



Australian Government

**Department of Education, Employment
and Workplace Relations**



NWP07 Water Training Package

Volume 1 of 2

Introduction, Qualifications, Assessment Guidelines, Competency Standards

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Preliminary information

Important note to users

Training Packages are not static documents; they are amended periodically to reflect the latest industry practices and are version controlled. It is essential that the latest version is always used.

Check the version number before commencing training or assessment

This Training Package is Version 2. Check whether this is the latest version by going to the National Training Information Service (www.ntis.gov.au) and locating information about the Training Package. Alternatively, contact Government Skills Australia (www.governmentskills.com.au) to confirm the latest version number.

Explanation of version number conventions

The primary release Training Package is Version 1. When changes are made to a Training Package, sometimes the version number is changed and sometimes it is not, depending on the extent of the change. When a Training Package is reviewed it is considered to be a new Training Package for the purposes of version control, and is Version 1. Do not confuse the version number with the Training Package's national code (which remains the same during its period of endorsement).

Version modification history

The version details of this endorsed Training Package are in the table below. The latest information is at the top of the table.

Version	Release date	Comments
2	23 December 2010	<p>NWP10107 Certificate I in Water Sustainability is updated to NWP10110 Certificate I in Water Sustainability.</p> <p>Review of the Certificate I in Water Sustainability resulting in minor changes to requirements for assessment appropriate for delivery in schools. New versions of core and elective units: NWP101B Investigate sustainable water cycle management, NWP102B Design a basic water system model, NWP103B Demonstrate care and safe practices, NWP104B Sample and test water sources and quality and NWP105B Draw and use simple maps, plans and drawings.</p> <p>Unless specified, following changes apply only to elective units.</p> <p>Two new units have been developed for water meter installation in the Certificate III in Water Operations: NWP302A Install meters for non-potable, non-urban water supplies, and NWP304A Maintain meters for non-potable, non-urban water supplies.</p> <p>NWP325B Conduct and report on dam safety inspection and basic monitoring replaced by three new units for dam safety monitoring in the Certificate III in Water Operations; NWP326A</p>

Version	Release date	Comments
		<p>Conduct and report dam safety instrumentation monitoring, NWP327A Inspect and report on concrete dam safety and NWP328A Inspect and report on embankment dams safety.</p> <p>The units NWP334B, NWP335B, NWP336B and NWP337B have been combined in a new unit NWP303A Monitor and control maintenance of water and wastewater system assets.</p> <p>Certificate III in Water Operations includes two updated versions of imported core unit of competency: BSBWOR301A Organise personal work priorities and development, and BSBOHS303B Contribute to OHS hazard identification and risk assessment.</p> <p>New unit for hydrography in the Certificate IV in Water Operations:</p> <p>NWP420A Install, operate and maintain hydrologic instruments and equipment</p> <p>NWP438A Measure and process hydrometric stream discharge data in flood conditions replaced by NWP421A Collect, measure and process hydrologic stream discharge gauging</p> <p>NWP437A Analyse data and produce hydrometric reports incorporated into NWP421A.</p> <p>NWP426B Coordinate and monitor the operation of potable water systems replaced by NWP403A Investigate and plan the optimisation of potable water distribution systems.</p> <p>NWP410B Coordinate and monitor asset constructions and maintenance has an updated version: NWP410C Coordinate and monitor asset construction and maintenance.</p> <p>Replacement of two large units in water and wastewater treatment in Certificate IV in Water Operations:</p> <p>NWP435B Coordinate and monitor the optimisation of water treatment processes</p> <p>NWP436B Coordinate and monitor the optimisation of wastewater treatment processes</p> <p>with smaller units to allow greater flexibility:</p> <p>NWP404A Apply principles of chemistry to water systems and processes</p> <p>NWP406A Investigate and plan the optimisation of granular media filtration processes</p> <p>NWP407A Investigate and plan the optimisation of dissolved</p>

Version	Release date	Comments
		<p>air flotation processes</p> <p>NWP408A Investigate and plan the optimisation of sedimentation and clarification processes</p> <p>NWP409A Investigate and plan to optimise the operation of chemical addition processes</p> <p>NWP411A Select treatment requirements for waterborne microorganisms</p> <p>NWP412A Investigate and plan the optimisation of activated sludge processes</p> <p>NWP413A Investigate and plan the optimisation of anaerobic treatment processes</p> <p>NWP414A Select strategies to control microbial impact on wastewater treatment processes</p> <p>New elective unit: NWP432A Contribute to the continuous improvement of quality systems.</p> <p>Additional imported units have been added to the Certificate IV in Water Operations:</p> <p>RTD3507A Undertake sampling and testing of water</p> <p>MEM30027A Prepare basic programs for programmable logic controllers</p> <p>MSACMT461A Facilitate SCADA systems in a manufacturing team or work area</p> <p>NWP219A Work safely in confined spaces has been included as an elective at Certificate IV in Water Operations.</p> <p>Units for hydrography have been added to the Diploma of Water Operations:</p> <p>NWP504A Collect and manage hydrometric station survey data</p> <p>NWP508A Apply principles of hydraulics to pipe and channel flows</p> <p>NWP509A Collect, verify and report hydrometric time series data</p> <p>NWP510A Develop and maintain ratings</p> <p>Imported units have been updated to new codes in reviewed parent Training Package. These include core units in</p>

Version	Release date	Comments
		Certificate III and Certificate IV.
1.1	July 2010	ISC Upgrade to incorporate wording for flexible packaging policy into 20 High Use qualifications. NWP20107 and NWP30107 slight changes to cover accredited courses as source for imported electives.
1	12 March 2008	NWP10101 has been replaced by NWP10107 Certificate I in Water Sustainability designed to be delivered in schools. A new qualification, NWP70107 Vocational Graduate Certificate in Water Industry Leadership has been added. The requirement in NWP01 that certificate qualifications had prerequisites of the preceding qualification has been removed.
1	20 May 2002	Primary release, based on revision of UTW98 Water Industry Training Package.

Summary of AQF qualifications in NWP07 Water Training Package

Code	Title
NWP10110	Certificate I in Water Sustainability
NWP20107	Certificate II in Water Operations
NWP30107	Certificate III in Water Operations
NWP40107	Certificate IV in Water Operations
NWP50107	Diploma of Water Operations
NWP70107	Vocational Graduate Certificate in Water Industry Leadership

Units of competency in NWP07 Water Training Package

Note: There are no prerequisites for any units of competency contained in the NWP07 qualifications.

Water industry units of competency

Unit code	Unit title
NWP101B	Investigate sustainable water cycle management
NWP102B	Design a basic water system model
NWP103B	Demonstrate care and safe practices
NWP104B	Sample and test water sources and quality
NWP105B	Draw and use simple maps, plans and drawings
NWP201B	Follow defined OHS procedures and regulatory requirements
NWP202B	Apply environmental and licensing procedures
NWP203B	Plan and organise personal work activities
NWP207A	Work effectively in the water industry
NWP208A	Perform basic wastewater tests
NWP209B	Use maps, plans, drawings and specifications
NWP210B	Perform basic water quality tests
NWP211B	Use computerised systems
NWP213B	Monitor and operate irrigation and domestic delivery systems
NWP215B	Install and replace basic volumetric metering equipment
NWP216B	Install basic metering equipment and flow control devices for

Unit code	Unit title
	irrigation systems
NWP218B	Perform and record sampling
NWP219A	Work safely in confined spaces
NWP220B	Collect and control drainage run-off
NWP221A	Operate basic flow control and regulating devices in water or wastewater treatment network systems
NWP222A	Operate basic flow control and regulating devices in irrigation systems
NWP223A	Install basic metering equipment, flow control and regulating devices
NWP226B	Prepare and restore work site
NWP227B	Control vegetation on a site
NWP229B	Repair minor structures
NWP230B	Maintain and repair irrigation channels and drains
NWP231B	Maintain and repair drainage assets
NWP232B	Operate water reticulation and distribution system
NWP233B	Construct and install water distribution assets
NWP234B	Locate, identify and protect utility services
NWP239B	Identify and apply water entitlements and delivery processes
NWP240B	Inspect and report catchment and surrounding areas
NWP241B	Inspect and maintain basic dams and water storages
NWP242B	Monitor and report water extraction
NWP243B	Operate bore fields and groundwater source systems
NWP244B	Maintain and repair bulkwater assets
NWP245B	Maintain tanks and water storage assets
NWP246B	Inspect and maintain public facilities
NWP247A	Maintain catchment and surrounding areas
NWP250B	Construct and install wastewater pipelines
NWP251B	Construct open earthen channels or drains
NWP252B	Construct and install irrigation delivery and stormwater drainage assets
NWP253B	Install and repair water services
NWP254B	Repair or insert water distribution assets
NWP255B	Maintain and repair wastewater collection assets
NWP256B	Monitor and report water distribution systems
NWP257B	Maintain and repair wastewater collection systems
NWP258B	Monitor and operate bulkwater transfer systems
NWP259B	Operate, monitor and maintain pump stations
NWP260A	Monitor and report water treatment processes
NWP261A	Operate and maintain water treatment plant and equipment
NWP262A	Monitor and report wastewater treatment processes
NWP263A	Operate and maintain wastewater treatment plant and equipment
NWP264B	Monitor, operate and report wastewater pre-treatment processes
NWP268B	Monitor, operate and report chlorine disinfection systems
NWP270B	Monitor, operate and report basic anaerobic processes
NWP271B	Monitor, operate and report sedimentation processes
NWP272B	Monitor, operate and report wastewater lagoon processes
NWP273A	Monitor, operate and report ultraviolet irradiation disinfection systems
NWP274A	Monitor, operate and report ozone treatment systems
NWP275A	Monitor, operate and report chlorine dioxide systems
NWP276A	Monitor, operate and report fluoridation systems
NWP277A	Work safely with liquefied chlorine gas
NWP278A	Perform blue green algae sampling

Unit code	Unit title
NWP300B	Provide and promote customer service
NWP301B	Implement, monitor and coordinate environmental procedures
NWP302A	Install meters for non-potable, non-urban water supplies
NWP303A	Monitor and control maintenance of water and wastewater system assets
NWP304A	Maintain meter for non-potable, non-urban water supplies
NWP305B	Monitor and conduct maintenance of complex flow-control and metering devices
NWP308B	Test and commission wastewater collection systems
NWP309B	Test and commission water distribution systems
NWP310B	Monitor and operate water distribution systems
NWP311B	Monitor and operate wastewater collection and transfer systems
NWP315B	Investigate and report breaches of water industry legislation
NWP316B	Monitor and schedule water deliveries
NWP317B	Control water quality in distribution systems
NWP318A	Monitor and operate gated spillways
NWP319A	Monitor and control dam operations
NWP320B	Monitor and implement dam maintenance
NWP321B	Inspect and operate groundwater regulation
NWP322B	Inspect and operate surface water systems
NWP323B	Monitor and coordinate catchment operations
NWP324B	Inspect and report river regulation operations
NWP326A	Conduct and report dam safety instrumentation monitoring
NWP327A	Inspect and report on concrete dam safety
NWP328A	Inspect and report on embankment dam safety
NWP330B	Establish positions of underground utilities using locating devices
NWP331B	Inspect conduit and report on condition and features
NWP332B	Monitor, operate and control drainage operations
NWP333B	Monitor and control rural water distribution operations
NWP338B	Perform odour and infiltration investigations
NWP339B	Perform leak detection
NWP340A	Measure and process hydrometric stream discharge data using wading gaugings
NWP342A	Commission, decommission and monitor hydrometric sites, stations and facilities
NWP345B	Monitor, operate and control water treatment processes
NWP346B	Monitor, operate and control wastewater treatment processes
NWP347B	Monitor, operate and control coagulation and flocculation processes
NWP348B	Monitor, operate and control sedimentation and clarification processes
NWP349B	Monitor, operate and control incineration processes
NWP350B	Monitor, operate and control aerobic bioreactor processes
NWP351B	Monitor, operate and control activated sludge processes
NWP352B	Monitor, operate and control dissolved air flotation processes
NWP353B	Monitor, operate and control anaerobic bioreactor processes
NWP354B	Monitor, operate and control granular media filtration processes
NWP355B	Monitor, operate and control membrane filtration processes
NWP356B	Monitor, operate and control ion exchange processes
NWP357B	Monitor, operate and control reverse osmosis and nano filtration processes
NWP359B	Monitor, operate and control nutrient removal processes
NWP360B	Monitor, operate and control dewatering processes

Unit code	Unit title
NWP361B	Monitor, operate and control gas scrubber treatment processes
NWP362B	Monitor, operate and control reclaimed water irrigation
NWP363B	Monitor performance and control maintenance of treatment plant assets
NWP364B	Perform laboratory testing
NWP365A	Identify and confirm blue green algae outbreaks
NWP366A	Monitor, operate and control chloramination disinfection processes
NWP367A	Monitor, operate and control activated carbon adsorption processes
NWP368A	Respond to blue green algae incidents
NWP401B	Coordinate and monitor the application of environmental plans and procedures
NWP403A	Investigate and plan the optimisation of potable water distribution systems
NWP404A	Apply principles of chemistry to water systems and processes
NWP406A	Investigate and plan the optimisation of granular media filtration processes
NWP407A	Investigate and plan the optimisation of dissolved air flotation processes
NWP408A	Investigate and plan the optimisation of sedimentation and clarification processes
NWP409A	Investigate and plan to optimise the operation of chemical addition processes
NWP410C	Coordinate and monitor asset construction and maintenance
NWP411A	Select treatment requirements for waterborne microorganisms
NWP412A	Investigate and plan the optimisation of activated sludge processes
NWP413A	Investigate and plan the optimisation of anaerobic treatment processes
NWP414A	Select strategies to control microbial impact on wastewater treatment processes
NWP415B	Coordinate and monitor surface water systems
NWP416B	Coordinate and monitor water storage catchment activities
NWP417B	Coordinate and monitor groundwater system usage
NWP418B	Coordinate and monitor bulkwater system operations
NWP419B	Coordinate and monitor river system usage
NWP420A	Install, operate and maintain hydrologic instruments and equipment
NWP421A	Collect, measure and process hydrometric stream discharge gauging
NWP425B	Coordinate and monitor the operation of irrigation delivery systems
NWP427B	Coordinate and monitor the operation of drainage systems
NWP428B	Coordinate and monitor the operation of wastewater collection systems
NWP429B	Coordinate, implement and report trade waste monitoring procedures
NWP430A	Evaluate, implement and monitor standard low-risk trade waste discharge approvals
NWP431A	Investigate, rectify and report on trade waste incidents
NWP432A	Contribute to the continuous improvement of quality systems
NWP440A	Supervise conduit inspection and reporting
NWP504A	Collect and manage hydrometric station survey data
NWP505B	Implement and monitor environmental management policies, plans, procedures and programs
NWP508A	Apply principle of hydraulics to pipe and channel flow
NWP509A	Collect, verify and report hydrometric time series data
NWP510A	Develop and maintain ratings

Unit code	Unit title
NWP511B	Manage large dam safety surveillance
NWP512B	Implement and manage catchment management plan
NWP513B	Develop and review catchment management plan
NWP514B	Implement and manage groundwater management plan
NWP515B	Develop and review groundwater management plan
NWP516B	Implement and manage surface water management plan
NWP517B	Develop and review surface water management plan
NWP518B	Prepare and report on data related to flood mitigation
NWP519B	Develop and report flood mitigation
NWP520A	Contribute to hydrometric planning and water resource management
NWP525B	Implement and manage asset construction and maintenance
NWP526A	Evaluate, implement and monitor high-risk trade waste discharge approvals
NWP527B	Conduct commissioning and post-commissioning activities
NWP528B	Implement and manage trade waste management policies and plans
NWP529B	Develop and modify trade waste management policies and plans
NWP530B	Implement and manage the operation and maintenance of irrigation delivery systems
NWP531B	Develop and review irrigation system management plan
NWP532B	Implement and manage potable water system management plan
NWP533B	Develop and review potable water system management plan
NWP534B	Implement and manage drainage system management plan
NWP535B	Develop and review drainage system management plan
NWP536B	Implement and manage wastewater collection management plan
NWP537B	Develop and review wastewater collection management plan
NWP545B	Implement and manage water treatment processes monitoring program
NWP546B	Develop and review water treatment processes management plan
NWP547B	Implement and manage wastewater treatment processes monitoring program
NWP548B	Develop and review wastewater treatment management plan
NWP551A	Evaluate, implement and monitor high-risk trade waste discharge approvals
NWP701A	Contribute to the development of a complex water organisation
NWP702A	Apply water industry legislation, codes and standards
NWP703A	Lead water planning processes
NWP704A	Lead a project development
NWP705A	Provide leadership in hydrometric network planning and water resource management
NWP706A	Review and evaluate water and wastewater sustainability objectives
NWP707A	Analyse and review water treatment plant technology

Imported units of competency

Unit code	Unit title
RIICCM205A	Carry out manual excavation
RIICCM210A	Install trench support
BSBLED101A	Plan skills development
BSBWOR204A	Use business technology
BSBITU201A	Produce simple word processed documents

Unit code	Unit title
BSBITU202A	Create and use spread sheets
BSBWOR301A	Organise personal work priorities and development
BSBWOR404A	Develop work priorities
BSBMGT402A	Implement operational plan
BSBMGT515A	Manage operational plan
BSBFIM501A	Manage budgets and financial plans
BSBOHS303B	Contribute to OHS hazard identification and risk assessment
BSBWOR301A	Organise personal work priorities and development
LGACOM405B	Implement and monitor the organisation's OHS policies, procedures and programs within the work group
LGAWORK404A	Manage a civil works project
LGAWORK405A	Plan and supervise roadworks
LGAWORK406A	Supervise concrete works
LGAWORK501A	Prepare preliminary design for operational works
LGAWORK502A	Prepare detailed works project documentation
LGAWORK503A	Undertake project investigation
CPPSIS4002A	Store and retrieve spatial data
CPPSIS5002A	Capture new spatial data
CPPSIS5010A	Collate and interpret spatial data
MEM30027A	Prepare basic programs for programmable logic controllers
MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area
PSPPROC414A	Manage contracts
PSPPROC506A	Plan to manage contracts
PSPSOHS501A	Participate in the coordination and maintenance of a systematic approach to managing OHS
RTD3507A	Undertake sampling and testing of water

Summary of mapping of units of competency

Summary Mapping of NWP07 Version 1.1 to NWP07 Version 2 Units of Competency					
N = Not Equivalent E = Equivalent					
Version 1.1 Code	Version 1.1 Title	N/E	Version 2 Code	Version 2 Title	Comments
NWP101A		E	NWP101B	Investigate sustainable water cycle management	Reviewed and updated
NWP102A		E	NWP102B	Design a basic water system model	Reviewed and updated
NWP103A		E	NWP103B	Demonstrate care and safe practices	Reviewed and updated
NWP104A		E	NWP104B	Sample and test water sources and quality	Reviewed and updated
NWP105A		E	NWP105B	Draw and use simple maps, plans and drawings	Reviewed and updated
			NWP302A	Install meters for non-potable, non-urban water supplies	New unit
			NWP304A	Maintain meters for non-potable, non-urban water supplies	New unit
			NWP326A	Conduct and report dam safety instrumentation monitoring	New unit
			NWP327A	Inspect and report on concrete dam safety	New unit
			NWP328A	Inspect and report on embankment dams safety	New unit
NWP334B		E	NWP303A	Monitor and control maintenance of	New unit/ Multi-unit equivalence with the

Summary Mapping of NWP07 Version 1.1 to NWP07 Version 2 Units of Competency					
N = Not Equivalent E = Equivalent					
Version 1.1 Code	Version 1.1 Title	N/E	Version 2 Code	Version 2 Title	Comments
				water and wastewater system assets	combination of NWP335B, NWP336B and NWP337B
NWP335B		E	NWP303A	Monitor and control maintenance of water and wastewater system assets	New unit/ Multi-unit equivalence with the combination of NWP334B, NWP336B and NWP337B
NWP336B		E	NWP303A	Monitor and control maintenance of water and wastewater system assets	New unit/ Multi-unit equivalence with the combination of NWP334B, NWP335B and NWP337B
NWP337B		E	NWP303A	Monitor and control maintenance of water and wastewater system assets	New unit/ Multi-unit equivalence with the combination of NWP334B, NWP335B and NWP336B
			NWP420A	Install, operate and maintain hydrologic instruments and equipment	New unit
NWP438A	Measure and process hydrometric stream discharge data in flood conditions	E	NWP421A	Collect, measure and process hydrologic stream discharge gauging	New unit based on NWP438A
NWP437A	Analyse data and produce hydrometric reports				Deleted. Contents addressed in new units NWP504A, NWP508A and NWP510A

Summary Mapping of NWP07 Version 1.1 to NWP07 Version 2 Units of Competency					
N = Not Equivalent E = Equivalent					
Version 1.1 Code	Version 1.1 Title	N/E	Version 2 Code	Version 2 Title	Comments
NWP426B	Coordinate and monitor the operation of potable water systems	E	NWP403A	Investigate and plan the optimisation of potable water distribution systems	New unit based on NWP426B
NWP435B	Coordinate and monitor the optimisation of water treatment processes				Deleted
NWP436B	Coordinate and monitor the optimisation of wastewater treatment processes				Deleted
			NWP404A	Apply principles of chemistry to water systems and processes	New unit. Replaces components of non-equivalent unit NWP435B
			NWP406A	Investigate and plan the optimisation of granular media filtration processes	New unit. Replaces components of non-equivalent unit NWP435B
			NWP407A	Investigate and plan the optimisation of dissolved air floatation processes	New unit. Replaces components of non-equivalent unit NWP435B
			NWP408A	Investigate and plan the optimisation of sedimentation and clarification processes	New unit. Replaces components of non-equivalent unit NWP435B
			NWP409A	Investigate and plan to optimise the operation of chemical addition	New unit. Replaces components of non-equivalent

Summary Mapping of NWP07 Version 1.1 to NWP07 Version 2 Units of Competency					
N = Not Equivalent E = Equivalent					
Version 1.1 Code	Version 1.1 Title	N/E	Version 2 Code	Version 2 Title	Comments
				processes	unit NWP435B
NWP410B		E	NWP410C	Coordinate and monitor asset construction and maintenance	Updated and equivalent
			NWP411A	Select treatment requirements for waterborne microorganisms	New unit. Replaces components of non-equivalent unit NWP435B
			NWP412A	Investigate and plan the optimisation of activated sludge processes	New unit. Replaces components of non-equivalent unit NWP436B
			NWP413A	Investigate and plan the optimisation of anaerobic treatment processes	New unit. Replaces components of non-equivalent unit NWP436B
			NWP414A	Select strategies to control microbial impact on wastewater treatment processes	New unit. Replaces components of non-equivalent unit NWP436B
			NWP432A	Contribute to the continuous improvement of quality systems	New unit
			NWP504A	Collect and manage hydrometric station survey data	New unit
			NWP508A	Apply principles of hydraulics to pipe and channel flows	New unit
			NWP509A	Collect, verify and report hydrometric	New unit

Summary Mapping of NWP07 Version 1.1 to NWP07 Version 2 Units of Competency					
N = Not Equivalent E = Equivalent					
Version 1.1 Code	Version 1.1 Title	N/E	Version 2 Code	Version 2 Title	Comments
				time series data	
			NWP510A	Develop and maintain ratings	New unit
Imported units of competency					
BCCM2005B		E	RIICCM205A	Carry out manual excavation	Updated imported unit from RII09
BCCM2010B		E	RIICCM210A	Install trench support	Updated imported unit from RII09
BSBCM104A		E	BSBLED101A	Plans skills development	Updated imported unit from BSB07
BSBCM205A		E	BSBWOR204A	Use business technology	Updated imported unit from BSB07
BSBCM213A		E	BSBITU201A	Produce simple word processed documents	Updated imported unit from BSB07
BSBCM214A	Create and use simple spreadsheets	E	BSBITU202A	Create and use spreadsheets	Updated imported unit from BSB07
BSBFLM405B		E	BSBMGT402A	Implement operational plan	Updated imported unit from BSB07
BSBFLM505B		E	BSBMGT515A	Manage operational plan	Updated imported unit from BSB07
BSBFLM513A		E	BSBFIM501A	Manage budgets and financial plans	Updated imported unit from BSB07
BSBOHS303A		E	BSBOHS303B	Contribute to OHS hazard identification and risk assessment	Updated core imported unit from BSB07
BSBCM302A		E	BSBWOR301A	Organise personal work priorities and development	Updated core imported unit from BSB07
BSBCM402A		E	BSBWOR404A	Develop work priorities	Updated imported unit from BSB07

Summary Mapping of NWP07 Version 1.1 to NWP07 Version 2 Units of Competency					
N = Not Equivalent E = Equivalent					
Version 1.1 Code	Version 1.1 Title	N/E	Version 2 Code	Version 2 Title	Comments
			MEM30027A	Prepare basic programs for programmable logic controllers	New imported unit
			MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area	New imported unit
PSPPROC410A		E	PSPPROC414A	Manage contracts	Updated imported unit from PSP04
PSPPROC502A		E	PSPPROC506A	Plan to manage contracts	Updated imported unit from PSP04
			RTD3507A	Undertake sampling and testing of water	New imported unit

Summary mapping of qualifications

Version 1.1 code	Version 1.1 title	N/E	Version 2 code	Version 2 title	Comments
NWP10107	Certificate I in Water Sustainability	E	NWP10110	Certificate I in Water Sustainability	New versions of core and elective units to reflect implementation in schools.

Explanation of the review date

The review date (shown on the title page) indicates when the Training Package is expected to be reviewed in the light of changes such as changing technologies and circumstances. The review date is not an expiry date. Endorsed Training Packages and their components remain current until they are reviewed or replaced.

Overview of Training Packages

What is a Training Package?

A Training Package is an integrated set of nationally endorsed competency standards, assessment guidelines and Australian Qualifications Framework (AQF) qualifications for a specific industry, industry sector or enterprise.

Each Training Package:

- provides a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enables nationally recognised qualifications to be awarded through direct assessment of workplace competencies
- encourages the development and delivery of flexible training which suits individual and industry requirements
- encourages learning and assessment in a work-related environment which leads to verifiable workplace outcomes.

How do Training Packages fit within the National Training Framework?

The National Training Framework is made up of the nationally agreed quality arrangements for the vocational education and training sector, the Australian Quality Training Framework (AQTF), and Training Packages endorsed by the National Quality Council (NQC).

How are Training Packages developed?

Training Packages are developed by Industry Skills Councils or enterprises to meet the identified training needs of specific industries or industry sectors. To gain national endorsement of Training Packages, developers must provide evidence of extensive research, consultation and support within the industry area or enterprise.

How do Training Packages encourage flexibility?

Training Packages describe the skills and knowledge needed to perform effectively in the workplace without prescribing how people should be trained.

Training Packages acknowledge that people can achieve vocational competency in many ways by emphasising what the learners can do, not how or where they learned to do it. For example, some experienced workers might be able to demonstrate competency against the units of competency, and even gain a qualification, without completing a formal training program.

With Training Packages, assessment and training may be conducted at the workplace, off the job, at a training organisation, during regular work, or through work experience, work placement, work simulation or any combination of these.

Who can deliver and assess using Training Packages?

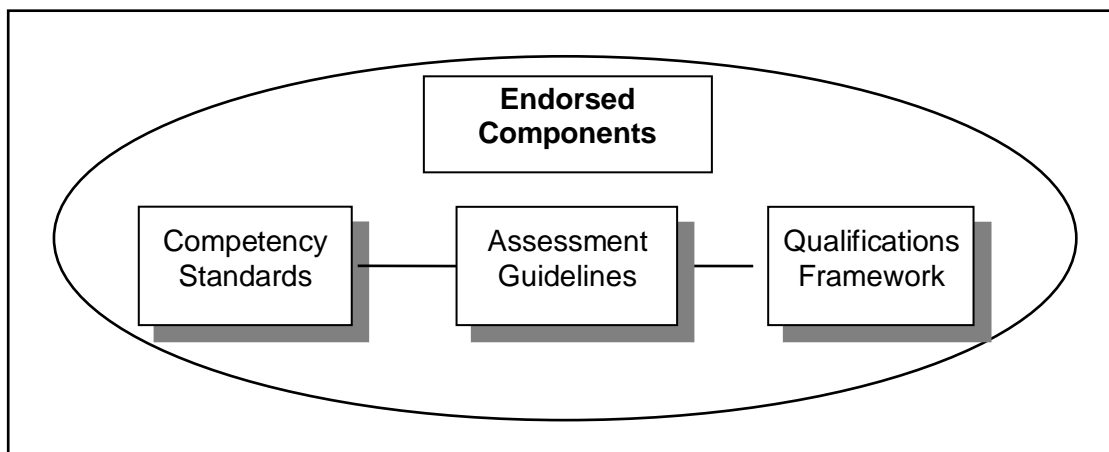
Training and assessment using Training Packages must be conducted by a registered training organisation (RTO) that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO as specified in the AQTF *Standards for Registered Training Organisations*.

Training Package components

Training Packages are made up of mandatory components endorsed by the NQC and optional support materials.

Training Package endorsed components

The nationally endorsed components include the Competency Standards, Assessment Guidelines and Qualifications Framework. These form the basis of training and assessment in the Training Package and, as such, they must be used.



Competency Standards

Each unit of competency identifies a discrete workplace requirement and includes the knowledge and skills that underpin competency as well as language, literacy and numeracy; and occupational health and safety requirements. The units of competency must be adhered to in training and assessment to ensure consistency of outcomes.

Assessment Guidelines

The Assessment Guidelines provide an industry framework to ensure all assessments meet industry needs and nationally agreed standards as expressed in the Training Package and the *Standards for Registered Training Organisations*. The Assessment Guidelines must be followed to ensure the integrity of assessment leading to nationally recognised qualifications.

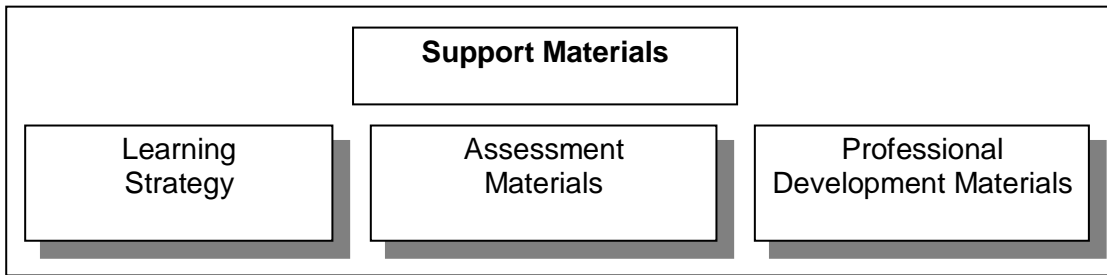
Qualifications Framework

Each Training Package provides details of those units of competency that must be achieved to award AQF qualifications. The rules around which units of competency can be combined to make up a valid AQF qualification in the Training Package are referred to as the 'packaging rules'. The packaging rules must be followed to ensure the integrity of the nationally recognised qualifications issued.

Training Package support materials

The endorsed components of Training Packages are complemented and supported by optional support materials that provide for choice in the design of training and assessment to meet the needs of industry and learners.

Training Package support materials can relate to single or multiple units of competency, an industry sector, a qualification or the whole Training Package. They tend to fall into one or more of the categories illustrated below.



Training Package support materials are produced by a range of stakeholders such as RTOs, individual trainers and assessors, private and commercial developers and Government agencies.

Where such materials have been quality assured through a process of 'noting' by the NQC, they display the following official logo. Noted support materials are listed on the National Training Information Service (NTIS), together with a detailed description and information on the type of product and its availability (www.ntis.gov.au).



It is not compulsory to submit support materials for noting; any resources that meet the requirements of the Training Package can be used.

Training Package, qualification and unit of competency codes

There are agreed conventions for the national codes used for Training Packages and their components. Always use the correct codes, exactly as they appear in the Training Package, and with the title always following the code.

Training Package codes

Each Training Package has a unique five-character national code assigned when the Training Package is endorsed, for example NWP07. The first three characters are letters identifying the Training Package industry coverage and the last two characters are numbers identifying the year of endorsement.

Qualification codes

Within each Training Package, each qualification has a unique eight-character code, e.g. NWP20107. The first three letters identify the Training Package; the first number identifies the qualification level (noting that Arabic numbers are not used in qualification titles themselves); the next two numbers identify the position in the sequence of the qualification at that level; and the last two numbers identify the year in which the qualification was endorsed. (Where qualifications are added after the initial Training Package endorsement, the last two numbers may differ from other Training Package qualifications as they identify the year in which those particular qualifications were endorsed.)

Unit of competency codes

Within each Training Package, each unit of competency has a unique code. The unit of competency codes are assigned when the Training Package is endorsed, or when new units of competency are added to an existing endorsed Training Package.

A typical code is made up of 12 characters, normally a mixture of uppercase letters and numbers, e.g. NWP260A. The first three characters signify the Training Package (NWP07 Water Training Package in the above example) and up to eight characters, relating to an industry sector, function or skill area, follow. The last character is always a letter and identifies the unit of competency version. The 'A' in the example above indicates that this is the original unit of competency. An incremented version identifier usually means that minor changes have been made. Typically this

would mean that wording has changed in the range statement or evidence guide, providing clearer intent. Where changes are made that alter the outcome, a new code is assigned and the title is changed.

Training Package, qualification and unit of competency titles

There are agreed conventions for titling Training Packages and their components. Always use the correct titles, exactly as they appear in the Training Package, and with the code always placed before the title.

Training Package titles

The title of each endorsed Training Package is unique and relates to the Training Package's broad industry coverage.

Qualification titles

The title of each endorsed Training Package qualification is unique. Qualification titles use the following sequence:

- firstly, the qualification is identified as either Certificate I, Certificate II, Certificate III, Certificate IV, Diploma or Advanced Diploma
- this is followed by the words 'in' for Certificates I to IV and 'of' for Diploma and Advanced Diploma
- then the industry descriptor follows, for example, Water Operations
- while the last element of this sequence is not applicable to this Training Package as it does not have streams, if applicable, the occupational or functional stream follows in brackets, for example (Computer Systems).

Unit of competency titles

The title of each unit of competency is unique. Unit of competency titles describe the competency outcome concisely and are written in sentence case.

For example:

- NWP208A Perform basic wastewater tests
- BSBWOR204A Use business technology.

Introduction to NWP07 Water Training Package

NWP07 Water Training Package supports and provides training pathways for a diverse range of people working in water organisations across the nation.

The development of NWP07 has been conducted with high levels of involvement and support from the water industry. The project team responsible for the technical production of the Training Package has received a significant amount of advice and input and, importantly, has had open access to industry enterprises, associations and key stakeholders.

The qualifications and units of competency have been, throughout the project, subject to ongoing refinement and will be subject to further review as part of a process of continuous improvement in order to reflect the changing nature and skill development needs of the industry.

The NWP07 Water Training Package review project was overseen and led by a committee comprising:

- John Harris, Chair, GSA Director, Wannon Region Water Authority

- Chris Davis, Australian Water Association
- Ross Young, Water Services Association of Australia
- David Roberts, Goulburn Murray Water
- Wayne Morling, Water Corporation
- Peter Bernich, SA Water Corporation
- Stephen Wilson, Water Industry Training Centre
- George Wall, Water Industry Operators Association
- Kim Peterson, TAFE NSW
- Tracie Regan, SunWater
- Elizabeth Owers, Department of Further Education Employment, Science and Technology (SA)
- Kathi Eland, Department of Education Science and Training (DEST)
- Nicholas Crosling, Government Skills Australia Industry Skills Council.

Others have also played a significant role and their input is also acknowledged with thanks.

Members of the Water Industry Advisory Committee who were not represented on the project steering committee were:

- Paul O'Brien, Vic Water
- Brad Flanagan, Queensland Utilities and Services ITAB
- John Flett, Goulburn Murray Water
- Carl Peterson, NSW Local Government Water Directorate
- Kevin O'Brien, Northern Territory Power and Water
- Don Mackay, Open Learning Institute
- Lynn Hallam, Hobart Water
- Steve Weatherstone, NSW VTE ITAB.

Members of the project's specialist Industry Advisory Groups (IAGs) for the sectors of water treatment, wastewater treatment, hydrography, water catchment and dams, water supply distribution, wastewater collection and trade waste.

The development team would especially like to thank the following individuals within the following advisory groups for their contribution to the project.

Trade Waste IAG:

David Hewett, Water Corporation
Cameron Jackson, Brisbane Water
Don Jackson, Power and Water
Stephen Murphy, Sydney Water
Peter Donlon, Water Services Association of Australia

Hydrography IAG:

Neil Harper, OTEN
Peter Cations, Thiess Environmental Services
Greg May, WA Department of Environment
Mic Clayton, Australian Hydrographers Association

Catchment/Dams IAG:

Norm Himsley, NSW Dams Safety Committee
Paul Heinrichs, Department of Energy, Utilities and Sustainability
Paul O'Brien, Vic Water and Victorian Dams Reference Committee
Wayne Morling, Water Corporation

The contribution of a number of water industry peak bodies should also be acknowledged for having advised their membership of ongoing project outcomes and provided avenues for consultation and feedback. These bodies include:

- Water Industry Operators Association
- Water Services Association of Australia
- Australian Water Association
- Water Directorate of Queensland
- Water Directorate of NSW
- Australian Hydrographers Association.

The project team would also like to thank the various water authorities who have so generously given of their time and venues to convene national workshops and conduct workplace functional analysis. In particular, we would like to thank:

- SA Water
- Water Corporation
- Sydney Water
- Hobart Water
- ActewAGL
- Central Highlands Water
- Gippsland Water

Special thanks go to Tracie Regan of SunWater who developed the dedicated Water Training Package Review Group hosted on the EdNA Groups website (www.groups.edna.edu.au). With over 25,000 hits recorded on this website, it has enabled industry to have ongoing input throughout the life of the project.

Government Skills Australia would like to thank the committee and the project team for their hard work and support in this long and complex project.

Qualifications Framework

The Australian Qualifications Framework

What is the Australian Qualifications Framework?

A brief overview of the Australian Qualifications Framework (AQF) follows. For a full explanation of the AQF see the *AQF Implementation Handbook, 3rd Edition 2002*. You can download it from the Australian Qualifications Framework Advisory Board (AQFAB) website (www.aqf.edu.au) or obtain a hard copy by contacting AQFAB on phone 03 9639 1606 or by emailing AQFAB on aqfab@curriculum.edu.au

The AQF provides a comprehensive, nationally consistent framework for all qualifications in post-compulsory education and training in Australia. In the vocational education and training (VET) sector it assists national consistency for all trainees, learners, employers and providers by enabling national recognition of qualifications and Statements of Attainment.

Training Package qualifications in the VET sector must comply with the titles and guidelines of the AQF. Endorsed Training Packages provide a unique title for each AQF qualification which must always be reproduced accurately.

Qualifications

Training Packages can incorporate the following six AQF qualifications.

- Certificate I in ...
- Certificate II in ...
- Certificate III in ...
- Certificate IV in ...
- Diploma of ...
- Advanced Diploma of ...

Graduate Certificates and Graduate Diplomas can also be awarded in the VET sector under certain conditions – see the *AQF Implementation Handbook* for details.

On completion of the requirements defined in the Training Package, a registered training organisation (RTO) may issue a nationally recognised AQF qualification. Issuance of AQF qualifications must comply with the advice provided in the *AQF Implementation Handbook* and the Australian Quality Training Framework (AQTF) *Standards for Registered Training Organisations*, particularly Standard 10.

Statement of Attainment

Where an AQF qualification is partially achieved through the achievement of one or more endorsed units of competency, an RTO may issue a Statement of Attainment. Issuance of Statements of Attainment must comply with the advice provided in the *AQF Implementation Handbook* and the AQTF *Standards for Registered Training Organisations*, particularly Standard 10.

Under the *Standards for Registered Training Organisations*, RTOs must recognise the achievement of competencies as recorded on a qualification or Statement of Attainment issued by other RTOs. Given this, recognised competencies can progressively build towards a full AQF qualification.

AQF guidelines and learning outcomes

The *AQF Implementation Handbook* provides a comprehensive guideline for each AQF qualification. A summary of the learning outcome characteristics and their distinguishing features for each VET-related AQF qualification is provided below.

Certificate I

Characteristics of learning outcomes

Breadth, depth and complexity of knowledge and skills would prepare a person to perform a defined range of activities most of which may be routine and predictable.

Applications may include a variety of employment-related skills, including preparatory access and participation skills, broad-based induction skills and/or specific workplace skills. They may also include participation in a team or work group.

Distinguishing features of learning outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate knowledge by recall in a narrow range of areas
- demonstrate basic practical skills, such as the use of relevant tools
- perform a sequence of routine tasks given clear direction
- receive and pass on messages/information.

Certificate II

Characteristics of learning outcomes

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or to apply knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of operations to be applied.

Performance of a prescribed range of functions involving known routines and procedures and some accountability for the quality of outcomes.

Applications may include some complex or non-routine activities involving individual responsibility or autonomy and/or collaboration with others as part of a group or team.

Distinguishing features of learning outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate basic operational knowledge in a moderate range of areas
- apply a defined range of skills
- apply known solutions to a limited range of predictable problems
- perform a range of tasks where choice between a limited range of options is required
- assess and record information from varied sources
- take limited responsibility for own outputs in work and learning.

Certificate III**Characteristics of learning outcomes**

Breadth, depth and complexity of knowledge and competencies covers selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available.

Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgement is required in the selection of equipment, services or contingency measures and within known time constraints.

Applications may involve some responsibility for others. Participation in teams, including group or team coordination may be involved.

Distinguishing features of learning outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate some relevant theoretical knowledge
- apply a range of well-developed skills
- apply known solutions to a variety of predictable problems
- perform processes that require a range of well-developed skills where some discretion and judgement is required
- interpret available information, using discretion and judgement
- take responsibility for own outputs in work and learning
- take limited responsibility for the output of others.

Certificate IV**Characteristics of learning outcomes**

Breadth, depth and complexity of knowledge and competencies covering a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications, including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provide some leadership and guidance to others in the application and planning of the skills.

Applications involve responsibility for and limited organisation of others.

Distinguishing features of learning outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts

- apply solutions to a defined range of unpredictable problems
- identify and apply skill and knowledge areas to a wide variety of contexts, with depth in some areas
- identify, analyse and evaluate information from a variety of sources
- take responsibility for own outputs in relation to specified quality standards
- take limited responsibility for the quantity and quality of the output of others.

Diploma

Characteristics of learning outcomes

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and coordination.

The self-directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in the development of strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. They may include participation in teams, including teams concerned with planning and evaluation functions. Group or team coordination may be involved.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

Distinguishing features of learning outcomes

Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas
- analyse and plan approaches to technical problems or management requirements
- transfer and apply theoretical concepts and/or technical or creative skills to a range of situations
- evaluate information, using it to forecast for planning or research purposes
- take responsibility for own outputs in relation to broad quantity and quality parameters
- take some responsibility for the achievement of group outcomes.

