



Australian Government

NWPTRT058 Assess and improve desalination processes

Release: 1

NWPTRT058 Assess and improve desalination processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to assess and improve desalination processes.

It includes assessing, evaluating system performance, investigating and reporting on the optimisation of desalination processes for water treatment and water recycling.

This unit applies to those working as water treatment operators responsible for water quality in a range of technical and process applications in water and wastewater treatment. Those undertaking this unit would work autonomously, usually with supervisory responsibilities, while performing complex tasks in a range of contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Evaluate desalination processes

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Review existing process performance and maintenance data against relevant organisational and legislative requirements

	1.2	Identify the impact of feed water quality on desalination treatment processes
	1.3	Identify any additional sampling and testing required for valid evaluation of current process performance
2 Investigate desalination process plant configuration	2.1	Review existing fault reports and other relevant plant asset information
	2.2	Investigate the operational status of plant components with reference to manufacturer and plant designer specifications
	2.3	Contribute to plant configuration investigations to identify potential operational improvements
	2.4	Identify hazards, assess risks and control measures according to workplace procedures
3 Investigate options for desalination process optimisation	3.1	Review current desalination processes with reference to organisational procedures protocol to identify potential deficiencies
	3.2	Identify and investigate new or additional chemicals and related dosing options
4 Develop and record a plan for process optimisation	4.1	Plan a trial to test the performance of the determined optimisation options
	4.2	Compile a report making recommendations on optimisation options

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT045 Assess and improve desalination processes.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

Assessment Requirements for NWPTRT058 Assess and improve desalination processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- analysing and evaluating reports and reference materials
- analysing problems and recommending appropriate remedial solutions
- assessing effectiveness of treatment chemicals by conducting a range of tests
- assessing fault reports and investigating the current operational status of plant components
- conducting investigations and reporting on operational and control system problems
- identifying and responding to risks and hazards
- identifying data and planning additional data collection through appropriate sampling and testing
- identifying opportunities for improved water treatment
- interpreting a range of complex and technical documents including at least one of the following:
 - codes of practice
 - national and industry standards
 - organisational policies
 - regulatory, legislative, licensing and organisational requirements
 - specifications
- operating a desalination process using at least one of the following:
 - electrodialysis reversal (EDR)
 - reverse osmosis (RO)
 - thermal desalination
- planning trials to test the performance of the determined optimisation options and compiling recommendation reports
- reviewing existing process performance with reference to historical or seasonal data, differences in raw water quality and plant configuration

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- antiscaling
- impact of electrical flow or current and how reversal effects the process
- Langelier saturation index
- log removal value concept
- permeate flux
- principles of desalination treatment processes
- problems for desalination processes caused by chemical and biological contamination
- relevant legislation, industry standards and workplace policies and procedures relating directly to the control and operation of desalination processes
- risk and hazard management principles
- salt passage
- saturation indices used for prediction of scaling formation
- silt and/or fouling indices used for prediction of solids or colloidal fouling
- types and application of chemicals and chemical cleaning methods for desalination processes
- types and characteristics of chemical and microbial contaminants treated through desalination processes
- workplace reporting requirements

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>