes
8. NWPTRT091 - Operate and control solids handling processes
9. NWPTRT092 - Operate and control digestion processes.

Additional course content provided by NSW Department of Industry

In addition to the above two core units and nine elective units, the following additional skills and knowledge are covered in the wastewater treatment courses:

- | | |
|--|---|
| 1. NSW Legislative and statutory requirements | 13. Septicity and odour control |
| 2. Characterisation and nature of sewage | 14. Sludge dewatering and management |
| 3. Wastewater collection and transfer systems | 15. Oxidation ponds |
| 4. In-line treatment of sewage | 16. Aerated lagoons |
| 5. Screening | 17. Basic chemistry (including pH and alkalinity control) |
| 6. Grit removal | 18. Dosage calculation |
| 7. Flow measurement | 19. Dosing tests and equipment calibration |
| 8. Sedimentation and clarification processes | 20. Chemical dosage and calculations |
| 9. Trickling filter processes | 21. Solution feed systems |
| 10. Anaerobic digestion process (including Imhoff tanks) | 22. Aerobic sludge digestion |
| 11. Complex testing | 23. Membrane bioreactors |
| 12. Tertiary filtration including membrane filters | 24. Chlorine disinfection processes. |

Appendix C—Trade waste regulation course

Certificate IV in Water Industry Operations (*Trade Waste*) issued by NSW TAFE

Core units

1. NWPGEN002 - Ensure compliance with water industry guidelines, standards and legislation.
2. NWPGEN005 - Coordinate and monitor the application of environmental plans and procedures.

Elective units (prescribed)

1. BSBWHS404 - Contribute to WHS hazard identification, risk assessment and risk control
2. NWPGEN014 - Sampling and testing trade wastewater
3. NWPTRD001 - Evaluate, implement and monitor standard low risk trade waste discharge approvals
4. NWPTRD002 - Evaluate, implement and monitor high risk trade waste discharge approvals
5. NWPTRD011 - Investigate and report on breaches of water industry legislation
6. NWPTRD012 - Investigate, rectify and report on trade waste incidents
7. NWPTRD021 - Implement and manage trade waste policies and plans
8. NWPTRD023 - Coordinate, implement and report trade waste monitoring procedures
9. NWPTRD024 - Establish connections of water and wastewater systems.