Advanced Diploma

Characteristics of learning outcomes

Breadth, depth and complexity involving analysis, design, planning, execution and evaluation across a range of technical and/or management functions, including

development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

Distinguishing features of learning outcomes

Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of specialised knowledge with depth in some areas
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions
- generate ideas through the analysis of information and concepts at an abstract level
- demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills
- demonstrate accountability for personal outputs within broad parameters
- demonstrate accountability for personal and group outcomes within broad parameters.

Qualifications and packaging rules

The qualifications in this Training Package have been developed to support experienced industry practitioners and new entrants seeking to commence or develop a career within the water industry.

The principal operational qualifications have been developed with small generic core units and a wide range of elective units to reflect the very diverse nature of work roles in the water industry. The industry has supported the concept of a single generic qualification at each AQF level instead of a range of specialist qualifications. Where the selection of elective units of competency has led to competency in a specialised area of operation, RTOs delivering the Training Package have supported the noting of specialisations on Certificates of Attainment.

Industry specialisations

All certificates in endorsed Training Packages can be customised to suit industry needs and RTOs are encouraged to develop and use industry specialisations (often called 'streams') relevant to their market and customers that are consistent with the packaging rules of NWP07.

Because of the generic nature of other qualifications, industry specialisations are mainly relevant for Certificates II and III, although may be applied to other qualifications.

Suggested specialisations

The following list is a suggestion of possible specialisations that may be appropriate to the water industry. RTOs have the authority to develop and use additional specialisations which comply with the packaging rules.

Specialisation names that may be used are:

- Water Treatment
- Wastewater Treatment
- Water Supply Distribution (Network)
- Wastewater Collection
- Trade Waste
- Catchment Operations
- Irrigation
- Dams Safety
- Dams Operations and Source Protection
- River Groundwater Diversions and Licensing
- Construction and Maintenance
- Hydrometric Monitoring.

Developing an industry specialisation

An RTO may develop an industry specialisation relevant to their market and clientele. The RTO should consult with its industry partners to determine which units of competency are relevant to include within the industry specialisation.

The requirements for the industry specialisation must be consistent with the packaging rules for NWP07. An industry specialisation should include a range of units that focus more on the industry specialisation than a generic qualification.

An industry specialisation may import units from another endorsed Training Package, provided the importation is within the rules of importation detailed in the packaging rules of the associated NWP07 qualification. For example a Certificate III 'Hydrometric Monitoring' industry specialisation may import the maximum allowable three units from PML04 Laboratory Operations Training Package.

It should be noted that a qualification with an industry specialisation does not change the title of the qualification, although RTOs may choose to record the specialisation. The AQTF requirements must be complied with and the qualification or Statement of Attainment should clearly specify the units of competency achieved and where appropriate, the specialisation.

As an example, an RTO may choose to promote, deliver and award the:

Certificate ### in Water Industry Operations

OR may choose to promote, deliver and award a:

Certificate ### in Water Industry Operations (Hydrometric Monitoring)

Both will be consistent with NWP07 packaging rules and an RTO may choose to offer either or both according to market need.

NWP07 users are referred to the companion Training Package User Guide which provides guidance on the packaging of electives to meet specialisations for the principal operational occupations.

Employability skills

Employability skills replacing key competency information from 2006

In May 2005, the approach to incorporate employability skills within Training Package qualifications and units of competency was endorsed. As a result, from 2006 employability skills will progressively replace key competency information in Training Packages.

Background to employability skills

Employability skills are also sometimes referred to as generic skills, capabilities or key competencies. The employability skills discussed here build on the Mayer Committee's Key Competencies, which were developed in 1992 and attempted to describe generic competencies for effective participation in work.

The Business Council of Australia (BCA) and the Australian Chamber of Commerce and Industry (ACCI), produced the *Employability Skills for the Future* report in 2002 in consultation with other peak employer bodies and with funding provided by the Department of Education, Science and Training (DEST) and the Australian National Training Authority (ANTA). Officially released by Dr Nelson (Minister for Education, Science and Training) on 23 May 2002, copies of the report are available from the DEST website at:
www.dest.gov.au/archive/ty/publications/employability_skills/index.htm.

The report indicated that business and industry now require a broader range of skills than the Mayer Key Competencies Framework and featured an Employability Skills Framework identifying eight employability skills¹:

- communication
- teamwork
- problem solving
- initiative and enterprise
- planning and organising
- self-management
- learning
- technology.

The report demonstrated how employability skills can be further described for particular occupational and industry contexts by sets of facets. The facets listed in the report are the aspects of the employability skills that the sample of employers surveyed identified as being important work skills. These facets were seen by employers as being dependent both in their nature and priority on an enterprise's business activity.

Employability Skills Framework

The following table contains the employability skills facets identified in the report *Employability Skills for the Future*.

¹ Personal attributes that contribute to employability were also identified in the report but are not part of the Employability Skills Framework

Skill	Facets Aspects of the skill that employers identify as important. The nature and application of these facets will vary depending on industry and job type.
Communication that contributes to productive and harmonious relations across employees and customers	<ul style="list-style-type: none"> • listening and understanding • speaking clearly and directly • writing to the needs of the audience • negotiating responsively • reading independently • empathising • using numeracy effectively • understanding the needs of internal and external customers • persuading effectively • establishing and using networks • being assertive • sharing information • speaking and writing in languages other than English
Teamwork that contributes to productive working relationships and outcomes	<ul style="list-style-type: none"> • working across different ages irrespective of gender, race, religion or political persuasion • working as an individual and as a member of a team • knowing how to define a role as part of the team • applying teamwork to a range of situations e.g. futures planning and crisis problem solving • identifying the strengths of team members • coaching and mentoring skills, including giving feedback
Problem solving that contributes to productive outcomes	<ul style="list-style-type: none"> • developing creative, innovative and practical solutions • showing independence and initiative in identifying and solving problems • solving problems in teams • applying a range of strategies to problem solving • using mathematics, including budgeting and financial management to solve problems • applying problem-solving strategies across a range of areas • testing assumptions, taking into account the context of data and circumstances • resolving customer concerns in relation to complex project issues
Initiative and enterprise that contribute to innovative outcomes	<ul style="list-style-type: none"> • adapting to new situations • developing a strategic, creative and long-term vision • being creative • identifying opportunities • translating ideas into action • generating a range of options • initiating innovative solutions

Skill	Facets Aspects of the skill that employers identify as important. The nature and application of these facets will vary depending on industry and job type.
Planning and organising that contribute to long and short-term strategic planning	<ul style="list-style-type: none"> • managing time and priorities – setting time lines, coordinating tasks for self and with others • being resourceful • taking initiative and making decisions • adapting resource allocations to cope with contingencies • establishing clear project goals and deliverables • allocating people and other resources to tasks • planning the use of resources, including time management • participating in continuous improvement and planning processes • developing a vision and a proactive plan to accompany it • predicting – weighing up risk, evaluating alternatives and applying evaluation criteria • collecting, analysing and organising information • understanding basic business systems and their relationships
Self-management that contributes to employee satisfaction and growth	<ul style="list-style-type: none"> • having a personal vision and goals • evaluating and monitoring own performance • having knowledge and confidence in own ideas and visions • articulating own ideas and visions • taking responsibility
Learning that contributes to ongoing improvement and expansion in employee and company operations and outcomes	<ul style="list-style-type: none"> • managing own learning • contributing to the learning community at the workplace • using a range of mediums to learn – mentoring, peer support and networking, IT and courses • applying learning to technical issues (e.g. learning about products) and people issues (e.g. interpersonal and cultural aspects of work) • having enthusiasm for ongoing learning • being willing to learn in any setting – on and off the job • being open to new ideas and techniques • being prepared to invest time and effort in learning new skills • acknowledging the need to learn in order to accommodate change
Technology that contributes to the effective carrying out of tasks	<ul style="list-style-type: none"> • having a range of basic IT skills • applying IT as a management tool • using IT to organise data • being willing to learn new IT skills • having the OHS knowledge to apply technology • having the appropriate physical capacity

Employability Skills Summary

An Employability Skills Summary exists for each qualification. Summaries provide a lens through which to view employability skills at the qualification level and capture the key aspects or facets of the employability skills that are important to the job roles covered by the qualification. Summaries are designed to assist trainers and assessors to identify and include important industry application of employability skills in learning and assessment strategies.

The following is important information for trainers and assessors about Employability Skills Summaries.

- Employability Skills Summaries provide examples of how each skill is applicable to the job roles covered by the qualification.
- Employability Skills Summaries contain general information about industry context which is further explained as measurable outcomes of performance in the units of competency in each qualification.
- The detail in each Employability Skills Summary will vary depending on the range of job roles covered by the qualification in question.
- Employability Skills Summaries are not exhaustive lists of qualification requirements or checklists of performance (which are separate assessment tools that should be designed by trainers and assessors after analysis at the unit level).
- Employability Skills Summaries contain information that may also assist in building learners' understanding of industry and workplace expectations.

Qualifications

NWP10110 Certificate I in Water Sustainability

The Certificate I in Environmental Sustainability provides pathways into the water industry for, in particular, young people who are seeking an opportunity to gain experience of the industry while developing a set of valuable employability skills.

To achieve this qualification the candidate must demonstrate competency in seven units of competency, comprising:

- four core units
- two industry project units
- two pathways units specifically incorporating employability skills
- three elective units.

Core		
<i>All core units must be completed.</i>		
Industry project units	NWP101B	Investigate sustainable water cycle management
	NWP102B	Design a basic water system model
Fundamental pathways units	NWP103B	Demonstrate care and safe practices
	NWP104B	Sample and test water sources and quality
Electives		
<i>Three elective units must be completed.</i>		
At least two units must be completed from the electives shown below.		
One unit may be drawn from this Training Package at Certificate II level or another endorsed Training Package or Accredited Course at Certificate I or II level.		
Water Industry Operations	NWP105B	Draw and use simple maps, plans and drawings
From Certificate I in Business Services Training Package	BSBLED101A	Plan skills development
From Certificate II in Business Services Training Package	BSBWOR204A	Use business technology
	BSBITU201A	Produce simple word processed documents
	BSBITU202A	Create and use spreadsheets

Employability Skills Qualification Summary**Qualification code:** NWP10110**Qualification title:** Certificate I in Water Sustainability

The following table contains a summary of the employability skills as identified by the water industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Communication	<ul style="list-style-type: none"> • communicates effectively and appropriately with others • reads and interprets workplace information accurately • uses literacy skills in regard to written and verbal communication in the workplace • uses basic interpersonal and communication skills (including listening and questioning, receiving feedback) • records and relays relevant information • understands relevant definitions, terminology, symbols and language • interprets maps and simple plans • explains water systems • follows instructions • maintains and checks records and documents • reports and documents water-related research and projects • uses correct water industry terminology when communicating and reporting
Teamwork	<ul style="list-style-type: none"> • works collaboratively and effectively with team members • applies work procedures accurately and in a timely manner • relates positively to fellow team members • applies procedures for maintaining a tidy and clean personal work area • works cooperatively and collaboratively with others to complete tasks
Problem solving	<ul style="list-style-type: none"> • researches, assesses and explains a limited range of principles and functions of water systems • responds effectively to hazards, risks and emergencies • performs mathematical and scientific calculations • applies water testing processes • uses appropriate techniques to solve or report problems identified when completing work tasks • applies scientific principles to the design, construction and operation of a working model of a water system

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Initiative and enterprise	<ul style="list-style-type: none"> • identifies risks and hazards • takes opportunities to work with team members and supervisors to improve processes • takes appropriate initiative to deal with problems and complete tasks
Planning and organising	<ul style="list-style-type: none"> • plans personal work • researches, explores, assesses and explains a limited range of principles and functions of water systems • investigates local water and wastewater systems • researches, assesses and reports on water systems and water quality, distribution and treatment • plans water sampling and testing • plans and designs a basic water system
Self management	<ul style="list-style-type: none"> • adapts and modifies activities depending on differing workplace contexts and environments • plans skills development • identifies and responds to risks to personal wellbeing which may affect safe performance in the workplace • recognises limitations in skills and experience, asks for help and seeks clarification or information about work requirements and procedures
Learning	<ul style="list-style-type: none"> • undertakes research on a limited range of water systems and management • seeks and applies feedback on personal performance • plans skills development • checks and confirms policies, procedures and legislative requirements • checks systems and equipment used in the workplace and the instructions, processes and precautions for their use
Technology	<ul style="list-style-type: none"> • uses technical equipment for measuring, sampling, testing and making adjustments • uses computer equipment for recording data, researching on the internet, and using graphic simulations, plans and diagrams • uses work-related plant, equipment and tools • identifies and correctly uses equipment, tools and other technology required to complete project tasks, including scientific equipment, computers, and safety and field equipment • applies procedures for identifying and using suitable work-related technology when carrying out project calculations

The diverse nature of the candidates undertaking this qualification may include students undertaking VET in Schools programs or people involved in other forms of pre-employment or early employment programs. Therefore, the facets of the above employability skills are

representative of the water industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines. This table is a summary of employability skills that are typical of this qualification and should not be interpreted as definitive.

NWP20107 Certificate II in Water Operations

To achieve this qualification the candidate must demonstrate competency in 11 units of competency, comprising three core and eight elective units.

Core	
<i>All core units must be completed.</i>	
NWP201B	Follow defined OHS procedures and regulatory requirements
NWP202B	Apply environmental and licensing procedures
NWP203B	Plan and organise personal work activities
Electives	
<i>Eight elective units must be completed.</i>	
The elective units must comprise at least five and up to eight electives drawn from the elective pool below.	
The balance of units required to complete the qualification may be selected according to the following rules.	
A maximum of three units may be drawn from Certificate III level in this Training Package.	
A maximum of three units may be drawn from another endorsed Training Package or Accredited Course at Certificate II or III levels.	
NWP207A	Work effectively in the water industry
NWP208A	Perform basic wastewater tests
NWP209B	Use maps, plans, drawings and specifications
NWP210B	Perform basic water quality tests
NWP211B	Use computerised systems
NWP213B	Monitor and operate irrigation and domestic delivery systems
NWP215B	Install and replace basic volumetric metering equipment
NWP216B	Install basic metering equipment and flow control devices for irrigation systems
NWP218B	Perform and record sampling
NWP219A	Work safely in confined spaces
NWP220B	Collect and control drainage run-off

NWP221A	Operate basic flow control and regulating devices in water or wastewater treatment network systems
NWP222A	Operate basic flow control and regulating devices in irrigation systems
NWP223A	Install basic metering equipment, flow control and regulating devices
NWP226B	Prepare and restore work site
NWP227B	Control vegetation on a site
NWP229B	Repair minor structures
NWP230B	Maintain and repair irrigation channels and drains
NWP231B	Maintain and repair drainage assets
NWP232B	Operate water reticulation and distribution system
NWP233B	Construct and install water distribution assets
NWP234B	Locate, identify and protect utility services
NWP239B	Identify and apply water entitlements and delivery processes
NWP240B	Inspect and report catchment and surrounding areas
NWP241B	Inspect and maintain basic dams and water storages
NWP242B	Monitor and report water extraction
NWP243B	Operate bore fields and groundwater source systems
NWP244B	Maintain and repair bulkwater assets
NWP245B	Maintain tanks and water storage assets
NWP246B	Inspect and maintain public facilities
NWP247A	Maintain catchment and surrounding areas
NWP250B	Construct and install wastewater pipelines
NWP251B	Construct open earthen channels or drains
NWP252B	Construct and install irrigation delivery and stormwater drainage assets
NWP253B	Install and repair water services
NWP254B	Repair or insert water distribution assets

NWP255B	Maintain and repair wastewater collection assets
NWP256B	Monitor and report water distribution systems
NWP257B	Maintain and repair wastewater collection systems
NWP258B	Monitor and operate bulkwater transfer systems
NWP259B	Operate, monitor and maintain pump stations
NWP260A	Monitor and report water treatment processes
NWP261A	Operate and maintain water treatment plant and equipment
NWP262A	Monitor and report wastewater treatment processes
NWP263A	Operate and maintain wastewater treatment plant and equipment
NWP264B	Monitor, operate and report wastewater pre-treatment processes
NWP268B	Monitor, operate and report chlorine disinfection systems
NWP270B	Monitor, operate and report basic anaerobic processes
NWP271B	Monitor, operate and report sedimentation processes
NWP272B	Monitor, operate and report wastewater lagoon processes
NWP273A	Monitor, operate and report ultraviolet irradiation disinfection systems
NWP274A	Monitor, operate and report ozone treatment systems
NWP275A	Monitor, operate and report chlorine dioxide systems
NWP276A	Monitor, operate and report fluoridation systems
NWP277A	Work safely with liquefied chlorine gas
NWP278A	Perform blue green algae sampling
RIICCM205A	Carry out manual excavation
RIICCM210A	Install trench support

Employability Skills Qualification Summary

Qualification code: NWP20107

Qualification title: Certificate II in Water Operations

The following table contains a summary of the employability skills as identified by the water industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Communication	<ul style="list-style-type: none"> • communicates effectively with internal and external customers • records and relays relevant information • understands and uses relevant definitions, terminology, symbols and language • interprets plans, drawings and specifications • participates in the implementation and monitoring of OHS policies and procedures • follows reporting procedures for monitoring conformity with statutory requirements • records and reports work activities • produces basic reports and logs • operates communications equipment • gives and receives instructions • follows plans, charts and instructions • understands a range of technical documents, including: <ul style="list-style-type: none"> • specifications • plans • organisational policies • service requirements specified in customer contracts • discusses organisational issues • reports and records hazards and risks • maintains and checks records and documents
Teamwork	<ul style="list-style-type: none"> • works collaboratively and effectively with team members and contractors • describes the organisation's management structure and role relationships • gives and receives instructions • works effectively as part of a team • monitors work processes and ensures safe work practices • applies work procedures accurately and in a timely manner • checks coordination issues, including permission to access third-party sites, isolations and permits to work with relevant personnel • relates positively to fellow workers and the management team
Problem solving	<ul style="list-style-type: none"> • responds effectively to hazards, risks and emergencies • conducts relevant tests and monitoring procedures • assesses environmental risks at the local work site

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	<ul style="list-style-type: none"> • applies control procedures to environmental risks and incidents • inspects water facilities (e.g. dams, distribution systems and treatment facilities) to identify actual or potential problems • analyses problems and applies appropriate remedial solutions • performs relevant calculations • collects and tests samples • restores sites after work • rectifies equipment faults
Initiative and enterprise	<ul style="list-style-type: none"> • identifies risks and hazards • contributes to improvements in environmental procedures • identifies typical faults and problems and takes necessary remedial action • identifies opportunities for improved water management • accesses, interprets and applies relevant legislative responsibilities
Planning and organising	<ul style="list-style-type: none"> • plans and organises personal work activities • plans activities, incorporating appropriate control measures to overcome identified risks and meet required environmental outcomes for specific project or site • confirms testing details and plans testing work according to organisational and statutory requirements • conducts and assesses relevant water tests • contributes to effective management of water operation's assets • identifies and responds to problems experienced in assignments and projects
Self management	<ul style="list-style-type: none"> • plans performance to ensure required levels of service standards and work quality • interprets work requirements • monitors and adjusts work according to requirements for job quality, customer service, public responsibility and resource use • checks, edits, saves, prints and files work according to organisational requirements • reviews and applies standard reporting procedures and identifies impact on work • follows work instructions • finalises work and completes documentation • uses feedback to improve own performance
Learning	<ul style="list-style-type: none"> • seeks and applies feedback on personal performance • uses information effectively to improve work performance • learns from colleagues as part of effective teamwork • responds to suggestions for improvement to personal work performance • seeks advice and assistance from designated organisational

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	personnel in operating computer systems <ul style="list-style-type: none"> • monitors and adjusts according to requirements for job quality, customer service, public responsibility and resource use
Technology	<ul style="list-style-type: none"> • knows procedures for the use of instruments and other field-testing equipment • prepares and checks testing equipment according to organisational and statutory requirements • applies relevant technologies used to gather, record and monitor, map and plan data • installs and maintains basic metering equipment, and flow control and regulating devices for irrigation systems • selects and uses suitable equipment according to the specific tasks and projects • reads meters • uses test equipment • uses workplace computer equipment • maintains and understands plant, equipment and tools' capabilities and limitations • uses technology to improve efficiency and effectiveness of managing work

The high proportion of electives required by this qualification means that the facets of the above employability skills are representative of the water industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements identified in units of competency that meet packaging guidelines. This table is a summary of employability skills that are typical of this qualification and should not be interpreted as definitive.

NWP30107 Certificate III in Water Operations

To achieve this qualification the candidate must demonstrate competency in 11 units of competency, comprising three core and eight elective units.

Core	
<i>All units must be completed.</i>	
NWP301B	Implement, monitor and coordinate environmental procedures
BSBWOR301A	Organise personal work priorities and development
BSBOHS303A	Contribute to OHS hazard identification and risk assessment
Electives	
<i>Eight elective units must be completed.</i>	
The elective units must comprise at least four and up to eight electives drawn from the elective pool below.	
The balance of units required to complete the qualification may be selected according to the following rules.	
A maximum of three water industry specific elective units (coded NWP) may be drawn from the Certificate II in this Training Package.	
A maximum of three units may be drawn from this Training Package at Certificate IV level.	
A maximum of three units may be drawn from another endorsed Training Package or Accredited Course at Certificate III or IV levels.	
NWP300B	Provide and promote customer service
NWP302A	Install meters for non-potable, non-urban water supplies
NWP303A	Monitor and control maintenance of water and wastewater system assets
NWP304A	Maintain meters for non-potable, non-urban water supplies
NWP305B	Monitor and conduct minor maintenance of complex flow-control and metering devices
NWP308B	Test and commission wastewater collection systems
NWP309B	Test and commission water distribution systems
NWP310B	Monitor and operate water distribution systems
NWP311B	Monitor and operate wastewater collection and transfer systems

NWP315B	Investigate and report breaches of water industry legislation
NWP316B	Monitor and schedule water deliveries
NWP317B	Control water quality in distribution systems
NWP318A	Monitor and operate gated spillways
NWP319A	Monitor and control dam operations
NWP320B	Monitor and implement dam maintenance
NWP321B	Inspect and operate groundwater regulation
NWP322B	Inspect and operate surface water systems
NWP323B	Monitor and coordinate catchment operations
NWP324B	Inspect and report river regulation operations
NWP326A	Conduct and report dam safety instrumentation monitoring
NWP327A	Inspect and report on concrete dam safety
NWP328A	Inspect and report on embankment dam safety
NWP330B	Establish positions of underground utilities using locating devices
NWP331B	Inspect conduit and report on condition and features
NWP332B	Monitor, operate and control drainage operations
NWP333B	Monitor and control rural water distribution operations
NWP338B	Perform odour and infiltration investigations
NWP339B	Perform leak detection
NWP340A	Measure and process hydrometric stream discharge data using wading gaugings
NWP341A	Install and maintain hydrometric instruments and equipment
NWP342A	Commission, decommission and monitor hydrometric sites, stations and facilities
NWP345B	Monitor, operate and control water treatment processes
NWP346B	Monitor, operate and control wastewater treatment processes
NWP347B	Monitor, operate and control coagulation and flocculation processes

NWP348B	Monitor, operate and control sedimentation and clarification processes
NWP349B	Monitor operate and control incineration processes
NWP350B	Monitor, operate and control aerobic bioreactor processes
NWP351B	Monitor, operate and control activated sludge processes
NWP352B	Monitor, operate and control dissolved air flotation processes
NWP353B	Monitor, operate and control anaerobic bioreactor processes
NWP354B	Monitor, operate and control granular media filtration processes
NWP355B	Monitor, operate and control membrane filtration processes
NWP356B	Monitor, operate and control ion exchange processes
NWP357B	Monitor, operate and control reverse osmosis and nano filtration processes
NWP359B	Monitor, operate and control nutrient removal processes
NWP360B	Monitor, operate and control dewatering processes
NWP361B	Monitor, operate and control gas scrubber treatment processes
NWP362B	Monitor, operate and control reclaimed water irrigation
NWP363B	Monitor performance and control maintenance of treatment plant assets
NWP364B	Perform laboratory testing
NWP365A	Identify and confirm blue green algae outbreaks
NWP366A	Monitor, operate and control chloramination disinfection processes
NWP367A	Monitor, operate and control activated carbon adsorption processes
NWP368A	Respond to blue green algae incidents
LGAWORK405A	Plan and supervise roadworks
LGAWORK406A	Supervise concrete works

Employability Skills Qualification Summary

Qualification code: NWP30107

Qualification title: Certificate III in Water Operations

The following table contains a summary of the employability skills as identified by the water industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Communication	<ul style="list-style-type: none"> • communicates effectively and appropriately with customers, colleagues and contractors • communicates effectively in a diverse workforce • negotiates and resolves disputes and minimises customer concerns • uses complex communication techniques, including: <ul style="list-style-type: none"> • verbal and non-verbal language • two-way interaction • constructive feedback • active listening • questioning to clarify and confirm understanding • interpreting verbal and non-verbal messages • observation techniques • uses positive, confident and cooperative language • controls tone of voice and body language • uses language and concepts appropriate to cultural differences • clear presents options and consequences • demonstrates flexibility and willingness to negotiate • communicates OHS policies and procedures • communicates environmental plans and procedures within the workplace • understands and interprets a range of technical documents, including relevant: <ul style="list-style-type: none"> • regulatory, legislative, licensing and organisational requirements • codes and standards • plans • specifications • organisational policies • understands relevant definitions, terminology, symbols and language • discusses organisational issues • reports and records hazards and risks • participates in ensuring compliance with standards, regulations and policies • maintains calibration records and certificates according to organisational and statutory requirements • collects and analyses data on system performance and usage and reports according to organisational requirements • prepares clear and concise reports for use in court proceedings

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	<ul style="list-style-type: none"> • according to stakeholder and organisational requirements • maintains and checks records and documents
Teamwork	<ul style="list-style-type: none"> • works collaboratively and effectively with team members and contractors • participates in regular reviews of environmental procedures • uses resources to undertake team tasks and meet customer service levels • refers customer concerns related to organisational liability to appropriate persons or departments according to organisational policy • monitors work processes and ensures safe work practices • contributes to the development, refinement and improvement of organisational quality service policies and standards • relates positively to fellow workers and the management team
Problem solving	<ul style="list-style-type: none"> • responds effectively to hazards, risks and emergencies • conducts relevant tests and monitoring procedures • inspects water facilities (e.g. dams, distribution systems and treatment facilities) to identify actual or potential problems • takes steps to resolve customer concerns or complaints according to organisational policies and procedures • analyses problems and applies appropriate remedial solutions • controls and integrates processes to maintain and optimise operating parameters • detects faults in operational condition of system and network • performs various calculations • rectifies equipment faults
Initiative and enterprise	<ul style="list-style-type: none"> • identifies risks and hazards • identifies typical faults and problems and takes necessary remedial action • applies knowledge of the effects of weather and conditions on operation of collection and transfer systems • identifies opportunities for improved water management • proactively implements effective customer service strategies and tactics
Planning and organising	<ul style="list-style-type: none"> • participates in effective implementation of organisation's operational plans • monitors and assesses relevant water tests • investigates water quality problems and investigates the causes according to organisational and statutory requirements • contributes to effective management of water operation's assets • installs and commissions new assets and equipment
Self management	<ul style="list-style-type: none"> • manages own performance to ensure required levels of service standards, work quality and professional competence • manages work priorities • plans and applies team and work activities to meet customer

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	<ul style="list-style-type: none"> • satisfaction and minimise inconvenience • uses feedback to improve own performance
Learning	<ul style="list-style-type: none"> • seeks feedback on personal performance • uses information effectively to improve work performance • learns from colleagues as part of effective teamwork • reviews personal work performance to identify opportunities to improve service provision to customers • identifies opportunities to improve services or processes and communicates them to colleagues
Technology	<ul style="list-style-type: none"> • reads meters • uses water management equipment, including: <ul style="list-style-type: none"> • pipes and fittings • gravity systems • pumping and valving systems • control systems • system hydraulics • uses workplace computer equipment • maintains and understands capabilities and limitations of plant, equipment and tools • conducts maintenance on devices and equipment • uses technology to improve efficiency and effectiveness of managing work

The high proportion of electives required by this qualification means that the facets of the above employability skills are representative of the water industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines. This table is a summary of employability skills that are typical of this qualification and should not be interpreted as definitive.

NWP40107 Certificate IV in Water Operations

The Certificate IV in Water Operations supports candidates seeking competency and requiring increasingly specialised technical skills or those who require a broad range of skills.

To achieve this qualification the candidate must demonstrate competency in nine units, comprising two core and seven elective units of competency.

Core	
<i>All core units must be completed.</i>	
LGACOM405B	Implement and monitor the organisation's OHS policies, procedures and programs within the work group
NWP401B	Coordinate and monitor the application of environmental plans and procedures
Electives	
<i>Seven elective units must be completed.</i>	
The elective units must comprise at least three and up to seven elective units of competency drawn from the elective pool below.	
The balance of units required to complete the qualification may be selected according to the following rules.	
A maximum of two water industry specific elective units (coded NWP) may be drawn from the Certificate III level in this Training Package.	
A maximum of three units may be drawn from this Training Package at Diploma level.	
A maximum of three units may be drawn from another endorsed Training Package or Accredited Course at Certificate IV or Diploma levels.	
NWP219A	Work safely in confined spaces
NWP403A	Investigate and plan the optimisation of potable water distribution systems
NWP404A	Apply principles of chemistry to water systems and processes
NWP406A	Investigate and plan the optimisation of granular media filtration processes
NWP407A	Investigate and plan the optimisation of dissolved air flotation processes
NWP408A	Investigate and plan the optimisation of sedimentation and clarification processes
NWP409A	Investigate and plan to optimise the operation of chemical addition processes

NWP410C	Coordinate and monitor asset construction and maintenance
NWP411A	Select treatment requirements for waterborne microorganisms
NWP412A	Investigate and plan the optimisation of activated sludge processes
NWP413A	Investigate and plan the optimisation of anaerobic treatment processes
NWP414A	Select strategies to control microbial impact on wastewater treatment processes
NWP415B	Coordinate and monitor surface water systems
NWP416B	Coordinate and monitor water storage catchment activities
NWP417B	Coordinate and monitor groundwater system usage
NWP418B	Coordinate and monitor bulkwater system operations
NWP419B	Coordinate and monitor river system usage
NWP420A	Install, operate and maintain hydrologic instruments and equipment
NWP421A	Collect, measure and process hydrometric stream discharge gauging
NWP425B	Coordinate and monitor the operation of irrigation delivery systems
NWP427B	Coordinate and monitor the operation of drainage systems
NWP428B	Coordinate and monitor the operation of wastewater collection systems
NWP429B	Coordinate, implement and report trade waste monitoring procedures
NWP430A	Evaluate, implement and monitor standard low-risk trade waste discharge approvals
NWP431A	Investigate, rectify and report on trade waste incidents
NWP432A	Contribute to the continuous improvement of quality systems
NWP440A	Supervise conduit inspection and reporting
LGAWORK404A	Manage a civil works project
PSPPROC414A	Manage contracts
MEM30027A	Prepare basic programs for programmable logic controllers
MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area

RTD3507A	Undertake sampling and testing of water
BSBWOR404A	Develop work priorities
BSBMGT402A	Implement operational plan

Employability Skills Qualification Summary

Qualification code: NWP40107

Qualification title: Certificate IV in Water Operations

The following table contains a summary of the employability skills as identified by the water industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Communication	<ul style="list-style-type: none"> • communicates OHS policies and procedures • communicates environmental plans and procedures within the workplace • communicates effectively with customers • interprets a range of complex and technical documents, including relevant: <ul style="list-style-type: none"> • regulatory, legislative, licensing and organisational requirements • codes and standards • specifications • organisational policies • understands relevant definitions, terminology, symbols and language • discusses organisational issues • reports and records hazards and risks • participates in ensuring compliance with standards, regulations and policies • maintains and checks records and documents • communicates effectively with a range of relevant parties • articulates complex ideas clearly • analyses and evaluates reports and reference materials
Teamwork	<ul style="list-style-type: none"> • demonstrates leadership within work teams • conducts briefing with team members • collaboratively and effectively implements operational plans • works collaboratively with relevant stakeholders • supervises and checks others' work, monitors work processes and ensures safe work practices • verifies competence of operators undertaking inspections • coordinates a range of team members and activities • ensures that relevant workforce participates in reviews of environmental procedures and prepares reports according to

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	<ul style="list-style-type: none"> organisational procedures • relates positively to fellow workers and the management team
Problem solving	<ul style="list-style-type: none"> • responds effectively to hazards, risks and emergencies • oversees processes within the water industry to ensure the effective and continuous provision of water services • analyses problems and applies appropriate remedial solutions • performs various calculations to provide data for the analysis and development of options and solutions • monitors assets to ensure performance meets specifications in management plans • identifies and rectifies faults • identifies links between operational problems and maintenance activities • identifies hazards and develops appropriate responses to control and mitigate risks in accordance with regulations and legislation
Initiative and enterprise	<ul style="list-style-type: none"> • proactively implements effective customer service strategies and tactics • identifies risks and hazards • identifies typical faults and problems and takes necessary remedial action • investigates breaches of contracts • develops and checks contingency plans for new types of industries or processes • establishes processes to identify and report non-compliance • identifies opportunities for improved water management
Planning and organising	<ul style="list-style-type: none"> • participates in effective implementation of organisation's operational plans • schedules activities to meet current and potential problems • participates in and coordinates elements of effective delivery of services • participates in the provision of appropriate information to inform workplace processes • monitors and assesses relevant water tests • contributes to the management of workplace contracts
Self management	<ul style="list-style-type: none"> • manages own performance to ensure required levels of service standards, work quality and professional competence • manages work priorities • monitors assets to ensure that progress follows plans • uses feedback to improve own performance
Learning	<ul style="list-style-type: none"> • seeks feedback on personal performance • uses information effectively to improve work performance • learns from colleagues as part of effective teamwork

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Technology	<ul style="list-style-type: none">• reads meters• monitors water management equipment• uses relevant computer equipment• maintains and understands capabilities and limitations of plant, equipment and tools• uses technology to improve efficiency and effectiveness of managing work

The high proportion of electives required by this qualification means that the facets of the above employability skills are representative of the water industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines. This table is a summary of employability skills that are typical of this qualification and should not be interpreted as definitive.

NWP50107 Diploma of Water Operations

The Diploma of Water Operations supports candidates seeking competency and requiring increasingly specialised technical skills or those who require a broad range of skills.

To achieve this qualification the candidate must demonstrate competency in seven units, comprising two core and five elective units of competency.

Core	
<i>The following two core units must be completed.</i>	
PSPSOHS501A	Participate in the coordination and maintenance of a systematic approach to managing OHS
NWP505B	Implement and monitor environmental management policies, plans, procedures and programs
Electives	
<i>Five elective units must be completed.</i>	
The elective units must comprise at least three and up to five elective units drawn from the elective pool below.	
The balance of units required to complete the qualification may be selected according to the following rules.	
A maximum of two water industry specific elective units (coded NWP) may be drawn from the Certificate IV level in this Training Package.	
A maximum of one relevant unit may be drawn from another endorsed Training Package at Certificate IV level.	
A maximum of two relevant units may be drawn from another endorsed Training Package or Accredited Course at Diploma level.	
NWP504A	Collect and manage hydrometric station survey data
NWP508A	Apply principles of hydraulics to pipe and channel flow
NWP509A	Collect, verify and report hydrometric time series data
NWP510A	Develop and maintain ratings
NWP511B	Manage large dam safety surveillance
NWP512B	Implement and manage catchment management plan
NWP513B	Develop and review catchment management plan
NWP514B	Implement and manage groundwater management plan

NWP515B	Develop and review groundwater management plan
NWP516B	Implement and manage surface water management plan
NWP517B	Develop and review surface water management plan
NWP518B	Prepare and report on data related to flood mitigation
NWP519B	Develop and report flood mitigation
NWP520A	Contribute to hydrometric planning and water resource management
NWP525B	Implement and manage asset construction and maintenance
NWP527B	Conduct commissioning and post-commissioning activities
NWP528B	Implement and manage trade waste policies and plans
NWP529B	Develop and modify trade waste management policies and plans
NWP530B	Implement and manage the operation and maintenance of irrigation delivery systems
NWP531B	Develop and review irrigation system management plan
NWP532B	Implement and manage potable water system management plan
NWP533B	Develop and review potable water system management plan
NWP534B	Implement and manage drainage system management plan
NWP535B	Develop and review drainage system management plan
NWP536B	Implement and manage wastewater collection management plan
NWP537B	Develop and review wastewater collection management plan
NWP545B	Implement and manage water treatment processes monitoring program
NWP546B	Develop and review water treatment processes management plan
NWP547B	Implement and manage wastewater treatment processes monitoring program
NWP548B	Develop and review wastewater treatment management plan
NWP551A	Evaluate, implement and monitor high-risk trade waste discharge approvals
LGAWORK501A	Prepare preliminary design for operational works

LGAWORK502A	Prepare detailed works project documentation
LGAWORK503A	Undertake project investigation
PSPPROC506A	Plan to manage contracts
BSBMGT515B	Manage operational plan
BSBFIM501A	Manage budgets and financial plans
CPPSIS4002A	Store and retrieve spatial data
CPPSIS5002A	Capture new spatial data
CPPSIS5010A	Collate and interpret spatial data

Employability Skills Qualification Summary

Qualification code: NWP50107

Qualification title: Diploma of Water Operations

The following table contains a summary of the employability skills as identified by the water industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Communication	<ul style="list-style-type: none"> • communicates the development, implementation and maintenance of: <ul style="list-style-type: none"> • OHS policies and procedures • environmental policies and procedures • a range of relevant water management policies and procedures • communicates effectively with a range of people, including staff, contractors and customers • interprets a range of complex and technical documents, including relevant: <ul style="list-style-type: none"> • regulatory, legislative, licensing and organisational requirements • codes and standards • develops and communicates a range of complex and technical documents, including relevant: <ul style="list-style-type: none"> • specifications • organisational policies and procedures • understands relevant definitions, terminology, symbols and language • discusses organisational issues • conducts community consultation • reports and records hazards and risks

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	<ul style="list-style-type: none"> • takes a leadership role in ensuring workforce compliance with standards, regulations and policies • maintains and checks records and documents • articulates complex ideas clearly • analyses and evaluates reports and reference materials
Teamwork	<ul style="list-style-type: none"> • demonstrates leadership within work teams and business units • collaboratively and effectively develops and implements operational plans • works collaboratively with relevant stakeholders • defines and explains responsibilities and accountabilities • supervises and checks others' work, monitors work processes and ensures safe work practices • facilitates production of and produces workplace documentation that ensures effective workforce performance • coordinates a range of team members and activities • relates positively to fellow workers and the management team
Problem solving	<ul style="list-style-type: none"> • responds effectively to hazards, risks and emergencies • develops plans geared to minimising risks and hazards • collates, manipulates and interprets data • applies techniques for flood estimation to flood estimation guidelines • conducts consultations • oversees processes within the water industry to ensure the effective and continuous provision of water services • analyses problems and applies appropriate remedial solutions • uses and analyses complex data in decision making
Initiative and enterprise	<ul style="list-style-type: none"> • proactively manages and supervises effective customer service strategies and tactics • establishes best practice procedures for the implementation of management plans • identifies work processes and practices to improve organisational performance • recommends changes to plan objectives and operational procedures • defines and quantifies responsibilities and accountabilities • identifies complex faults and problems and takes necessary remedial action • considers information about known impacts, risk assessments and control procedures in preparing plans • modifies policies and plans to incorporate identified and required changes • identifies opportunities for improved water management
Planning and organising	<ul style="list-style-type: none"> • leads effective implementation of organisation's operational plans • plans and participates in effective delivery of services

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	<ul style="list-style-type: none"> • plans processes • develops and checks contingency plans for new types of industries or processes • incorporates issues identified by reviews and audits into management plan • prepares and presents management policies and plans • reviews management policies against objectives, policies and plans • implements emergency action plans according to management plans • monitors activities to ensure compliance with approvals • prepares and plans for trade waste management • schedules and conducts on-site inspections • manages workplace contracts
Self management	<ul style="list-style-type: none"> • manages own performance to ensure required levels of service standards, work quality and professional competence • manages work priorities • identifies and recommends opportunities for performance improvements according to management plans • reviews objectives of the management and implementation plans • defines and quantifies responsibilities and accountabilities • uses feedback to improve own performance
Learning	<ul style="list-style-type: none"> • seeks feedback on personal performance • uses information effectively to improve work performance • identifies and assesses legislative, organisational and environmental requirements that impact on work system • regularly reviews and assesses records to identify long-term trends and impacts • learns from colleagues as part of effective teamwork
Technology	<ul style="list-style-type: none"> • uses IT systems to manage and communicate planning process • uses complex water system management technology • models simulated, hypothetical or estimated rainfall intensity data and catchment characteristics • understands capabilities and limitations of organisation's plant, equipment and tools • uses technology to improve efficiency and effectiveness of managing work

The high proportion of electives required by this qualification means that the facets of the above employability skills are representative of the water industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines. This table is a summary of employability skills that are typical of this qualification and should not be interpreted as definitive.

NWP70107 Vocational Graduate Certificate in Water Industry Leadership

The Vocational Graduate Certificate in Water Industry Leadership supports graduate entrants to the water industry who require industry-specific context to add to their broad academic education gained in, for example, engineering, applied science or chemistry. It also supports experienced existing workers seeking to extend their career opportunities.

To achieve this qualification the candidate must demonstrate competency in four of the units listed below.

