



Australian Government

Department of Education, Employment and Workplace Relations

NWP263A Operate and maintain wastewater treatment plant and equipment

Revision Number: 2

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Modification History

NWP263A Release 2: Layout adjusted. No changes to content.

NWP263A Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to operate and maintain wastewater treatment processes within domestic and industrial wastewater treatment plants in urban and rural areas. The ability to operate wastewater treatment processes to ensure that wastewater disposal or re-use meets state or territory licensing requirements is essential to performance.

Application of the Unit

This unit supports the attainment of skills and knowledge required for operational staff in wastewater treatment plants with responsibility for the practical and safe operation of plant, equipment and processes.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency. Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Operate wastewater treatment processes.	1.1 Identify <i>reasons and requirements</i> for treatment of wastewater. 1.2 Identify major components of wastewater treatment processes. 1.3 Identify and apply practices undertaken in <i>wastewater treatment processes</i>. 1.4 Operate <i>mechanical equipment</i> used in wastewater treatment according to manufacturer specifications and organisational requirements. 1.5 Handle, use, store and dose <i>chemicals</i> according to relevant legislation and organisational procedures.
2 Maintain items of equipment used in wastewater treatment processes.	2.1 Identify maintenance requirements and schedules according to standard operating procedures. 2.2 Meet maintenance and cleaning requirements of equipment.
3 Follow safety requirements for work in a wastewater treatment plant.	3.1 Identify and record hazards of working in a wastewater treatment plant. 3.2 Identify and record operational requirements for safe and effective use of equipment. 3.3 Select, fit and use safety equipment, including personal protective equipment. 3.4 Identify and apply safe work practices when handling chemicals and working in a wastewater treatment plant.
4 Record wastewater treatment plant data.	4.1 Complete records required for effective operation of a wastewater treatment plant. 4.2 Identify, record and report range of data routinely collected. 4.3 Identify data that falls outside normal operating parameters and report for further action.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- recognise and report operational problems
- apply policies, procedures and standards
- use safety equipment and personal protective equipment
- collect and test samples
- interpret material safety data sheets (MSDS)
- receive and apply instructions
- use literacy skills in regard to verbal and written communication in the workplace
- communicate with other employees and people that interact within the work environment

Required knowledge:

- sources and characteristics of wastewater
- physical, chemical and microbiological characteristics and basic principles related to wastewater treatment
- reasons for wastewater treatment
- types of wastewater treatment plants and processes
- major chemical types and equipment used
- wastewater treatment plant hazards
- safety equipment
- reasons for data and information collection
- MSDS

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The candidate should demonstrate the ability to operate and maintain wastewater treatment processes within domestic and industrial wastewater treatment plants in urban and rural areas including:

- applying wastewater treatment processes, including operating mechanical equipment
- using chemicals safely, as required and according to organisational procedures
- conducting regular routine inspection of mechanical equipment
- identifying hazards and applying appropriate safety procedures
- gathering and recording data
- reporting anomalies

Context of and specific resources for assessment

Access to the workplace and resources including:

- documentation that should normally be available in a water industry organisation
- relevant codes, standards and government regulations

Where applicable, physical resources should include equipment modified for people with disabilities.

Access must be provided to appropriate learning and assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- a decision of competence only taken at the point when the assessor has complete confidence in the person's competence over time and in various contexts
- all assessment that is part of a structured learning

experience must include a combination of direct, indirect and supplementary evidence

- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner appropriate to the skill levels of the operator and cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Reasons and requirements for treatment may include:

- ensuring conformity with legislation, standards and guidelines
- removing impurities and contaminants to enable discharge and re-use
- reducing impact of impurities on environment and public health
- relevant environmental protection legislation and regulations and trade waste agreements

Wastewater treatment processes may include:

- grit removal
- aeration
- screening
- sedimentation
- disinfection
- granular and membrane filtration
- thickening and dewatering
- anoxic processes
- sludge digestion
- suspended and fixed media aerobic bioreactor processes
- anaerobic processes
- lagoons and wetlands
- gas scrubbers
- biosolids and effluent disposal and re-use
- dilution
- chemical dosing
- nutrient removal
- reverse osmosis

Mechanical equipment used may include:

- pumps, including:
 - centrifugal
 - positive displacement
 - airlift
- blowers
- screens
- control valves
- electronic digital monitoring systems
- recording systems

Chemicals and aids used may include:

- chemical testing and analysis equipment
- communication equipment
- manual and hydraulic equipment
- personal protective equipment
- lime
- sodium hypochlorite
- polymers
- aluminium and iron coagulants
- carbon sources

Unit Sector(s)

Not applicable.

Competency field

Treatment.