



Australian Government

Department of Education, Employment and Workplace Relations

NWP259B Operate, monitor and maintain pump stations

Revision Number: 2

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Modification History

NWP259B Release 2: Layout adjusted. No changes to content.

NWP259B Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to operate and monitor the performance of pump stations in water and wastewater systems and undertake minor maintenance, or organise more complex maintenance, of pump stations according to organisational operating procedures.

Application of the Unit

This unit supports the attainment of skills and knowledge required for staff with specific responsibility for ensuring that pump stations operate according to organisational requirements. This may include minor maintenance tasks, such as gland adjustment, packing replacement and the replacement of some fittings.

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 Plan and prepare work.	1.1 Determine pump station work requirements from standard operating and maintenance procedures. 1.2 Access and interpret pump operation and maintenance procedures. 1.3 Perform site check to prevent damage to other utilities and the environment, according to legislative and organisational requirements. 1.4 Select and check equipment to meet safety requirements of task and site and select, fit and use personal protective equipment. 1.5 Handle, use and store chemicals according to organisational requirements.
2 Operate pump stations.	2.1 Identify and set or adjust pump station components according to organisational requirements. 2.2 Carry out routine security inspections and cleaning duties. 2.3 Operate pump station according to organisational requirements.
3 Maintain pump stations.	3.1 Apply pump station maintenance standards. 3.2 Inspect pump station components according to organisational requirements, and identify maintenance needs. 3.3 Schedule maintenance tasks and order appropriate materials. 3.4 Conduct maintenance tasks according to organisational maintenance standards and manufacturer recommendations. 3.5 Identify and report pump station faults and carry out minor repairs.
4 Monitor and adjust pump station performance.	4.1 Apply pump station performance targets. 4.2 Identify and apply monitoring points and timing. 4.3 Monitor pump station and make adjustments, where necessary, to maintain operational parameters.
5 Check outsourced maintenance work.	5.1 Check that completed maintenance and repairs meet specifications. 5.2 Check return of pumping station to service.
6 Finalise work.	6.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures. 6.2 Restore work site to meet environmental and organisational requirements. 6.3 Maintain workplace records as required.

Required Skills and Knowledge

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

Required skills:

- operate pumps and pumping stations
- maintain pumps and pumping stations
- identify system faults
- identify hazards
- implement remedial action
- operate service according to procedures
- identify and respond to operational problems
- collect data
- produce reports and logs
- use safety and personal protective equipment
- use tools and machinery
- follow plans and instructions
- perform work-related calculations
- apply procedures and standards
- communicate with employees and customers
- work effectively as part of a team
- use communication systems
- use literacy skills in regard to verbal and written communication in the workplace
- give and receive instructions

Required knowledge:

- system hydraulics basics, including suction and lift
- system layout
- principles and purpose of pump operation
- OHS requirements
- types of pump and their operational function
- pump and pump station operation and maintenance procedures and standards
- principles affecting selection of pump station monitoring points and timing of monitoring activities
- environmental aspects of operation
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- communication systems
- hazardous materials handling
- risk factors and potential hazards of operating wastewater transfer systems
- equipment operation, capacity and limitations
- effects of weather and conditions on system
- control systems

- pump station components
- high and low voltage requirements
- effect of lightning strikes

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 monitor the performance of pump stations in water and wastewater systems and undertake minor maintenance including:

- planning and preparing for work, including selecting equipment and chemicals
- operating pump stations, including conducting a security inspection
- conducting pump station maintenance
- monitoring and adjusting pump station performance
- checking quality of outsourced maintenance work
- finalising work, including completing documentation

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 should only be made 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

Questioning will be 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.

Pump station work

requirements may include:

- location
- timing
- site boundary protection
- type of pumps
- extent of maintenance
- maintenance methods

Pump operation and maintenance procedures

may include:

- gland packing
- gland adjustment
- removal and replacement of valves or instruments

Legislative and organisational requirements
may include:

- relevant federal and state or territory legislation and regulations
- codes of practice, associated standards and guidance material
- documented organisational policies, manuals and induction programs
- relevant community planning and development agreements, such as land care agreements

Equipment used may include:

- hand and power tools
- high pressure cleaning equipment
- lifting equipment
- on- and off-road vehicles
- portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment

Chemicals may include:

- cleaning chemicals
- oils
- greases
- paints
- thinners

Pump station components
may include:

- suction pipes
- valves
- pumps

- electrical cabinets
 - pumps
 - weirs
 - flow meters
 - run time meters
 - wet and dry pump wells
 - electrical motors
- Pump station maintenance standards*** may include:
- electrical
 - mechanical
 - civil construction
- Maintenance needs*** may include:
- painting
 - adjusting glands
 - replacing corroded items, such as bolts
 - cleaning
 - removing fat and solids build up.
- Materials*** may include:
- metal
 - masonry
 - wood
- Pump station faults*** may include:
- flow fluctuations outside acceptable limits
 - over-heating bearing
 - blocked suction lines
 - vibrating drive shaft
 - broken impellers
- Monitoring points and timing*** may include:
- routine inspections of flow rate
 - inspections to identify infiltration and obstructions
- Adjustments*** may include:
- flow
 - use of night and day rate power

Unit Sector(s)

Not applicable.

Competency field

Collection and distribution.