Unit code	Unit title
NWP701A	Contribute to the development of a complex water organisation
NWP702A	Apply water industry legislation, codes and standards
NWP703A	Lead water planning processes
NWP704A	Lead a project development
NWP705A	Provide leadership in hydrometric network planning and water resource management
NWP706A	Review and evaluate water and wastewater sustainability objectives
NWP707A	Analyse and review water treatment plant technology

Employability Skills Qualification Summary

Qualification code: NWP70107

Qualification title: Vocational Graduate Certificate in Water Industry Leadership

The following table contains a summary of the employability skills as identified by the water industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Communication	<ul style="list-style-type: none"> • communicates development, implementation and maintenance of policy, processes and strategy within the water organisation • communicates effectively with staff, contractors and customers • interprets a range of complex and technical documents, including relevant: <ul style="list-style-type: none"> • regulatory, legislative, licensing and organisational requirements • codes and standards • discusses and advocates organisational issues • communicates compliance and reporting information to team members • takes a leadership role in ensuring workforce compliance with

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	<p>standards, regulations and policies</p> <ul style="list-style-type: none"> • articulates complex ideas clearly • analyses and evaluates reports and reference materials
Teamwork	<ul style="list-style-type: none"> • demonstrates leadership within work teams and business units • collaboratively and effectively develops, implements and oversees operational and strategic plans • works collaboratively with relevant stakeholders • plans, applies and monitors reporting processes • supervises and checks others' work, monitors work processes and ensures safe work practices • coordinates a range of team members and activities • relates positively to fellow workers and the management team
Problem solving	<ul style="list-style-type: none"> • analyses and identifies trends related to the management of water resources • leads organisational planning processes • analyses and reviews the capacity of relevant technology and applies it to the solving of problems • responds effectively to hazards, risks and emergencies • oversees processes within the water industry to ensure the effective and continuous provision of water services • analyses problems and applies appropriate remedial solutions • uses and analyses complex data in decision making
Initiative and enterprise	<ul style="list-style-type: none"> • develops strategies, policies and plans aimed at ensuring the sustainable use of water • conducts research to underpin the planning process • identifies work processes and practices to improve organisational performance • analyses the structure and challenges of the water industry • identifies complex faults and problems and takes necessary remedial action • identifies, pursues and promotes opportunities for improved water management
Planning and organising	<ul style="list-style-type: none"> • leads the effective development of high-level planning processes • plans and participates in the effective delivery of services • improves policies, plans and processes • plans for environmental sustainability • periodically reviews risk management or control plans and assesses them for their adequacy, timeliness and effectiveness in risk mitigation • undertakes evidence-based short, medium and long-range planning • plans processes

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Self management	<ul style="list-style-type: none"> • manages own performance • manages work priorities • coordinates a range of tasks to ensure efficient completion • assesses project outcomes for compliance with required quality standards • negotiates required changes to project plans • develops risk management or control plans to eliminate or reduce the potential for risk events and consequences • uses feedback to improve own performance
Learning	<ul style="list-style-type: none"> • seeks feedback on organisational and work performance • identifies quality management methods, techniques and tools used to support project management • performs complex research to maintain currency of knowledge and practice • analyses technical and financial information • uses information effectively to improve work performance • identifies potential or actual operational problems • researches and interprets social trends • learns from colleagues as part of effective teamwork
Technology	<ul style="list-style-type: none"> • uses IT systems to manage and communicate the planning process • uses complex water system management technology • understands capabilities and limitations of organisation's plant, equipment and tools • uses technology to improve efficiency and effectiveness of managing work

The diverse nature of the roles undertaken by the candidates and the equally diverse nature of the experience they bring to the roles they are performing means that the facets of the above employability skills are representative of the water industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines. This table is a summary of employability skills that are typical of this qualification and should not be interpreted as definitive.

Qualification pathways

The qualifications described above have been designed to maximise flexibility and respond to a significant range of career pathways and needs.

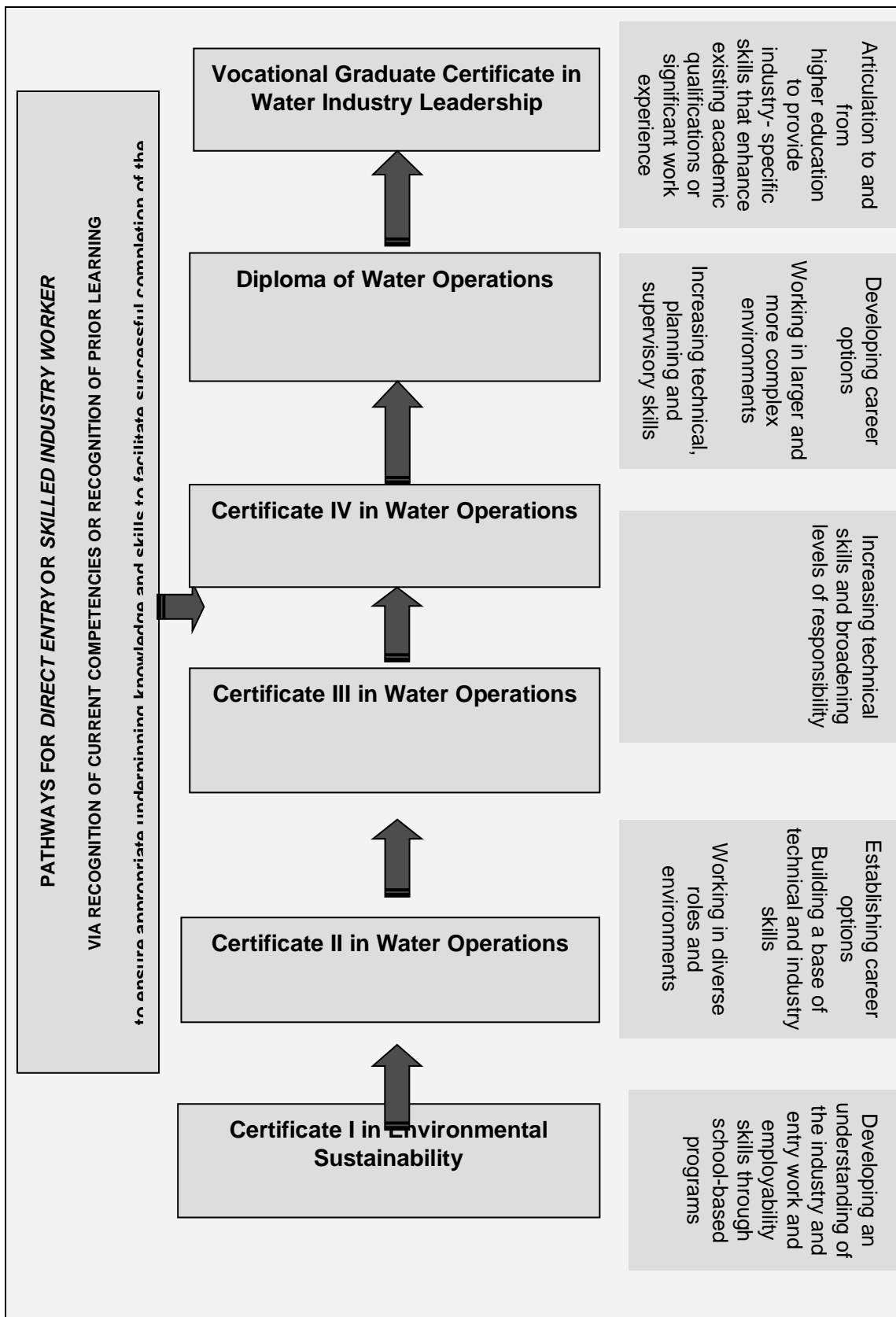
Government Skills Australia, the water industry and its peak associations have developed, and will continue to develop, valuable career and career-pathway advice which should also be used by RTOs and candidates when designing qualification packaging and selecting qualification pathways.

This industry advice is designed to assist candidates to make appropriate choices about the qualifications they can undertake to maximise their career choices, and to alert them to any industry accreditation or recognition requirements. Industry career and career-pathway advice is also valuable in explaining the opportunities that are available in various States and Territories for articulation between the VET sector and higher education qualifications. Candidates have the opportunity to seek articulation into a range of higher education qualifications and are provided with entry (including advanced standing or recognition of prior learning), depending on the individual higher education provider requirements and the experience of the candidate.

Career pathway and industry accreditation information will change over time and RTOs should contact Government Skills Australia or local industry groups or check the following websites for up-to-date advice:

Government Skills Australia	www.governmentskills.com.au
Department of Education, Science and Training – career development site	www.dest.gov.au/sectors/career_development/default.htm
Department of Education, Science and Training – Job Guide	http://jobguide.dest.gov.au/
Australian Apprenticeships Training Information Service	www.nacinfo.com.au

State and Territory Training Authorities and state Industry Training Advisory Bodies will also have valuable career and career-pathway information.



Assessment Guidelines

Introduction

These Assessment Guidelines provide the endorsed framework for assessment of units of competency in this Training Package. They are designed to ensure that assessment is consistent with the Australian Quality Training Framework (AQTF) *Standards for Registered Training Organisations*. Assessments against the units of competency in this Training Package must be carried out in accordance with these Assessment Guidelines.

Assessment system overview

This section provides an overview of the requirements for assessment when using this Training Package, including a summary of the AQTF requirements, licensing or registration requirements and assessment pathways.

Benchmarks for assessment

Assessment within the National Training Framework is the process of collecting evidence and making judgements about whether competency has been achieved in order to confirm whether an individual can perform to the standards expected in the workplace, as expressed in the relevant endorsed unit of competency.

In the areas of work covered by this Training Package, the endorsed units of competency are the benchmarks for assessment. As such, they provide the basis for nationally recognised Australian Qualifications Framework (AQF) qualifications and Statements of Attainment issued by registered training organisations (RTOs).

Australian Quality Training Framework assessment requirements

Assessment leading to nationally recognised AQF qualifications and Statements of Attainment in the vocational education and training (VET) sector must meet the requirements of the AQTF as expressed in the *Standards for Registered Training Organisations*.

The *Standards for Registered Training Organisations* can be downloaded from the Department of Education, Science and Technology (DEST) website at www.dest.gov.au or can be obtained in hard copy from DEST. The following points summarise the assessment requirements under the AQTF.

Registration of training organisations

Assessment must be conducted by, or on behalf of, an RTO formally registered by a state or territory registering/course accrediting body in accordance with the *Standards for Registered Training Organisations*. The RTO must have the specific units of competency and/or AQF qualifications on its scope of registration. See Section 1 of the *Standards for Registered Training Organisations*.

Quality training and assessment

Each RTO must have systems in place to plan for and provide quality training and assessment across all its operations. See Standard 1 of the *Standards for Registered Training Organisations*.

Assessor competency requirements

Each person involved in training, assessment or client service must be competent for the functions they perform. See Standard 7 of the *Standards for Registered Training Organisations* for assessor

competency requirements. Standard 7 also specifies the competencies that must be held by trainers.

Assessment requirements

The RTO's assessments must meet the requirements of the endorsed components of Training Packages within its scope of registration. See Standard 8 of the *Standards for Registered Training Organisations*.

Assessment strategies

Each RTO must identify, negotiate, plan and implement appropriate learning and assessment strategies to meet the needs of each of its clients. See Standard 9 of the *Standards for Registered Training Organisations*.

Mutual recognition

Each RTO must recognise the AQF qualifications and Statements of Attainment issued by any other RTO. See Standard 5 of the *Standards for Registered Training Organisations*.

Access and equity and client services

Each RTO must apply access and equity principles, provide timely and appropriate information, advice and support services that assist clients to identify and achieve desired outcomes. This may include reasonable adjustment in assessment. See Standard 6 of the *Standards for Registered Training Organisations*.

Partnership arrangements

RTOs must have, and comply with, written agreements with each organisation providing training and/or assessment on its behalf. See Standard 1.6 of the *Standards for Registered Training Organisations*.

Recording assessment outcomes

Each RTO must have effective administration and records management procedures in place, and must record AQF qualifications and Statements of Attainment issued. See Standards 4 and 10.2 of the *Standards for Registered Training Organisations*.

Issuing AQF qualifications and Statements of Attainment

Each RTO must issue AQF qualifications and Statements of Attainment that meet the requirements of the *AQF Implementation Handbook* and the endorsed Training Packages within the scope of its registration. An AQF qualification is issued once the full requirements for a qualification, as specified in the nationally endorsed Training Package, are met. A Statement of Attainment is issued where the individual is assessed as competent against fewer units of competency than required for an AQF qualification. See Standard 10 and Section 2 of the *Standards for Registered Training Organisations*.

Licensing or registration requirements

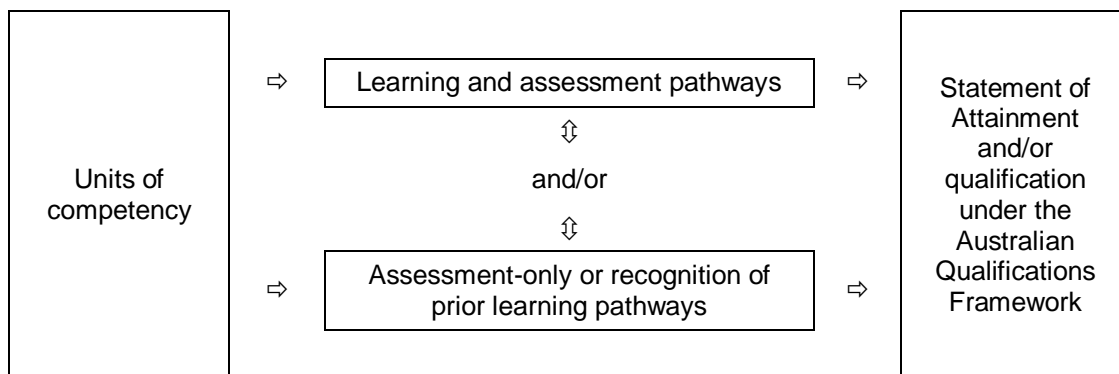
While some functions performed by people working in the water industry, such as the use of some plant and equipment, are regulated or licensed in some or all of the States and Territories, generally the water industry does not have water-specific licensed occupations. It is important that RTOs and candidates make themselves familiar with the licensing and registration arrangements that apply in their jurisdiction.

Pathways

The competencies in this Training Package may be attained in a number of ways, including through:

- formal or informal education and training
- experiences in the workplace
- general life experience
- any combination of the above.

Assessment under this Training Package, leading to an AQF qualification or Statement of Attainment, may follow a learning and assessment pathway, an assessment-only or recognition pathway, or a combination of the two as illustrated in the following diagram.



Each of these assessment pathways leads to full recognition of competencies held – the critical issue is that the candidate is competent, not how the competency was acquired.

Assessment, by any pathway, must comply with the assessment requirements set out in the *Standards for Registered Training Organisations*.

Learning and assessment pathways

Usually, learning and assessment are integrated, with assessment evidence being collected and feedback provided to the candidate at any time throughout the learning and assessment process.

Learning and assessment pathways may include structured programs in a variety of contexts using a range of strategies to meet different learner needs. Structured learning and assessment programs could be group-based, work-based, project-based, self-paced and action learning-based; conducted by distance or e-learning; and/or involve practice and experience in the workplace.

Learning and assessment pathways to suit Australian Apprenticeships have a mix of formal structured training and structured workplace experience with formative assessment activities through which candidates can acquire and demonstrate skills and knowledge from the relevant units of competency.

Assessment-only or recognition of prior learning pathway

Competencies already held by individuals can be formally assessed against the units of competency in this Training Package, and should be recognised regardless of how, when or where they were achieved.

In an assessment-only or recognition of prior learning (RPL) pathway, the candidate provides current, quality evidence of their competency against the relevant unit of competency. This process may be directed by the candidate and verified by the assessor, such as in the compilation of

portfolios; or may be directed by the assessor, such as through observation of workplace performance and skills application, and oral or written assessment. Where the outcomes of this process indicate that the candidate is competent, structured training is not required. The RPL requirements of Standard 8.2 of the *Standards for Registered Training Organisations* must be met.

As with all assessment, the assessor must be confident that the evidence indicates that the candidate is currently competent against the endorsed unit of competency. This evidence may take a variety of forms and might include certification, references from past employers, testimonials from clients and work samples. The onus is on candidates to provide sufficient evidence to satisfy assessors that they currently hold the relevant competencies.

In judging evidence, the assessor must ensure that the evidence of prior learning is:

- authentic (the candidate's own work)
- valid (directly related to the current version of the relevant endorsed unit of competency)
- reliable (shows that the candidate consistently meets the endorsed unit of competency)
- current (reflects the candidate's current capacity to perform the aspect of the work covered by the endorsed unit of competency)
- sufficient (covers the full range of elements in the relevant unit of competency and addresses the four dimensions of competency, namely task skills, task management skills, contingency management skills and job/role environment skills).

The assessment-only or recognition of prior learning pathway is likely to be most appropriate in the following scenarios:

- candidates enrolling in qualifications who want RPL or recognition of current competencies
- existing workers
- individuals with overseas qualifications
- recent migrants with established work histories
- people returning to the workplace
- people with disabilities or injuries requiring a change in career.

Combination of pathways

Where candidates for assessment have gained competencies through work and life experience and gaps in their competence are identified, or where they require training in new areas, a combination of pathways may be appropriate.

In such situations, the candidate may undertake an initial assessment to determine their current competency. Once current competency is identified, a structured learning and assessment program ensures that the candidate acquires the required additional competencies identified as gaps.

Assessor requirements

This section identifies the mandatory competencies for assessors and clarifies how others may contribute to the assessment process where one person alone does not hold all the required competencies.

Assessor competencies

The *Standards for Registered Training Organisations* specify mandatory competency requirements for assessors. For information, Standard 7.3 and 7.4 of the *Standards for Registered Training Organisations* follows:

- 7.3 **a** The RTO must ensure assessments are conducted by a person who has:
- i the following competencies from the Training and Assessment Training Package or is able to demonstrate equivalent competencies:
 - a TAAASS401A Plan and organise assessment
 - b TAAASS402A Assess competence
 - c TAAASS404A Participate in assessment validation
 - ii relevant vocational competencies, at least to the level being assessed.
- b** However, if a person does not have the assessment competencies as defined in standard 7.3 a (i) and the vocational competencies as defined in standard 7.3 a (ii), one person with all the assessment competencies listed in standard 7.3 a (i) and one or more persons who have the vocational competencies listed in standard 7.3 a (ii) may work together to conduct the assessments.

Designing assessment tools

This section provides an overview on the use and development of assessment tools.

Use of assessment tools

Assessment tools provide a means of collecting the evidence that assessors use in making judgements about whether candidates have achieved competency.

There is no set format or process for the design, production or development of assessment tools. Assessors may use prepared assessment tools such as those specifically developed to support this Training Package or they may develop their own.

Using prepared assessment tools

If using prepared assessment tools, assessors should ensure these are benchmarked or mapped against the current version of the relevant unit of competency. This can be done by checking that the materials are listed on the National Training Information Service website (www.ntis.gov.au). Materials on the list have been noted by the National Quality Council as meeting its quality criteria for Training Package support materials.

Developing assessment tools

When developing their own assessment tools, assessors must ensure that the tools:

- are benchmarked against the relevant unit or units of competency
- are reviewed as part of the validation of assessment strategies as required under 9.2i of the *Standards for Registered Training Organisations*
- meet the assessment requirements expressed in the *Standards for Registered Training Organisations*, particularly Standards 8 and 9.

A key reference for assessors developing assessment tools is TAA04 Training and Assessment Training Package and the unit of competency TAAASS403A *Develop assessment tools*.

Conducting assessment

This section details the mandatory assessment requirements and provides information on equity in assessment including reasonable adjustment.

Mandatory assessment requirements

Assessments must meet the criteria set out in Standard 8 from the *Standards for Registered Training Organisations*. For information, Standard 8 of the *Standards for Registered Training Organisations* is reproduced below.

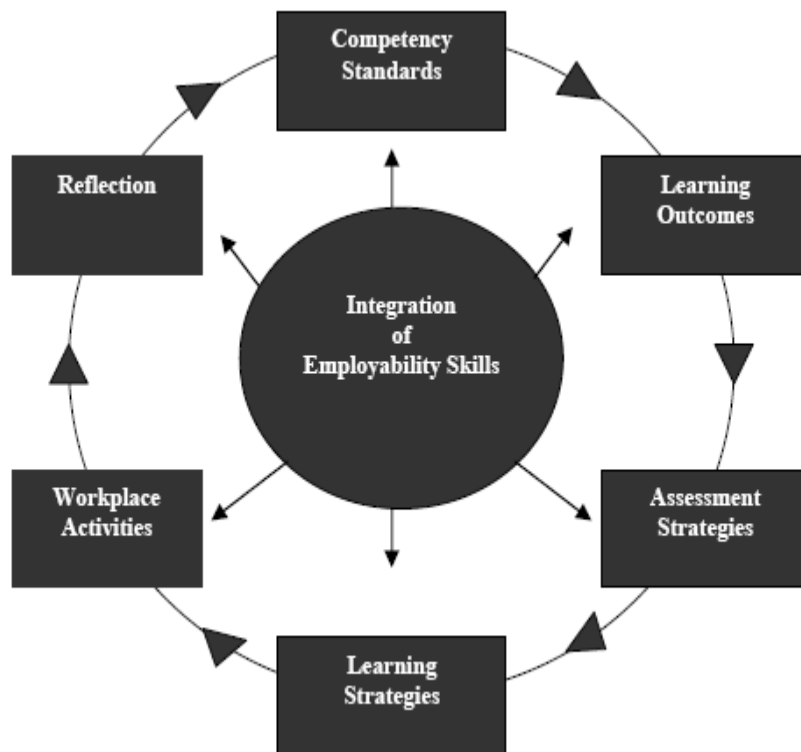
8. RTO Assessments

The RTO's assessments meet the requirements of the endorsed components of Training Packages and the outcomes specified in accredited courses within the scope of its registration.

- 8.1. The RTO must ensure that assessments (including RPL):
- i. comply with the Assessment Guidelines included in the applicable nationally endorsed Training Packages or the assessment requirements specified in accredited courses;
 - ii. lead to the issuing of a statement of attainment or qualification under the AQF when a person is assessed as competent against nationally endorsed unit(s) of competency in the applicable Training Package or modules specified in the applicable accredited course;
 - iii. are valid, reliable, fair and flexible;
 - iv. provide for applicants to be informed of the context and purpose of the assessment and the assessment process;
 - v. where relevant, focus on the application of knowledge and skill to the standard of performance required in the workplace and cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills;
 - vi. involve the evaluation of sufficient evidence to enable judgements to be made about whether competency has been attained;
 - vii. provide for feedback to the applicant about the outcomes of the assessment process and guidance on future options in relation to those outcomes;
 - viii. are equitable for all persons, taking account of individual needs relevant to the assessment; and
 - ix. provide for reassessment on appeal.
- 8.2. a The RTO must ensure RPL is offered to all applicants on enrolment.
b The RTO must have an RPL process that:
- i. is structured to minimise the time and cost to applicants; and
 - ii. provides adequate information, support and opportunities for participants to engage in the RPL process.

Delivery and assessment of employability skills

Employability skills are integral to workplace competency and, as such, must be considered in the design, customisation, delivery and assessment of VET programs in an integrated and holistic way, as represented diagrammatically below.



Training providers must analyse the employability skills information contained in units of competency in order to design valid and reliable learning and assessment strategies. This analysis includes:

- reviewing unit(s) of competency to determine how each relevant employability skill is found and applied within the unit
- analysing the Employability Skills Summary for the qualification in which the unit(s) is/are packaged to help clarify relevant industry/workplace contexts with regard to the application of employability skills at that qualification level
- designing learning and assessment activities that address the employability skills requirements.

Employability skills in context

Candidates undertaking the qualifications in this Training Package are diverse in nature, varying from students undertaking VET in Schools programs through to people involved in other forms of pre-employment or early-employment programs or operational staff in a wide range of water applications and resource management. As a result of this diversity, the Employability Skills Summary Tables will be representative of the water industry in general and will vary in relation to specific job roles.

The flexibility and broad scope of qualifications are reflected in the extensive list of elective units of competency. Learning and assessment strategies for each qualification should be based on the requirements identified in units of competency that meet the packaging guidelines, without additional requirements for the facets of employability skills.

Employability Skills Summaries of qualifications capture what might be typical of each qualification but will be influenced by the selection of electives.

Access and equity

An individual's access to the assessment process should not be adversely affected by restrictions placed on the location or context of assessment beyond the requirements specified in this Training Package.

Reasonable adjustments can be made to ensure equity in assessment for people with disabilities. Adjustments include any changes to the assessment process or context that meet the individual needs of the person with a disability but do not change competency outcomes. Such adjustments are considered 'reasonable' if they do not impose an unjustifiable hardship on a training provider or employer. When assessing people with disabilities, assessors are encouraged to apply good practice assessment methods with sensitivity and flexibility.

Further sources of information

The section provides a listing of useful contacts and resources to assist assessors in planning, designing, conducting and reviewing assessment against this Training Package.

Contacts

Government Skills Australia

Level 2, 47-49 Waymouth Street,
Adelaide SA Australia 5000

Tel: 08 8410 3455
Fax: 08 8410 2842

Web: www.governmentskills.com.au
Email: info@governmentskills.com.au

TVET Australia Ltd

Level 21, 390 St Kilda Road
Melbourne VIC 3004

PO Box 12211
MELBOURNE VIC 8006

Tel: 03 9832 8100
Fax: 03 9832 8199

Web: www.atpl.net.au
Email: sales@atpl.net.au

Innovation and Business Skills Australia

Level 2, Building B, 192 Burwood Road
HAWTHORN VIC 3122

Telephone: (03) 9815 7000
Facsimile: (03) 9815 7001

Web: www.ibsa.org.au
Email: admin@bsitab.org

General resources

Refer to <http://antapubs.dest.gov.au/publications/search.asp> to locate the following ANTA publications.

AQF Implementation Handbook, Third Edition. Australian Qualifications Framework Advisory Board, 2002, www.aqf.edu.au

Australian Quality Training Framework (AQTF) – for general information go to:
www.dest.gov.au/sectors

Australian Quality Training Framework (AQTF) – for resources and information go to:
www.dest.gov.au

Australian Quality Training Framework Standards for Registered Training Organisations, Australian National Training Authority, Melbourne, 2005. Available in hard copy from State and Territory Training Authorities or can be downloaded from www.dest.gov.au

TAA04 Training and Assessment Training Package. This is available from the Innovation and Business Skills Australia (IBSA) Industry Skills Council and can be viewed, and components downloaded, from the National Training Information Service (NTIS)

National Training Information Service, an electronic database providing comprehensive information about RTOs, Training Packages and accredited courses – www.ntis.gov.au

Style Guide for Training Package Support Materials, Australian National Training Authority, Melbourne, 2003. Can be downloaded from the ANTA page at www.dest.gov.au

Assessment resources

Training Package Assessment Guides — a range of resources to assist RTOs in developing Training Package assessment materials developed by ANTA with funding from the Department of Education, Training and Youth Affairs. It is made up of 10 separate titles, as described at the ANTA publications page of www.dest.gov.au. Go to www.resourcegenerator.gov.au/loadpage.asp?TPAG.htm

Printed and/or CD ROM versions of the Guides can be purchased from Australian Training Products (ATP). The resource includes the following guides:

1. Training Package Assessment Materials Kit
2. Assessing Competencies in Higher Qualifications
3. Recognition Resource
4. Kit to Support Assessor Training
5. Candidate's Kit: Guide to Assessment in New Apprenticeships
6. Assessment Approaches for Small Workplaces
7. Assessment Using Partnership Arrangements
8. Strategies for Ensuring Consistency in Assessment

9. Networking for Assessors
10. Quality Assurance Guide for Assessment

An additional guide *Delivery and Assessment Strategies* has been developed to complement these resources.

Assessment tool design and conducting assessment

VETASSESS and Western Australian Department of Training and Employment 2000, *Designing Tests – Guidelines for designing knowledge based tests for Training Packages*

Vocational Education and Assessment Centre 1997, *Designing Workplace Assessment Tools, A self-directed learning program*, NSW TAFE

Manufacturing Learning Australia 2000, *Assessment Solutions*, Australian Training Products, Melbourne

Rumsey, David 1994, *Assessment practical guide*, Australian Government Publishing Service, Canberra

Assessor training

Australian Committee on Training Curriculum (ACTRAC) 1994, *Assessor training program – learning materials*, Australian Training Products, Melbourne

Australian National Training Authority, *A Guide for Professional Development*, ANTA, Brisbane

Australian Training Products Ltd *Assessment and Workplace Training, Training Package – Toolbox*, ATPL Melbourne

Green, M, et al. 1997, *Key competencies professional development Package*, Department for Education and Children's Services, South Australia

Victorian TAFE Association 2000, *The professional development CD: A learning tool*, VTA, Melbourne

Assessment system design and management

Office of Training and Further Education 1998, *Demonstrating best practice in VET project – assessment systems and processes*, OTFE Victoria

Toop, L., Gibb, J. and Worsnop, P. *Assessment system designs*, Australian Government Publishing Service, Canberra

Western Australia Department of Training and VETASSESS 1998, *Kit for Skills Recognition Organisations*, WADOT, Perth

Access and equity resources

Regularly check DEST publications for supporting resources (including ANTA publications): http://www.dest.gov.au/sectors/training_skills/publications_resources

Working with Diversity

AQTF supporting resources (in DEST Publications catalogue)
http://www.dest.gov.au/sectors/training_skills/publications_resources/profiles/anta/profile/working_diversity_guide_to_equity_and_the_aqtf.htm

Working with Diversity: A Guide to Equity and the AQTF
Working with Diversity: Quality Training for People with a Disability
Working with Diversity: Quality Training for Indigenous Australians

Flexible learning resources

Search for access and equity, disability, diversity, indigenous, rural and remote
(www.flexiblelearning.net.au)

Legislation

Racial Discrimination Act 1975 <http://scaleplus.law.gov.au/html/pasteact/0/47/top.htm>

Disability Discrimination Act 1992 (DDA)
<http://scaleplus.law.gov.au/html/pasteact/0/311/top.htm>

Human Rights and Equal Opportunity Commission <http://www.hreoc.gov.au>

Equal Opportunity in the Workplace Agency (EOWA). <http://www.eowa.gov.au/>

Language and literacy

Adult literacy: <http://www.dest.gov.au/literacynet/>

Indigenous

Partners in a Learning Culture National Strategy and Blueprint for Implementation
http://www.dest.gov.au/sectors/training_skills/publications_resources/profiles/anta/profile/partners_in_a_learning_culture_executive_summary.htm

Australian Indigenous Training Advisory Council (AITAC)
http://www.dest.gov.au/sectors/training_skills/policy_issues_reviews/key_issues/nts/vet/aitac.htm

Indigenous Education Online <http://indigo.dest.gov.au/>

Australian Government Indigenous portal www.indigenous.gov.au

Indigenous Education Consultative Bodies (IECB): contact state and territory training authorities, or telephone 1800 800 821, or go to
http://www.dest.gov.au/sectors/indigenous_education/organisation_contacts

Disability

Australian Disability Training Advisory Council (ADTAC)
http://www.dest.gov.au/sectors/training_skills/policy_issues_reviews/key_issues/nts/vet/adtac.htm

Australian Disability Clearinghouse on Education and Training (ADCET)
www.adcet.edu.au

Disability employment agencies: contact state and territory offices of Department of Family and Community Services for details of local disability employment agencies, or go to <http://www.facs.gov.au/internet/facsinternet.nsf/disabilities/services-cdes.htm>

Bridging Pathways. National strategy for increasing opportunities for people with a disability in VET

http://www.dest.gov.au/sectors/training_skills/publications_resources/profiles/anta/profile/bridging_pathways_revised_blueprint.htm

Women

Women: Shaping Our Future

<http://antapubs.dest.gov.au/publications/publication.asp?qsID=607>

Competency Standards

What is competency?

The broad concept of industry competency concerns the ability to perform particular tasks and duties to the standard of performance expected in the workplace. Competency requires the application of specified skills, knowledge and attitudes relevant to effective participation in an industry, industry sector or enterprise

Competency covers all aspects of workplace performance and involves performing individual tasks; managing a range of different tasks; responding to contingencies or breakdowns; and dealing with the responsibilities of the workplace, including working with others. Workplace competency requires the ability to apply relevant skills, knowledge and attitudes consistently over time and in the required workplace situations and environments. In line with this concept of competency, Training Packages focus on what is expected of a competent individual in the workplace as an outcome of learning, rather than focusing on the learning process itself.

Competency standards in Training Packages are determined by industry to meet identified industry skill needs. Competency standards are made up of a number of units of competency each of which describes a key function or role in a particular job function or occupation. Each unit of competency within a Training Package is linked to one or more AQF qualifications.

Contextualisation of units of competency by RTOs

Registered training organisations (RTOs) may contextualise units of competency to reflect local outcomes required. Contextualisation could involve additions or amendments to the unit of competency to suit particular delivery methods, learner profiles, specific enterprise equipment requirements, or to otherwise meet local needs. However, the integrity of the overall intended outcome of the unit of competency must be maintained.

Any contextualisation of units of competency in this endorsed Training Package must be within the bounds of the following advice. In contextualising units of competency, RTOs:

- must not remove or add to the number and content of elements and performance criteria
- may add specific industry terminology to performance criteria where this does not distort or narrow the competency outcomes
- may make amendments and additions to the range statement as long as such changes do not diminish the breadth of application of the competency and reduce its portability
- may add detail to the evidence guide in areas such as the critical aspects of evidence or resources and infrastructure required where these expand the breadth of the competency but do not limit its use.

Components of units of competency

The components of units of competency are summarised below, in the order in which they appear in each unit of competency.

Unit title

The unit title is a succinct statement of the outcome of the unit of competency. Each unit of competency title is unique, both within and across Training Packages.

Unit descriptor

The unit descriptor broadly communicates the content of the unit of competency and the skill area it addresses. Where units of competency have been contextualised from units of competency from other endorsed Training Packages, summary information is provided. There may also be a brief second paragraph that describes its relationship with other units of competency and any licensing requirements.

Employability Skills statement

A standard employability skills statement appears in each unit of competency. This statement directs trainers and assessors to consider the information contained in the Employability Skills Summary in which the unit of competency is packaged.

Prerequisite units (optional)

If there are any units of competency that must be completed before the unit, these will be listed.

Application of the unit

This subsection fleshes out the unit of competency's scope, purpose and operation in different contexts, for example, by showing how it applies in the workplace.

Competency field (optional)

The competency field either reflects the way the units of competency are categorised in the Training Package or denotes the industry sector, specialization or function. It is an optional component of the unit of competency.

Sector (optional)

The industry sector is a further categorisation of the competency field and identifies the next classification, for example an elective or supervision field.

Elements of competency

The elements of competency are the basic building blocks of the unit of competency. They describe in terms of outcomes the significant functions and tasks that make up the competency.

Performance criteria

The performance criteria specify the required performance in relevant tasks, roles, skills and in the applied knowledge that enables competent performance. They are usually written in passive voice. Critical terms or phrases may be written in bold italics and then defined in range statement, in the order of their appearance in the performance criteria.

Required skills and knowledge

The essential skills and knowledge are either identified separately or combined. Knowledge identifies what a person needs to know to perform the work in an informed and effective manner. Skills describe the application of knowledge to situations where understanding is converted into a workplace outcome.

Range statement

The range statement provides a context for the unit of competency, describing 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. As applicable, the meanings of key terms used in the performance criteria will also be explained in the range statement.

Evidence guide

The evidence guide is critical in assessment as it provides information to the RTO and assessor about how the described competency may be demonstrated. The evidence guide does this by providing a range of evidence for the assessor to make determinations, and by providing the assessment context.

The evidence guide describes:

- conditions under which competency must be assessed including variables such as the assessment environment or necessary equipment
- relationships with the assessment of any other units of competency
- suitable methodologies for conducting assessment including the potential for workplace simulation
- resource implications, for example access to particular equipment, infrastructure or situations
- how consistency in performance can be assessed over time, various contexts and with a range of evidence, and expectations at the AQF qualification level involved
- the required underpinning knowledge and skills.

Employability skills in units of competency

The detail and application of employability skills facets will vary according to the job-role requirements of each industry. In developing Training Packages, industry stakeholders are consulted to identify appropriate facets of employability skills which are incorporated into the relevant units of competency and qualifications.

Employability skills are not a discrete requirement contained in units of competency (as was the case with Key Competencies). Employability skills are specifically expressed in the context of the work outcomes described in units of competency and will appear in elements, performance criteria, range statements and evidence guides. As a result, users of Training Packages are required to review the entire unit of competency in order to accurately determine employability skills requirements.

How employability skills relate to the key competencies

The eight nationally agreed employability skills now replace the seven key competencies in Training Packages. Trainers and assessors who have used Training Packages prior to the introduction of employability skills may find the following comparison useful.

Employability skills	Mayer key competencies
Communication	Communicating ideas and information
Teamwork	Working with others and in teams
Problem solving	Solving problems Using mathematical ideas and techniques
Initiative and enterprise	

Planning and organising	Collecting, analysing and organising information Planning and organising activities
Self-management	
Learning	
Technology	Using technology

When analysing the above table it is important to consider the relationship and natural overlap of employability skills. For example, using technology may involve communication skills and combine the understanding of mathematical concepts.

Explicitly embedding employability skills in units of competency

This Training Package seeks to ensure that industry-endorsed employability skills are explicitly embedded in units of competency. The application of each skill and the level of detail included in each part of the unit will vary according to industry requirements and the nature of the unit of competency.

Employability skills must be both explicit and embedded within units of competency. This means that employability skills will be:

- embedded in units of competency as part of the other performance requirements that make up the competency as a whole
- explicitly described within units of competency to enable Training Packages users to identify accurately the performance requirements of each unit with regards to employability skills.

This Training Package also seeks to ensure that employability skills are well-defined and written into units of competency so that they are apparent, clear and can be delivered and assessed as an essential component of unit work outcomes.

The following table contains examples of embedded employability skills for each component of a unit of competency. Please note that in the examples below the bracketed skills are provided only for clarification and will not be present in units of competency within this Training Package.

Unit component	Example of embedded employability skills
Unit title	Implement and manage catchment management plan (planning) Plan and organise personal work activities (self management)
Unit descriptor	This unit covers the skills and knowledge required to promote the use and implementation of innovative work practices to effect change. (initiative and enterprise)
Element	Proactively resolve issues. (problem solving)
Performance criteria	Information is organised in a format suitable for analysis and dissemination in accordance with organisational requirements. (planning and organising)
Range statement	Software applications may include email, internet, word processing, spreadsheet, database or accounting packages. (technology)
Required skills and knowledge	<p>Modify activities depending on differing workplace contexts, risk situations and environments. (learning)</p> <p>Work collaboratively with others during an emergency. (teamwork)</p> <p>Instructions, procedures and other information relevant to the maintenance of assets and security. (communication)</p>
Evidence guide	<p>Evidence of having worked constructively with a wide range of customers, suppliers and stakeholders to solve problems and adapt or design new solutions to meet identified needs in customer services. In particular, evidence must be obtained on the ability to:</p> <ul style="list-style-type: none"> • assess response options to identified customer needs and determine the optimal action to be implemented (problem solving) • in consultation with relevant others, design an initiative to address identified issues. (initiative and enterprise).

Certificate I competency standards

NWP101B Investigate sustainable water cycle management

Unit descriptor This unit of competency describes the outcomes required to understand the water cycle, sustainable water usage and the testing of water quality. The ability to understand the link between the services and systems of the water organisation and supply to, and usage by, the consumer is essential to performance.

Employability skills This unit of competency contains employability skills.

Application of the unit This unit supports the attainment of skills and knowledge required for new entrants to the industry or those who are preparing to enter the water industry workforce or undertaking assignment and field work related to water research. Successful completion of this unit would be facilitated by partnership with a water industry organisation. There are opportunities to integrate delivery and assessment of this unit with mainstream high school programs (mathematics, science, geography, physics, engineering and English).

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

- | | |
|---|---|
| <p>1 Identify water cycle and water systems.</p> | <p>1.1 Find out about and explain continuous cycle of evaporation and condensation that controls distribution of earth's water.</p> <p>1.2 Find out about and explain methods of capturing, storing and distributing water.</p> <p>1.3 Find out about and explain range of <i>water and waste systems</i> used to deliver services.</p> <p>1.4 Find out about and explain community's use of water services.</p> <p>1.5 Use <i>appropriate water industry terms</i> when communicating and reporting.</p> |
| <p>2 Identify sustainable water practices.</p> | <p>2.1 Identify and report ways for households to minimise water usage and increase available supply.</p> <p>2.2 Find out about and report ways for communities to minimise water usage and increase available supply.</p> <p>2.3 Find out about and report <i>ways to increase sources</i> of water supply.</p> |
| <p>3 Assess factors affecting water quality.</p> | <p>3.1 Identify bodies responsible for establishing and managing standards for water quality.</p> <p>3.2 Identify and explain characteristics, requirements and standards for drinking water.</p> <p>3.3 Identify and explain <i>environmental risks and impacts</i> to water services.</p> <p>3.4 Find out about and report methods and procedures used by water organisations to maintain water quality.</p> |

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- research and interpret legal, social, community and environmental requirements and impact on water resource management
- identify system and infrastructure components of selected water systems
- identify agencies involved in water management
- identify environmental policies, plans and procedures
- use literacy skills for verbal and written communication in collaborating, research and reporting.

Required knowledge:

- legal, social, community and environmental requirements which apply to a selected water environment
- terminology applicable to water systems, water usage, water conservation and the water industry
- control procedures for environmental risks and incidents
- principally environmental impact assessment
- primary agencies involved in drinking water quality and environmental management
- water quality performance indicators
- overview of the water supply system
- water hazardous agents and preventative strategies
- community and agency roles and responsibilities in monitoring water quality
- recording methods.

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.

Range of water and waste systems include:

- water catchment systems
- water storage systems
- water treatment systems
- water distribution systems
- stormwater drainage systems
- sewerage systems and sewerage treatment systems
- trade waste treatment systems.

Appropriate water industry terms include:

- sewage versus sewerage
- rising main or pressure main
- reservoirs and tanks
- standpipes
- pumping stations
- water and wastewater
- stormwater

RANGE STATEMENT

- infiltration and inflow
 - pressure and head
 - flow
 - concentration.
- Ways for households** to minimise water usage and increase available supply include:
- installation of water saving fittings
 - behavioural change
 - roof water re-use
 - grey water recycling.
- Ways for communities** to minimise water usage and increase available supply include:
- use of tiered water access or rationing systems
 - promotion and use of incentives to drive behavioural change in consumers
 - planning changes to allow water recycling and re-use
 - introduction of third pipe systems in new housing estates.
- Ways to increase sources** include:
- introduction of desalination plants
 - introduction of new treatment plants and re-use strategies
 - development of new catchment infrastructure.
- Environmental risks and impacts** may include:
- impact of mismanagement of potential pollutants
 - impact of mismanagement of biological agents and contaminants
 - impact of variable and changing water resources
 - community waste disposal
 - impact on urban and non-urban water catchment areas
 - impact on rivers, waterways and channels
 - water and wastewater treatment processes
 - trade waste treatment and disposal processes
 - construction and infrastructure
 - risk factors for catchment water quality
 - backflow and cross-connections
 - stormwater
 - function of wastewater and stormwater systems.

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 research and interpret the water cycle, sustainable water usage and the testing of water quality including:

- identifying and exploring the meaning of the water cycle and implications for community's use of water services
- identifying and exploring systems and customer services offered by water industry organisations

EVIDENCE GUIDE

Context of and specific resources for assessment

- identifying the factors which influence customer expectations and satisfaction
- identifying and exploring factors that can contribute to sustainable water practices within communities and households
- identifying and exploring strategies that can be employed to increase access to water resources
- exploring and communicating factors affecting water quality.

Access to resources including:

- library, water enterprise information, information sources for research and investigation
- mentors, advisors and teachers able to guide and support research and investigation of water resource management
- guided visits to key locations associated with water resource management.

Access must be provided to appropriate learning and assessment support.

Assessment processes and techniques must take into account language, literacy and cultural factors which might have an impact on the candidate's demonstration of competency.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a variety of assignments and activities reflecting the scope and practical requirements of research and practical assignments
- assessment can be through assignments, projects, excursions and 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 underpinning knowledge.

NWP102B Design a basic water system model

Unit descriptor	This unit of competency describes the outcomes required to explore and apply the characteristics of basic water and wastewater systems to a system model. This includes understanding the characteristics of simple water and wastewater systems, together with the application of scientific principles to the development of a working water system model.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for those who are preparing to enter or considering entry to the water industry workforce or further training. When delivered and assessed as part of a qualification, the unit will be customised to ensure its relevance to work-like activities and assignment and field work related water research. The candidate will benefit from partnership with a water industry organisation. There are opportunities to integrate delivery and assessment of this unit with mainstream educational programs (mathematics, science, geography, physics, engineering and English).

