



Australian Government

NWPTRT045 Assess and improve desalination processes

Release: 1

NWPTRT045 Assess and improve desalination processes

Modification History

Release	Comments
1	This unit was released in NWP Water Training Package release 1.0 and meets the Standards for Training Packages.

Application

This unit describes the skills required to assess, evaluate system performance, investigate and report 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.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies and procedures must be consulted and adhered to.

Those undertaking this unit would work autonomously performing sophisticated tasks in a familiar context.

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

Competency Field

Treatment

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section.
1. Assess performance of desalination processes	1.1 Review existing process performance data. 1.2 Review existing operational processes with reference to manufacturer and plant designer specifications. 1.3 Identify the impact of raw water quality on desalination treatment processes. 1.4 Review existing fault reports and other relevant plant asset information.

	1.5 Investigate the operational status of plant components. 1.6 Assess the effectiveness of various process control strategies.
2. Improve performance of desalination process	2.1 Identify treatment process conditions for optimising desalination. 2.2 Determine plant configuration and revised operational processes for process optimisation. 2.3 Plan a trial to test the performance of the determined optimisation options.
3. Report on system performance and improvement	3.1 Report on the current operational status of the water treatment process. 3.2 Report on effective treatment processes and associated sampling and testing requirements required to maintain water quality. 3.3 Compile a report making recommendations on optimisation options.

Foundation Skills

The foundation skills demands of this unit have been mapped for alignment with the Australian Core Skills Framework (ACSF). The following tables outline the performance levels indicated for successful attainment of the unit.

ACSF levels indicative of performance:

1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Learning					Reading					Writing					Oral communication					Numeracy				

Performance variables:

1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Support					Context					Text complexity					Task complexity				

Further information on ACSF and the foundation skills underpinning this unit can be found in the Foundation Skills Guide on the GSA website.

Range of Conditions

Desalination processes include:	- reverse osmosis - electrodialysis reversal (EDR) - nanofiltration
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Unit Mapping Information

Links

Companion Volume implementation guides are found in VETNet -

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

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Assessment Requirements for NWPTRT045 Assess and improve desalination processes

Modification History

Release	Comments
1	These Assessment Requirements were released in NWP Water Training Package release 1.0 and meet the Standards for Training Packages.

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. The candidate must be assessed in at least one of the desalination processes listed in the Range of conditions. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- preparing and applying chemical dosing and cleaning
- applying calculations to determine log removal values, Langelier saturation index, silt density index, salt passage or permeate flux, as required
- evaluating process performance
- reviewing existing process performance with reference to historical data, differences in raw water quality and plant configuration
- identifying data deficiencies and collecting additional data through appropriate sampling and testing
- assessing fault reports and investigating current operational status of processes for water treatment
- investigating current and potential chemical addition practices
- planning trials to test the performance of the treatment optimisation options for desalination
- preparing recommendation reports

Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- types and characteristics of chemical and microbial contaminants treated through desalination processes
- problems for desalination processes caused by chemical and biological contamination

- relevant legislation, standards and workplace policies and procedures relating directly to the control and operation of desalination processes
- principles of water reuse treatment processes
- log removal value concept for desalination
- saturation indices used for prediction of scaling formation
- silt and/or fouling indices used for prediction of solids or colloidal fouling
- properties and modes of action for desalination
- types and application of chemicals and chemical cleaning methods for desalination processes
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Assessment Conditions

Competency should be assessed in an actual workplace or in a simulated environment, with access to equipment and infrastructure appropriate to the outcome. Competency should be demonstrated over time to ensure the candidate is assessed across a variety of situations.

Some components of this unit require assessment in a workplace environment therefore the unit is not suitable for fully external or electronic based assessment.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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