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Investigate local water and wastewater systems.	1.1	Find out about and explain <i>source</i> of local water supply system and explore its characteristics.
	1.2	Identify local water distribution system and explain its characteristics.
	1.3	Find out about and explain water metering and allocation system and related water pricing system.
	1.4	Find out about local wastewater collection and treatment systems and explain their characteristics.
2 Apply basic scientific principles to the operation of a water system.	2.1	Explore and explain <i>basic principles governing the natural flow of water.</i>
	2.2	Find out about <i>basic principles governing the distribution of water</i> through pipe networks and explain them.
	2.3	Use scientific principles in the design, construction and operation of a working model of a water system.
	2.4	Use scientific principles to measure the flow of water.
3 Investigate safe and effective operations of water and wastewater systems.	3.1	Find out about potential risks to health of inappropriately installed, managed or used water systems and explain the risks.
	3.2	Find out about potential risks to health of inappropriately installed, managed or used wastewater systems and explain the risks.
	3.3	Find out about and explain <i>ways</i> to use water wisely and dispose of wastewater safely.
	3.4	Find out about and explain ways that communities can improve the efficiency and environmental impact of wastewater management.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- use research and investigation to gather information and test models and hypotheses
- use literacy skills for verbal and written communication
- use interpersonal and communication skills, including listening, questioning and receiving feedback
- work cooperatively and collaboratively with others to complete project tasks
- adapt and modify activities depending on differing project contexts and environments
- use appropriate techniques to solve or report problems identified when completing project tasks
- carry out calculations that may be required when completing tasks, particularly those including the four basic mathematical operations
- apply basic principles of science, including hydraulics, to develop an understanding of the flow of water
- take appropriate initiative to deal with problems and complete tasks
- identify and use equipment, tools and other technology required to complete project tasks
- recognise limitations, ask for help and seek clarification or information about requirements and procedures.

Required knowledge:

- mathematical calculations and techniques
- relevant scientific knowledge, including basic principles of hydraulics, valve operation and pipe layout
- procedures for identifying and using relevant technology when carrying out calculations
- typical problems in the design of simple water systems and appropriate actions and solutions.

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.

Source of local water supply system may be:

- groundwater systems
- river systems
- lakes
- dams.

Basic principles governing the natural flow of water may include:

- introduction to basic fluid mechanics
- introduction to basic hydraulics
- principles governing:
 - hydraulics
 - gradient
 - pressure
 - current and flow
 - depth

RANGE STATEMENT

- Basic principles governing the distribution of water** may include:
- dam design
 - river channel behaviour.
 - introduction to basic engineering principles governing the operation of valves and pumps
 - introduction to basic hydraulic principles governing pipe network design and layout
 - flow measurement.
- Ways to use water wisely and dispose of wastewater safely** may include:
- participation in, or reference to, government programs and initiatives, such as:
 - water recycling
 - storm water catchment and reuse
 - on site treatment
 - Waterwatch program
 - Waterwise program
 - Greening Australia program
 - Landcare program.

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 explore and apply the characteristics of basic water and wastewater systems to a system model including:

- investigating, interpreting and communicating the essential characteristics of local water and wastewater systems
- selecting and applying basic scientific principles associated with the design and construction of a water system model
- problem solving sound practices that can be adopted by householders and communities for the safe and effective management of a water and wastewater system.

Context of and specific resources for assessment

Access to resources including:

- library, water enterprise information, information sources for research and investigation
- mentors, advisors and teachers able to guide and support research and investigation of water resource management
- guided visits to key locations associated with water resource management.

Access must be provided to appropriate learning and assessment support.

Assessment processes and techniques must take into account language, literacy and cultural factors which might have an impact on the candidate's demonstration of competency.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a variety of assignments and activities reflecting the scope and practical

EVIDENCE GUIDE

requirements of research and practical assignments

- assessment can be through assignments, projects, excursions and 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 underpinning knowledge.

NWP103B Demonstrate care and safe practices

Unit descriptor	This unit of competency describes the outcomes required to understand, apply and satisfy safe practices in a work-like context. It includes identifying and following procedures for hazards and risks, monitoring and maintaining cleanliness and tidiness in work activities, and reporting hazards and risks in appropriate ways. It may apply to general OHS requirements and specific workplace policies and procedures. Training and assessment against this unit of competency must incorporate relevant OHS and related legislative requirements.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for those who are preparing to enter the water industry workforce or undertaking assignment and field work related to water research. The candidate will be assisted by partnership with a water industry organisation to achieve the outcomes of this unit in a workplace setting. The work environment for this unit may be a work-like or educational environment.

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Follow safe work procedures.	<p>1.1 Find out about and describe typical <i>hazards</i> associated with working with water.</p> <p>1.2 Check relevant OHS, <i>hazard control procedures</i> and <i>strategies</i> to ensure <i>safe work practices</i> and use them to assess ways to overcome identified hazards.</p> <p>1.3 Check and apply safety procedures for reporting hazards in the work environment.</p> <p>1.4 Use <i>personal protective clothing and equipment</i> specified in safety and workplace procedures.</p>
2 Maintain personal wellbeing in a work environment.	<p>2.1 Assess <i>risks to personal wellbeing</i> which may affect safe performance and follow procedures to address them.</p> <p>2.2 Follow procedures for maintaining a tidy and clean personal work area.</p>
3 Be aware of and report on safety of self and others.	<p>3.1 Identify situations that may endanger own safety and that of other workers and report them.</p> <p>3.2 Deal with incidents and injuries promptly and report them to <i>appropriate people</i> to contact when a problem arises.</p> <p>3.3 Take part in <i>activities</i> to foster safe working.</p>
4 Follow emergency procedures.	<p>4.1 Respond to a range of <i>emergencies</i>.</p> <p>4.3 Follow emergency procedures.</p> <p>4.3 Get help from team members and supervisors when needed.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- use literacy skills for interpreting safety information
- use interpersonal and communication skills, including listening, questioning and receiving feedback
- report activity and location hazards, OHS incidents and related action
- solve or report problems identified when dealing with safety hazards and applying appropriate hazard control procedures
- use personal protective clothing and equipment appropriate for safety risks
- follow instructions.

Required knowledge:

- procedures related to safe work practices to be followed in specific locations
- location hazards and ways to minimise or remove them
- equipment, materials and activities and the processes and precautions for their use
- personal protective clothing and equipment relevant to location and activity
- relevant hygiene and safety standards.

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.

Hazards may include:

- untidy work conditions, including poor hygiene practices and unnecessary obstacles and equipment in work areas
- moving machinery
- materials handling
- working at heights
- lifting objects
- dangerous surfaces
- movement of equipment, goods and vehicles
- oxygen deficiency, toxic gases and confined spaces
- volatile and toxic substances
- live electrical conductors
- sharps in water, including needles, glass and metal fragments
- macerators and sharp mechanical devices
- earth subsidence
- failure of support systems
- high pressure water jets
- drowning
- traffic
- bush navigation and survival.

RANGE STATEMENT

Hazard control procedures

may include:

- emergency, fire and accident procedures
- hazard identification and removal and hazard control
- use of personal protective clothing and equipment
- relevant manufacturer guidelines relating to the operation and use of equipment
- safety regulations
- safe use of chemicals and toxic substances.

Strategies to ensure ***safe work practices*** may include:

- manual handling procedures
- correct posture
- safe lifting and bending
- using appropriate personal protective clothing and equipment
- good hygiene and health maintenance.

Personal protective clothing and equipment may include:

- gloves
- masks
- aprons
- hair covering
- uniform
- safety headwear and footwear
- safety glasses
- two-way radios
- high visibility clothing.

Risks to personal wellbeing

are actions by an individual that may affect their ability to work safely and may include:

- smoking, alcohol and drug use
- lack of sleep
- poor diet
- lack of exercise
- stress
- not using appropriate methods when lifting or moving heavy objects
- not wearing proper personal protective clothing
- not using appropriate personal protective equipment.

Appropriate people may include:

- supervisors
- team leaders
- other persons authorised or nominated by the organisation.

Activities may include:

- problem solving meetings
- suggestion schemes
- regular communication with team leaders
- training
- information sessions.

Emergencies may include:

- accidents, including those that do not result in injury
- injuries such as cuts, scalds and burns

RANGE STATEMENT

- health conditions such as fainting, asthma attacks and allergic reactions
- spills and leakages of harmful gas and liquids
- structural failures and breakages
- fire
- flooding
- getting lost
- power failures or shorts.

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 understand, apply and satisfy safe practices in a work-like water operations context:

- identifying potential water assignment hazards
- understanding and applying appropriate safety requirements and safe work practices
- using appropriate personal protective clothing and equipment
- understanding factors that contribute to personal wellbeing and explore their effect on safety and performance
- understanding and applying procedures for proactively identifying and reporting potential and actual threats to safety
- understanding and applying procedures for dealing with emergency situations.

Context of and specific resources for assessment

Access to resources including:

- library, water enterprise information, information sources for research and investigation
- mentors, advisors and teachers able to guide and support research and investigation of water resource management
- guided visits to key locations associated with water resource management.

Access must be provided to appropriate learning and assessment support.

Assessment processes and techniques must take into account language, literacy and cultural factors which might have an impact on the candidate's demonstration of competency.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a variety of assignments and activities reflecting the scope and practical requirements of research and practical assignments
- assessment can be through assignments, projects, excursions and 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 underpinning knowledge.

NWP104B Sample and test water sources and quality

Unit descriptor This unit of competency describes the outcomes required to collect and prepare water samples and perform water flow and quality tests according to specified standards and parameters relevant to water quality standards.

Training and assessment against this unit of competency must incorporate relevant OHS and related legislative requirements.

Employability skills This unit of competency contains employability skills.

Application of the unit This unit supports the attainment of skills and knowledge required for those who are preparing to enter or considering entry to the water industry workforce or undertaking assignment and field work related to water research. The candidate will be assisted by partnership with a water industry organisation. There are opportunities to integrate delivery and assessment of this unit with mainstream high school programs (mathematics, science, geography, physics, engineering and English). The unit may be applied in a work-like or educational environment.

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

- | | |
|---|--|
| <p>1 Prepare for and conduct water quality sampling.</p> | <p>1.1 Develop sampling plan documenting required <i>samples, sampling locations</i> and sampling schedules to meet <i>assignment requirements</i>.</p> <p>1.2 Select and check appropriate <i>sampling equipment</i> for the task prior to use.</p> <p>1.3 Collect samples according to sampling plan and ensure safety procedures are followed to limit hazards and contamination to self, work area and environment.</p> <p>1.4 Maintain <i>integrity of samples</i> during sampling and label sample containers according to organisational requirements.</p> <p>1.5 Check and record sample information.</p> <p>1.6 Record results of repeat sampling to identify trends.</p> |
| <p>2 Prepare for and conduct water quality tests.</p> | <p>2.1 Confirm instructions for conducting and recording basic water quality tests and <i>plan testing work</i> according to <i>standard practice</i>.</p> <p>2.2 Select, check and use required testing and personal protective clothing and equipment.</p> <p>2.3 Identify and record correct samples for testing.</p> <p>2.4 Conduct <i>basic water quality tests</i> according to standard procedures, ensuring that sample integrity is maintained during the testing process.</p> |

ELEMENT	PERFORMANCE CRITERIA
3 Finalise work.	3.1 Make records according to assignment requirements.
	3.2 Report observations or measurements that are outside established organisational guidelines for further action.
	3.3 Dispose of samples and clean and store test equipment according to organisational procedures.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- prepare, collect, label and preserve water samples
- dispose of waste and spent samples correctly
- produce reports and logs
- plan work activities
- conduct basic water quality tests
- use and calibrate testing equipment
- work effectively as part of a team
- perform task-related calculations
- follow plans and instructions
- apply procedures and standards
- use literacy skills for verbal and written communication in the assignment
- use personal protective clothing and equipment.

Required knowledge:

- types and purposes of water samples
- procedures and techniques for water sampling
- range and purpose of basic water quality testing
- test procedures
- procedures for disposal of waste and excess water samples
- task-related calculations
- relevant policies, procedures and standards
- assignment planning processes.

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.

Samples may include:

- grab, composite or flow-weighted composite samples for:
 - microbiological testing
 - testing for chemical and physical characteristics.

Sampling locations may

- raw water supply, including:

RANGE STATEMENT

include:

- surface water
- groundwater
- water distribution and treatment systems.

Assignment requirements for sampling procedures that may be established in a real or simulated environment may include:

- standard procedures
- Australian Standards, such as AS/NZS 5667 Water quality - sampling
- state Environment Protection Authority sampling guidelines
- legislative requirements
- safety procedures.

Sampling equipment may include:

- buckets or wide-mouthed containers
- depth samplers
- sample dippers
- sterile sample containers:
 - plastic
 - glass
 - test-specific (such as acid washed)
- weighted sample bottles
- dip tubes
- composite and discrete automatic samplers
- equipment for preservation of samples, including:
 - refrigeration
 - cool storage devices
 - screw top containers
 - containers for storing and carrying samples safely.

Integrity of samples is maintained by ensuring:

application of correct:

- holding time
- storage procedures
- sub-sampling procedures.

Plan testing work to address a range of requirements, including:

- timelines
- communication with other team members and individuals
- interpretation of organisational and statutory requirements
- locations, such as:
 - on-site testing
 - field-based testing
 - laboratory
- range of testing procedures and techniques that applies to organisational, plant or field sites
- variety of samples to be tested
- testing equipment to be used
- test reporting systems.

RANGE STATEMENT

Standard practice for testing procedures that may be established in a real or simulated environment, may include:

- standard procedures for testing
- equipment manufacturers' operations manuals
- methods recommended by Australian Public Health Association (APHA) reference document: 'Standard methods for the examination of water and wastewater'
- methods recommended by American Society for Testing Materials (ASTM) International
- safety procedures, including:
 - risk and hazard assessment
 - safe handling of samples and chemicals
 - use of personal protective clothing and equipment
- relevant organisational policies
- local authority regulations and federal, state or territory legislative requirements.

Basic water quality tests include the range of tests required for competent performance of work tasks in an organisational context, and should comprise at least three of the following types of test:

- pH
- temperature
- electrical conductivity
- microscopy
- turbidity
- colour
- chlorine residue
- jar testing
- alkalinity
- hardness
- dissolved oxygen.

Records may include:

- sample records, field detail sheets or chain of custody forms, including information such as:
 - time sample was taken
 - details of person collecting sample
 - sample point
 - volume of sample
 - data gathered at time of collection
 - pre-treatment
 - preservation
 - instructions to transporters
- time and logging of sample receipt and testing
- visual observations
- equipment identification
- atypical results
- test results.

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 collect and prepare water samples and perform water flow and quality tests according to specified standards and parameters relevant to water quality standards including:

- identifying potential hazards in water sampling.
- planning and organising sampling and testing assignment.
- using appropriate sampling and testing equipment and personal protective clothing and equipment.
- understanding and applying procedures for water sampling and testing.
- determining and reporting accurate and relevant results from testing.

Context of and specific resources for assessment

Access to resources including:

- library, water enterprise information, information sources for research and investigation
- mentors, advisors and teachers able to guide and support research and investigation of water resource management
- guided visits to key locations associated with water resource management.

Access must be provided to appropriate learning and assessment support.

Assessment processes and techniques must take into account language, literacy and cultural factors which might have an impact on the candidate's demonstration of competency.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a variety of assignments and activities reflecting the scope and practical requirements of research and practical assignments
- assessment can be through assignments, projects, excursions and 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 underpinning knowledge.

NWP105B Draw and use simple maps, plans and drawings

Unit descriptor	This unit of competency describes the outcomes required to read and interpret maps, plans and drawings and prepare a simple map or plan.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for those who are preparing to enter or considering entry to occupations in water resource management or undertaking assignment and field work related to water research. The candidate will be assisted by partnership with a water industry organisation. There are opportunities to integrate delivery and assessment of this unit with mainstream high school programs (mathematics, science, geography, physics, engineering and English). The unit may be applied in a work-like or educational environment.

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Interpret maps, plans and drawings.	<p>1.1 Find out what types of maps, plans and drawings are used to support work tasks.</p> <p>1.2 Check and interpret key features of maps and site plans and commonly used symbols and abbreviations.</p> <p>1.3 Explain function of the legend.</p> <p>1.4 Check and explain natural and man-made features on maps, plans and drawings.</p>
2 Use maps and plans.	<p>2.1 Explain the orientation of sites.</p> <p>2.2 Follow a map or plan to find identified features in the real world.</p> <p>2.3 Calculate real world distances using maps and plans with a range of scales.</p>
3 Draw a map or plan.	<p>3.1 Prepare a simple map or plan, including selecting tools and equipment and a workable scale, key and abbreviations.</p> <p>3.2 Take real world measurements and record features on a drawing.</p> <p>3.3 Use field notes and measures to draw a local area map.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- read and interpret plans, drawings and specifications
- measure accurately
- communicate effectively
- work effectively as part of a team
- use literacy skills for verbal and written communication in the workplace
- use information provided in maps, plans and drawings to complete a job.

REQUIRED SKILLS AND KNOWLEDGE

Required knowledge:

- the range of maps, plans and drawings to different assignment situations
- measurements and calculations
- features of maps, plans and drawings such as:
 - contours
 - datum points
 - planes
 - gradients
 - sections
 - orthographic projections
 - symbols
 - dimensions
 - terminology.

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.

Types of maps, plans and drawings may include:

- urban and rural topographical maps
- site plans and elevations
- process flow sheets
- survey plans
- sectional plans and elevations
- channel drainage plans
- pipe system plans
- location of assets plans.

Key features of maps and site plans will include combinations of:

- shape and orientation of site
- roads
- railways
- easements
- existing buildings and structures
- services, including:
 - drainage
 - sewerage
 - gas
 - water
 - electricity
 - telecommunications
- dimensions

RANGE STATEMENT

- grades of pipelines and channels
- tree preservation orders
- geographical features
- power and transmission lines
- heritage and cultural features
- types of structures, including:
 - buildings
 - bridges
 - fabricated towers
 - fences
 - pipelines
 - regulators
 - poles
 - environmental barriers
- environmental features, including:
 - fauna and flora habitats
 - cultural features
 - heritage features
 - water catchments
 - shape of structure and building
 - service requirements
 - location of plant and equipment
 - vertical and horizontal measurements
 - clearance distance
 - geological features
 - service layouts
 - bore and casing details.
- relationship to north
- currency of plan
- relationship between plan and site.

Orientation of sites may include:

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 read and interpret maps, plans and drawings and prepare a simple map or plan including:

- interpreting all relevant information on maps, plans and drawings to facilitate assignment or project.
- preparing a simple map or plan that represents a real world local

EVIDENCE GUIDE

Context of and specific resources for assessment	<p>environment.</p> <p>Access to resources including:</p> <ul style="list-style-type: none">• library, water enterprise information, information sources for research and investigation• mentors, advisors and teachers able to guide and support research and investigation of water resource management• guided visits to key locations associated with water resource management. <p>Access must be provided to appropriate learning and assessment support.</p> <p>Assessment processes and techniques must take into account language, literacy and cultural factors which might have an impact on the candidate's demonstration of competency.</p> <p>Validity and sufficiency of evidence requires that:</p> <ul style="list-style-type: none">• competency will need to be demonstrated over a variety of assignments and activities reflecting the scope and practical requirements of research and practical assignments• assessment can be through assignments, projects, excursions and simulated project-based activity and must include evidence relating to each of the elements in this unit. <p>In all cases where practical assessment is used it will be combined with targeted questioning to assess underpinning knowledge.</p>
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Certificate II competency standards

NWP201B Follow defined OHS procedures and regulatory requirements

Unit descriptor	This unit of competency describes the outcomes required to follow defined OHS procedures and regulatory requirements related to the work being undertaken in order to ensure one's own safety and that of others in the workplace.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for all operators within the water industry to be able to understand and apply OHS policies and processes within the workplace.
Competency field	Common

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Apply workplace OHS procedures.	<p>1.1 Recognise and understand <i>workplace OHS policies and procedures</i>.</p> <p>1.2 Apply OHS policies and procedures in designated workplaces.</p> <p>1.3 Identify <i>personnel with OHS responsibilities</i> and apply workplace procedures for managing OHS.</p>
2 Follow workplace procedures for hazard identification and risk control.	<p>2.1 Identify <i>potential hazards relating to specific jobs</i> and roles within the workplace and consider and assess control measures.</p> <p>2.2 Recognise hazards in relation to specific work or work areas and report them to designated personnel according to workplace procedures.</p> <p>2.3 Follow <i>workplace procedures</i> and work instructions for controlling risks.</p> <p>2.4 Follow workplace procedures for dealing with incidents, accidents and emergencies and complete appropriate reporting.</p>
3 Contribute to participative arrangements for the management of OHS.	<p>3.1 Raise OHS issues with designated personnel according to workplace procedures and relevant OHS legislation.</p> <p>3.2 Make contributions to participative arrangements for OHS management in the workplace within organisational procedures and scope of work responsibilities.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- interpret and apply relevant legislative responsibilities
- interpret and apply safety systems
- identify and report hazards
- work effectively as part of a team

REQUIRED SKILLS AND KNOWLEDGE

- apply personal risk control strategies
- communicate effectively in the workplace
- use literacy skills in regard to verbal and written communication in the workplace
- complete basic workplace records and reports.

Required knowledge:

- relevant legislative and statutory requirements and responsibilities
- site and equipment safety systems
- reporting procedures
- manual handling procedures
- personal safety measures
- workplace hazards
- risk control procedures
- signs and symbols in the workplace
- water hazardous agents and preventative strategies.

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.

Workplace OHS policies and procedures may be informed by and address:

- relevant federal and state or territory OHS legislation and regulations
- codes of practice, associated standards and guidance material
- documented organisational policies, manuals and induction programs

Personnel with OHS responsibilities may include:

- team leaders and workplace supervisors
- nominated OHS representatives
- members of OHS workplace committees.

Potential hazards relating to specific jobs will vary according to the operations of the workplace and nature of work being undertaken. It is important that the scope of work and risks are canvassed. Potential risks may include:

- those associated with working:
 - in confined spaces
 - at height
 - with hazardous substances
 - with electricity
 - with plant and equipment
- specific hazards relating to the water industry, including:
 - engulfment hazards
 - hygiene (wastewater treatment)
 - needles in public recreation areas (dams).

Workplace procedures may include:

- hazard policies and procedures
- emergency, fire and accident procedures

RANGE STATEMENT

- senior first aid
- practical emergency response techniques
- basic incident management
- procedures for the use of personal protective clothing and equipment
- hazard identification and issue resolution procedures
- tag-out
- lock-out
- confined space entry permits
- job procedures and work instructions
- job evaluation safety analysis (JESA)
- job safety analysis (JSA).

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 follow defined OHS procedures and regulatory requirements related to the work being undertaken in order to ensure one's own safety and that of others in the workplace including:

- following procedures for health and safety, risk control and hazard management for a range of tasks falling within the job role
- recording and reporting a hypothetical workplace accident according to enterprise and workplace procedures
- selecting, checking, using and maintaining personal protective equipment, for example that required to enter a confined space.

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
- access to a range of work locations, activities and equipment which require demonstration of OHS procedures compliance.

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

EVIDENCE GUIDE

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.

NWP202B Apply environmental and licensing procedures

Unit descriptor	This unit of competency describes the outcomes required to implement established environmental and licensing procedures, contribute to improved environmental practices, and identify and minimise environmental risks and the impact of work-related activities on the local environment.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff, construction workers and other operators within the water industry.
Competency field	Common

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Relate environmental procedures to specific project or site.	1.1 Identify and apply organisation's environmental procedures.
	1.2 Identify and apply relevant legislative, regulatory and licensing requirements .
	1.3 Identify and record environmental risks and impacts at particular job sites according to organisational requirements.
	1.4 Plan work, incorporating appropriate control measures to overcome identified risks, and meet required environmental outcomes on specific project or site .
2 Apply established environmental procedures.	2.1 Undertake work on project or site according to organisation's established environmental procedures.
	2.2 Apply organisational procedures for dealing with environmental incidents.
3 Report on environmental processes and incidents.	3.1 Access and maintain documentation relating to environmental management.
	3.2 Identify environmental risks and record and report incidents according to organisational procedures and practices.
	3.3 Follow reporting procedures for monitoring conformity according to organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- interpret and apply relevant legislative responsibilities
- identify and respond to operational problems
- access, interpret and apply standard operating procedures
- communicate effectively with internal and external customers
- use literacy skills in regard to verbal and written communication in the workplace

REQUIRED SKILLS AND KNOWLEDGE

- apply environmental policies, plans and procedures
- work effectively as part of a team
- apply control procedures to environmental risks and incidents
- perform work-related calculations
- assess environmental risks at local work site
- complete basic workplace records and reports.

Required knowledge:

- relevant legislative requirements and responsibilities
- standard operating procedures
- established environmental management procedures
- control procedures for environmental risks and incidents
- risk assessment procedures
- environmental impact assessment
- water cycle
- ecologically sustainable development
- heritage conservation
- primary agencies involved in drinking water quality management
- water quality performance indicators
- overview of water supply system
- water hazardous agents and preventative strategies
- community and agency roles and responsibilities in monitoring water quality
- recording procedures
- basic workplace reporting procedures.

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.

Legislative, regulatory and licensing 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.

Environmental risks and impacts may include:

- management of chemicals
- management of biological agents
- impact on limited water resources
- spillage
- waste disposal
- impact on urban and non-urban water catchment areas

RANGE STATEMENT

- Specific project or site** may include:
- impact on rivers, waterways and channels
 - water and wastewater treatment processes
 - trade waste treatment and disposal processes
 - construction conditions and processes.
 - buildings
 - plants
 - construction and maintenance sites
 - workshops
 - laboratories
 - bulkwater storage sites
 - surface or groundwater sites
 - catchments
 - flood plains
 - irrigation sites
 - wetlands
 - drainage sites
 - waste disposal sites.
- Environmental management **documentation** may include:
- information on applicable environmental laws or regulatory conditions
 - complaint records
 - training records
 - process information
 - process operational logbooks
 - inspection, maintenance and calibration records
 - relevant contractor and supplier information
 - incident reports
 - information on emergency preparedness and response
 - records of significant environmental impacts
 - compliance records
 - audit reports
 - incident management policy, guidelines, plans and procedures
 - incident management standards
 - site operating licences
 - environmental impact plans
 - statement of environmental effects
 - management reviews.
- Recording and reporting** may include:
- following procedures relevant to the role and organisation, which may require:
 - written reports
 - proforma reports

RANGE STATEMENT

Incidents may include:

- verbal reports.
- emissions to air
- releases to/of water
- releases to land
- vibration and noise
- disposal of waste
- contamination of land
- impact on communities
- destruction of habitat
- use of energy sources
- waste generation processes and technologies
- impact on culturally significant sites
- and may involve the implementation of emergency responses.

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 implement established environmental and licensing procedures including:

- contributing to improved environmental practices
- identifying and minimising environmental risks and the impact of work-related activities on the local environment
- assessing environmental protection requirements of a work site
- implementing appropriate environmental protection procedures
- assessing and reporting environmental risks and incidents.

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

EVIDENCE GUIDE

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.

NWP203B Plan and organise personal work activities

Unit descriptor	This unit of competency describes the outcomes required to plan and organise personal work activities to meet specified outcomes, including identifying and using resources and equipment and applying customer service policies.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff who work under supervision but who are required to exercise responsibility for their own effective work performance.
Competency field	Common

ELEMENT

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and conduct assigned work activities.	1.1 Identify work activities and relevant legislation and organisational procedures .
	1.2 Organise and plan work activities to achieve agreed outcomes.
	1.3 Identify and obtain resources to complete planned work activities.
2 Monitor quality of work.	2.1 Interpret and check instructions against relevant organisational standards of work.
	2.2 Seek clarification of work instructions as required.
	2.3 Monitor and adjust work according to requirements for job quality, customer service, public responsibility and resource use.
3 Provide and obtain feedback and information on work activities.	3.1 Record and report work activities according to organisational requirements.
	3.2 Access appropriate avenues to provide suggestions for improvement to personal work performance.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- prepare, identify and respond to operational problems
- complete basic reports, records and logs
- follow work instructions
- follow policies, procedures and standards
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- communicate such things as work requirements effectively
- assertiveness
- time management.

REQUIRED SKILLS AND KNOWLEDGE

Required knowledge:

- organisational reporting and communication systems
- work planning processes
- legislative and organisational policies, procedures and standards
- administrative procedures
- quality systems
- organisational procedures for contractors
- reporting procedures.

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.

Legislation and organisational procedures include:

- by-laws and organisational policies
- standard operating procedures
- equal employment opportunity
- OHS.

Plan work activities will require:

- interpretation of instructions and directions
- assessment and prioritisation of workload
- adherence to timelines
- interaction and communication with team members and individuals
- interpretation of legislation and organisational procedures
- reference to:
 - productivity requirements
 - total quality management principles
 - customer service requirements.

Record and report information relating to work activities, including:

- completion of time sheets
- requisitions
- work sheets and job cards
- basic workplace records and verbal or written reports.

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 plan and organise personal work activities to meet specified outcomes, including:

- identifying and using resources and equipment
- applying customer service policies
- identifying, prioritising and planning work tasks
- identifying and applying appropriate quality standards
- monitoring work performance and seeking feedback.

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.

NWP207A Work effectively in the water industry

Unit descriptor	This unit of competency describes the outcomes required to work effectively in the water industry. It requires an understanding of the role of water organisations in the community, services they provide, water systems used, the importance of maintaining water quality, and structure of the organisation.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for new entrants to the industry or those who are preparing to enter the water industry workforce.
Competency field	Common

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Assess the importance of water services to the community.	1.1	Explore and explain structure of the water industry nationally, at a state and territory level, and locally.
	1.2	Explore and explain range of water and waste systems used to deliver services.
	1.3	Explore and explain community's use of water services.
	1.4	Review and assess strategies to ensure long-term water sustainability.
2 Assess the factors affecting water quality.	2.1	Review legislative, regulatory and licensing requirements governing the organisation and understand their impact.
	2.2	Identify characteristics, requirements and standards for drinking water.
	2.3	Conduct simple tests for assessing water quality.
	2.4	Identify and assess environmental risks and impacts to water services.
	2.5	Identify organisational procedures for maintaining water quality.
3 Apply knowledge and understanding of the organisation's systems and structure to work.	3.1	Identify and describe water and waste systems and infrastructure used by the organisation in delivery of its services.
	3.2	Review and describe organisation's management structure and role relationships.
	3.3	Review and apply organisation's key policies and procedures.
	3.4	Review and apply standard reporting procedures and identify impact on own work.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- access, interpret and apply relevant organisational and legislative requirements

REQUIRED SKILLS AND KNOWLEDGE

- identify system and infrastructure components
- identify organisational structure and its components
- identify environmental policies, plans and procedures
- perform work-related calculations
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- complete basic workplace records and reports.

Required knowledge:

- relevant legislative requirements and responsibilities
- standard operating procedures
- established environmental management procedures
- risk management principles
- control procedures for environmental risks and incidents
- environmental impact assessment
- primary agencies involved in drinking water quality management
- water quality performance indicators
- overview of the water supply system
- water hazardous agents and preventative strategies
- community and agency roles and responsibilities in monitoring water quality
- recording procedures
- basic workplace reporting procedures.

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.

Range of water and waste systems may include:

- water catchment systems
- water storage systems
- water treatment systems
- water distribution systems
- stormwater drainage systems
- sewerage systems and sewerage treatment systems
- trade waste treatment systems.

RANGE STATEMENT

Strategies to ensure long-term water sustainability may include:

- water conservation, including:
 - water saver fittings and fixtures
 - behavioural change
 - water rationing strategies
 - water recycling and re-use
 - water treatment and re-use
 - third pipe systems
 - improved catchment and storage.

Legislative, regulatory and licensing requirements will 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.

Environmental risks and impacts may include:

- impact of mismanagement of chemicals
- impact of mismanagement of biological agents
- detrimental impact on limited water resource
- spillage
- waste disposal
- detrimental impact on urban and non-urban water catchment areas
- detrimental impact on rivers, waterways and channels
- unsatisfactory water and wastewater treatment processes
- unsatisfactory trade waste treatment and disposal processes
- poor construction processes.

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 work effectively in the water industry including:

- assessing water sustainability strategies, with reference to the structure of the water industry and water industry services
- identifying characteristics of water quality and applying procedures for maintaining water quality to legislation and organisational requirements
- applying key organisational policies and procedures to a specific job role.

EVIDENCE GUIDE

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.

NWP208A Perform basic wastewater tests

Unit descriptor	This unit of competency describes the outcomes required to perform basic wastewater tests.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with responsibility for preparing for, conducting and reporting on basic wastewater tests in wastewater treatment and system operations.
Competency field	Common

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Prepare for basic wastewater tests.	1.1	Receive instructions for conducting and recording basic wastewater tests and confirm with appropriate personnel.
	1.2	Confirm testing details and plan testing work according to legislative and organisational requirements .
	1.3	Select, fit and use personal protective equipment specified for routine wastewater tests.
	1.4	Prepare and check testing equipment according to organisational requirements.
2 Conduct basic wastewater tests.	2.1	Locate and identify correct samples for testing and report abnormal sample characteristics .
	2.2	Conduct basic wastewater tests according to organisational requirements.
	2.3	Maintain integrity of samples during testing.
	2.4	Identify atypical data and take appropriate action.
3 Finalise work.	3.1	Record relevant information according to organisational requirements.
	3.2	Dispose of samples and clean and store test equipment according to organisational procedures.
	3.3	Clear and restore work area according to organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- conduct basic wastewater tests
- calibrate testing equipment
- operate testing equipment
- conduct sub-sampling

REQUIRED SKILLS AND KNOWLEDGE

- dispose of samples and waste
- communicate effectively
- produce reports and logs
- perform relevant work-related calculations
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- interpret work requirements.

Required knowledge:

- range and purpose of basic wastewater testing
- procedures for the use of instruments and other field-testing equipment
- test procedures
- relevant work-related calculations
- maintenance and storage of reagents
- sub-sampling and basic wastewater test methods
- documentation procedures for test results
- sample and waste disposal procedures
- relevant legislative and organisational requirements.

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.

Basic wastewater tests

include:

- range of tests required for competent performance of work tasks in the organisational context, which should comprise at least three of the following types of test:
 - pH
 - temperature
 - electrical conductivity
 - dissolved oxygen
 - microscopy
 - thirty minute settleability
 - settleable solids concentration (cone test)
 - turbidity.

Testing details may include:

- locations, including:
 - on-site testing
 - field-based testing
 - laboratory
- range of testing procedures and techniques that apply to organisational, plant or field sites
- variety of samples to be tested

RANGE STATEMENT

- testing equipment
 - test reporting systems.
- Planning of testing work** may include:
- interpretation of instructions and directions
 - timelines
 - interaction and communication with team members and individuals
 - interpretation of legislative and organisational requirements.
- 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.
- Testing equipment** may include:
- portable meters, such as:
 - pH meters
 - electrical conductivity meters
 - thermistors
 - comparators
 - pocket colorimeters
 - dissolved oxygen meters
 - test kits
 - microscopes
 - thermometers
 - Imhoff cones
 - graduated cylinders and settling apparatus.
- Abnormal sample characteristics** may include:
- insufficient sample volume
 - odour
 - visible contaminants, such as:
 - scum
 - debris
 - discolouration.
- Maintaining integrity of samples** may include application of correct:
- holding time
 - storage procedures
 - sub-sampling procedures.
- Atypical data** may include:
- results that fall outside organisational range requirements
 - results that fall outside legislated range requirements.
- Information** may include:
- time and logging of sample receipt and testing
 - visual observations
 - equipment identification

RANGE STATEMENT

- atypical results
- test results.

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 perform basic wastewater tests by:

- interpreting testing requirements and procedures
- preparing, checking and using equipment correctly
- conducting at least three different tests safely while maintaining the integrity of samples
- recording all relevant information.

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.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the

EVIDENCE GUIDE

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.

NWP209B Use maps, plans, drawings and specifications

Unit descriptor	This unit of competency describes the outcomes required to read and interpret maps, plans, drawings and specifications.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff involved in the location, construction and maintenance or repair of assets, such as plants, pump stations and infrastructure.
Competency field	Common

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Interpret maps, plans and drawings.	1.1 Identify main types of maps, plans, drawings and specifications used to support work tasks.
	1.2 Identify parts of water systems and their interrelationship on a range of drawing types.
	1.3 Interpret commonly used symbols and abbreviations.
	1.4 Interpret function of the legend.
	1.5 Verify latest version of map, plan or drawing.
2 Use maps and site plans to support work activities.	2.1 Apply organisation's system for managing maps and plans .
	2.2 Apply relevant technologies used to gather, record and monitor, map and plan data.
	2.3 Identify function and key features of maps and site plans in the planning of work.
	2.4 Identify orientation of the site .
	2.5 Identify and isolate access from roadways to work site.
	2.6 Determine materials and distances from plans and drawings.
3 Read and interpret specifications.	3.1 Relate specifications to particular maps and plans and identify quality standards.
	3.2 Identify and determine types of details from works specifications.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- read and interpret maps, plans, drawings and specifications
- measure accurately
- communicate effectively
- work effectively as part of a team

REQUIRED SKILLS AND KNOWLEDGE

- use literacy skills in regard to verbal and written communication in the workplace
- use information provided in maps, plans and drawings to complete a job and in different work situations.

Required knowledge:

- measurements and calculations
- contours
- datum points
- planes
- gradients
- sections
- orthographic projection
- symbols
- dimensions
- terminology.

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.

Types of maps, plans, drawings and specifications may include:

- urban and rural topographical maps
- site plans and elevations
- process flow sheets
- survey plans
- sectional plans and elevations
- channel drainage plans
- pipe system plans
- location of assets plans
- details and specifications providing illustrations and dimensions.

System for managing maps and plans used within organisation may be:

- geographic information systems
- electronic plans management systems
- manual systems
- hard copy systems.

Technologies used to gather, record and monitor map and plan data may:

- vary across organisations
- include use of global positioning system (GPS) technology and require the use of portable navigation devices by operators.

Key features of maps and site plans will include combinations of:

- shape and orientation of site
- roads
- railways

RANGE STATEMENT

- easements
- existing buildings and structures
- services, including:
 - drainage
 - sewerage
 - gas
 - water
 - electricity and telecommunications
- dimensions
- grades of pipelines and channels
- tree preservation orders
- geographical features
- power and transmission lines
- heritage and cultural features
- types of structure, including:
 - buildings
 - bridges
 - fabricated towers
 - fences
 - pipelines
 - regulators
 - poles
- environmental barriers
- environmental features, including:
 - fauna and flora habitats
 - cultural features
 - heritage features
 - water catchments
- shape of structure and building
- service requirements
- location of plant and equipment
- vertical and horizontal measurements
- clearance distance
- geological features
- service layouts
- bore and casing details.
- relationship to north
- currency of plan
- relationship between plan and site.

Orientation of the site may include:

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 read and interpret maps, plans, drawings and specifications including:

- locating correct maps, plans, drawings and specifications for work tasks
- interpreting correctly all relevant information in maps, plans, drawings and specifications to enable the work to be performed correctly, effectively and according to organisational quality standards.

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.

NWP210B Perform basic water quality tests

Unit descriptor	This unit of competency describes the outcomes required to perform basic water quality tests.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with responsibility for preparing for, conducting and reporting on basic water quality tests in general water industry and water treatment operations.
Competency field	Common

ELEMENT

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Prepare for basic water quality tests.	1.1	Receive instructions for conducting and recording basic water quality tests and confirm with appropriate personnel.
	1.2	Confirm testing details and plan testing work according to legislative and organisational requirements .
	1.3	Select, fit and use personal protective equipment specified for routine water tests.
	1.4	Prepare and check testing equipment according to organisational requirements.
2 Conduct basic water quality tests.	2.1	Identify and check correct samples for testing and report abnormal sample characteristics .
	2.2	Conduct basic water quality tests according to organisational requirements.
	2.3	Maintain integrity of samples during testing.
	2.4	Identify atypical data and take appropriate action.
3 Finalise work.	3.1	Record relevant information according to organisational requirements.
	3.2	Dispose of samples and clean and store test equipment according to organisational procedures.
	3.3	Clear and restore work area according to organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- conduct basic water quality tests
- calibrate testing equipment
- operate testing equipment
- conduct sub-sampling

REQUIRED SKILLS AND KNOWLEDGE

- dispose of samples and waste
- communicate effectively
- produce reports and logs
- perform relevant work-related calculations
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- interpret work requirements.

Required knowledge:

- range and purpose of basic water quality testing
- test procedures
- abnormal characteristics of water samples
- atypical test result data
- relevant work-related calculations
- maintenance and storage of reagents
- requirements for maintaining sample integrity
- documentation procedures for test results
- sample and waste disposal procedures
- relevant legislative and organisational requirements.

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.

Basic water quality tests

include:

- range of tests required for competent performance of work tasks in the organisational context
- should comprise at least three of the following types of test:
 - pH
 - temperature
 - electrical conductivity
 - microscopy
 - turbidity
 - colour
 - chlorine residual
 - jar testing
 - hardness
 - dissolved oxygen.

Testing details may include:

- locations, including:
 - on-site testing
 - field-based testing

RANGE STATEMENT

- laboratory
- range of testing procedures and techniques that apply to organisational, plant or field sites
- variety of samples to be tested
- testing equipment to be used
- test reporting systems.
- interpretation of instructions and directions
- timelines
- interaction and communication with team members and individuals
- interpretation of legislative and organisational requirements.
- 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.
- portable meters, such as:
 - pH meters
 - electrical conductivity meter
 - thermistors
 - comparators
 - pocket colorimeters
 - dissolved oxygen meters
 - test kits
- microscopes
- thermometers.
- insufficient sample volume
- odour
- visible contaminants, such as:
 - scum
 - debris
 - discolouration.
- application of correct:
 - holding time
 - storage procedures
 - sub-sampling procedures.
- results that fall outside organisational range requirements
- results that fall outside legislated range requirements.

Plan testing work may include:

Legislative and organisational requirements may include:

Testing equipment may include:

Abnormal sample characteristics may include:

Maintaining integrity of samples may include:

Atypical data may include:

RANGE STATEMENT

Information may include:

- time and logging of sample receipt and testing
- visual observations
- equipment identification
- atypical results
- test results.

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 perform basic water quality tests by:

- interpreting testing requirements and procedures
- preparing, checking and using equipment correctly
- conducting at least three different types of test safely while maintaining the integrity of samples
- recording all relevant information.

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

EVIDENCE GUIDE

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.

NWP211B Use computerised systems

Unit descriptor	This unit of competency describes the outcomes required to operate computer-based information systems to support the administration of the organisation's work.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for administration, field and operational staff involved in accessing, entering and retrieving information.
Competency field	Common

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Operate the organisation's computer system.	1.1	<i>Operate software programs</i> relevant to role and maintain <i>integrity of system</i> .
	1.2	Apply OHS requirements relevant to use of organisation's computer system.
	1.3	Consult designated organisational personnel, as required, for advice and assistance in operating computer systems.
	1.4	Identify system or operational problems when using the system and notify relevant personnel for resolution.
2 Use computer systems to access, enter and retrieve workplace information.	2.1	Locate, open and use relevant workplace information according to organisational requirements.
	2.2	Enter relevant workplace data according to organisational requirements.
	2.3	Produce basic reports as required.
3 Check and edit work, and exit system.	3.1	Check, edit, save, print and file work according to organisational requirements.
	3.2	Exit and close down the system according to system and organisational procedures.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and report operational problems
- use computers to collect and analyse data
- produce reports and logs
- use literacy skills in regard to verbal and written communication in the workplace
- apply procedures and standards.

Required knowledge:

- standard operations of computerised information systems

REQUIRED SKILLS AND KNOWLEDGE

- procedures for retrieving, collecting and monitoring data
- computer-generated information, including reports, documents, files and databases
- organisational requirements and procedures for entering data relevant to position and tasks
- basic workplace reports and forms
- OHS requirements regarding computer use.

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.

Operation of software systems may include:

- start, stop and adjustment of processes
- maintenance of records and reports on process performance
- creation and maintenance of work plans and work reports.

Software programs will include:

- proprietary commercial software packages for creating, accessing and retrieving data
- in-house developed or 'tailored' software packages.

Integrity of system includes:

- confidentiality of data and information
- appropriate storage and backup of information
- exercising due care with internet and email programs.

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:

- perform each task outlined in the elements consistently and in a representative range of contexts
- meet the performance criteria associated with each element by employing the techniques, procedures, information and resources available in the workplace from those listed in the range statement
- demonstrate an understanding of the underpinning knowledge and the application of skills as described in the required skills and knowledge section.

The candidate should demonstrate the ability to:

- use a variety of software programs relevant to job role
- ensure integrity of software systems, data and information
- start, stop and adjust processes, as required
- complete records and reports.

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

EVIDENCE GUIDE

- 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.

NWP213B Monitor and operate irrigation, stock and domestic delivery systems

Unit descriptor	This unit of competency describes the outcomes required to operate and check irrigation, stock and domestic supply systems to ensure the delivery of water.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with responsibility for delivering raw water supplies to meet customer orders.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Interpret delivery requirements.	1.1 Plan deliveries according to customer orders and schedules .
	1.2 Monitor system flow rates or sources to ensure orders can be met.
2 Operate irrigation or stock and domestic supply systems.	2.1 Identify and apply organisational requirements, plans, orders and schedules for the operation of irrigation or stock and domestic supply system.
	2.2 Operate irrigation or stock and domestic supply system according to organisational procedures and legislative requirements , using safe work methods and appropriate equipment .
	2.3 Monitor deliveries, record adjustments and irregularities, and communicate as required.
3 Record and report work activities.	3.1 Identify actual and potential problems that may reduce service standards and communicate to relevant personnel.
	3.2 Record and report workplace activities according to legislative and organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce basic reports and logs
- operate communications equipment
- give and receives instructions
- follow plans, charts and instructions
- use safety equipment and personal protective equipment
- communicate with customers and other employees
- work effectively as part of a team

REQUIRED SKILLS AND KNOWLEDGE

- perform work-related calculations
- operate irrigation or stock and domestic supply system
- check channel flow and water deliveries
- use literacy skills in regard to verbal and written communication in the workplace
- identify control system faults.

Required knowledge:

- impact of the principles of hydraulics on the operation of flows
- layout of drainage or irrigation system
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- communication systems
- service requirements specified in customers' contracts
- risk factors and potential hazards involved with water system
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of system, site and plant
- flow measurement procedures
- control systems.

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.

- Orders and schedules*** for water delivery may require:
- interaction and communication with other employees, other authorities and general public
 - meeting customers' contracts or supply orders and requests
 - visual and electronic observation
 - implementation of reporting procedures that may also include procedures for the implementation of by-laws, organisational policies and statutory requirements.
- Flow rates or sources*** may include delivery by:
- irrigation channel
 - pipeline
 - water tanker.
- Organisational procedures and legislative 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:
- personal protective equipment
 - hard copy chart recording systems
 - mechanical flow usage meters

RANGE STATEMENT

- basic hand and power tools
- on- and off-road vehicles
- communication equipment
- bar pulling equipment
- computerised equipment.

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 check irrigation, stock and domestic supply systems to ensure the delivery of water including:

- interpreting irrigation or drainage requirements
- operating, adjusting and monitoring irrigation or drainage system in a given area
- ensuring that water is delivered to schedule
- identifying and reporting problems and irregularities
- completing relevant records and reports.

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

EVIDENCE GUIDE

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.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- operate communications equipment
- give and receive instructions
- follow plans, charts and instructions
- perform work-related calculations
- use safety equipment and personal protective equipment
- communicate with customers and other employees
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- secure metering devices.

Required knowledge:

- relevant utilities and service bodies
- organisation's communication systems
- materials handling
- environmental, landscape and ground structure of water and wastewater systems
- risk factors and potential hazards involved with water systems
- equipment operation, capacity and limitations
- effects of weather and conditions on site
- meter types
- equipment placement and operation
- metering measurement procedures
- data collection and recording system
- lock-out procedures for mechanical and electrical installations.

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.

Safety requirements to be considered in planning work include:

- where relevant, meeting requirements to work in confined spaces and at heights
- use of appropriate personal protective equipment
- organisational electrical safety procedures
- adherence to OHS policies, and statutory and regulatory requirements.

RANGE STATEMENT

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.

Basic metering equipment may include:

- domestic
- industrial
- commercial
- volumetric metering equipment.

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 install and replace basic volumetric metering equipment for domestic, industrial and commercial premises including:

- planning and preparing for installation or replacement of basic volumetric metering equipment
- installing or replacing meters
- reading meters and report faults
- completing reports.

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
- the assessor has complete confidence in the person's competence over time and in various contexts

EVIDENCE GUIDE

- 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.

NWP216B Install basic metering equipment and flow control devices for irrigation systems

Unit descriptor This unit of competency describes the outcomes required to install meters, flow control and regulating devices for irrigation systems. These installations may occur in ground and surface water source irrigation systems.

Employability skills The required outcomes described in this unit of competency contain applicable facets of employability skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying employability skill requirements.

Application of the unit This unit supports the attainment of skills and knowledge required for field and operational staff involved in the accurate installation of key water industry metering and flow control devices.

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

- | | |
|--|--|
| 1 Plan and prepare work. | <p>1.1 Apply work requirements for installation of flow control and metering devices in irrigation systems from plans, specifications and instructions.</p> <p>1.2 Prepare work plans to ensure safety within the workplace.</p> <p>1.3 Select and check equipment and tools to meet safety requirements of the task and site.</p> <p>1.4 Select, fit and use personal protective equipment.</p> |
| 2 Install flow control devices in irrigation systems. | <p>2.1 Carry out installation of flow control devices in irrigation systems according to manufacturer guidelines and legislative and organisational requirements.</p> <p>2.2 Check that installed flow control devices meet specifications.</p> |
| 3 Install metering devices in irrigation systems. | <p>3.1 Carry out installation of flow metering devices in irrigation systems according to manufacturer guidelines and legislative and organisational requirements.</p> <p>3.2 Check that installed metering devices meet specifications.</p> |
| 4 Maintain flow control and metering devices in irrigation systems. | <p>4.1 Carry out routine inspections of flow control and metering facilities in irrigation systems according to organisational procedures.</p> <p>4.2 Carry out preventative maintenance and service of equipment and facilities according to manufacturer guidelines and organisational requirements.</p> |
| 5 Review, record and report activities. | <p>5.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.</p> <p>5.2 Restore work site to meet environmental and organisational requirements.</p> <p>5.3 Record and report activities according to organisational procedures.</p> |

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- operate communications equipment
- follow plans, charts and instructions
- perform work-related calculations
- follow procedures and standards
- use safety equipment and personal protective equipment
- communicate with customers and other employees
- work effectively as part of a team
- install flow control devices
- install metering devices
- use literacy skills in regard to verbal and written communication in the workplace
- identify control system or metering faults.

Required knowledge:

- impact of the principles of hydraulics on the operation of flows
- system layout
- lock-out procedures for mechanical and electrical installations
- organisational communication systems
- effective workplace communication processes
- materials handling
- environmental, landscape and ground structure of work area
- risk factors and potential hazards
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of system, site and plant
- flow measurement principles and procedures
- layout and performance of pipes and fittings
- operation of control systems.

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.

Flow control and metering devices may include:

- flow directional gates
- regulators
- pumping systems, including:
 - centrifugal
 - Archimedes screw type

RANGE STATEMENT

- submersible
- positive displacement
- valving systems, including:
 - sluice
 - gate
 - blade
 - non-return
- doors, drop structures and bars
- electronic monitoring and metering systems
- mechanical flow usage meters
- Dethridge-type wheels.

Equipment and tools used may include:

- hand and power tools
- on- and off-road vehicles
- lifting and winching equipment
- mechanical excavation equipment
- chemical spraying apparatus
- small marine craft
- personal protective equipment.

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.

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 install meters, flow control and regulating devices for irrigation systems:

- planning and preparing the installation of flow control and metering devices
- interpreting plans, specifications and instructions for installation of flow control devices
- interpreting plans, specifications and instructions for installation of basic metering devices
- conducting routine inspections, maintenance and servicing of basic metering, flow control and regulating devices
- completing relevant workplace documentation.

Context of and specific

Access to the workplace and resources including:

EVIDENCE GUIDE

resources for assessment

- 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.

NWP218B Perform and record sampling

Unit descriptor	This unit of competency describes the outcomes required to collect and prepare water and wastewater samples according to legislative and organisational standard operating procedures.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with specific responsibility for collecting grab or composite water samples.
Competency field	Common

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Prepare for water quality sampling.	1.1	Confirm required samples , procedures for sampling and sampling locations according to organisational requirements .
	1.2	Select sampling equipment according to specified samples required and appropriate sample preservation methods .
	1.3	Identify, check and prepare materials, equipment and resources required to satisfy job plan according to organisational requirements.
	1.4	Plan sampling work activities to comply with sampling plan and organisational requirements.
2 Conduct water quality sampling.	2.1	Collect samples ensuring that sample types, sampling locations and sampling times comply with sampling plan.
	2.2	Maintain integrity of samples during sampling and label sample containers according to organisational requirements.
	2.3	Follow approved safety procedures to limit hazards and contamination to self, work area and environment.
3 Record sampling data.	3.1	Record required information according to legislative and organisational requirements.
	3.2	Report observations or measurements outside organisational guidelines or specifications for further action.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- prepare, collect, label and preserve water samples
- dispose of waste and spent samples correctly
- produce reports and logs
- plan work activities
- work effectively as part of a team

REQUIRED SKILLS AND KNOWLEDGE

- perform task-related calculations
- identify and obtain resources
- follow plans and instructions
- apply procedures and standards
- communicate work requirements
- use literacy skills in regard to verbal and written communication in the workplace
- use personal protective equipment.

Required knowledge:

- types and purposes of water samples
- procedures and techniques for water sampling
- water sample preparation, including:
 - prevention of contamination
 - volume of sample
 - appropriate containers
 - preservation
 - location selection
 - location maintenance
 - equipment
 - transportation
 - documentation procedures for water samples
 - disposal procedures for waste and excess water samples
- task-related calculations
- legislative and organisational policies, procedures and standards
- communication systems
- work planning processes
- effects of weather and conditions on work
- hazards associated with collection of water samples.

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.

Samples may include:

- grab, composite or flow-weighted composite samples for:
 - microbiological testing
 - testing for chemical and physical characteristics.

Organisational requirements may include:

- standard operating procedures
- Australian standards, for example AS/NZS 5667 Water quality - sampling
- state Environment Protection Authority sampling guidelines

RANGE STATEMENT

- Sampling equipment** may include:
- legislative requirements
 - OHS.
 - buckets or wide-mouthed containers
 - depth samplers
 - sample dippers
 - sterile sample containers:
 - plastic
 - glass
 - test-specific, such as acid washed
 - weighted sample bottles
 - dip tubes
 - composite and discrete automatic samplers.
- Sample preservation methods** may include:
- refrigeration
 - freezing
 - chemical addition, such as acidification
 - shielding from direct sunlight
 - filtration.
- Planning sampling work activities** may include:
- interpretation of instructions and directions
 - timelines
 - interaction and communication with team members and individuals
 - customer service requirements.
- Sampling locations** may include:
- raw water supply, including:
 - surface water
 - groundwater
 - water distribution and treatment systems
 - wastewater collection and treatment systems.
- Records** may include:
- sample records, field detail sheets or chain of custody forms, including information such as:
 - time sample was taken
 - details of person collecting sample
 - sample point
 - volume of sample
 - data gathered at time of collection
 - pre-treatment
 - preservation
 - instructions to transporters.

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 perform basic water sampling by:

- planning and preparing for water sampling tasks
- collecting samples according to sampling plan
- maintaining integrity of water samples
- recording all required information.

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.

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.

NWP219A Work safely in confined spaces

Unit descriptor	This unit of competency describes the outcomes required to work safely in confined spaces in the water industry. Working in confined spaces poses specific health and safety risks and the ability to follow defined workplace policies and procedures, OHS policies and procedures and regulatory requirements are essential for safe practice.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff within the water industry who are required to work safely in confined spaces.
Competency field	Common

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Assess confined space for entry.	<p>1.1 Check OHS manuals, standard workplace instructions and policies dealing with working in confined spaces.</p> <p>1.2 Confirm purpose for entry to confined space.</p> <p>1.3 Conduct risk assessment of confined space access activity and document according to organisational, legislative and regulatory requirements.</p> <p>1.4 Review established emergency procedures to be put in place as required.</p>
2 Plan and prepare for entry.	<p>2.1 Identify workplace procedures and work instructions for controlling risks in confined spaces and use to plan entry.</p> <p>2.2 Record on entry permit safety equipment and personal protective equipment to be used.</p> <p>2.3 Conduct isolation procedures prior to entry when appropriate to planned entry.</p> <p>2.4 Conduct atmospheric assessment of confined space and record results on entry permit.</p> <p>2.5 Set up and locate equipment specified on entry permit.</p> <p>2.6 Confirm communication and emergency response procedures with the stand-by person.</p> <p>2.7 Complete and process entry permit authorising entry to confined space following required procedures.</p>
3 Enter confined space safely.	<p>3.1 Select, fit and use personal protective equipment specified on entry permit.</p> <p>3.2 Ensure entry permit is signed prior to entering confined space.</p> <p>3.3 Ensure entry to confined space is controlled according to requirements specified in entry permit.</p> <p>3.4 Continue atmospheric monitoring while the confined space is occupied.</p> <p>3.5 Maintain communication with stand-by person and confined space</p>

ELEMENT	PERFORMANCE CRITERIA
	entry personnel.
	3.6 Complete task to be undertaken in confined space according to organisational procedures and safe work practices.
4 Conclude confined space operations.	4.1 Ensure confined space is evacuated and sign-out is completed on entry permit.
	4.2 Ensure signature of authorised person on entry permit is gained at completion of operations.
	4.3 Ensure confined space entry equipment is cleaned, examined and stored according to manufacturer and organisational requirements.
	4.4 Ensure confined space is secured according to organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- work in accordance with risk assessments and entry permits
- apply relevant Australian and New Zealand standard AS/NZS 2865: 2001 Safe Working in Confined Spaces
- perform work-related calculations
- identify and control hazards in confined spaces
- fit personal protective equipment
- conduct atmospheric assessments with electronic gas detector
- maintain equipment
- prepare space for entry
- access, interpret and apply relevant legislative responsibilities
- identify and report hazards
- communicate effectively in the workplace
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- complete relevant workplace records and reports.

Required knowledge:

- types of confined spaces encountered in the water industry
- organisational procedures for confined space entry
- safe systems of work
- use of equipment for confined space entry
- hazards to health and safety in confined spaces
- hazard identification procedures
- OHS requirements for confined space entry
- atmospheric hazards and assessment methods
- site and equipment safety requirements
- isolation procedures

REQUIRED SKILLS AND KNOWLEDGE

- lock-out and tag-out procedures
- first aid
- emergency procedures.

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.

Confined spaces may include:

- water pipe systems and tunnels
- access chambers, manholes and shafts
- valve pits and sumps
- live or inactive sewer mains
- wastewater pump wells
- tanks, such as water and chemical storage, digesters and filter cells
- stormwater systems and environmental traps
- trenches.

Risk assessment of the confined space access activity may include analysis of:

- restricted means of entry and exit
- atmosphere that contains potentially harmful levels of contaminants
- unsafe oxygen levels
- engulfment hazards and need for hydraulic isolation
- working with hazardous equipment and materials
- working in hot or cold conditions
- working in high places.

Workplace procedures and work instructions may include:

- application of entry permit procedures
- hazard policies and procedures
- emergency, engulfment, fire and accident procedures
- procedures for the use of personal protective clothing and equipment
- hazard identification and issue resolution procedures
- job procedures and work instructions.

RANGE STATEMENT

Safety equipment and personal protective equipment will vary according to nature of work undertaken but may include:

- self-rescue respiratory protection devices
- self-contained compressed air breathing apparatus
- supplied airline breathing apparatus and escape breathing apparatus
- atmospheric monitoring devices
- harness and lifeline
- fall arrest and winching system
- ventilation equipment
- signs
- barricades
- communication devices
- tools and equipment relevant to work to be performed
- waterproof overalls
- non-slip safety footwear
- hard hat
- protective gloves.

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 work safely in confined spaces by:

- planning work in confined spaces effectively
- identifying and using specified and required safety equipment
- applying entry permit process accurately and according to specified procedures
- applying OHS requirements in relation to working in confined spaces within the water industry
- assessing risks
- working effectively with team members and in particular the stand-by person
- conducting air monitoring procedures
- working effectively within confined spaces to complete required tasks
- completing work and exiting confined space
- completing required documentation
- handling, cleaning and maintaining equipment effectively and according to standard operating procedures.

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.

EVIDENCE GUIDE

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.

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.

NWP220B Collect and control drainage run-off

Unit descriptor	This unit of competency describes the outcomes required to collect, monitor, manage and re-use drainage run-off surplus water.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with specific responsibility for collecting, monitoring and managing stormwater drainage run-off.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare work.	1.1	Program work requirements for collecting and controlling drainage assets according to <i>relevant legislation and organisational procedures</i> .
	1.2	Select and check <i>equipment and tools</i> required to meet safety requirements of task and site.
	1.3	Select, fit and use personal protective equipment.
2 Monitor drainage assets.	2.1	Identify and define designated work areas to be inspected using organisational plans and data.
	2.2	Conduct and report routine inspections of <i>drainage networks and storage facilities</i> according to organisational requirements.
3 Monitor quality and flow.	3.1	Collect water samples and record and report according to organisational requirements.
	3.2	Operate flow regulation devices to achieve discharge and diversion of drainage waters to meet customer and organisational requirements.
	3.3	Inspect and test flow regulation devices and report operational condition according to legislative and organisational requirements.
4 Manage and re-use drainage water.	4.1	Produce data relating to system adjustment according to organisational policies and statutory requirements.
	4.2	Manage drainage storage facilities according to customer and organisational requirements.
	4.3	Implement drainage re-use and report according to organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- collect and analyse data
- produce reports and logs

REQUIRED SKILLS AND KNOWLEDGE

- use safety equipment and personal protective equipment
- use tools and machinery
- interpret plans, charts, diagrams and instructions
- perform work-related calculations
- apply procedures and standards
- communicate with employees and customers
- work effectively as part of a team
- use communication equipment
- use literacy skills in regard to verbal and written communication in the workplace
- give and receive instructions.

Required knowledge:

- use of sediment and erosion control devices
- impact of principles of hydraulics on operation of flows
- organisation's system layout
- environmental aspects of maintenance
- construction processes
- sampling and testing procedures
- relevant utilities and service providers
- communication systems
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of construction and maintenance processes
- equipment operation, capacity and limitations
- effects of weather and conditions on construction site or plant
- organisation's control systems
- pre-cast components
- pipes and fittings
- chemical usage.

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.

Relevant legislation and organisational procedures 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.

RANGE STATEMENT

Equipment and tools may include:

- hand and power tools
- on- and off-road vehicles
- lifting and winching equipment
- mechanical excavation equipment
- compressors
- pneumatic spaders and attachments
- motorised cutting equipment
- chemical spraying apparatus
- small marine craft
- trenching systems
- portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

Drainage networks and storage facilities include infrastructure, such as:

- structures, including:
 - channels
 - drains
 - meter pits
 - access chambers
 - collection chambers
 - drop structures
 - regulators
 - erosion barriers
 - anti-pollution devices
 - grates
 - head walls
- pipes, including:
 - vitrified clay
 - polyvinyl chloride (PVC)
 - polyethylene
 - reinforced concrete
 - ductile iron cement lined
 - cast iron cement lined
 - glass reinforced piping
- prefabricated sections, including:
 - drainage sections
 - drainage pits

RANGE STATEMENT

- culverts
- under road crossovers
- person access pits
- siphons
- meter outlets
- fittings, including:
 - jointing systems for pipe types and prefabricated sections, e.g. gibault and tension bands
 - solvent cement joints
 - compression rings
 - bolted flanges
 - malleable jointing materials
 - electrofusion
 - butt welding.

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 collect, monitor, manage and re-use drainage run-off surplus water including:

- planning and preparing for monitoring, collecting, controlling and re-using drainage run-off
- inspecting drainage assets
- monitoring and adjusting flows
- managing drainage water re-use
- 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

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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.

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.

NWP221A Operate basic flow control and regulating devices in water or wastewater treatment network systems

Unit descriptor	This unit of competency describes the outcomes required to operate basic flow control and regulating devices in water or wastewater treatment network systems.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with responsibility for using flow control and metering devices according to organisational procedures.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Monitor required flows in water or wastewater treatment network systems.	<p>1.1 Apply operating parameters and requirements for flows in water or wastewater treatment network systems.</p> <p>1.2 Use equipment to support the monitoring process in water or wastewater treatment network systems according to OHS, organisational and manufacturer requirements.</p> <p>1.3 Monitor, measure and record flows at designated locations and systems according to agreed schedule and procedures.</p> <p>1.4 Identify potential operational problems in water or wastewater treatment network systems and provide proactive advice to relevant personnel.</p>
2 Regulate flows in water or wastewater treatment network systems.	<p>2.1 Adjust flow regulation and control mechanisms in water or wastewater treatment network systems to increase and decrease flow according to organisational procedures.</p> <p>2.2 Secure flow regulation devices in water or wastewater treatment network systems to maintain a constant flow and meet legislative and organisational requirements.</p>
3 Record and report system adjustments.	<p>3.1 Produce information relating to flow adjustments in water or wastewater treatment network systems according to organisational procedures.</p> <p>3.2 Collect, record and report information on flows and abnormalities in water or wastewater treatment network systems according to organisational requirements.</p>
4 Respond to contingencies.	<p>4.1 Identify and assess potential risks and contingencies in operation of flow control and regulating devices within water or wastewater treatment systems.</p> <p>4.2 Identify and apply organisational standards and procedures for responding to potential and actual risks and contingencies.</p> <p>4.3 Apply organisational standards and procedures for informing relevant personnel of potential risks within the organisation.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- collect and report system performance information
- adjust and maintain flow system control mechanisms
- secure flow regulation devices
- use literacy skills in regard to verbal and written communication in the workplace
- use personal protective equipment.

Required knowledge:

- impact of the principles of hydraulics on the operation of flows
- system layout
- role of relevant utilities and service bodies
- risk factors and potential hazards
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of system and site
- system flow control mechanisms
- relevant lock-out procedures for mechanical and electrical installations.

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.

Equipment used includes:

- personal protective equipment
- electronic digital monitoring and metering systems
- basic hand and power tools
- valves, pumps and flow meters
- mechanical meters and flow devices
- hydrants
- recording systems
- communication equipment, including:
 - two-way radio
 - telephone
 - fax
- lifting and winching equipment
- on- and off-road vehicles.
- interaction and communication with other employees, other authorities and general public
- visual observation
- implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements.

Processes to ensure flows are ***monitored, measured and recorded*** may require:

RANGE STATEMENT

Designated locations and systems may include:

- urban locations
- rural locations
- ground and surface water source systems
- wastewater collection and transfer systems
- trade waste systems.

Flow regulation may involve operation of:

- valving systems, including:
 - sluice
 - blade
 - gate
 - non-return
 - pressure reducing
- supervisory control and data acquisition (SCADA) systems
- pumping systems, including:
 - centrifugal
 - Archimedes screw type
 - submersible
 - positive displacement
 - electronic and manual controlling systems
- service reservoirs.

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.

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 in water and wastewater treatment network systems to:

- identify flow requirements
- prepare for and conduct flow monitoring
- identify and report operational problems
- adjust and regulate flows according to organisational requirements
- complete records and reports.

Context of and specific resources for assessment

Access to the workplace and resources including:

- documentation that should normally be available in a water

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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.

NWP222A Operate basic flow control and regulating devices in irrigation systems

Unit descriptor	This unit of competency describes the outcomes required to operate basic flow control and regulating devices in irrigation systems.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with responsibility for using flow control and metering devices according to organisational procedures.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Monitor required flows in irrigation systems.	1.1	Access and apply operating parameters and requirements for flows in irrigation systems.
	1.2	Use equipment to support monitoring process in irrigation systems according to OHS, organisational and manufacturer requirements.
	1.3	Monitor, measure and record flows at designated locations and systems according to agreed schedule and procedures.
	1.4	Identify potential operational problems in irrigation systems and provide proactive advice to relevant personnel.
2 Regulate flows in irrigation systems.	2.1	Adjust flow regulation and control mechanisms in irrigation systems to increase and decrease flow according to organisational procedures.
	2.2	Secure flow regulation devices in irrigation systems to maintain a constant flow and meet legislative and organisational requirements .
3 Record and report system adjustments.	3.1	Produce information relating to flow adjustments in irrigation systems according to organisational procedures.
	3.2	Collect, record and report information on flows and abnormalities in irrigation systems according to organisational requirements.
4 Respond to contingencies.	4.1	Identify and assess potential risks and contingencies in the operation of flow control and regulating devices within irrigation systems.
	4.2	Identify and apply organisational standards and procedures for responding to potential and actual risks and contingencies.
	4.3	Apply organisational standards and procedures for informing relevant personnel within organisation of potential risks.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- collect and report system performance information

REQUIRED SKILLS AND KNOWLEDGE

- adjust and maintain flow system control mechanisms
- secure flow regulation devices
- use literacy skills in regard to verbal and written communication in the workplace
- use personal protective equipment.

Required knowledge:

- impact of the principles of hydraulics on the operation of flows
- system layout
- role of relevant utilities and service bodies
- risk factors and potential hazards
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of system and site
- system flow control mechanisms
- relevant lock-out procedures for mechanical and electrical installations.

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.

Equipment used includes:

- personal protective equipment
- electronic digital monitoring and metering systems
- basic hand and power tools
- valves, pumps and flow meters
- mechanical meters and flow devices
- hydrants
- recording systems
- communication equipment, including:
 - two-way radio
 - telephone
 - fax
- lifting and winching equipment
- on- and off-road vehicles.

Processes to ensure flows are ***monitored, measured and recorded*** may require:

- interaction and communication with other employees, other authorities and general public
- visual observation
- implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements.

Designated locations and systems may include:

- urban locations
- rural locations
- ground and surface water source systems

RANGE STATEMENT

- Flow regulation** may include operation of:
- wastewater collection and transfer systems
 - trade waste systems.
 - valving systems, including:
 - sluice
 - blade
 - gate
 - non-return
 - pressure reducing
 - supervisory control and data acquisition (SCADA) systems
 - pumping systems, including:
 - centrifugal
 - Archimedes screw type
 - submersible
 - positive displacement
 - electronic and manual controlling systems
 - service reservoirs.
- 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.

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 basic flow control and regulating devices in irrigation systems including:

- identifying flow requirements
- preparing for and conducting flow monitoring
- identifying and reporting operational problems
- adjusting and regulating flows according to organisational requirements
- completing records and reports.

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.

EVIDENCE GUIDE

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.

NWP223A	Install basic metering equipment, flow control and regulating devices
Unit descriptor	This unit of competency describes the outcomes required to install meters, flow control and regulating devices for water distribution or wastewater collection systems.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff involved in the accurate installation of key water industry metering and flow control devices.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

- | | |
|---|---|
| 1 Plan and prepare work. | <p>1.1 Determine work requirements for installation of flow control and metering devices in water distribution or wastewater collection systems from plans, specifications and instructions.</p> <p>1.2 Prepare work plans to ensure safety within workplace.</p> <p>1.3 Select and check equipment and tools to meet safety requirements of task and site.</p> <p>1.4 Select, fit and use personal protective equipment.</p> |
| 2 Install flow control devices. | <p>2.1 Carry out installation of flow control devices in water distribution or wastewater collection systems according to manufacturer guidelines and legislative and organisational requirements.</p> <p>2.2 Check that flow control devices meet specifications.</p> |
| 3 Install metering devices. | <p>3.1 Carry out installation of metering devices in water distribution or wastewater collection systems according to manufacturer guidelines and legislative and organisational requirements.</p> <p>3.2 Check that installed metering devices meet specifications.</p> |
| 4 Maintain flow control and metering devices in water distribution or wastewater collection systems. | <p>4.1 Carry out routine inspections of flow control and metering facilities in water distribution or wastewater collection systems according to organisational procedures.</p> <p>4.2 Carry out preventative maintenance and service of equipment and facilities according to manufacturer guidelines and organisational requirements.</p> |
| 5 Review, record and report activities. | <p>5.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.</p> <p>5.2 Restore work site to meet environmental and organisational requirements.</p> <p>5.3 Record and report activities according to organisational procedures.</p> |

REQUIRED SKILLS AND KNOWLEDGE

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- operate communications equipment
- follow plans, charts and instructions
- perform work-related calculations
- follow procedures and standards
- use safety equipment and personal protective equipment
- communicate with customers and other employees
- work effectively as part of a team
- install flow control devices
- install metering devices
- use literacy skills in regard to verbal and written communication in the workplace
- identify control system and metering faults.

Required knowledge:

- impact of the principles of hydraulics on the operation of flows
- system layout
- lock-out procedures for mechanical and electrical installations
- organisational communication systems
- effective workplace communication processes
- materials handling
- environmental, landscape and ground structure of work area
- risk factors and potential hazards
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of system, site and plant
- flow measurement principles and procedures
- layout and performance of pipes and fittings
- operation of control systems.

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.

Flow control and metering devices may include:

- flow directional gates
- regulators
- pumping systems, including:
 - centrifugal
 - Archimedes screw type

RANGE STATEMENT

- submersible
- positive displacement
- valving systems, including:
 - sluice
 - gate
 - blade
 - non-return
 - doors, drop structures and bars
 - electronic monitoring and metering systems

Equipment and tools used
may include:

- mechanical flow usage meters
- Dethridge-type wheels.
- hand and power tools
- on- and off-road vehicles
- lifting and winching equipment
- mechanical excavation equipment
- chemical spraying apparatus
- small marine craft
- personal protective equipment.

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.

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 install meters, flow control and regulating devices for water distribution or wastewater collection systems including:

- planning and preparing for installation of flow control and metering devices
- interpreting plans, specifications and instructions for installation of flow control devices
- interpreting plans, specifications and instructions for installation of basic metering devices
- conducting routine inspections, maintenance and servicing of basic metering, flow control and regulating devices
- completing relevant workplace 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 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

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that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

NWP226B Prepare and restore work site

Unit descriptor	This unit of competency describes the outcomes required to prepare work sites prior to work and restore them on completion of work. The ability to follow work instructions, use a range of equipment and tools to prepare a safe work site and subsequently to restore the site to the required condition is essential to satisfactory performance.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff performing a wide range of functions that support construction, maintenance and operations processes.
Competency field	Common

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	<p>1.1 Determine <i>site preparation</i> requirements from specifications, instructions and pre-work inspections.</p> <p>1.2 Identify and report potential risks to public and environment.</p> <p>1.3 Perform a site check according to <i>legislative and organisational requirements</i> to identify risks and prevent damage to other utilities.</p> <p>1.4 Select and check work site <i>equipment, tools and materials</i> as appropriate to meet task and safety specifications.</p> <p>1.5 Select, fit and use personal protective equipment.</p>
2 Prepare work site.	<p>2.1 Position <i>safety equipment and materials</i> as required to prevent potential risks to public and environment.</p> <p>2.2 <i>Store and secure equipment</i> and materials as necessary.</p> <p>2.3 Use work site equipment, tools and materials according to regulatory and legislative requirements.</p> <p>2.4 Use manual or mechanical excavation equipment where required to achieve specifications.</p> <p>2.5 Provide appropriate drainage and diversion of site inflows from work site without <i>damage to environment</i>.</p>
3 Restore work site.	<p>3.1 Use equipment, tools and materials according to regulatory and legislative requirements.</p> <p>3.2 Backfill and compact excavations according to specifications.</p> <p>3.3 Remove excess soil, debris and unwanted materials from site.</p> <p>3.4 <i>Restore work site</i> to meet environmental and organisational requirements.</p>
4 Review, record and report activities.	<p>4.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.</p> <p>4.2 Maintain workplace records as required.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- set up a site
- excavate backfill
- compact and reinstate site
- prepare site for planting and plant vegetation
- interpret plans, instructions and standard operating procedures
- use tools and equipment
- identify and respond to operational problems
- use communication systems
- use safety equipment and personal protective equipment
- identify hazards
- give and receive instructions
- use literacy skills in regard to verbal and written communication in the workplace
- communicate with customers and other employees.

Required knowledge:

- OHS procedures
- personal work site safety
- public and site safety
- risk factors and potential hazards of site preparation and restoration
- environmental aspects of site preparation and restoration
- trenching, shoring and excavation management
- excavation procedures and site restoration
- relevant utilities and service bodies
- communication systems
- landscape and ground structure of work area
- equipment operation, capacity and limitations
- effects of weather and conditions on construction site or plant.

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.

- Site preparation*** may include:
- interpreting plans
 - locating public utilities
 - setting out site
 - battering
 - shoring
 - scaffolding

RANGE STATEMENT

Legislative and organisational requirements may include:

- excavating
- directing traffic and the public.
- 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, tools and materials may include:

- hand and power tools
- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment, including:
 - compressors
 - pneumatic spades and attachments
 - motorised cutting equipment
- revegetation and gardening supplies and plants
- communication equipment
- personal protective equipment.

Safety equipment and materials may be used to ensure public and site safety when:

- positioning signs
- erecting barricades
- controlling access.

Storing and securing equipment may include:

- stacking and securing pipes safely
- placing equipment in locked storage during absence from site.

Damage to environment is avoided or minimised by using a range of techniques, including:

- sediment control devices
- erosion prevention
- diversion and collection structures.

Restore work site using techniques, including:

- backfilling
- compacting
- planting or replanting vegetation
- reinstating site.

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 prepare work sites prior to work and restore them on completion of work including:

- interpreting work requirements
- planning work site layout
- selecting appropriate work and safety equipment
- storing and securing materials and equipment safely
- clearing and preparing work site according to specifications
- restoring work site according to environmental and organisational procedures
- cleaning, maintaining and storing equipment
- completing relevant workplace 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 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.

Questioning will be appropriate to the skill levels of the operator and cultural issues that may affect responses to the questions,

EVIDENCE GUIDE

and will reflect the requirements of the competency and the work being performed.

NWP227B Control vegetation on a site

Unit descriptor	This unit of competency describes the outcomes required to control vegetation on a site by inspecting, identifying and treating weeds, plants and shrubs. The ability to plan and undertake work safely, including the safe handling of chemicals and equipment, is essential to performance.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff involved in plant control but it does not reflect the requirements for undertaking plant control on the properties of third parties where further training and licensing requirements may apply.
Competency field	Common

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare work.	1.1	Plan work according to work specifications, relevant legislation and organisational procedures .
	1.2	Perform site check according to organisational requirements to prevent damage to other utilities and environment.
	1.3	Select and check equipment and personal protective equipment and material safety data sheets to meet safety requirements of task and site.
	1.4	Identify noxious weeds, plants and shrubs.
2 Treat vegetation.	2.1	Conduct monitoring programs to determine spread, growth rate and extent of problem caused by weeds.
	2.2	Store, handle, transport and mix chemicals and other control mechanisms according to relevant legislation and organisational procedures.
	2.3	Use processes to treat vegetation in a manner safe to all stakeholders and according to appropriate standards and organisational operational procedures.
	2.4	Implement controls according to organisational requirements to minimise environmental damage and deal with emergencies and spillage.
3 Check work and restore work site.	3.1	Clean equipment after use and prepare for safe storage or re-use.
	3.2	Identify potential hazards and dispose of waste according to organisational requirements.
4 Complete records and reports.	4.1	Record use of chemicals and control mechanisms according to legislative and organisational requirements.
	4.2	Complete work reports and documentation as required.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and report operational problems
- produce reports and logs
- use personal protective equipment
- use tools and machinery
- use chemicals and other treatments
- follow plans, charts and instructions
- perform work-related calculations
- interpret material safety data sheets (MSDS)
- apply procedures and standards
- communicate with employees and customers
- work effectively as part of a team
- use communication equipment
- use literacy skills in regard to verbal and written communication in the workplace
- give and receive instructions.

Required knowledge:

- environmental aspects of controlling vegetation
- relevant utilities and service bodies
- communication systems
- use, storage, handling and transport of hazardous substances
- landscape and ground structure of work area
- risk factors and potential hazards of vegetation control processes
- equipment operation, capacity and limitations
- effects of weather and conditions on use of chemical treatment, site or plant
- control systems
- materials handling
- landscape and ground structure of work area.

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.

Relevant legislation and organisational procedures 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,

RANGE STATEMENT

Equipment and personal protective equipment may include:

- such as land care agreements.
 - hand and power tools
 - on- and off-road vehicles
 - lifting and winching equipment
 - mechanical excavation equipment
 - chemicals and mixers
 - chemical spraying apparatus
 - mixing equipment and storage areas
 - communication equipment
 - gas detection equipment
 - rescue equipment
 - breathing apparatus
 - other appropriate personal protective equipment, including goggles and gloves.
- Processes** used to treat and control vegetation include:
- application of chemicals
 - manual extraction
 - use of genetic plant modification
 - companion planting
 - other environmental controls, including use of insects.

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 control vegetation on a site by inspecting, identifying and treating weeds, plants and shrubs including:

- interpreting work requirements from given documentation
- identifying noxious weeds and appropriate control methods
- planning and preparing equipment and materials required for work
- treating vegetation according to legislative and organisational procedures
- identifying risks and implement controls
- restoring work site according to environmental and organisational requirements
- completing relevant 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.

EVIDENCE GUIDE

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.

NWP229B Repair minor structures

Unit descriptor	This unit of competency describes the outcomes required to construct and repair minor structural assets of the water industry, such as meter pits, erosion barriers and small weirs.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with specific responsibility for ensuring that small structural assets are constructed and repaired in a safe and timely manner.
Competency field	Common

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare repair work.	1.1	Determine work requirements from plans, specifications and instructions.
	1.2	Select and check formwork, materials and equipment required to ensure that safety requirements of task and site are met.
	1.3	Select, fit and use personal protective equipment.
	1.4	Conduct appropriate utility location activities prior to excavation according to legislative and organisational requirements .
	1.5	Arrange appropriate site boundary protection according to organisational requirements.
2 Repair minor structures.	2.1	Inspect structures and determine appropriate repair techniques .
	2.2	Apply appropriate repair techniques according to manufacturer guidelines and legislative and organisational requirements.
3 Complete and record work outcomes.	3.1	Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	3.2	Restore work site to meet environmental and organisational requirements.
	3.3	Complete workplace records and process as required.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- undertake minor repairs to structures
- interpret plans, instructions and standard operating procedures
- follow procedures and standards
- use safety equipment and personal protective equipment
- use tools and machinery

REQUIRED SKILLS AND KNOWLEDGE

- lay concrete
- insert water stop or seal
- identify hazards
- perform work-related calculations
- give and receive instructions
- work effectively as part of a team
- communicate with customers and other employees
- use literacy skills in regard to verbal and written communication in the workplace
- apply lock-out and tag-out procedures.

Required knowledge:

- OHS procedures
- personal work site safety procedures
- construction calculations
- risk factors and potential hazards of minor structure construction and maintenance
- equipment operation
- formwork preparation and positioning
- methods of repairing concrete, brick and stone structures
- concrete placement techniques, including compaction
- water to cement ratio of concrete.

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.

Formwork, materials and equipment may include:

- formwork, such as:
 - steel formwork
 - timber formwork
- equipment, such as:
 - personal protective equipment
 - hand and power tools
 - ties
 - chains
 - props
 - jacks
 - drainage aggregate
 - pipes
 - lifting and winching equipment
 - mechanical excavation equipment
- pneumatic and motorised equipment, including:

RANGE STATEMENT

- compressors
- pneumatic spades and attachments
- motorised cutting equipment
- cable ways
- travellers
- gauging stations
- small control weirs
- communication equipment.
- 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.
- quick-set cement
- cementitious materials
- proprietary equipment.

Legislative and organisational requirements may include:

Repair techniques may include:

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 repair work on minor structural assets of the water industry including:

- planning and preparing work site
- performing repair tasks according to manufacturer specifications and organisational requirements
- checking work, restoring work site, storing equipment and 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

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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.

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.

NWP230B Maintain and repair irrigation channels and drains

Unit descriptor	This unit of competency describes the outcomes required to maintain and repair irrigation or stock and domestic supply channels and drains.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with responsibility for carrying out planned and emergency maintenance and repair work on raw water delivery systems.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare work site.	1.1 Determine work requirements from plans, drawings, specifications or instructions.
	1.2 Make appropriate drainage and inflow diversion arrangements without damage to environment.
	1.3 Select and check equipment and excavation methods to meet safety requirements of task and site.
2 Maintain irrigation channels, drains and associated fittings.	2.1 Conduct routine inspections of designated work areas according to maintenance schedules.
	2.2 Identify system faults and apply corrective action according to structure type, location, specification and legislative and organisational requirements .
	2.3 Identify, select, place and join components and associated fittings according to manufacturer specifications and organisational requirements.
	2.4 Construct cast in situ components according to specifications and organisational requirements.
	2.5 Repair earthworks and embankments to meet organisational requirements.
3 Check work and restore work site.	3.1 Check repaired or replaced components and earthworks to ensure that specifications have been met.
	3.2 Backfill, compact and restore work site to meet environmental and organisational requirements.
4 Finalise work.	4.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	4.2 Complete workplace records and process as required.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

REQUIRED SKILLS AND KNOWLEDGE

- identify and respond to operational problems
- lay concrete
- insert water stop or seal
- produce reports and logs
- use safety and personal protective equipment
- use tools and machinery
- interpret plans, charts and instructions
- perform work-related calculations
- apply procedures and standards
- work effectively as part of a team
- communicate with employees and customers
- use communication equipment
- use literacy skills in regard to verbal and written communication in the workplace
- give and receive instructions.

Required knowledge:

- environmental aspects of maintenance
- construction processes
- concrete placement techniques, including compaction
- water to cement ratio of concrete
- relevant utilities and service providers
- communication systems
- work-related calculations
- hazardous materials handling
- landscape and ground structure of work area
- backfilling and compaction requirements
- risk factors and potential hazards of maintenance processes
- effects of weather and conditions on construction site or plant
- control systems
- recording and reporting systems
- pre-cast components
- pipes and fittings
- chemical usage.

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.

Work requirements may include:

- selection and correct use of safety and personal protective equipment

RANGE STATEMENT

- site boundaries
- boundary protection
- extent of work
- safe work methods
- job work orders
- hazard identification, such as damage to other utilities.

Equipment used may include:

- hand and power tools
- on- and off-road vehicles
- lifting and winching equipment
- mechanical excavation equipment
- compressors
- pneumatic spaders and attachments
- motorised cutting equipment
- chemical spraying apparatus
- small marine craft
- trenching systems
- portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

System faults may include:

- unapproved works and connections
- exfiltration
- contamination.

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.

Components and associated fittings may include:

- controlling equipment
- channels
- pipes
- metered or unmetered outlets
- regulators
- prefabricated channel components
- collection and person access chambers

RANGE STATEMENT

- meter pits
- drop structures
- erosion barriers
- head walls
- pipes, including:
 - vitrified clay
 - polyvinyl chloride (PVC)
 - polyethylene
 - reinforced concrete
 - glass reinforced piping
 - ductile iron cement lined
 - cast iron cement lined
- fittings, including:
 - jointing systems for pipe types and prefabricated sections, e.g. gibault and tension bands
 - solvent cement joints
 - compression rings
 - bolted flanges
 - malleable jointing materials
 - electrofusion
 - butt welding.

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 conduct maintenance and repair work on irrigation drains and channels by:

- planning and preparing work site
- inspecting irrigation drains and channels and identifying faults
- performing maintenance and repair tasks according to manufacturer specifications and organisational requirements
- checking work, restoring work site, storing equipment and 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

EVIDENCE GUIDE

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.

NWP231B Maintain and repair drainage assets

Unit descriptor	This unit of competency describes the outcomes required to conduct maintenance and repair activities on drainage assets.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with specific responsibility for ensuring that drainage asset maintenance and repair are completed in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1	Determine <i>work requirements</i> from plans, drawings, specifications or instructions.
	1.2	Check site and identify <i>hazards</i> according to <i>legislative and organisational requirements</i> .
	1.3	Make appropriate drainage and inflow diversion arrangements without damage to environment.
	1.4	Select and check <i>equipment</i> and excavation methods to meet safety requirements of task and site.
	1.5	Select, fit and use personal protective equipment.
2 Maintain drainage assets.	2.1	Conduct routine inspections to determine <i>asset</i> condition and operational capacity according to organisational requirements.
	2.2	Conduct preventative maintenance according to organisational maintenance programs.
	2.3	Repair damaged components according to specification, location and organisational requirements.
	2.4	Remove debris, silt and obstructions according to legislative and organisational requirements.
	2.5	Select, place and join prefabricated drain sections according to manufacturer specifications and legislative and organisational requirements.
	2.6	Construct cast in situ components according to specifications and legislative and organisational requirements.
	2.7	Check repaired and replaced components to ensure that specifications have been met.
3 Finalise work.	3.1	Backfill, compact and restore work site to meet environmental and organisational requirements.
	3.2	Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	3.3	Complete workplace records and process as required.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- complete records and logs
- use safety equipment and personal protective equipment
- use tools and machinery
- lay concrete
- insert water stop or seal
- work effectively as part of a team
- perform work-related calculations
- interpret plans, charts and instructions
- use literacy skills in regard to verbal and written communication in the workplace
- apply procedures and standards.

Required knowledge:

- system layout
- environmental aspects of maintenance
- construction processes
- concrete placement techniques, including compaction
- water to cement ratio of concrete
- relevant utilities and service bodies
- communication systems
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of construction processes
- equipment operation, capacity and limitations
- work-related calculations
- effects of weather and conditions on construction site or plant
- control systems
- pre-cast components
- pipes and fittings.

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.

Work requirements may include:

- site boundaries
- boundary protection
- extent of work
- utilities location

RANGE STATEMENT

- Hazards** may include:
- safe work methods.
 - damage to other utilities.
- 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:
- personal protective equipment
 - hand and power tools
 - on- and off-road vehicles
 - lifting and winching equipment
 - mechanical excavation equipment
 - compressors
 - pneumatic spaders and attachments
 - motorised cutting equipment
 - chemical spraying apparatus
 - small marine craft
 - trenching systems
 - portable pumps
 - communication equipment
 - breathing apparatus
 - gas detection equipment
 - rescue equipment.
- Assets** may include:
- controlling equipment
 - channels
 - drains
 - meter pits
 - access chambers
 - collection chambers
 - drop structures
 - erosion barriers
 - anti-pollution devices
 - grates
 - head walls
 - pipes
 - outlets
 - regulators
 - pipes, including:

RANGE STATEMENT

- vitrified clay
- polyvinyl chloride (PVC)
- polyethylene
- reinforced concrete
- glass reinforced piping
- ductile iron cement lined
- cast iron cement lined
- fittings, including:
 - jointing systems for pipe types and prefabricated sections, e.g. gibault and tension bands
 - solvent cement joints
 - compression rings
 - bolted flanges
 - malleable jointing materials
 - electrofusion
 - butt welding
- prefabricated sections, including:
 - drainage sections
 - drainage pits
 - culverts
 - under road crossovers
 - person access pits
 - siphons
 - meter outlets.

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 perform maintenance and repair work on drainage assets by:

- planning and preparing work site
- performing maintenance and repair tasks according to manufacturer specifications and organisational requirements
- checking work, restoring work site, storing equipment and 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.

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.

NWP232B Operate water reticulation and distribution system

Unit descriptor	This unit of competency describes the outcomes required to operate and adjust water reticulation and distribution system devices to meet organisational requirements.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with responsibility for ensuring the practical delivery, monitoring and regulation of reticulated water distribution services.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Establish system constraints and prepare work site.	1.1	Determine system layout and operational problem areas.
	1.2	Plan work required to operate and adjust water reticulation system according to legislative and organisational requirements .
	1.3	Select and check equipment and personal protective equipment to meet safety requirements of task and site.
	1.4	Identify and locate isolation valves and hydrants and follow standard organisational procedures for their operation.
2 Monitor performance and usage of distribution system devices.	2.1	Identify fluctuations in supply, system changes, community demands and water quality complaints.
	2.2	Collect and report data on system performance and usage according to organisational requirements.
3 Regulate flow.	3.1	Inspect flow regulating systems and adjust to meet demand requirements.
	3.2	Regulate and divert flows to facilitate repair or emergency activities.
4 Regulate pressure.	4.1	Monitor and adjust pressure to meet optimum delivery.
	4.2	Investigate pressure fluctuations and report according to legislative and organisational requirements.
	4.3	Document and report reticulation and distribution information according to organisational procedures.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- collect data
- produce reports and logs
- use safety equipment and personal protective equipment
- use tools and machinery
- follow plans, charts and instructions
- perform work-related calculations
- work effectively as part of a team
- apply procedures and standards
- communicate with employees and customers
- use communication equipment
- install and operate a stand pipe or fire plug
- record water losses
- give and receive instructions
- communicate effectively with utilities and service bodies
- identify system faults
- identify hazards
- use literacy skills in regard to verbal and written communication in the workplace
- implement remedial action to maintain supply.

Required knowledge:

- impact of the principles of hydraulics on the operation of flows
- system layout and performance
- standard operating procedures
- water hammer
- water quality and disinfection requirements
- environmental aspects of operation
- electrical safety for disconnecting and changing meters and fittings
- lock-out procedures for mechanical and electrical installations
- organisational communication systems
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of operating water distribution systems
- conditions for connection to live water mains
- equipment operation, capacity and limitations
- effects of weather and conditions on systems, site or plant
- control systems.

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.

Water reticulation system

may include:

- scours
- chambers
- hydrants
- sluices
- valves
- main taps
- fire services
- service reservoirs.

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 may include:

- hand and power tools
- lifting equipment
- on- and off-road vehicles
- portable pumps
- communication equipment
- disinfection and sampling equipment
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

Flow regulating systems will include operation of:

- valving systems, such as:
 - sluice
 - gate
 - blade
 - non-return
 - electronic and manual controlling systems
 - service reservoirs.

RANGE STATEMENT

Pressure fluctuations may be:

- high
- low
- outside acceptable limits.

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 reticulation and distribution systems by:

- identifying conditions of system
- preparing work site
- monitoring system performance and usage
- monitoring and diverting flow
- monitoring and regulating pressure.

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.

EVIDENCE GUIDE

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.

NWP233B Construct and install water distribution assets

Unit descriptor	This unit of competency describes the outcomes required to construct and install water distribution assets.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with responsibility for ensuring that water distribution assets are constructed and installed in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for construction and installation.	1.1 Determine <i>work requirements</i> for construction and installation of <i>water distribution system pipes and assets</i> from plans, specifications and instructions.
	1.2 Perform site checks according to legislative and organisational requirements to prevent damage to other utilities.
	1.3 Select and check <i>equipment and tools</i> to meet safety and work requirements of task and site.
	1.4 Select, fit and use personal protective equipment.
2 Construct and install distribution assets, pipes and associated fittings.	2.1 Excavate and prepare trenches according to specifications and <i>legislative and organisational requirements</i> .
	2.2 Lay bedding or foundation according to specifications.
	2.3 Inspect pipes and fittings, and lay or join according to manufacturer guidelines and organisational requirements.
	2.4 Install or place prefabricated components according to manufacturer guidelines and legislative and organisational requirements.
	2.5 Backfill excavations according to specifications.
3 Confirm work quality.	3.1 Check constructed and installed distribution assets, pipes and fittings to ensure that specifications are met.
	3.2 Check water quality testing results to ensure that organisational requirements are met.
4 Finalise work.	4.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	4.2 Restore work site to meet environmental and organisational requirements.
	4.3 Complete workplace records and as constructed drawings, and process as required.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- lay and join pipes
- install associated fittings and components
- identify and respond to operational problems
- interpret plans, instructions and standard operating procedures
- perform work-related calculations
- follow procedures and standards
- use safety and personal protective equipment
- use tools and machinery
- identify hazards
- give and receive instructions
- communicate with others
- use literacy skills in regard to verbal and written communication in the workplace
- work effectively as part of a team.

Required knowledge:

- OHS procedures
- personal work site safety procedures
- risk factors and potential hazards of construction and installation processes
- electrical safety for disconnection and changing meters and fittings
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- environmental aspects of construction and installation
- component parts
- shoring and levelling
- construction procedures
- conditions for connection to live water mains
- pipes and fittings
- disinfection procedures.

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.

Work requirements may include:

- location and extent of job
- risk assessment recommendations
- involvement of subcontractors
- equipment specifications
- materials specifications

RANGE STATEMENT

Water distribution system pipes and assets may include:

- utilities location procedures
- environmental protection requirements
- boundary protection, signage and traffic management.
- water mains
- services
- valves
- meters
- pipes, including:
 - polyvinyl chloride (PVC)
 - polyethylene
 - mild steel cement lined
 - ductile iron cement lined
 - cast iron
 - copper
 - glass reinforced piping
- fittings, including:
 - jointing systems for pipe types, e.g. gibault
 - tapping bands
 - tension bands
 - solvent joins
 - compression ring joints
 - bolted flanges
 - cathodic protection
- structures, including:
 - meter pits
 - person access pits
 - regulators
 - erosion barriers
 - head walls
 - thrust blocks.

Equipment and tools may include:

- personal protective equipment
- hand and power tools
- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment, including:
 - compressors
 - pneumatic spades and attachments
 - motorised cutting equipment
- communication equipment.
- relevant federal and state or territory legislation and

Legislative and

RANGE STATEMENT

organisational

requirements may include:

- 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.

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 construct and install water distribution system assets by:

- planning work and preparing work site safely
- constructing and installing assets according to specifications and instructions
- checking quality of work and ensuring water quality standards
- clearing the work site
- 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 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

EVIDENCE GUIDE

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.

NWP234B Locate, identify and protect utility services

Unit descriptor This unit of competency describes the outcomes required to work near utility services during the construction, repair or installation of utilities' infrastructure. Work activities may involve trench excavation or the application of trenchless technologies for installation or repair.

Employability skills This unit of competency contains employability skills.

Application of the unit This unit supports the attainment of skills and knowledge required for workers involved in the construction, repair or installation of underground utility infrastructure. Typically workers are involved in locating, identifying and protecting existing utilities' infrastructure to prevent damage, injury, death or loss of service.

Competency field Common

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

- | | |
|---|--|
| 1 Plan and prepare to locate utility services at work site. | <p>1.1 Determine work site boundaries and requirements from plans, specifications and instructions.</p> <p>1.2 Obtain plans and relevant information from specific utility service owners using appropriate information sources.</p> <p>1.3 Determine alignment of services on site according to utility locating procedures.</p> <p>1.4 Determine type, size and likely configuration of all underground and overhead services from plans and typical or local installation practices.</p> <p>1.5 Identify hazards and precautions associated with excavating or working near utilities' apparatus.</p> <p>1.6 Review and apply safe work method statements associated with work activity and incorporate into job planning according to legislative and organisational requirements.</p> |
| 2 Locate utility apparatus by excavation. | <p>2.1 Select and safely use appropriate tools and equipment for location of all apparatus.</p> <p>2.2 Identify apparatus and indicators of apparatus presence.</p> <p>2.3 Determine full extent of apparatus in the ground.</p> |
| 3 Operate plant in close proximity to underground or overhead utility apparatus. | <p>3.1 Monitor plant during work activities and identify potential or actual encroaches of plant on minimum clearances to apparatus.</p> <p>3.2 Give instructions to plant operator using agreed signals.</p> |
| 4 Protect and support utility apparatus during excavation and backfilling. | <p>4.1 Protect apparatus according to utility owner requirements to prevent damage.</p> <p>4.2 Support apparatus along or across excavation according to utility owner requirements or engineering advice to prevent damage.</p> <p>4.3 Report damage to apparatus to utility owner according to agreed protocols.</p> |

ELEMENT	PERFORMANCE CRITERIA
	4.4 Reinstatement apparatus during backfill according to utility owner's requirements.
5 Initiate emergency procedures.	5.1 Recognise emergency situations or events.
	5.2 Implement emergency response according to procedures for particular infrastructure involved.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- locate and identify utilities
- assess and identify risk of potential hazards associated with each utility
- respond to all types of emergencies relating to utility services
- use basic mathematics for calculations and measurement
- use safety equipment and personal protective equipment
- use tools and equipment
- follow policies, procedures and standards
- communicate with employees, other service providers and customers
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- use communication systems.

Required knowledge:

- published guidelines for working near utility services in the State or Territory in which work is being undertaken
- system layout
- environmental aspects of excavation
- relevant utilities and service bodies
- communication systems
- landscape and ground structure of work area
- risk assessment and identification of potential hazards associated with each utility
- emergency response procedures for all types of utility services
- equipment operation, capacity and limitations
- effects of weather and conditions on site or plant.

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.

Utility service may include:

- electricity
- gas

RANGE STATEMENT

- fuel and oil
- water
- sewer and stormwater
- communication lines
- pay television
- road traffic control
- power cables
- steam pipes
- relevant surface fittings
- cathodic protection cables.

Appropriate information sources may include:

- 'Dial Before You Dig' national call centre for subscribing utilities (note: not all underground utility services are listed with 'Dial Before You Dig')
- local agencies, which should also be contacted following 'Dial Before You Dig' enquiries.

Alignment of services refers to:

- location of utilities' assets at a certain or agreed distance from property boundaries in the road reserve.

Utility locating procedures may include locating utility apparatus using:

- utility plans
- surface fittings
- indicators or markers
- standard allocations
- on-site features
- manual location.

Type, size and likely configuration of utility apparatus may include:

- colour
- materials
- appearance
- dimensions
- installation practices
- arrangement of apparatus.

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.

Appropriate tools and equipment may include:

- personal protective equipment
- shovels with insulated handles
- crow bars with insulated handles
- air or water vacuum potholing equipment
- hand and power tools

RANGE STATEMENT

- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment, including:
 - compressors
 - pneumatic spades and attachments
 - motorised cutting equipment
- on- and off-road vehicles
- portable pumps
- communication equipment.

Apparatus may include:

- pipes, including:
 - vitrified clay
 - reinforced concrete
 - polyvinyl chloride (PVC)
 - polyethylene
 - cast iron cement lined
 - ductile iron cement lined
 - glass reinforced piping
 - mild steel cement lined
- structures, including:
 - meter pits
 - valve pits
 - drop structures
 - regulators
 - erosion barriers
 - person access chambers and pits
 - head walls
 - thrust blocks
 - inspection shafts.

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 work near utility services during the construction, repair or installation of utilities' infrastructure including:

- gathering information regarding location of utilities at a particular site
- gathering and applying safe work methods for locating and protecting utilities at or near a work site
- selecting appropriate tools and equipment
- monitoring use of equipment and using agreed procedures

EVIDENCE GUIDE

Context of and specific resources for assessment

and signals to ensure timely warnings of proximity to utilities' apparatus

- protecting and supporting apparatus during performance of work tasks and during site restoration
- applying emergency procedures in response to a range of specific incidents.

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.

NWP239B Identify and apply water entitlements and delivery processes

Unit descriptor	This unit of competency describes the outcomes required to identify and apply irrigation, and stock and domestic supply systems, measure water and report water usage.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff involved with the operation of raw water systems, including the identification of water entitlements and delivery processes and the use of legislation relevant to field operators.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Identify and apply water entitlements.	1.1	Apply principles of allocation or sale of water to properties and landholders.
	1.2	Apply changes to entitlement or allocation to properties and between properties to workplace practices where relevant.
	1.3	Apply relevant sections of legislation relating to water distribution and delivery to workplace practices, including breach notification.
	1.4	Identify relevant water products and services offered to customers, and customer contracts.
2 Identify and apply principles of water supply networks and distribution systems.	2.1	Identify relevant type and structure of water supply networks and their interaction where relevant.
	2.2	Identify design and operation of relevant components of water distribution system .
	2.3	Identify and monitor principles of water flow and factors affecting water flow.
	2.4	Identify and apply basic principles of regulating water efficiently through the water supply system.
3 Record and monitor water use.	3.1	Monitor, report and measure water flows and volumes according to legislative and organisational requirements.
	3.2	Identify and monitor balance of water entitlements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- follow relevant written policies and procedures
- read meters and other measurement instruments
- perform work-related calculations
- work effectively as part of a team

REQUIRED SKILLS AND KNOWLEDGE

- complete estimates and record water use
- operate a range of flow control devices
- use literacy skills in regard to verbal and written communication in the workplace
- use personal protective equipment.

Required knowledge:

- relevant sections of Water Acts and legislation
- organisational operating procedures
- property water allocation or entitlement policies
- transferable water entitlement procedures
- workplace system networks or distribution systems
- depth and flow conversion charts.

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.

Entitlement or allocation may include:

- property water rights or leases
- permanent or temporary transfers
- allocations based on storage levels.

Legislation 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.

Type and structure of water reticulation system may include:

- manual and automated channel systems
- pipeline systems
- rivers and streams
- combination of these.

Components of water distribution system may include:

- storages
- channels
- pipelines
- tanks
- control and regulating structures
- supply points.

Operation of reticulation system is ***monitored and reported*** and may require:

- interaction and communication with other employees, other authorities and general public
- visual observation

- use of computerised monitoring systems
- application of processes for identifying and reporting regulated water use and suspected breaches
- implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements.

Measurement of water flows and volumes may be:

- metered
- estimated
- calculated on past usage rates.

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 identify and apply irrigation, and stock and domestic supply systems, measure water and report water usage including:

- applying water allocation and entitlement principles and procedures
- interpreting and applying relevant legislation, including identification and notification of breaches
- calculating water flows and volumes
- regulating water delivery according to legislative and organisational requirements.

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

EVIDENCE GUIDE

- 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.

NWP240B Inspect and report catchment and surrounding areas

Unit descriptor	This unit of competency describes the outcomes required to inspect and report on surface catchment areas and associated rivers, lakes, water bodies, dams, water storages and groundwater areas to identify potential risks to water quality, the environment and the public. The unit also requires the ability to apply organisational procedures, identify and record unusual activities or events, apply relevant control measures and report outcomes.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for inspecting catchments and surrounding areas and contributing to catchment management and control.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Inspect and monitor catchment and surrounding areas.	<p>1.1 Identify and apply work requirements for undertaking <i>inspections of catchments and surrounding areas.</i></p> <p>1.2 Inspect and monitor designated locations according to agreed schedule and procedures.</p> <p>1.3 Provide reports identifying maintenance tasks required to ensure that facilities meet required standards to relevant personnel using standard organisational procedures.</p>
2 Report catchment conditions.	<p>2.1 Measure and record catchment inflows and outflows or extractions.</p> <p>2.2 Identify organisation standards for the condition and maintenance of catchment environment.</p> <p>2.3 Identify and report <i>changes to environmental conditions.</i></p>
3 Assist in investigating hazards, risks and catchment security.	<p>3.1 Identify and report activities within catchment that pose a hazard or risk to the public, water quality or the environment according to organisational guidelines.</p> <p>3.2 Identify and report activities of external parties within the catchment and surrounding area that breach organisational guidelines.</p> <p>3.3 Check and confirm public complaints and report to relevant personnel.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- undertake inspections of catchment and surrounds
- identify and respond to operational problems
- use communication systems
- provide basic verbal or written reports
- follow plans and instructions
- follow procedures and standards
- use safety equipment and personal protective equipment
- communicate with customers and other employees
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- follow organisational reporting procedures.

Required knowledge:

- environmental, landscape and ground structure of work area
- risk factors and potential hazards of surface water systems
- catchment emergency response procedures
- catchment security procedures
- operation of communication systems
- customer service
- effects of weather and conditions on operation of catchment area
- relevant utilities and service bodies
- equipment operation
- Water Act and statutory legislation governing typical or routine catchment activities.

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.

- Inspections of catchments and surrounding areas*** may require:
- interaction and communication with other employees, other authorities and general public
 - visual observation
 - implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements
 - bushcraft
 - eradication of feral animals and noxious plants
 - identification of declared flora
 - fire suppression procedures
 - knowledge of system layout

RANGE STATEMENT

Changes to environmental conditions may include:

- use of gauging stations, telemarkers or supervisory control and data acquisition (SCADA) systems.
- weed infestations
- erosion or bank stability
- blue green algae outbreaks
- dead stock
- storm debris affecting waterways.

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 inspect and report on surface catchment areas and associated rivers, lakes, water bodies, dams, water storages and groundwater areas to identify potential risks to water quality, the environment and the public including:

- interpreting work requirements and inspecting specific catchment locations
- monitoring and reporting environmental conditions
- investigating breaches and complaints
- compiling reports
- contributing to catchment security procedures.

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 GUIDE

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.

NWP241B Inspect and maintain basic dams and water storages

Unit descriptor	This unit of competency describes the outcomes required to undertake basic inspection of dams and water storages and to conduct routine maintenance according to organisational maintenance plans and manufacturer specifications.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for undertaking basic surveillance and conducting routine maintenance on dams and storages, including urban reservoirs and large wastewater lagoons.
Competency field	Dam safety

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Undertake basic dam or storage inspection.	<p>1.1 Select, fit and use safety equipment, including personal protective equipment.</p> <p>1.2 Carry out routine inspections of dams and storages according to organisational procedures.</p> <p>1.3 Read and record monitoring devices and flow recording and measurement systems.</p> <p>1.4 Identify assets and structural components requiring routine maintenance or repairs.</p>
2 Undertake routine maintenance of dam or storage equipment and structures.	<p>2.1 Select and check equipment and materials required for maintenance and repair tasks.</p> <p>2.2 Carry out routine maintenance according to organisational requirements.</p> <p>2.3 Operate basic flow control, measuring, surveillance and ancillary devices as part of routine checks.</p>
3 Report basic dam or storage inspection and routine maintenance.	<p>3.1 Communicate abnormal observations and potentially serious maintenance issues with line management.</p> <p>3.2 Complete dam inspection reports and routine maintenance reports and forward to relevant personnel.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- undertake visual inspections
- undertake routine maintenance of plant, equipment and structures
- exercise valves
- perform work-related calculations

REQUIRED SKILLS AND KNOWLEDGE

- measure and record seepage flow
- operate controls and ancillary equipment according to standard operating procedures
- operate communications equipment
- produce reports or logs
- follow policies, procedures and standards
- use safety and personal protective equipment
- adjust mechanical and electrical systems
- identify control system faults
- communicate with other employees
- use literacy skills in regard to verbal and written communication in the workplace
- work effectively as part of a team.

Required knowledge:

- visual and electronic inspection procedures
- equipment operation, capacity and limitations
- system layout
- risk factors and potential hazards of surface water systems
- routine maintenance procedures
- communication and reporting systems.

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.

- Routine inspections*** may include:
- visual observation of changes to assets, including:
 - cracking
 - movement
 - debris
 - concrete erosion
 - flaking of paint or coatings
 - corrosion of materials
 - electronic inspection.
- Storages** may include:
- urban water storages
 - urban reservoirs
 - large wastewater lagoons.
- Routine maintenance*** may include:
- greasing or oiling plant and equipment
 - exercising valves
 - checking pressures and position indicators.
- Basic flow control, measuring, surveillance and ancillary devices*** may
- auxiliary power plants and auxiliary drives
 - electronic catchment surveillance

RANGE STATEMENT

include:

- monitoring and measuring systems
- recording systems
- small marine craft
- manual and electrical hydraulic systems
- flow control and adjustment equipment
- pumping systems, including:
 - submersible
 - centrifugal
- valving systems, including:
 - sluice
 - blade
 - gate
 - non-return
 - pressure reducing
- manually and electronically operated floodgates
- spillways.

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 undertake basic inspection of dams and water storages and to conduct routine maintenance including:

- conducting routine inspections of dams and storages according to organisational requirements
- taking readings from specified devices
- identifying and reporting repair and maintenance requirements
- conducting routine basic maintenance according to organisational maintenance plans
- completing inspection and maintenance reports.

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

EVIDENCE GUIDE

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.

NWP242B Monitor and report water extraction

Unit descriptor	This unit of competency describes the outcomes required to monitor the extraction of water from waterways and water bodies and to report risks, compliance and complaints.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with responsibility for ensuring that water extraction complies with water use legislation.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Monitor designated areas.	1.1 Use water allocation management plan to check allowances in designated areas .
	1.2 Select, check and prepare equipment to monitor water extraction.
	1.3 Monitor designated areas according to agreed schedule and organisational procedures.
2 Measure and monitor flow rates and usage.	2.1 Monitor flow meters and record data according to organisational and legislative requirements .
	2.2 Monitor water extraction for compliance with licensing and record data according to organisational requirements.
	2.3 Monitor and record water levels.
3 Identify and report risks, breaches and complaints.	3.1 Identify and report risks to public, users and environment according to organisational procedures.
	3.2 Identify and report breaches of relevant legislation.
	3.3 Investigate and report complaints from the public and users regarding water allocation and quality.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment
- work effectively as part of a team
- operate communications equipment
- isolate waterways
- follow plans, charts and instructions
- follow policies, procedures and standards

REQUIRED SKILLS AND KNOWLEDGE

- calculate inflow and outflow rates
- give and receive instructions
- use literacy skills in regard to verbal and written communication in the workplace
- communicate with customers and other employees.

Required knowledge:

- effects of weather and conditions on operation of site or plant
- system layout
- relevant utilities and service bodies
- materials handling
- environmental, landscape and ground structure of river system and flood plains
- communication systems
- water flow measurement and calculations
- control systems
- equipment operation, capacity and limitations
- risk factors and potential hazards of surface water systems.

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.

Designated areas may include:

- urban locations, including:
 - rivers
 - weirs
 - dams
- rural locations, including:
 - rivers
 - weirs
 - bores
 - springs.

Equipment may include:

- electronic digital monitoring and metering systems
- recording systems
- communication equipment, including:
 - two-way radio
 - telephone
 - fax
- small marine craft
- basic hand and power tools
- lifting and winching equipment
- computerised equipment

RANGE STATEMENT

- Monitoring** may require:
- on- and off-road vehicles.
 - interaction and communication with other employees, other authorities and general public
 - visual observation
 - implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements.
- Organisational and legislative 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.
- Risks** may include:
- contamination
 - bacterial growth
 - algal blooms.
- Breaches** may include:
- excessive use
 - siphoning
 - illegal connection
 - uncontrolled run-off.

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 monitor the extraction of water from waterways and water bodies and to report risks, compliance and complaints including:

- monitoring water extraction with reference to water usage legislation using relevant equipment
- reading meters, recording data and performing calculations
- identifying and reporting risks and breaches, and investigate complaints.

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:

EVIDENCE GUIDE

- 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.

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.

NWP243B Operate bore fields and groundwater source systems

Unit descriptor	This unit of competency describes the outcomes required to operate bore fields and groundwater source systems. Monitoring the availability and quality of supply, and control of water flows from the source are also required, in conjunction with the ability to apply legislative and organisational requirements.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff operating bores and groundwater sources in urban or rural areas.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Monitor water quality and supply of bore field or groundwater source.	<p>1.1 Determine work requirements or specifications, including required <i>equipment</i>.</p> <p>1.2 <i>Monitor designated locations</i> within groundwater sources area according to agreed schedule and <i>legislative and organisational requirements</i>.</p> <p>1.3 Monitor water depths according to agreed schedule and procedures.</p> <p>1.4 Collect and record water samples according to organisational requirements.</p> <p>1.5 Take water flow measurements to determine demand and usage rates.</p>
2 Check source areas.	<p>2.1 Identify potential hazards to public and environment and report them to relevant personnel.</p> <p>2.2 Identify and report breaches of legislative and organisational requirements.</p> <p>2.3 Respond to public enquiries in line with organisational requirements.</p>
3 Regulate and report flows.	<p>3.1 Regulate flow control mechanisms according to organisational requirements to maintain system supply.</p> <p>3.2 Produce data relating to system demand adjustments according to organisational requirements.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- operate communications equipment
- use tools and equipment
- interpret plans, instructions and standard operating procedures
- perform work-related calculations
- follow procedures and standards
- use safety equipment and personal protective equipment
- identify hazards
- give and receive instructions
- communicate with customers and other employees
- operate effectively as part of a team
- measure water flows and water table levels
- select and collect samples
- identify control system faults
- identify and prevent well contamination
- adjust mechanical and electrical systems
- use literacy skills in regard to verbal and written communication in the workplace
- isolate mains and waterways.

Required knowledge:

- OHS standards and requirements
- public and site safety
- system hydraulics and flushing
- system layout
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- communication systems
- environmental, landscape and ground structure of work area
- risk factors and potential hazards of groundwater source systems
- well contaminants
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- sampling procedures
- water flow measurement
- control systems
- basic types of bore construction and principles.

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.

Equipment used may include:

- electronic digital monitoring and metering systems
- recording systems
- communication equipment, including:
 - two-way radio
 - telephone
 - fax
- basic hand and power tools
- on- and off-road vehicles
- flow control and adjustment equipment
- pumping systems, including:
 - submersible
 - centrifugal
 - multiple stage
 - deep well pumps
- valving systems, including:
 - sluice
 - blade
 - gate
 - non-return
 - pressure reducing
- water table level measuring devices
- personal protective equipment.

Monitoring designated locations may require:

- interaction and communication with other employees, other authorities and general public
- visual observation
- directing traffic and the public
- implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements.

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.

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 bore fields and groundwater source systems including:

- monitoring groundwater depth
- taking and processing water samples ready for testing
- taking and recording flow measurements
- monitoring groundwater sources and surrounding area
- reporting environmental problems and breaches
- operating flow control and regulation devices
- recording and reporting work activities.

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

EVIDENCE GUIDE

requirements of the competency and the work being performed.

NWP244B Maintain and repair bulkwater assets

Unit descriptor	This unit of competency describes the outcomes required to maintain and repair bulkwater assets, including planning and preparing for work, conducting maintenance and repair work and cleaning, flushing and disinfecting as appropriate.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with responsibility for ensuring that maintenance and repair work on bulkwater assets is completed in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for maintenance.	1.1 Determine work requirements for the maintenance and repair of assets from work drawings, plans, specifications and instructions.
	1.2 Select and check equipment and tools required to meet safety requirements of task and site.
	1.3 Select, fit and use personal protective equipment.
2 Maintain and repair assets, pipes and fittings.	2.1 Repair or replace leakages and damaged assets according to organisational procedures.
	2.2 Check and clean pipes and fittings before use.
	2.3 Select fittings and tools and lay and/or join assets according to manufacturer guidelines and legislative and organisational requirements .
	2.4 Conduct preventative maintenance according to organisational maintenance programs.
	2.5 Perform cleaning, flushing and disinfection according to organisational requirements.
	2.6 Check work to ensure that specifications have been met.
3 Finalise work.	3.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	3.2 Restore work site to meet environmental and organisational requirements.
	3.3 Complete workplace records and process them as required.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- maintain appropriate assets
- dewater and clean system and structures
- maintain surface protection
- record work activities
- identify and respond to operational problems
- use communication systems
- follow plans and instructions
- follow policies and procedures
- use safety equipment and personal protective equipment
- use tools and machinery
- perform calculations
- work effectively as part of a team
- identify hazards
- give and receive instructions
- use literacy skills in regard to verbal and written communication in the workplace
- communicate with customers and other employees.

Required knowledge:

- risk factors and potential hazards involved in maintenance of bulkwater asset processes
- component parts
- standard operating procedures for maintenance activities
- system hydraulics basics
- system layout
- environmental aspects of operation and maintenance
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- communication systems
- landscape and ground structure of work area
- control systems
- OHS procedures
- personal work site safety
- disinfection procedures in line with legislative and organisational requirements.

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.

Assets may include: • bulkwater pipes, including:

RANGE STATEMENT

- reinforced concrete
- polyvinyl chloride (PVC)
- polyethylene
- cast iron cement lined
- ductile iron cement lined
- glass reinforced piping
- mild steel cement lined
- structures, including:
 - meter pits
 - valve pits
 - regulators
 - person access chambers and pits
 - head walls
 - thrust blocks
 - large mains
 - flow recorder.

Equipment and tools may include:

- hand and power tools
- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment, including:
 - compressors
 - pneumatic spades and attachments
 - motorised cutting equipment
 - on- and off-road vehicles
 - portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

Fittings may include:

- jointing systems for pipe types, e.g. gibault
- tension bands
- compression ring joints
- bolted flanges
- dismantling joints
- cathodic protection
- electrofusion
- welded joints.

Legislative and organisational requirements

- relevant federal and state or territory legislation and

RANGE STATEMENT

may include:

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.

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 conduct maintenance and repair work on bulkwater assets by:

- planning and preparing the work site
- performing maintenance and repair tasks according to manufacturer specifications and organisational requirements
- conducting cleaning, flushing and disinfection as required
- checking work, restoring work site, storing equipment and 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

EVIDENCE GUIDE

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.

NWP245B Maintain tanks and water storage assets

Unit descriptor	This unit of competency describes the outcomes required to maintain and repair tanks and water storage assets, including reservoirs, balancing storages, sand dams and ring dams.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for ensuring that maintenance and repair of tanks and water storage assets are completed in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1 Determine <i>work requirements</i> for maintenance and repair of <i>tanks and water storage assets</i> from specifications and instructions.
	1.2 Plan work according to job requirements using relevant plans, drawings, standards and technical data.
	1.3 Check coordination issues with relevant personnel, including isolations and permits to work.
	1.4 Identify, check and prepare materials, <i>equipment</i> and resources required to satisfy job plan according to <i>legislative and organisational requirements</i> .
	1.5 Select, fit and use personal protective equipment.
2 Clean and maintain water tanks and water storage assets.	2.1 Monitor, operate and tag flow-regulating devices to isolate tanks according to organisational requirements.
	2.2 Use safety equipment and follow safety procedures for entry into storages.
	2.3 Carry out de-silting processes and clean and flush assets according to organisational requirements.
	2.4 Repair minor structural damage to storage assets and tanks and identify and report major faults according to organisational procedures.
	2.5 Check and operate flow-regulating devices to return tank to service.
	2.6 Check maintenance and repairs to tanks and water storage assets to ensure specifications are met.
	2.7 Check level sensing equipment and alarms to ensure effective operation.
3 Review, report and record work.	3.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	3.2 Restore work site to meet environmental and organisational requirements.
	3.3 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:

- maintain structures, fittings and assets
- conduct earthworks
- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment
- use tools and equipment
- 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
- give and receive instructions
- identify system faults
- use literacy skills in regard to verbal and written communication in the workplace
- identify hazards.

Required knowledge:

- system hydraulics basics
- system layout
- environmental aspects of maintenance
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- communication systems
- hazardous materials handling
- material safety data sheets (MSDS)
- landscape and ground structure of work area
- risk factors and potential hazards of maintenance processes
- equipment operation, capacity and limitations
- control systems
- pipes and fittings
- disinfection of systems and chemical usage.

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.

Work requirements may include:

- work site boundaries

RANGE STATEMENT

Tanks and water storage assets may include:

- types of tanks and assets to be maintained or repaired
- methods to be used
- risk assessment and preventative measures.
- pipes
- valves
- controlling equipment of polyvinyl chloride (PVC)
- polyethylene
- mild steel cement lined
- ductile iron cement lined
- cast iron cement lined
- asbestos cement
- copper
- glass reinforced piping
- structures, including:
 - meter pits
 - person access chambers or pits
 - valve chambers
 - regulators
 - erosion barriers
 - head walls
 - thrust blocks
 - fittings, including:
 - hydrants
 - sluices
 - scours
 - main taps
- jointing systems for pipe types, e.g. gibault
- tapping bands
- tension bands
- solvent cement joints
- compression ring joints
- bolted flanges
- electrofusion
- welded
- cathodic protection.

Equipment used may include:

- hand and power tools
- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment, including:

RANGE STATEMENT

- compressors
- pneumatic spades and attachments
- motorised cutting equipment
- on- and off-road vehicles
- portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.
- 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.

Legislative and organisational requirements may include:

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 perform maintenance and repair work on tanks and water storage assets by:

- planning and preparing work site
- performing maintenance and repair tasks according to manufacturer specifications and organisational requirements
- checking work, restoring work site, storing equipment and 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

EVIDENCE GUIDE

requirements of the workplace

- the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- 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.

NWP246B Inspect and maintain public facilities

Unit descriptor	This unit of competency describes the outcomes required to inspect and perform or arrange, the cleaning and maintenance of public facilities, including the disposal of wastes at the facilities of water organisations.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with specific responsibility for conducting general inspections and performing or arranging maintenance of a water organisation's public facilities at a designated site.
Competency field	Common

ELEMENT

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Inspect, plan and prepare work areas.	1.1 Determine work site locations and boundaries and work requirements from instructions, inspection records, guidelines and specifications.
	1.2 Inspect areas and facilities and identify, control and report potential hazards following OHS and organisational guidelines.
	1.3 Select and check equipment to meet maintenance requirements of task and site.
2 Perform or arrange maintenance of public facilities.	2.1 Perform or arrange cleaning or maintenance of areas and facilities to meet legislative and organisational requirements .
	2.2 Order supplies as required.
	2.3 Store, handle and use chemicals and equipment appropriately and according to legislative and organisational requirements.
	2.4 Dispose of wastes , including dangerous materials, according to legislative and organisational requirements.
3 Record and report on work.	3.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	3.2 Restore work site to meet environmental and organisational requirements.
	3.3 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:

- inspect and maintain public facilities
- use safety equipment and personal protective equipment
- store, transport, handle and use chemicals safely
- perform work-related calculations

REQUIRED SKILLS AND KNOWLEDGE

- apply procedures and standards for maintenance of public facilities
- communicate with employees, customers and the public
- work effectively as part of a team
- give and receive instructions
- use literacy skills in regard to verbal and written communication in the workplace
- use hand tools and equipment.

Required knowledge:

- environmental aspects of inspecting and maintaining public facilities
- use, storage, handling and transport of hazardous substances
- landscape and ground structure of work area
- risk factors and potential hazards of maintaining public facilities
- relevant material safety data sheets (MSDS)
- effects of weather and conditions on the use of disinfecting and cleaning products.

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.

Inspection may require:

- interaction and communication with other employees, other authorities and general public
- visual observation
- record keeping
- implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements.

Areas and facilities to be monitored and maintained:

- will be dependent upon water organisation's infrastructure but may include areas such as dams, reservoirs and reserves
- may include a range of facilities, such as:
 - toilet facilities, including septic systems
 - barbeques and surrounds
 - public recreation areas, including seating and picnic areas
 - boat ramps
 - jetties
 - observation decks
 - walkways.

Equipment used may include:

- hand and power tools
- motorised machinery
- on- and off-road vehicles
- small marine craft
- chemicals and mixers

RANGE STATEMENT

- chemical spraying apparatus
 - mixing equipment and storage areas
 - appropriate personal protective equipment
 - communication equipment.
- 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.
- Wastes** may include:
- hazardous waste, such as:
 - broken glass
 - syringes
 - biological hazards, such as:
 - wastewater
 - excrement
 - dead animals
 - noxious weeds
 - non-hazardous substances, such as:
 - paper
 - general household rubbish
 - garden waste, such as:
 - lawn clippings
 - weeds
 - branches
 - soil.
- Records** and reporting may include:
- records, such as:
 - manual or electronic data
 - copies of contractor permits to work, site inductions and OHS procedures
 - work orders
 - purchase orders
 - reporting, such as:
 - verbal reports
 - paper-based reports
 - electronic reports.

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 inspect and perform or arrange, the cleaning and maintenance of public facilities including:

- interpreting work instructions and inspect sites
- select appropriate equipment to maintain public facilities
- cleaning or arranging cleaning of public facilities
- maintaining or arranging the maintenance of public facilities
- replenishing supplies
- clearing and disposing of waste and debris safely
- restoring work site and store equipment
- completing relevant 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 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

EVIDENCE GUIDE

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.

NWP247A Maintain catchment and surrounding areas

Unit descriptor	This unit of competency describes the outcomes required to maintain surface catchment areas and associated rivers, lakes, water bodies, dams, water storages and groundwater areas in a manner that meets organisational standards and contributes to the maintenance of water quality, and the protection of the environment and the public. The ability to apply organisational procedures, apply procedures to maintain environmental conditions, undertake maintenance and report outcomes is essential to performance.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for maintaining catchment and surrounding areas and contributing to catchment management and control.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Prepare for work.	<p>1.1 Access and review catchment inspection records describing maintenance requirements for action.</p> <p>1.2 Identify and apply work requirements and timelines for performing maintenance tasks of catchments and surrounding areas.</p> <p>1.3 Assess site, equipment and methods to be used for hazards or risks and apply appropriate control measures using safe work procedures.</p> <p>1.4 Plan maintenance work to be conducted within required timeframe, using allocated resources effectively and according to legislative and organisational requirements.</p>
2 Maintain environmental condition of waterways and surrounding areas.	<p>2.1 Remove dead livestock or native fauna from waterways and surrounding catchments and dispose of according to organisational requirements.</p> <p>2.2 Remove flood debris from waterways and surrounding areas according to organisational procedures.</p> <p>2.3 Carry out fuel reduction burns according to organisational procedures.</p> <p>2.4 Apply basic control measures to contain or control chemical spills or contaminated water supplies.</p> <p>2.5 Identify and report potential or emerging changes to environmental conditions according to organisational requirements.</p>
3 Eradicate noxious weeds and feral pests.	<p>3.1 Identify noxious weeds and feral pests that are contributing to degradation of catchment and surrounding areas.</p> <p>3.2 Use standard organisational procedures for managing and removing noxious weeds and feral pests according to safe work practices.</p> <p>3.3 Compile reports on eradication process according to organisational procedures.</p>

ELEMENT	PERFORMANCE CRITERIA
4 Perform minor maintenance.	4.1 Identify <i>infrastructure</i> requiring minor maintenance.
	4.2 Apply erosion control measures for waterways and surrounding areas.
	4.3 Make repairs using appropriate equipment and resources to a standard that meets organisational requirements.
	4.4 Provide reports of maintenance performed according to organisational procedures.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- undertake inspections of catchment and surrounds
- identify and respond to maintenance problems
- use communication systems
- provide basic verbal or written reports
- follow plans and instructions
- perform work-related calculations
- follow organisational procedures and standards
- use safety equipment and personal protective equipment
- communicate with customers and other employees
- use literacy skills in regard to verbal and written communication in the workplace
- work effectively as part of a team.

Required knowledge:

- environmental, landscape and ground structure of work area
- risk factors and potential hazards of surface water systems
- catchment emergency response procedures
- catchment security procedures
- operation of communication systems
- customer service
- effects of weather and conditions on operation of site or plant
- relevant utilities and service bodies
- equipment operation.

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.

- Performing maintenance tasks*** may require:
- interaction and communication with other employees, other authorities and general public
 - visual observation

RANGE STATEMENT

- implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements
- bushcraft
- eradication of feral pests and noxious plants
- identification of declared flora
- fire suppression or fuel reduction procedures
- system layout.

Equipment used may include:

- personal protective equipment
- electronic digital monitoring systems
- recording systems
- on- and off-road vehicle operation
- basic hand and power tools
- communication equipment, including:
 - two-way radio
 - telephone
 - fax
- small marine craft.

Basic control measures may include:

- minor earthworks, such as bunding and diversions
- booms and other temporary bunding systems
- aeration
- eductor trucks
- hay bales
- geofabric and beaching.

Infrastructure that may require minor maintenance includes:

- fences and gates
- buildings, plant and equipment
- signage
- roads, tracks and paths
- public facilities including:
 - bridges
 - boardwalks
 - display boards
 - campgrounds
 - picnic areas
 - toilets
 - fireplaces.

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 maintain surface catchment areas including:

- interpreting work requirements
- monitoring and reporting environmental conditions
- maintaining catchment areas and removing debris and noxious weeds and pests according to legislative and organisational requirements
- performing minor maintenance tasks
- compiling reports.

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.

NWP250B Construct and install wastewater pipelines

Unit descriptor	This unit of competency describes the outcomes required to construct and install wastewater collection assets.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for ensuring that wastewater pipelines are constructed and installed in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare construction and installation of collection pipelines.	<p>1.1 Determine <i>work requirements</i> for construction and installation from plans, specifications and instructions.</p> <p>1.2 Perform site check to prevent damage to other utilities according to legislative and organisational requirements.</p> <p>1.3 Select and check <i>equipment and tools</i> required to meet safety requirements of task and site.</p> <p>1.4 Identify potential risks to public and environment, and take appropriate steps to minimise and eliminate risks.</p>
2 Construct and install collection pipelines.	<p>2.1 Select, fit and use personal protective equipment.</p> <p>2.2 Excavate and prepare trenches according to specifications and <i>legislative and organisational requirements</i>.</p> <p>2.3 Lay bedding or foundation according to specifications.</p> <p>2.4 Select and lay or join <i>pipes</i> and <i>fittings</i> to grade according to manufacturer guidelines and organisational requirements.</p> <p>2.5 Backfill excavations according to specifications.</p>
3 Review construction and installation of collection assets.	<p>3.1 Check constructed or installed collection pipes and fittings to ensure specifications are met.</p> <p>3.2 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.</p> <p>3.3 Restore work site to meet environmental and organisational requirements.</p> <p>3.4 Complete workplace records and as constructed drawings and process as required.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- install components specified for wastewater collection system, including requirements for protection
- construct appropriate assets
- install junctions and side lines
- identify and respond to operational problems
- use communication systems
- follow plans, instructions, standards and standard operating procedures
- perform work-related calculations
- use safety equipment and personal protective equipment
- use tools and machinery
- identify hazards
- give and receive instructions
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- communicate with customers and other employees.

Required knowledge:

- OHS procedures
- personal work site safety
- risk factors and potential hazards of construction and installation processes
- equipment operation, capacity and limitations
- safe use of lasers
- use of automatic levels
- basic levelling techniques
- profiles and boning rods
- pipe laying techniques
- effects of weather and conditions on operation of site or plant
- environmental aspects of construction and installation
- component parts
- shoring and levelling
- construction and installation procedures and materials.

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.

Work requirements may include:

- location and extent of job
- risk assessment recommendations
- involvement of subcontractors
- equipment specifications
- material specifications
- utilities' location procedures
- environmental protection requirements
- boundary protection
- signage and traffic management.

Equipment and tools may include:

- hand and power tools
- lifting and winching equipment
- mechanical excavation equipment
- levering equipment
- pneumatic and motorised equipment, including:
 - compressors
 - pneumatic spades and attachments
 - motorised cutting equipment
 - pipes and associated fittings
 - on- and off-road vehicles
 - portable pumps
 - pipe laying laser
 - rotating laser
- profiles
- automatic level
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

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.

Pipes may include:

- vitrified clay

RANGE STATEMENT

- reinforced concrete
 - polyvinyl chloride (PVC)
 - polyethylene
 - cast iron
 - ductile iron cement lined
 - glass reinforced piping
 - mild steel cement lined.
- Fittings** may include:
- jointing systems for pipe types, e.g. gibault
 - tension bands
 - solvent cement joints
 - compression ring joints
 - bolted flanges
 - cathodic protection
 - electrofusion
 - butt welding.

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 construct and install wastewater collection system pipelines by:

- planning work and preparing work site safely
- constructing and installing pipes according to specifications and instructions
- checking quality of work
- clearing work site
- 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

EVIDENCE GUIDE

- 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 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.

NWP251B**Construct open earthen channels or drains****Unit descriptor**

This unit of competency describes the outcomes required to plan and prepare for the construction of open channels or drains and to complete construction operations and subsequent site restoration according to legislative and organisational requirements.

Employability skills

This unit of competency contains employability skills.

Application of the unit

This unit supports the attainment of skills and knowledge required for field and operational staff involved in the construction of earthen channels and drains for stormwater or irrigation systems or the remodelling or reconstruction of unserviceable systems.

Competency field

Collection and distribution

ELEMENT**PERFORMANCE CRITERIA**

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for construction work.

- 1.1 Determine **work requirements** from design plans, specifications, instructions and work orders.
- 1.2 Check site and identify **hazards** according to **legislative and organisational requirements**.
- 1.3 Make appropriate **drainage and diversion arrangements** without damage to environment.
- 1.4 Check **equipment** and open-cut excavation methods to ensure that safety requirements of task and site are met.
- 1.5 **Prepare site** according to specifications and organisational requirements.

2 Construct channels or drains.

- 2.1 Construct earthen channels, drains and batters to planned width, depth and gradient.
- 2.2 Compact soil, apply additives if necessary, and take earth samples to meet organisational requirements.
- 2.3 Check construction works to ensure that specifications are met.

3 Restore work site and equipment.

- 3.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
- 3.2 Restore work site and add **environmental improvements or controls** to complete work according to plans and organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs

REQUIRED SKILLS AND KNOWLEDGE

- use safety and personal protective equipment
- use tools and machinery
- interpret plans, charts and instructions
- apply procedures and standards
- apply channel, drain and batter construction techniques
- identify soil types, mechanics and compaction rates
- select and operate appropriate compaction plant, such as tamping foot and smooth drum roller
- operate communication systems
- perform work-related calculations
- communicate with employees and customers
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- give and receive instructions.

Required knowledge:

- channel and drain system design basics
- channel and drain system layout
- environmental aspects of construction
- channel, drain and batter construction processes
- measures to reduce channel deterioration, infestation of weeds, pests and seepage
- relevant utilities and service providers
- safe use of lasers
- use of automatic levels
- basic levelling techniques
- profiles and boning rods
- survey principles
- soil types, mechanics and compaction rates
- capabilities of plant used for construction, including equipment operation, capacity and limitations
- communication systems
- work-related calculations
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of construction processes
- effects of weather and conditions on construction site or plant
- control systems.

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.

Work requirements may include:

- confirmation of site availability
- confirmation of statutory approvals, including:
 - vegetation clearing approval
 - riverine protection permits
 - use of borrow approvals
- preparations for conditions included in statutory approvals for work
- site boundaries
- borrow and spoil areas
- boundary protection
- location, timing and type of work activity
- extent of the work
- access roads
- specifications for depth, width and gradient
- utility location
- safe work methods.

Hazards may include:

- damage to other utilities
- soil types and suitability to cut
- those associated with particular plant and equipment.

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.

Drainage and diversion arrangements may include:

- statutory approvals and conditions
- environmental.

Equipment may include:

- hand and power tools
- on- and off-road vehicles
- off-road plant
- lifting and winching equipment
- compressors
- rotating lasers
- profiles
- automatic level
- pneumatic spaders and attachments
- motorised cutting equipment

RANGE STATEMENT

- portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

Site preparation may include:

- installation of temporary erosion control structures
- cultural heritage monitors
- safety barricades
- removal of vegetation, debris, silt and soil.

Environmental improvements or controls may include:

- revegetation processes
- drainage measures
- sedimentation control.

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 construct open earthen channels and drains by:

- planning work and preparing work site according to given specifications and instructions
- cutting channels to specification
- compacting soil
- taking soil samples
- checking that work meets specifications
- cleaning and storing equipment
- restoring work site.

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

EVIDENCE GUIDE

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.

NWP252B Construct and install irrigation delivery and stormwater drainage assets

Unit descriptor	This unit of competency describes the outcomes required to construct irrigation delivery or stormwater drainage assets on site and to install both constructed assets and prefabricated components.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for ensuring that the construction and installation of irrigation or stormwater drainage assets is completed in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1	Determine work requirements from specifications and instructions.
	1.2	Select, fit and use personal protective equipment.
	1.3	Perform site check to identify hazards and prevent damage to other utilities according to legislative and organisational requirements .
	1.4	Provide appropriate drainage and diversion from work site without damage to environment.
	1.5	Check equipment and excavation methods to meet safety requirements of task and site.
2 Construct and install drains, channels, pipes and associated fittings.	2.1	Provide bedding and foundations according to structure type, location and specification.
	2.2	Select, lay and install join pipes and fittings according to manufacturer and organisational requirements.
	2.3	Select, place and join prefabricated components according to manufacturer and organisational requirements.
	2.4	Check installed pipes, fittings and prefabricated components to ensure that test specifications are met.
	2.5	Construct cast in situ components according to specifications and organisational requirements.
3 Finalise work.	3.1	Check constructions and installations to ensure that specifications are met.
	3.2	Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	3.3	Backfill, compact and restore work site to meet environmental and organisational requirements.
	3.4	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:

- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment
- use tools and machinery
- interpret plans, charts and instructions
- perform work-related calculations
- apply procedures and standards
- communicate with employees and customers
- work effectively as part of a team
- use communication equipment
- use literacy skills in regard to verbal and written communication in the workplace
- give and receive instructions.

Required knowledge:

- system hydraulics basics
- system layout
- environmental aspects of construction
- construction processes
- relevant utilities and service providers
- communication systems
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of construction processes
- equipment operation, capacity and limitations
- effects of weather and conditions on construction site or plant
- control systems
- pre-cast components
- pipes and fittings.

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.

Work requirements may include:

- extent and scope of work
- work site boundaries
- utilities location
- risk assessment and prevention measures
- signage

RANGE STATEMENT

Legislative and organisational requirements may include:

- traffic control.
- 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
- on- and off-road vehicles
- lifting and winching equipment
- mechanical excavation equipment
- compressors
- pneumatic spaders and attachments
- motorised cutting equipment
- chemical spraying apparatus
- small marine craft
- trenching systems
- portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

Structures may include:

- drop structures
- regulators
- erosion barriers
- head walls
- concrete channels.

Pipes may include:

- vitrified clay
- polyvinyl chloride (PVC)
- polyethylene
- reinforced concrete.

Fittings may include:

- jointing systems for pipe types and prefabricated sections, e.g. gibault and tension bands
- tension bands
- solvent cement joints
- compression rings
- bolted flanges
- malleable jointing materials

RANGE STATEMENT

- electrofusion
- butt welding.

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 construct and install irrigation delivery or stormwater drainage assets by:

- planning work and preparing work site according to given specifications and instructions
- constructing assets according to specifications
- installing assets according to specifications
- checking that work meets specifications
- cleaning and storing equipment
- restoring work site
- 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 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

EVIDENCE GUIDE

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.

NWP253B Install and repair water services

Unit descriptor	This unit of competency describes the outcomes required to install and repair water service pipes running from the main supply to the consumer connection.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for ensuring that water pipes are installed and repaired in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for service installation.	1.1	Determine work requirements for installation of services from plans, specifications and organisational procedures.
	1.2	Determine materials and configuration from plans, specifications and organisational procedures.
	1.3	Determine location of other utilities and services according to legislative and organisational requirements .
	1.4	Identify and apply system operation requirements.
	1.5	Select, fit and use equipment , including personal protective equipment.
	1.6	Determine location, size and number of tappings from plans, specifications and organisational procedures.
2 Drill and tap main pipe.	2.1	Set up and operate tapping machine according to manufacturer specifications and organisational procedures.
	2.2	Install main tap according to specifications and organisational requirements.
	2.3	Recognise and correct faults or malfunctions in drilling and tapping.
	2.4	Apply corrosion protection measures where required.
3 Install conduits under roads and pathways.	3.1	Coordinate installation of conduits with road and path construction.
	3.2	Install conduits according to specifications, drawings and organisational requirements.
4 Install pipes and fittings.	4.1	Measure pipes and cut to length within acceptable tolerance for length and squareness.
	4.2	Prepare pipe ends and make joints according to manufacturer specifications.
	4.3	Set out configuration of pipes and fittings according to plans, specifications and organisational requirements, with allowance for thermal movement if required.
	4.4	Recognise and correct joining faults or malfunctions.
	4.5	Select bedding and backfill material and place according to manufacturer specifications and organisational requirements.

ELEMENT	PERFORMANCE CRITERIA
5 Maintain water system hygiene.	5.1 Store service pipes and fittings clear of potential pollutants or damaging substances and remove debris or filling from pipes before installation.
	5.2 Flush service pipe work before final commissioning.
	5.3 Plug pipe openings during work breaks.
6 Locate and repair leaks.	6.1 Determine locations of leaks and isolate and dewater.
	6.2 Identify and apply electrical safety procedures.
	6.3 Identify and apply appropriate repair techniques to maintain integrity of service.
7 Test water service.	7.1 Apply test or operational pressures to service and all joints.
	7.2 Check pipes, connections and fittings are operable without leakage under test or operational conditions.
8 Finalise work.	8.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	8.2 Restore work site to meet environmental and organisational requirements.
	8.3 Complete workplace records and process as required.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- install and repair service pipes and fittings
- identify control system faults
- use safety equipment and personal protective equipment
- use tools and equipment
- identify hazards
- work effectively as part of a team
- perform work-related calculations
- identify and respond to operational problems
- use communication systems
- interpret plans, instructions and procedures
- follow procedures and standards
- complete documentation
- use literacy skills in regard to verbal and written communication in the workplace
- communicate with customers and other employees.

Required knowledge:

- OHS procedures
- personal work site safety
- risk factors
- equipment operation

REQUIRED SKILLS AND KNOWLEDGE

- environmental aspects of service installation
- pipe systems and installation requirements
- characteristics of pipe materials
- work-related calculations
- systems' operation
- testing systems
- corrosion principles applicable to service pipes and fittings
- operation of water meters.

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.

Work requirements may include:

- confined spaces
- lifting and moving materials in a trench.

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
- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment
- pressure drilling and tapping machines
- pipe cutting and bending apparatus
- thread cutting equipment
- communication equipment
- bridging clamps
- insulating gloves
- personal protective equipment.

Pipes may include:

- copper
- polybutylene
- brass
- polyethylene
- polyvinyl chloride (PVC)
- galvanised steel.

RANGE STATEMENT

Joints may be:

- threaded
- electrofusion
- push fit
- solvent welded
- butt welded
- compression
- silver soldered.

Fittings may include:

- tapping bands
- main taps
- ferrules
- ball valves
- dirt boxes
- meter boxes.

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 install and repair water services between the main supply and customer connection by:

- planning work and preparing work site
- performing installation and repair tasks according to manufacturer specifications and legislative and organisational requirements
- ensuring system hygiene and operational performance
- checking work, restoring work site, storing equipment and 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

EVIDENCE GUIDE

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.

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.

NWP254B Repair or insert water distribution assets

Unit descriptor	This unit of competency describes the outcomes required to repair water distribution assets and insert or cut in fittings and valves.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for ensuring that repair of water distribution assets is completed in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for repairs.	1.1	Determine work requirements and location for repair of <i>assets</i> from specifications and instructions.
	1.2	Select and check <i>equipment</i> and tools required to meet safety requirements of task and site.
	1.3	Select, fit and use personal protective equipment.
	1.4	Advise customers of supply interruption.
	1.5	Isolate the work area.
2 Repair or insert assets.	2.1	Repair or replace leakages and damaged pipes and <i>fittings</i> according to specifications.
	2.2	Carry out internal and external protection of assets to meet specifications.
	2.3	Pressurise and check repaired distribution assets to ensure that joints are sound.
3 Maintain system hygiene and water quality.	3.1	Store pipes and fittings clear of potential pollutants or damaging substances and remove debris or filling from pipes before use.
	3.2	<i>Sterilise fittings</i> and repair materials, disinfect and take samples.
	3.3	Keep trench water levels below pipe level.
4 Review, record and report work.	4.1	Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	4.2	Complete workplace records and process as required.
	4.3	Restore work site to meet environmental and organisational requirements.
	4.4	Determine and report apparent cause of asset failure by visual examination of removed components.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- use safety equipment and personal protective equipment
- use tools and machinery
- follow plans, charts, specifications and instructions
- perform work-related calculations
- apply policies and procedures
- identify hazards
- communicate with employees and customers
- work effectively as part of a team
- use communication systems
- give and receive instructions
- identify system faults
- install and repair the appropriate systems' fittings and assets
- use literacy skills in regard to verbal and written communication in the workplace
- apply appropriate surface protection and clean system and structures.

Required knowledge:

- system hydraulics basics
- system layout
- environmental aspects of maintenance
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- communication systems
- work-related calculations
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of maintenance processes
- equipment operation, capacity and limitations
- effects of weather and conditions on construction site or plant
- control systems
- pipes and fittings
- disinfection of systems and chemical usage.

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.

Assets may include:

- distribution system pipe work, including:
 - polyvinyl chloride (PVC)
 - polyethylene
 - mild steel cement lined
 - ductile iron cement lined
 - cast iron cement lined
 - asbestos cement
 - copper
 - glass reinforced piping
- structures, including:
 - meter pits
 - maintenance holes
 - valve chambers
 - regulators
 - erosion barriers
 - head walls
 - thrust blocks
 - controlling equipment.

Equipment used may include:

- hand and power tools
- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment, including:
 - compressors
 - pneumatic spades and attachments
 - motorised cutting equipment
 - on- and off-road vehicles
 - portable pumps
- leak clamps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

Fittings may include:

- hydrants
- sluices
- valves
- scours

RANGE STATEMENT

- Sterilising fittings*** may include:
- main taps
 - jointing and repair systems for pipe types, e.g. gibault
 - tapping bands
 - tension bands
 - solvent cement joints
 - compression ring joints
 - bolted flanges
 - electrofusion
 - butt welding
 - cathodic protection.
 - air scouring
 - sterilising pipeline and repair pieces
 - sampling and testing
 - scrubbing
 - flushing.

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 conduct repair work on water distribution assets by:

- planning work and preparing work site
- performing repair tasks according to manufacturer specifications and organisational requirements
- ensuring system hygiene and water quality
- checking work, restoring work site, storing equipment and 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

EVIDENCE GUIDE

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.

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.

NWP255B Maintain and repair wastewater collection assets

Unit descriptor	This unit of competency describes the outcomes required to maintain and repair pipes, drains and wastewater collection assets.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with responsibility for ensuring that wastewater collection assets are maintained and repaired in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for maintenance.	1.1 Determine work requirements for maintenance and repair of assets from working drawings, plans, specifications and instructions.
	1.2 Select and check equipment and tools required to meet safety requirements of task and site.
	1.3 Select, fit and use personal protective equipment.
2 Conduct maintenance and repair work.	2.1 Locate and remove system chokes and blockages to achieve maximum system performance.
	2.2 Repair or replace leakages and damaged assets to meet test specifications.
	2.3 Repair or replace structures as required to meet operational, legislative and organisational requirements .
	2.4 Check maintained and repaired assets to ensure that specifications have been met.
3 Finalise work.	3.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.
	3.2 Complete workplace records and process as required.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- install and repair appropriate assets
- clear chokes and blockages
- maintain assets
- identify and respond to operational problems
- use communication systems
- perform work-based calculations
- follow drawings, plans, specifications and instructions

REQUIRED SKILLS AND KNOWLEDGE

- apply policies and procedures
- use safety and personal protective equipment
- work effectively as part of a team
- use tools and machinery
- identify hazards
- communicate with customers and other employees
- use literacy skills in regard to verbal and written communication in the workplace
- record work activities.

Required knowledge:

- system hydraulics basics
- system layout
- system calculations
- environmental aspects of construction and maintenance
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- risk factors and potential hazards of locating underground utilities and services
- risk factors and potential hazards of installation and maintenance processes
- hazardous materials handling
- landscape and ground structure of work area
- equipment operation, capacity and limitations
- effects of weather and conditions on construction site or plant
- control systems
- pipes and fittings
- OHS procedures
- personal work site safety
- component parts
- repair and maintenance standard operating procedures.

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.

Assets may include:

- collection system's pipe work, including:
 - vitrified clay
 - reinforced concrete
 - polyvinyl chloride (PVC)
 - polyethylene
 - cast iron cement lined
 - ductile iron cement lined

RANGE STATEMENT

- glass reinforced piping
- mild steel cement lined
- structures, including:
 - meter pits
 - valve pits
 - drop structures
 - regulators
 - erosion barriers
 - person access chambers and pits
 - head walls
 - thrust blocks
 - inspection shafts
 - controlling equipment
- fittings, including:
 - jointing systems for pipe types, e.g. gibault
 - tension bands
 - solvent cement joints
 - compression ring joints
 - bolted flanges
 - cathodic protection
 - electrofusion
 - butt-welding.

Equipment and tools may include:

- hand and power tools
- lifting and winching equipment
- mechanical excavation equipment
- local repair by electronic means, including:
 - top hats
 - patches
- pneumatic and motorised equipment, including:
 - compressors
 - pneumatic spades and attachments
 - motorised cutting equipment
 - conventional and jet rodding systems
 - on- and off-road vehicles
 - portable pumps
- communication equipment
- closed circuit television (CCTV) equipment to survey repairs
- breathing apparatus
- gas detection equipment

RANGE STATEMENT

Legislative and organisational requirements may include:

- rescue equipment
- appropriate personal protective equipment.
- 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.

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 conduct maintenance and repair work on wastewater collection assets by:

- planning and preparing work site
- performing maintenance and repair tasks on pipe work and structures according to manufacturer specifications and organisational requirements
- checking work, restoring work site, storing equipment and 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

EVIDENCE GUIDE

- 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.

NWP256B Monitor and report water distribution systems

Unit descriptor	This unit of competency describes the outcomes required to inspect water distribution systems, detect faults and report on water distribution system performance.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with responsibility for ensuring that water distribution system performance complies with legislative and organisational requirements.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Monitor distribution system performance.	1.1	Conduct <i>routine inspections</i> of <i>supply networks</i> and report faults according to organisational procedures.
	1.2	Select <i>equipment</i> and inspection methods to meet task and site safety requirements.
	1.3	Collect data on system performance and usage and report according to <i>legislative and organisational requirements</i> .
2 Monitor water quality.	2.1	Collect and record water samples according to organisational requirements.
	2.2	Monitor water quality according to organisational requirements.
3 Identify system non-conformance.	3.1	Investigate and report consumer complaints according to organisational requirements.
	3.2	Record and report leakages, and damaged pipes and fittings according to organisational requirements.
	3.3	Identify and report <i>system faults</i> and operational condition of network according to organisational requirements.
	3.4	Investigate and report pressure and flow fluctuations outside acceptable limits according to organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment
- use tools and machinery
- follow plans, instructions and policies
- perform system calculations
- apply inspection and testing procedures and standards

REQUIRED SKILLS AND KNOWLEDGE

- communicate with employees and customers
- use communication equipment
- give and receive instructions
- work effectively as part of a team
- identify system faults
- use literacy skills in regard to verbal and written communication in the workplace
- identify hazards.

Required knowledge:

- system hydraulics basics
- system layout
- system calculations
- environmental aspects of maintenance
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- communication systems
- hazardous materials handling
- landscape and ground structure of work area
- risk management principles
- risk factors and potential hazards of inspection processes
- equipment operation, capacity and limitations
- effects of weather and conditions on system operation and plant
- control systems
- pipes and fittings.

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.

- Routine inspections*** may include:
- interaction and communication with other employees, other authorities and general public
 - visual observation
 - implementation of reporting procedures that may also include procedures for implementation of by-laws, organisational policies and statutory requirements.

RANGE STATEMENT

Supply networks may include:

- distribution system pipe work, including:
 - polyvinyl chloride (PVC)
 - polyethylene
 - mild steel cement lined
 - ductile iron cement lined
 - cast iron cement lined
 - asbestos cement
 - copper
 - glass reinforced piping
- structures, including:
 - meter pits
 - person access chambers or pits
 - valve chambers
 - regulators
 - erosion barriers
 - head walls
 - thrust blocks
 - pumping stations
 - consumer services
 - meters
- fittings, including:
 - hydrants
 - sluices
 - valves
 - scours
 - main taps
 - jointing systems for pipe types, e.g. gibault
 - tapping bands
 - tension bands
 - solvent cement joints
 - compression ring joints
 - bolted flanges
 - electrofusion
 - butt welding
 - backflow prevention devices
 - cathodic protection.

RANGE STATEMENT

Equipment may include:

- hand and power tools
- lifting equipment
- mechanical excavation equipment
- electronic monitoring and metering systems
- recording systems
- motorised equipment
- on- and off-road vehicles
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

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.

System faults may include:

- loss of pressure
- leakage
- odour
- turbidity and colour
- loss of flow.

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 inspect water distribution systems, detect faults and report on water distribution system performance including:

- monitoring and reporting on performance of water distribution systems, including water quality
- identifying and reporting leakages or damage to system components
- identifying and reporting operational conditions falling outside performance specifications
- processing consumer complaints.

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

EVIDENCE GUIDE

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.

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.

NWP257B Maintain and repair wastewater collection systems

Unit descriptor	This unit of competency describes the outcomes required to investigate reported problems in wastewater collection systems and to conduct appropriate maintenance and repair work on wastewater collection assets.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for ensuring that repairs and maintenance of wastewater collection systems are conducted in a safe and timely manner.
Competency field	Collection and distribution

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Investigate reported system problems.	1.1 Investigate customer complaints.
	1.2 Locate problems using inspection points and system fault location techniques.
	1.3 Identify organisational and customer responsibilities for faults.
	1.4 Select remedial action according to organisational procedures.
2 Plan and prepare for maintenance and repair.	2.1 Determine work requirements for maintenance and repair of assets from specifications and instructions.
	2.2 Select and check equipment and tools required to meet task and site safety requirements.
	2.3 Select, fit and use personal protective equipment.
3 Maintain and repair assets, pipes and fittings.	3.1 Control flows to allow maintenance and repair of assets.
	3.2 Repair or replace leakages and damaged assets according to organisational procedures.
	3.3 Select fittings and tools and lay or join assets according to manufacturer guidelines and organisational requirements.
	3.4 Conduct preventative maintenance according to organisational maintenance programs.
	3.5 Locate system chokes and blockages and arrange removal.
	3.6 Perform cleaning and flushing according to legislative and organisational requirements .
	3.7 Inspect minor structures and determine and apply appropriate repair techniques.
4 Finalise work.	4.1 Check, maintain and store equipment, tools and materials to manufacturer guidelines and organisational procedures.
	4.2 Restore work site to meet environmental and organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment
- use tools and machinery
- follow plans, charts and instructions
- perform work-related calculations
- apply policies
- apply monitoring procedures and standards
- communicate effectively with employees and customers
- work effectively as part of a team
- use communication systems
- give and receive instructions
- identify system faults
- use literacy skills in regard to verbal and written communication in the workplace
- identify hazards.

Required knowledge:

- system hydraulics basics
- system layout
- environmental aspects of maintenance
- customer and organisational responsibilities for blockages
- standards and procedures for organisational repair and maintenance
- lock-out procedures for mechanical and electrical installations
- closed circuit television (CCTV) and other methods of monitoring
- relevant utilities and service bodies
- communication systems
- safety procedures
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of monitoring processes
- equipment operation
- capacity and limitations
- effects of weather and conditions on system operation and plant
- control systems
- pipes and fittings
- disinfection of systems and chemical usage.

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.

Work requirements may include:

- location and extent of work
- location of utilities
- site boundary protection and traffic control
- hazards, risks and preventative solutions.

Assets may include:

- collection system pipe work, including:
 - polyvinyl chloride (PVC)
 - polyethylene
 - vitrified clay
 - concrete
 - mild steel cement lined
 - ductile iron cement lined
 - cast iron cement lined
 - asbestos cement
 - glass reinforced piping
- structures, including:
 - meter pits
 - maintenance holes, chambers, traps or pits
 - valve chambers
 - regulators
 - erosion barriers
 - thrust blocks
- pumping stations.

Equipment and tools may include:

- basic hand and power tools
- electronic monitoring and metering systems
- recording systems
- on- and off-road vehicles
- communication equipment
- computerised equipment
- CCTV
- pipe and cable detection equipment
- leak detection equipment
- motorised equipment
- portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment

RANGE STATEMENT

- Flow control** may include:
- rescue equipment
 - appropriate personal protective equipment.
 - admission of trade waste
 - odours
 - infiltration and exfiltration
 - electronic and manual controlling systems
 - pumping systems, including:
 - centrifugal
 - positive displacement
 - valving systems, including:
 - sluice
 - gate
 - non-return
 - blade
 - metering systems, including:
 - bubbler tube
 - ultrasonic
 - magnetic meter.
- Fittings** may include:
- sluices
 - valves
 - scours
 - main taps
 - jointing systems for pipe types, e.g. gibault
 - tapping bands
 - tension bands
 - solvent cement joints
 - compression ring joints
 - bolted flanges
 - electrofusion
 - butt welding
 - backflow prevention devices
 - cathodic protection.
- 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.

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 maintain and repair wastewater collection assets by:

- investigating reported faults
- negotiating with customers
- applying organisational procedures to selection of system fault solutions
- preparing equipment, tools and work sites
- conducting maintenance and repair of pipes, fittings and small structures
- reporting blockages
- cleaning and flush systems
- clearing work site
- 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.

EVIDENCE GUIDE

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.

NWP258B Monitor and operate bulkwater transfer systems

Unit descriptor	This unit of competency describes the outcomes required to monitor and operate bulkwater transfer systems.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for staff with specific responsibility for ensuring that the operation of bulk water transfer systems complies with legislative and organisational requirements.
Competency field	Collection and distribution

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare work.	1.1 Determine work requirements for operation and monitoring of bulkwater transfer systems are in line with specifications and instructions.
	1.2 Perform site check to prevent damage to other utilities and the environment, according to legislative and organisational requirements .
	1.3 Select and check equipment to meet safety requirements of task and site and select, fit and use personal protective equipment.
	1.4 Identify pumping stations and follow correct operating procedures.
2 Monitor system performance and usage.	2.1 Conduct routine monitoring programs according to organisational maintenance schedules.
	2.2 Identify fluctuations in demand and system changes causing dirty water.
	2.3 Collect, analyse and record data on system performance and usage according to organisational requirements.
	2.4 Collect and record water samples according to organisational requirements.
3 Regulate flow.	3.1 Monitor and adjust flow regulating systems to meet demand requirements, according to organisational procedures.
	3.2 Regulate and divert flows to facilitate repair or emergency activities.
	3.3 Conduct isolation and inspection of transfer systems.
4 Regulate pressure.	4.1 Monitor and adjust pressure to meet optimum delivery performance, according to organisational procedures.
	4.2 Investigate and report pressure fluctuations according to organisational requirements.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- operate bulkwater systems
- identify and respond to operational problems
- collect data
- produce reports and logs
- use safety and personal protective equipment
- use tools and machinery
- follow plans, charts, specifications and instructions
- perform work-related calculations
- apply procedures and standards
- communicate with employees and customers
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- identify system faults
- use literacy skills in regard to verbal and written communication in the workplace
- identify hazards.

Required knowledge:

- system hydraulics basics
- system layout
- environmental aspects of operation
- lock-out procedures for mechanical and electrical installations
- relevant utilities and service bodies
- communication systems
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of operating water transfer systems
- equipment operation, capacity and limitations
- effects of weather and conditions on systems, site or plant
- pumps
- weirs
- valves
- flow meters
- run time meters
- diurnal variations
- wet and dry pumpwells
- illegal connections
- control systems

REQUIRED SKILLS AND KNOWLEDGE

- disinfection of systems and chemical usage.

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.

Work requirements may include:

- work site boundaries
- extent and scope of work
- risk assessment and preventative measures
- utility location.

Bulkwater transfer systems may include:

- in-line pumping stations
- high and low range pumps
- incline meters
- scour chambers and air valves
- service reservoirs
- pipes, including:
 - polyvinyl chloride (PVC)
 - polyethylene
 - mild steel cement lined
 - ductile iron cement lined
 - cast iron cement lined
 - asbestos cement
 - copper
 - glass reinforced piping
- structures, including:
 - pumping stations
 - meter pits
 - person access chambers or pits
 - valve chambers
 - regulators
 - erosion barriers
 - head walls
 - thrust blocks.

RANGE STATEMENT

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
- lifting equipment
- metering equipment
- sluices
- control devices
- on- and off-road vehicles
- portable pumps
- communication equipment
- breathing apparatus
- gas detection equipment
- rescue equipment
- appropriate personal protective equipment.

Adjustment of flow regulation systems may include:

- use of rating tables to determine:
 - release rates
 - valve positions.

Regulation of the system will include operation of:

- pumping systems, including:
 - centrifugal
 - submersible
 - positive displacement
- valving systems, including:
 - sluice
 - gate
 - blade
 - non-return
 - electronic and manual controlling systems
- service reservoirs.

Pressure fluctuations may include:

- high
- low
- outside acceptable limits.

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 monitor and operate bulkwater transfer systems by:

- planning and preparing for work
- monitoring transfer system performance
- collecting and recording data
- regulating water flow
- regulating water pressure.

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.

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.

NWP259B Operate, monitor and maintain pump stations

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.
Employability skills	This unit of competency contains employability skills.
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.
Competency field	Collection and distribution

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare work.	1.1 Determine <i>pump station work requirements</i> from standard operating and maintenance procedures.
	1.2 Access and interpret <i>pump operation and maintenance procedures</i> .
	1.3 Perform site check to prevent damage to other utilities and the environment, according to <i>legislative and organisational requirements</i> .
	1.4 Select and check <i>equipment</i> to meet safety requirements of task and site and select, fit and use personal protective equipment.
	1.5 Handle, use and store <i>chemicals</i> according to organisational requirements.
2 Operate pump stations.	2.1 Identify and set or adjust <i>pump station components</i> 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 <i>pump station maintenance standards</i> .
	3.2 Inspect pump station components according to organisational requirements, and identify <i>maintenance needs</i> .
	3.3 Schedule maintenance tasks and order appropriate <i>materials</i> .
	3.4 Conduct maintenance tasks according to organisational maintenance standards and manufacturer recommendations.
	3.5 Identify and report <i>pump station faults</i> and carry out minor repairs.

ELEMENT	PERFORMANCE CRITERIA
4 Monitor and adjust pump station performance.	4.1 Apply pump station performance targets.
	4.2 Identify and apply <i>monitoring points and timing</i> .
	4.3 Monitor pump station and make <i>adjustments</i> , 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

REQUIRED SKILLS AND KNOWLEDGE

- 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.

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

RANGE STATEMENT

- 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.

RANGE STATEMENT

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.

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

EVIDENCE GUIDE

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.

NWP260A Monitor and report water treatment processes

Unit descriptor	This unit of competency describes the outcomes required to monitor and report on water treatment processes within potable community and industrial water treatment plants in urban and rural areas.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff in water treatment plants with responsibility for monitoring and reporting on water treatment processes.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Identify characteristics of water purity and reasons for treatment of potable water.	<p>1.1 Identify characteristics of water affecting its physical, chemical and microbiological acceptability.</p> <p>1.2 Identify <i>reasons and requirements</i> for treatment of water.</p>
2 Monitor and report on water quality.	<p>2.1 Clearly identify water treatment <i>processes</i> and determine their application.</p> <p>2.2 Identify organisation's water quality parameters and check characteristics of <i>water quality</i> according to relevant legislation and organisational procedures.</p> <p>2.3 Record and report water quality according to organisational procedures.</p>
3 Follow safety requirements for work in a water treatment plant.	<p>3.1 Identify and record hazards of working in a water treatment plant.</p> <p>3.2 Identify and record operational requirements for safe and effective use of <i>equipment</i>.</p> <p>3.3 Select, fit and use safety equipment, including personal protective equipment.</p>
4 Monitor and report on water treatment.	<p>4.1 Identify operating principles used in water treatment processes.</p> <p>4.2 Complete records required for effective operation of a water treatment plant.</p> <p>4.3 Identify, record and report range of data routinely collected.</p> <p>4.4 Identify data that falls outside normal operating range and report for further action.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- apply policies, procedures and standards
- recognise and report operational problems
- use safety equipment and personal protective equipment
- select, 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:

- operating principles of water treatment processes
- basic water chemistry
- water uses and demands, both domestic and industrial
- physical, chemical and microbiological characteristics of water within the water treatment process
- water quality guidelines
- reasons for water treatment
- types of treatment plants and processes
- major chemicals and equipment used
- physical and chemical hazards
- reasons for data and information collection.

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 water treatment include:

- ensuring conformity with standards and guidelines, including Australian Drinking Water Guidelines
- removal of impurities, contaminants and pollution
- impact of impurities on water treatment processes
- relevant water and environment legislation and regulations
- hazard analysis critical control point (HACCP) operational philosophy.

Water treatment ***processes*** may include:

- screens
- coagulation and flocculation
- sedimentation clarification
- dissolved air flotation
- granular and membrane filtration
- disinfection

RANGE STATEMENT

- aeration and oxidation
 - fluoridation
 - reverse osmosis
 - ion exchange
 - activated carbon adsorption
 - calibration of dosing equipment
 - softening
 - backwash water treatment.
- Water quality** characteristics may include:
- physical
 - chemical
 - microbiological.
- Equipment** used may include:
- pumps, including:
 - centrifugal
 - positive displacement
 - airlift
 - blowers and compressors
 - mixers and chemical batching facilities
 - control valves
 - electronic digital monitoring systems
 - recording systems
 - chemical testing and analysis equipment
 - communication equipment
 - manual or hydraulic equipment
 - personal protective equipment.

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 monitor and report on water treatment processes within potable community and industrial water treatment plants in urban and rural areas including:

- identifying characteristics and importance of water quality
- establishing organisational water quality standards
- checking and recording water quality characteristics
- applying safety procedures in a potable water treatment plant
- collecting and recording routine data on water treatment plant processes.

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

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- 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.

NWP261A Operate and maintain water treatment plant and equipment

Unit descriptor	This unit of competency describes the outcomes required to operate water treatment processes within potable community and industrial water treatment plants in urban and rural areas. The ability to operate water treatment processes in compliance with relevant water legislation and regulations, and Australian Drinking Water Guidelines is vital to performance.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff in water treatment plants with responsibility for the practical and safe operation of plant, equipment and processes.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Operate water treatment processes.	1.1	Identify <i>reasons and requirements</i> for treatment of water.
	1.2	Identify major components of <i>water treatment processes</i> .
	1.3	Identify and apply practices undertaken in water treatment processes.
	1.4	Operate <i>mechanical equipment</i> used in water treatment according to manufacturer specifications and organisational requirements.
	1.5	Handle, use, store and dose <i>chemicals</i> according to organisational procedures.
2 Maintain items of equipment used in water treatment processes.	2.1	Identify maintenance requirements and schedules according to standard operating procedures.
	2.2	Complete maintenance and cleaning requirements of equipment.
3 Follow safety requirements for work in a water treatment plant.	3.1	Identify and record hazards of working in a water treatment plant.
	3.2	Identify and record operational requirements for the 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 water treatment plant.
4 Complete documentation.	4.1	Complete records required for effective operation of a water treatment plant according to organisational requirements.
	4.2	Identify and record 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:

- apply policies, procedures and standards
- recognise and report operational problems
- 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 work environment.

Required knowledge:

- water cycle
- sources of water
- uses of water, both domestic and industrial
- physical, chemical and microbiological characteristics of water within the water treatment process
- water quality characteristics
- reasons for water treatment
- types of treatment plants and processes
- major chemicals and equipment used
- water treatment plant hazards
- safety equipment
- reasons for data and information collection.

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 include:

- ensuring conformity with standards and guidelines, including Australian Drinking Water Guidelines
- removal of impurities, contaminants and pollution
- impact of impurities on water treatment processes
- relevant water legislation and regulations relating to water and the environment
- hazard analysis critical control point (HACCP) operational philosophy.

Water treatment processes may include:

- screens
- coagulation and flocculation
- sedimentation clarification
- dissolved air flotation

RANGE STATEMENT

- granular and membrane filtration
 - disinfection
 - aeration and oxidation
 - fluoridation
 - reverse osmosis
 - ion exchange
 - activated carbon adsorption
 - calibration of dosing equipment
 - softening
 - backwash water treatment.
- Mechanical equipment** may include:
- pumps, including:
 - centrifugal
 - positive displacement
 - airlift
 - blowers and compressors
 - mixers and chemical batching facilities
 - control valves
 - electronic digital monitoring systems
 - recording systems
 - chemical testing and analysis equipment
 - communication equipment
 - flow meters
 - alarms and process control systems
 - centrifuge
 - belt filter press
 - screens, including raked bar screens
 - manual or hydraulic equipment.
- Chemicals** and aids used may include:
- lime
 - soda ash
 - aluminium and iron coagulants
 - polymers
 - chlorine
 - fluoride
 - carbon dioxide.

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

The candidate should demonstrate the ability to operate water treatment processes within potable community and industrial

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required to demonstrate competency in this unit

water treatment plants in urban and rural areas including:

- applying water treatment processes, including operating mechanical equipment
- using chemicals safely 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.

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.

NWP262A Monitor and report wastewater treatment processes

Unit descriptor	This unit of competency describes the outcomes required to monitor and report on wastewater treatment processes within domestic and industrial wastewater treatment plants in urban and rural areas. The ability to monitor processes to ensure that wastewater disposal or re-use meets state or territory licensing requirements is essential to performance.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff in wastewater treatment plants with responsibility for monitoring wastewater treatment processes.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Identify sources and characteristics of wastewater and reasons for wastewater treatment.	<p>1.1 Identify <i>wastewater sources</i> and characteristics.</p> <p>1.2 Identify <i>reasons</i> and <i>statutory requirements</i> for wastewater treatment.</p>
2 Monitor and report on wastewater quality.	<p>2.1 Identify <i>wastewater treatment processes</i> and determine their application.</p> <p>2.2 Check <i>characteristics of wastewater</i> according to organisational procedures.</p> <p>2.3 Record and report wastewater quality according to organisational procedures.</p>
3 Follow safety requirements for work in a wastewater treatment plant.	<p>3.1 Identify and record hazards of working in a wastewater treatment plant.</p> <p>3.2 Identify operational requirements for safe and effective use of <i>equipment</i>.</p> <p>3.3 Select, fit and use safety equipment, including personal protective equipment.</p> <p>3.4 Identify and apply safe work practices when handling <i>chemicals</i> and working in a wastewater treatment plant.</p>
4 Monitor and report on wastewater treatment.	<p>4.1 Identify operating principles used in wastewater treatment processes.</p> <p>4.2 Complete records required for effective operation of a wastewater treatment plant.</p> <p>4.3 Identify, record and report range of <i>data</i> routinely collected.</p> <p>4.4 Carry out, record and report <i>process calculations</i>.</p> <p>4.5 Identify data that falls outside normal operating <i>parameters</i> and report for further action.</p>

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- apply policies, procedures and standards
- recognise and report operational problems
- use safety equipment and personal protective equipment
- select, 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 of wastewater
- physical, chemical and microbiological characteristics and operating principles related to wastewater treatment
- reasons for wastewater treatment
- types of wastewater treatment plant processes
- major chemicals and equipment used
- wastewater treatment plant hazards
- safety equipment
- reasons for data and information collection.

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.

Wastewater sources may include:

- domestic
- industrial
- storm
- ground.

Reasons for treatment may include:

- ensuring conformity with legislation, regulations, standards and codes
- removal of impurities and contaminants to enable discharge or re-use
- reducing impact of impurities on the environment and public health.

Statutory requirements are defined by:

- relevant federal and state or territory legislation and regulations
- codes of practice, associated standards and guidance material
- documented organisational policies, manuals and induction

RANGE STATEMENT

- programs
 - relevant community planning and development agreements, such as land care agreements.
- Wastewater treatment processes** may include:
- grit removal
 - aeration
 - screening
 - sedimentation
 - disinfection
 - granular and membrane filtration
 - thickening and dewatering
 - 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.
- Characteristics of wastewater** may include:
- types of impurities, such as:
 - organic
 - inorganic
 - micro-organisms
 - public health considerations.
- Equipment** used may include:
- pumps, including:
 - centrifugal
 - positive displacement
 - airlift
 - blowers
 - screens
 - control valves
 - electronic digital monitoring systems
 - recording systems
 - chemical testing and analysis equipment
 - communication equipment
 - belt press
 - centrifuge
 - comminutor
 - flow meters
 - flow recorders

RANGE STATEMENT

- Chemicals** and major equipment used may include:
- manual or hydraulic equipment
 - personal protective equipment.
 - chemicals and lime
 - sodium hypochlorite
 - aluminium and iron coagulants
 - polymers.
- Data** may include:
- instantaneous flow rate
 - flow records
 - temperature
 - sand and grit
 - pH
 - chemical oxygen demand
 - dissolved oxygen
 - settleable solids concentration (cone test)
 - thirty minute settleability test
 - sludge blanket level
 - residual chlorine
 - microscopic examination
 - conductivity.
- Process calculations** may include:
- average dry weather flow
 - peak dry weather flow
 - chemical feed rate and concentration
 - process efficiency.
- Wastewater quality **parameters** may include:
- physical
 - chemical
 - microbiological.

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 monitor and report on wastewater treatment processes within domestic and industrial wastewater treatment plants in urban and rural areas including:

- performing, recording and reporting process measurements and calculations
- demonstrating procedures for starting and stopping plant and locking out control equipment
- adjusting process controls according to specific plant procedures
- recording and reporting faults and breakdowns
- identifying common process faults and following procedures to rectify these.

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

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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.

NWP263A Operate and maintain wastewater treatment plant and equipment

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.
Employability skills	This unit of competency contains employability skills.
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.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

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

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.

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

RANGE STATEMENT

- 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
- chemical testing and analysis equipment
- communication equipment
- manual and hydraulic equipment
- personal protective equipment.

Chemicals and aids used may include:

- lime
- sodium hypochlorite
- polymers
- aluminium and iron coagulants
- carbon sources.

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

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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.

NWP264B Monitor, operate and report wastewater pre-treatment processes

Unit descriptor	This unit of competency describes the outcomes required to monitor, operate and report on wastewater pre-treatment processes, including separation processes such as screens and grit removal, used in industrial or domestic wastewater treatment plants prior to biological treatments.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with specific responsibility for ensuring that pre-treatment processes comply with legislative and organisational requirements.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1	Determine work requirements from specifications and instructions.
	1.2	Identify and report potential risks to self, other employees, public and environment.
	1.3	Select and check work site equipment, tools and safety materials as appropriate to meet task and safety specifications.
	1.4	Select, fit and use personal protective equipment according to organisational requirements .
2 Monitor pre-treatment processes.	2.1	Carry out routine plant inspections according to standard operating procedures.
	2.2	Monitor processes to maintain parameters of operation.
	2.3	Collect process samples and conduct standard tests .
	2.4	Collect, record and report process data according to organisational and plant requirements.
	2.5	Identify and report process faults and operational condition of plant according to organisational requirements.
3 Operate pre-treatment processes.	3.1	Operate pre-treatment processes according to specifications and organisational procedures.
	3.2	Initiate system adjustments to enhance system performance according to system specifications and organisational procedures.
	3.3	Handle, use, store and dose chemicals according to organisational procedures.
4 Review, report and record work.	4.1	Check, maintain and store equipment, tools and materials according to manufacturer guidelines and environmental and organisational procedures.
	4.2	Compile reports from plant and system data to meet organisational requirements.
	4.3	Report observations outside defined parameters for further action.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and report operational problems
- produce reports and logs
- use safety and personal protective equipment
- follow plans, charts, specifications and instructions
- sample and test process stream
- perform work-related calculations
- apply procedures and standards
- communicate with employees and customers
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- identify control system faults
- use literacy skills in regard to verbal and written communication in the workplace
- sample and test products.

Required knowledge:

- principles of and need for effective pre-treatment
- system layout
- lock-out procedures for mechanical and electrical installations
- policies, procedures and legislation applied to wastewater pre-treatment processes
- relevant utilities and service bodies
- communication systems
- work-related calculations
- chemicals for odour or pH control
- hazardous materials handling
- environment, landscape and ground structure of work area
- risk factors and potential hazards related to water or wastewater treatment
- chemical dosing processes
- equipment operation, capacity and limitations
- pumping and valving systems
- control systems
- impacts of hydraulic loads on processes.

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.

Equipment, tools and safety materials may

- electronic monitoring and metering systems

RANGE STATEMENT

include:

- recording systems
- basic hand and power tools
- sampling and laboratory testing and equipment
- computerised equipment
- communication equipment
- personal protective equipment.

Organisational requirements may include:

- codes of practice, associated standards and guidance material
- documented organisational policies, manuals and induction programs which may refer to legislation and/or regulations
- relevant community planning and development agreements, such as land care agreements.

Routine plant inspections may include:

- interaction and communication with other employees, other authorities and general public
- visual observation
- identification of corrosion damage.

Processes may include:

- screening
- gravity and aerated grit chambers
- gross pollution traps
- removal and disposal of screenings
- shredding
- odour removal
- oily water separators
- riffle plate separators.

Tests may include:

- settling tests
- pH
- dissolved oxygen
- suspended solids
- chemical oxygen demand.

System adjustments may include:

- pH correction
- dissolved oxygen levels
- flow control
- screen rotation frequency
- solids removal
- chemical additions.

Reports may include:

- plant performance data
- chemical usage.

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 monitor, operate and report on wastewater pre-treatment processes including:

- planning and preparing for work
- collecting and labelling samples and performing tests
- inspecting plant and monitoring processes
- collecting and recording data
- operating and adjusting processes
- recording all required information.

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.

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.

NWP268B Monitor, operate and report chlorine disinfection systems

Unit descriptor This unit of competency describes the outcomes required to monitor and operate chlorine disinfection systems and to report on process quality control.

Employability skills This unit of competency contains employability skills.

Application of the unit This unit supports the attainment of skills and knowledge required for operational staff with specific responsibility for ensuring that chlorine disinfection systems comply with organisational requirements. For staff working on chlorine disinfection systems where liquefied chlorine gas is used, the unit NWP277A Work safely with liquefied chlorine gas, is essential.

Competency field Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

- | | |
|---|---|
| 1 Plan and prepare for work. | <p>1.1 Determine work requirements according to <i>legislative and organisational requirements</i>.</p> <p>1.2 Select and check <i>equipment</i> required to meet safety requirements of task and site.</p> <p>1.3 Select, fit and use personal protective equipment.</p> |
| 2 Monitor systems performance. | <p>2.1 Monitor chlorine <i>disinfection systems</i> according to agreed schedule and procedures.</p> <p>2.2 Collect process samples and conduct standard <i>tests</i>.</p> <p>2.3 Maintain and monitor relevant OHS requirements.</p> <p>2.4 Collect and report process data according to organisational and disinfection system requirements.</p> <p>2.5 Make system adjustments as required to maintain effectiveness of chlorine disinfection.</p> |
| 3 Prepare and apply chemical dosing. | <p>3.1 Handle, use and store <i>chemicals</i> according to environmental and organisational requirements.</p> <p>3.2 Prepare chemical dosing according to system specifications and organisational requirements and apply using appropriate <i>chlorine dosing equipment</i>.</p> <p>3.3 Maintain information related to chlorine supply and usage according to statutory requirements.</p> |
| 4 Complete documentation. | <p>4.1 Compile records from plant and system data to meet organisational requirements.</p> <p>4.2 Report observations outside defined parameters for further action.</p> |

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational and process faults with chlorine dosing equipment problems
- produce reports and logs
- use safety and personal protective equipment
- follow plans, charts and instructions
- apply policies, standard operating procedures and regulatory standards
- collect and test samples
- communicate with employees and customers
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- perform work-related calculations
- prepare and apply chlorine dosing
- operate computerised equipment
- identify control system faults
- identify hazards
- perform microbiological and chlorine residual sampling
- use literacy skills in regard to verbal and written communication in the workplace
- interpret material safety data sheets (MSDS).

Required knowledge:

- properties and chemistry of chlorine
- pH
- microbiological water quality guidelines
- chlorine system layout
- lock-out procedures for mechanical and electrical installations
- policies, standard operating procedures and legislation
- communication systems
- hazardous substances handling
- risk factors and potential hazards associated with chlorination
- work-related chlorine calculations
- chlorine dosing processes
- equipment operation, capacity and limitations
- pumping and valving systems
- automatic feed rate control systems
- MSDS.

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.

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 may include:

- electronic monitoring and metering systems
- recording systems
- basic hand and power tools
- sampling and laboratory testing equipment
- computerised equipment
- on- and off-road vehicles
- communication equipment
- personal protective equipment.

Disinfection systems may include:

- liquefied chlorine gas
- sodium hypochlorite
- calcium hypochlorite.

Tests may include:

- chlorine residuals
- pH.

Chemicals may include:

- liquefied chlorine gas
- sodium hypochlorite
- calcium hypochlorite
- pH correcting chemicals, such as:
 - sodium hydroxide
 - lime
 - soda ash.

Chlorine dosing equipment may include:

- vacuum gas or liquid chlorinator
- hypochlorite dosing pump
- calcium hypochlorite tablet dispenser.

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 monitor, operate and report on chlorine disinfection systems by:

- scheduling work
- selecting and using appropriate tools and equipment, including personal protective equipment
- monitoring chlorine disinfection systems
- collecting process samples and performing standard tests
- collecting and reporting process data
- preparing and applying chlorine dosing safely
- producing reports.

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.

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

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that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

NWP270B Monitor, operate and report basic anaerobic processes

Unit descriptor	This unit of competency describes the outcomes required to monitor and operate anaerobic processes and report on system performance within domestic and industrial wastewater treatment plants.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with specific responsibility for operating anaerobic processes in treatment plants and checking that the processes comply with organisational requirements.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1 Determine work requirements according to legislative and organisational requirements .
	1.2 Select and check equipment required to meet safety requirements of task and site.
	1.3 Select, fit and use personal protective equipment.
2 Monitor and operate basic anaerobic process performance.	2.1 Carry out anaerobic process inspections according to planned schedules.
	2.2 Collect process samples and conduct standard tests .
	2.3 Collect and report process data according to organisational and plant requirements.
	2.4 Monitor processes to ensure that parameters of operation are maintained.
	2.5 Identify and report process faults and operational condition of plant according to organisational requirements.
	2.6 Carry out basic system adjustments according to organisational requirements to enhance system performance.
	2.7 Handle, use, store and dose chemicals according to organisational procedures.
3 Complete documentation.	3.1 Compile records from plant and system data to meet organisational requirements.
	3.2 Report observations outside defined parameters for further action.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and report operational problems
- produce reports and logs
- use safety equipment and personal protective equipment
- follow plans, charts and instructions
- perform system calculations
- apply procedures and standards
- communicate with employees and customers
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- identify system faults
- use literacy skills in regard to verbal and written communication in the workplace
- sample and test products.

Required knowledge:

- anaerobic process principles
- system layout
- lock-out procedures for mechanical and electrical installations
- policies, procedures and legislation relating to water treatment
- communication systems
- hazardous materials handling
- explosion hazards
- risk factors and potential hazards
- basic system calculations
- chemical dosing processes
- hydraulic detention times
- equipment operation, capacity and limitation.

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.

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,

RANGE STATEMENT

- such as land care agreements.
- Equipment** may include:
- electronic monitoring and metering systems
 - recording systems
 - basic hand and power tools
 - sampling and laboratory testing equipment
 - computerised equipment
 - on- and off-road vehicles
 - communication equipment
 - personal protective equipment.
- Anaerobic processes** may include:
- upflow anaerobic sludge blanket
 - hybrid reactors
 - fluidised bed reactors
 - heated fully mixed reactors
 - anaerobic lagoons.
- Tests** may include:
- settling
 - volatile fatty acids
 - temperature
 - pH.
- System adjustments** may include:
- pH correction
 - mixing
 - chemical additions
 - sludge wasting
 - temperature
 - influent feed rate.

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 monitor, operate and report on basic anaerobic processes by:

- planning and conducting routine inspections
- monitoring system processes
- reporting process and structural faults
- performing system adjustments
- completing system performance-monitoring 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

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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.

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.

NWP271B Monitor, operate and report sedimentation processes

Unit descriptor	This unit of competency describes the outcomes required to monitor and operate non-chemically assisted sedimentation processes within domestic and industrial wastewater treatment plants or stormwater systems. The required outcomes also include reporting on the sedimentation system performance and process quality control within these systems.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with responsibility for checking that sedimentation processes comply with organisational performance requirements.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1 Determine work requirements according to legislative and organisational requirements .
	1.2 Select and check equipment required to meet safety requirements of task and site.
	1.3 Select, fit and use personal protective equipment.
2 Monitor and operate sedimentation processes.	2.1 Carry out sedimentation process inspections according to type of plant.
	2.2 Collect process samples and conduct standard tests .
	2.3 Collect and report process data according to organisational and plant requirements.
	2.4 Monitor processes to maintain parameters of operation.
	2.5 Identify and report process faults and operational condition of plant according to organisational requirements.
	2.6 Carry out basic system adjustments to enhance system performance according to organisational requirements.
3 Report sedimentation processes.	3.1 Compile records from plant and system data to meet organisational requirements.
	3.2 Report observations outside defined parameters for further action.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- use safety equipment and personal protective equipment

REQUIRED SKILLS AND KNOWLEDGE

- follow plans, charts and instructions
- perform system calculations
- apply procedures and standards
- communicate with employees and various customers
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- identify control system faults
- use literacy skills in regard to verbal and written communication in the workplace
- sample and test products.

Required knowledge:

- principles that form the basis of sedimentation processes
- system layout
- lock-out procedures for mechanical and electrical installations
- policies, procedures and legislation relating to water treatment
- communication systems
- risk factors and potential hazards
- basic system calculations
- equipment operation, capacity and limitations
- effects of changes in hydraulic load on sedimentation processes.

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.

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:

- electronic monitoring and metering systems
- recording systems
- basic hand and power tools
- sampling and laboratory testing equipment
- computerised equipment
- communication equipment
- personal protective equipment.

RANGE STATEMENT

Tests may include:

- pH
- dissolved oxygen
- settleable solids concentration (cone test)
- suspended solids
- temperature
- total solids concentration.

Processes may include:

- Imhoff tanks
- conventional clarifiers and sedimentation tanks
- lamellar thickeners
- picket fence thickeners
- gross pollution traps
- primary treatments, such as primary sedimentation
- oily water separators
- riffle plate separators.

System adjustments may include:

- sludge withdrawal rates
- scum removal
- inflow control.

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 monitor, operate and report on sedimentation processes by:

- planning and conducting routine plant inspections
- monitoring system processes
- reporting process and structural faults
- performing system adjustments
- completing system performance monitoring 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

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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.

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.

NWP272B Monitor, operate and report wastewater lagoon processes

Unit descriptor	This unit of competency describes the outcomes required to monitor and operate wastewater lagoon processes and report on system performance.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with responsibility for checking that lagoon processes comply with organisational requirements.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1 Determine work requirements according to legislative and organisational requirements .
	1.2 Select and check equipment required to meet safety requirements of task and site.
	1.3 Select, fit and use personal protective equipment.
2 Monitor performance.	2.1 Carry out routine inspections according to particular lagoon system and organisational requirements.
	2.2 Collect process samples and conduct standard tests .
	2.3 Collect and report process data according to organisational and lagoon system requirements.
3 Operate and control lagoon processes.	3.1 Monitor processes to maintain parameters of operation.
	3.2 Identify and report process faults and operational condition of plant according to organisational requirements.
	3.3 Carry out basic system adjustments within defined parameters to enhance system performance according to organisational requirements.
	3.4 Handle, use and store chemicals according to organisational requirements.
4 Complete documentation.	4.1 Maintain records of plant and system data according to organisational requirements.
	4.2 Report observations outside defined parameters for further action.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- use safety equipment and personal protective equipment

REQUIRED SKILLS AND KNOWLEDGE

- follow plans, charts and instructions
- perform system calculations
- apply procedures and standards
- communicate with colleagues, other employees and customers
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- identify control system faults
- use literacy skills in regard to verbal and written communication in the workplace
- sample and test products.

Required knowledge:

- biological principles of lagoon wastewater treatment processes
- system hydraulics basics
- system layout
- lock-out procedures for mechanical and electrical installations
- policies, procedures and legislation relating to wastewater management
- communication systems
- hazardous materials handling
- environment, landscape and ground structure of work area
- risk factors and potential hazards related to lagoon wastewater treatment
- system calculations
- chemical dosing processes
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- pumping and valving systems.

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.

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:

- electronic monitoring and metering systems
- recording systems

RANGE STATEMENT

- basic hand and power tools
 - sampling and laboratory testing equipment
 - computerised equipment
 - on- and off-road vehicles
 - communication equipment
 - personal protective equipment.
- Tests** may include:
- settling
 - microscopic observation
 - pH
 - dissolved oxygen
 - electrical conductivity
 - temperature
 - odour
 - visual observation of:
 - colour
 - scum
 - insects
 - birdlife
 - weed growth
 - redox potential.
- Processes** may include:
- primary, secondary and maturation lagoons
 - aerated lagoons
 - winter storages.
- System adjustments** may include:
- pH correction
 - mixing
 - flow control
 - water level
 - dissolved oxygen levels
 - recirculation rates
 - chemical additives.
- Records** and data compiled may include:
- plant performance data
 - chemical usage.

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 monitor, operate and report on wastewater lagoon processes, including:

- planning and conducting routine inspections

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Context of and specific resources for assessment

- monitoring system processes
- reporting process and structural faults
- performing system adjustments
- preparing and applying chemical dosing
- completing system performance-monitoring documentation.

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.

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.

NWP273A Monitor, operate and report ultraviolet irradiation disinfection systems

Unit descriptor	This unit of competency describes the outcomes required to monitor and operate ultraviolet (UV) irradiation disinfection systems and to report on microbiological quality control.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with specific responsibility for ensuring that UV irradiation disinfection systems comply with organisational requirements.
Competency field	Treatment

ELEMENT PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1 Determine work requirements according to legislative and organisational requirements .
	1.2 Select and check equipment and tools required to meet safety requirements of task and site.
	1.3 Select, fit and use personal protective equipment.
2 Monitor system performance.	2.1 Monitor UV irradiation disinfection systems according to agreed schedule and procedures.
	2.2 Collect process samples and conduct standard microbiological tests as required.
	2.3 Maintain and monitor relevant OHS requirements.
	2.4 Collect and report process data according to organisational and disinfection system requirements.
3 Maintain and operate UV irradiation disinfection system.	3.1 Carry out routine inspections of system components according to organisational requirements.
	3.2 Clean and replace system components as required.
	3.3 Operate UV lamp sequencing according to organisational requirements.
4 Complete documentation.	4.1 Produce information relating to UV irradiation disinfection system maintenance and operation, according to organisational requirements.
	4.2 Review information and contribute to enterprise processes for continuous improvement and incident management.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- use safety equipment
- use UV-absorbent personal protective equipment
- safe use of cleaning chemicals
- follow plans, charts and instructions
- apply policies, standard operating procedures and regulatory standards
- communicate effectively
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- perform work-related calculations
- operate computerised equipment
- identify control system faults
- identify hazards
- perform microbiological sampling
- use literacy skills in regard to verbal and written communication in the workplace
- interpret material safety data sheets (MSDS).

Required knowledge:

- properties of UV irradiation
- microbiological water quality guidelines
- UV irradiation disinfection system layout, including components
- lock-out procedures for mechanical and electrical installations
- policies, standard operating procedures and legislation
- communication systems
- safe use of cleaning chemicals and prevention of associated hazards
- risk factors and potential hazards associated with UV irradiation systems
- UV irradiation generation equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- MSDS.

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.

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.
- electronic monitoring and metering systems
- recording systems
- basic hand and power tools
- sampling and laboratory testing equipment
- computerised equipment
- personal protective equipment, such as:
 - UV-absorbent face shields
 - UV-absorbent safety goggles
 - UV-absorbent protective clothing.

Equipment and tools may include:

UV irradiation disinfection systems may include:

- low pressure mercury lamps
- medium pressure mercury lamps.

Tests may include:

- UV absorbance
- turbidity
- suspended solids
- iron
- lamp intensity
- hardness.

UV irradiation **system components** may include:

- power supply
- ballast
- lamps
- sleeves
- racks.

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 monitor, operate and report on UV irradiation disinfection systems by:

- scheduling work
- selecting and using appropriate tools and equipment, including personal protective equipment
- monitoring UV irradiation disinfection systems
- collecting process samples and performing standard tests
- maintaining and operating UV irradiation disinfection systems
- collecting and reporting process data
- producing reports.

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.

In all cases where practical assessment is used it will be combined with targeted questioning to assess the

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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.

NWP274A Monitor, operate and report ozone treatment systems

Unit descriptor	This unit of competency describes the outcomes required to monitor and operate ozone treatment systems and to report on process quality control.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with specific responsibility for ensuring that ozone treatment systems comply with organisational requirements.
Competency field	Treatment

ELEMENT

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1 Determine work requirements according to legislative and organisational requirements .
	1.2 Select and check equipment and tools required to meet safety requirements of task and site.
	1.3 Select, fit and use personal protective equipment.
2 Monitor system performance.	2.1 Monitor ozone treatment systems according to agreed schedule and procedures.
	2.2 Collect process samples and conduct standard tests .
	2.3 Maintain and monitor relevant OHS requirements.
	2.4 Collect and report process data according to organisational and disinfection system requirements.
3 Prepare and apply ozone dosing.	3.1 Generate and dose ozone according to system specifications and organisational requirements.
	3.2 Maintain information related to ozone generation and dosing according to organisational requirements.
4 Complete and review reports.	4.1 Produce information relating to system maintenance and operation according to organisational requirements.
	4.2 Review information and contribute to enterprise processes for continuous improvement and incident management.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment
- follow plans, charts and instructions
- apply policies, regulatory standards and standard operating procedures

REQUIRED SKILLS AND KNOWLEDGE

- communicate effectively
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- perform work-related ozone calculations
- prepare and apply ozone dosing
- operate computerised equipment
- identify control system faults
- identify hazards
- perform microbiological and ozone residual sampling
- use literacy skills in regard to verbal and written communication in the workplace
- interpret material safety data sheets (MSDS).

Required knowledge:

- properties and chemistry of ozone
- pH
- microbiological water quality guidelines
- ozone system layout
- lock-out procedures for mechanical and electrical installations
- policies, standard operating procedures and legislation
- communication systems
- hazardous substances handling
- risk factors and potential hazards associated with ozonation
- work-related ozone calculations
- ozone dosing processes
- operation, capacity and limitations of ozone generation equipment
- effects of weather and conditions on operation of site or plant
- pumping and valving systems
- automatic feed rate control systems
- MSDS.

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.

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 and tools may include:

- electronic monitoring and metering systems
- recording systems
- basic hand and power tools
- sampling and laboratory testing equipment
- computerised equipment
- on- and off-road vehicles
- communication equipment
- personal protective equipment.

Ozone treatment systems may include:

- electric discharge ozone-generation system
- UV ozone-generation system.

Tests may include:

- ozone residuals
- exhaust gas ozone concentration
- pH.

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 monitor, operate and report on ozone treatment systems including:

- scheduling work
- selecting and using appropriate tools and equipment, including personal protective equipment
- monitoring ozone treatment systems
- collecting process samples and performing standard tests
- collecting and reporting process data
- preparing and applying ozone dosing safely
- producing reports.

EVIDENCE GUIDE

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.

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.

NWP275A Monitor, operate and report chlorine dioxide systems

Unit descriptor	This unit of competency describes the outcomes required to monitor and operate chlorine dioxide systems and to report on process quality control.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with specific responsibility for ensuring that chlorine dioxide system processes comply with organisational requirements.
Competency field	Treatment

ELEMENT

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Plan and prepare for work.	1.1 Determine work requirements according to legislative and organisational requirements .
	1.2 Select and check equipment and tools required to meet safety requirements of task and site.
	1.3 Select, fit and use personal protective equipment.
2 Monitor system performance.	2.1 Monitor chlorine dioxide systems according to agreed schedule and procedures.
	2.2 Collect process samples and conduct standard tests .
	2.3 Maintain and monitor relevant OHS requirements.
	2.4 Collect and report process data according to organisational and disinfection system requirements.
3 Prepare and apply chemical dosing.	3.1 Handle, use and store chemicals according to organisational requirements.
	3.2 Prepare chemical dosing according to system specifications and organisational requirements.
	3.3 Maintain information related to chemical supply and usage according to statutory requirements.
4 Complete documentation.	4.1 Produce information relating to system maintenance and operation according to organisational requirements.
	4.2 Review information and contribute to enterprise processes for continuous improvement and incident management.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment

REQUIRED SKILLS AND KNOWLEDGE

- follow plans, charts and instructions
- apply policies, regulatory standards and standard operating procedures
- communicate effectively
- work effectively as part of a team
- use communication equipment
- give and receive instructions
- perform work-related chlorine dioxide calculations
- prepare and apply chemical dosing
- operate computerised equipment
- identify control system faults
- identify hazards
- conduct microbiological and chlorine dioxide residual sampling
- use literacy skills in regard to verbal and written communication in the workplace
- interpret material safety data sheets (MSDS).

Required knowledge:

- properties and chemistry of chlorine dioxide
- pH
- microbiological water quality guidelines
- chlorine dioxide system layout
- lock-out procedures for mechanical and electrical installations
- policies, standard operating procedures and legislation
- communication systems
- hazardous substances handling
- risk factors and potential hazards associated with chlorine dioxide
- work-related chlorine dioxide calculations
- chlorine dioxide dosing processes
- chlorine dioxide generation equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- pumping and valving systems
- automatic feed rate control systems
- MSDS.

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.

Legislative and

organisational requirements

may include:

- relevant federal and state or territory legislation and regulations
- codes of practice, associated standards and guidance

RANGE STATEMENT

- material
- documented organisational policies, manuals and induction programs
 - relevant community planning and development agreements, such as land care agreements.
- Equipment and tools** may include:
- electronic monitoring and metering systems
 - recording systems
 - basic hand and power tools
 - sampling and testing equipment
 - computerised equipment
 - communication equipment
 - personal protective equipment.
- Chlorine dioxide systems** may include:
- sodium chlorite/hydrochloric acid generating system
 - sodium chlorite/sodium hypochlorite generating system
 - sodium chlorite/liquefied chlorine gas generating systems.
- Tests** may include:
- chlorine dioxide residuals
 - pH.
- Chemicals** may include:
- chlorine dioxide
 - chemicals used for generation of chlorine dioxide
 - pH correcting chemicals, such as:
 - sodium hydroxide
 - lime
 - soda ash.

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 monitor, operate and report on chlorine dioxide systems including:

- scheduling work
- selecting and using appropriate tools and equipment, including personal protective equipment
- monitoring chlorine dioxide disinfection systems
- collecting process samples and performing standard tests
- collecting and reporting process data
- preparing and applying chemical dosing safely
- producing reports.

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.

EVIDENCE GUIDE

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.

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.

NWP276A Monitor, operate and report fluoridation processes

Unit descriptor This unit of competency describes the outcomes required to monitor and operate fluoridation processes and to report on water quality control.

Employability skills This unit contains employability skills.

Application of the unit This unit is a skill set required by water operators responsible for fluoridation processes in water treatment. It may be a requirement for compliance with state and territory legislation and government water quality guidelines.

This unit of competency is a skills set for operators responsible for fluoridation processes in water treatment.

Competency field Treatment

ELEMENT PERFORMANCE CRITERIA

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

- | | |
|---|--|
| 1 Plan and prepare for work. | <p>1.1 Determine work requirements according to <i>organisational requirements</i> and health and safety requirements.</p> <p>1.2 Select and check <i>equipment and tools</i> required to meet safety requirements of task and site.</p> <p>1.3 Select, fit and use <i>personal protective equipment</i>.</p> |
| 2 Monitor process performance. | <p>2.1 Monitor <i>fluoridation processes</i> according to agreed schedule and procedures.</p> <p>2.2 Collect process samples and conduct standard <i>tests</i>.</p> <p>2.3 Maintain and monitor relevant OHS requirements.</p> <p>2.4 Collect <i>process data</i>, perform <i>calculations</i> and report according to organisational and fluoridation process requirements.</p> |
| 3 Prepare and apply fluoride dosing. | <p>3.1 Handle, use and store <i>fluoridation chemicals</i> according to organisational requirements.</p> <p>3.2 Apply fluoride dosing and perform calculations according to organisational requirements.</p> |
| 4 Report on fluoridation processes. | <p>4.1 Maintain information related to fluoride supply and usage according to organisational requirements.</p> <p>4.2 Produce information relating to maintenance and operation according to organisational requirements.</p> <p>4.3 Record information and submit according to organisational procedures for continuous improvement and incident management.</p> |

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

REQUIRED SKILLS AND KNOWLEDGE

- identify and respond to operational problems
- produce reports and logs
- use safety and personal protective equipment
- follow plans, charts and instructions
- apply policies, regulatory standards and standard operating procedures relevant to fluoridation
- communicate effectively with colleagues to determine work requirements and report information using clear and direct communication appropriate for the audience and context
- work effectively as part of a team
- use organisation's communication equipment
- receive, clarify and confirm work instructions
- perform chemical dosing calculations
- prepare and apply fluoride dosing
- identify and report control system faults
- identify and report hazards
- perform fluoride residual sampling and testing
- use literacy skills to produce reports and logs and interpret a range of workplace documents
- interpret and follow material safety data sheets (MSDS).

Required knowledge:

- properties of fluoridation chemicals
- fluoridation and its relationship to public health
- fluoride sampling and record keeping
- fluoride addition points
- fluoride system layout and security
- lock-out procedures for mechanical and electrical installations
- policies and standard operating procedures for fluoride processes
- organisation's communication systems and procedures
- safe handling and disposal of fluoride compounds
- risk factors and potential hazards associated with fluoridation
- work-related fluoride calculations
- fluoride dosing processes
- equipment operation, capacity and limitations
- effects of weather and conditions on operation of site or plant
- pumping and valving systems
- automatic feed rate control systems
- MSDS.

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. 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) may also be included.

Organisational requirements may include:

- codes of practice, associated standards and guidance material for the handling and control of fluoride processes
- organisational policies, manuals and induction programs
- occupational health and safety requirements.

Equipment and tools may include:

- electronic monitoring and metering systems
- recording systems
- basic hand and power tools
- sampling and laboratory testing equipment
- computerised equipment
- off-road vehicles, such as forklift trucks
- organisation's communication equipment.

Personal protective equipment may include:

- that specified in MSDS
- impervious rubber or plastic suits
- elbow-length gloves, apron and boots with long-sleeved shirt and long trousers
- for plants using dry fluoridating agents:
 - full face mask with type 3 respiratory filter or chemical goggles and a half mask with P3 type respiratory filter (AS/NZS 1715 Selection, Use and Maintenance of Respiratory Protective Devices)
- for plants using liquid fluoridising agents:
 - full face shield or splash-proof safety goggles.

Fluoridation processes may include:

- solution feed such as:
 - sodium fluoride solution feed
 - sodium fluoride saturator system.
- dry chemical feeders, such as sodium fluorosilicate
- acid feed systems.

Tests may include:

- fluoride residual analysis
- ion selective electrodes
- spectrophotometry/colorimetry, such as SPADNS method.

Process data may include:

- volume of water treated
- quantity of fluoride added to the water
- stock fluoride on hand
- results of fluoride residual analyses
- calculated average fluoride concentrations.

Calculations may include:

- average fluoride dosage or concentration
- chemical dosing rate, given required fluoride dosage
- fluoride dosage, given chemical dosing rate.

RANGE STATEMENT

Fluoridation chemicals may include:

- sodium fluoride
- sodium fluorosilicate
- fluorosilicic acid.

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 monitor, operate and report on fluoridation processes by:

- scheduling work
- selecting and using appropriate tools and equipment, including personal protective equipment
- calculating average fluoride concentrations
- collecting process samples and determining fluoride residuals
- collecting and reporting process data
- preparing and applying fluoride dosing safely
- completing log sheets.

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

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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.

NWP277A Work safely with liquefied chlorine gas

Unit descriptor	This unit of competency describes the outcomes required to work safely with liquefied chlorine gas, including the safe changeover of gas containers; safe transport, handling and storage of liquefied chlorine gas containers; and implementation of emergency procedures.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for operational staff with specific responsibility for disconnecting and connecting liquefied chlorine gas containers in water and wastewater treatment plants.
Competency field	Treatment

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Prepare to work with liquefied chlorine gas.	1.1	Check work procedures and instructions for compliance with current legislative and organisational requirements .
	1.2	Check hazard signage for compliance with organisational requirements.
	1.3	Select and check tools and equipment required to ensure that safety requirements of task and site are met.
	1.4	Check first aid provisions for potential liquefied chlorine gas exposure hazards for compliance with organisational requirements.
	1.5	Select, fit and use appropriate personal protective equipment .
2 Perform liquefied chlorine gas container changeover procedures.	2.1	Obtain liquefied chlorine gas containers from the correct storage area and handle them according to organisational requirements.
	2.2	Conduct disconnection procedures according to organisational requirements.
	2.3	Conduct connection procedures according to organisational requirements.
	2.4	Transport depleted containers to correct storage area according to organisational requirements.
	2.5	Check and store tools and equipment according to organisational procedures.
3 Implement emergency procedures.	3.1	Locate and understand emergency procedures .
	3.2	Follow safe workplace procedures for emergency situations within scope of responsibilities.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- access, interpret and apply relevant legislative and organisational requirements
- access, interpret and apply safety procedures
- identify and report hazards
- apply first aid procedures according to job requirements
- select and use personal protective equipment
- use tools and equipment
- apply correct liquefied chlorine gas container procedures relating to:
 - transport, handling and storage
 - disconnection
 - connection
- perform work-related calculations
- operate a vacuum chlorinator safely during disconnection and reconnection procedures
- interpret material safety data sheets (MSDS)
- work effectively as part of a team
- complete records and logs
- use literacy skills in regard to verbal and written communication in the workplace
- communicate effectively in the workplace.

Required knowledge:

- personal protective equipment and its application
- emergency equipment and its application
- properties of liquefied chlorine gas
- basic function and components of vacuum chlorinator systems
- hazards of liquefied chlorine gas handling
- relevant MSDS
- procedures for liquefied chlorine gas container:
 - transport, handling and storage
 - disconnection
 - connection
- maintenance procedures for personal protective equipment.

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.

Procedures may include:

- transport and handling of liquefied chlorine gas containers
- liquefied chlorine gas container disconnection procedures
- liquefied chlorine gas container connection procedures
- storage of liquefied chlorine gas cylinders or drums.

Legislative and organisational requirements may include:

- AS/NZS 2927 The storage and handling of liquefied chlorine gas
- MSDS for liquefied chlorine gas
- 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.

Tools and equipment may include:

- wire brush
- valve key.

First aid provisions may include:

- cardiopulmonary resuscitation (CPR) instructions
- safety shower
- eyewash.

Appropriate personal protective equipment (PPE) may include:

- protective clothing
- safety footwear
- chemical resistant gloves
- air-supplied self-contained breathing apparatus.

Correct storage area may include:

- indoor or shaded outdoor compound at treatment site or depot.

Disconnection procedures may include:

- chlorinator shutdown and isolation
- purging operations
- leak testing.

Connection procedures may include:

- component replacement
- chlorinator start-up
- leak testing
- stand-by settings.

Emergency procedures may include:

- raising alarm
- contacting appropriate personnel
- isolating liquefied chlorine gas containers
- evacuation procedures.

EVIDENCE GUIDE

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 changeover liquefied chlorine gas containers safely and correctly, including:

- correctly selecting, fitting and using PPE, including air-supplied self-contained breathing apparatus
- implementing relevant Australian standards, MSDS requirements and other legislative and organisational requirements as applicable
- correctly transporting, handling and storing liquefied chlorine gas containers
- correctly disconnecting liquefied chlorine gas containers
- correctly connecting liquefied chlorine gas containers
- implementing emergency procedures relating to liquefied chlorine gas hazards.

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.

Questioning will be undertaken in a manner appropriate to the skill levels of the operator and cultural issues that may affect

EVIDENCE GUIDE

responses to the questions, and will reflect the requirements of the competency and the work being performed.

NWP278A Perform blue green algae sampling

Unit descriptor	This unit of competency describes the outcomes required to collect and prepare water and wastewater samples for blue green algae identification, enumeration and toxicity testing according to standard operating procedures.
Employability skills	This unit of competency contains employability skills.
Application of the unit	This unit supports the attainment of skills and knowledge required for field and operational staff with specific responsibility for collecting blue green algae samples for identification, enumeration and toxicity testing.
Competency field	Treatment

ELEMENT

Elements describe the essential outcomes of a unit of competency.

PERFORMANCE CRITERIA

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 required skills and knowledge, and the range statement. Assessment of performance is to be consistent with the evidence guide.

1 Prepare for blue green algae sampling.	1.1 Confirm required samples , procedures for sampling and sampling locations according to legislative and organisational requirements .
	1.2 Select sampling equipment according to specified samples required and sample preservation methods .
	1.3 Select and check equipment and tools required to meet organisational requirements.
	1.4 Plan sampling work activities to comply with sampling plan and organisational requirements.
2 Conduct blue green algae sampling.	2.1 Collect samples, ensuring that sample types, sampling locations and sampling times comply with sampling plan.
	2.2 Maintain integrity of samples during sampling and label sample containers according to organisational requirements.
	2.3 Follow approved safety procedures to limit hazards and contamination to self, work area and environment.
3 Record and report data.	3.1 Record required information according to organisational requirements.
	3.2 Report observations or measurements outside organisational guidelines or specifications for further action.

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- prepare, collect, label and preserve blue green algae samples
- produce reports and logs
- plan work activities
- work effectively as part of a team
- identify and obtain resources

REQUIRED SKILLS AND KNOWLEDGE

- follow plans and instructions
- apply procedures and standards
- communicate work requirements
- use literacy skills in regard to verbal and written communication in the workplace
- use personal protective equipment.

Required knowledge:

- types and purposes of blue green algae samples
- procedures and techniques for blue green algae sampling
- sample preparation, including:
 - prevention of contamination
 - volume of sample
 - appropriate containers
 - preservation
 - location selection
 - location maintenance
 - equipment
 - transportation
 - documentation procedures for samples
- legislative and organisational policies, procedures and standards
- communication systems
- work planning processes
- hazards associated with collection of blue green algae samples.

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.

Samples may include grab, integrated or concentrated samples for:

- identification
- enumeration
- toxicity testing.

Legislative and organisational requirements may include:

- Australian standards, for example AS/NZS 5667 Water quality - sampling
- state Environment Protection Authority sampling guidelines
- 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,

RANGE STATEMENT

	such as land care agreements.
Sampling equipment may include:	<ul style="list-style-type: none">• buckets or wide-mouthed containers• depth samplers• sample dippers• hose pipe samplers• plankton nets• laboratory supplied sample containers• weighted sample bottles.
Sample preservation methods may include:	<ul style="list-style-type: none">• refrigeration• chemical addition, such as Lugol's iodine solution.
Planning sampling work activities may include:	<ul style="list-style-type: none">• interpreting instructions and directions• planning timelines• interacting and communicating with team members and individuals• considering customer service requirements.
Sampling locations may include:	<ul style="list-style-type: none">• water storages• rivers• wastewater lagoons.
Records may include:	<ul style="list-style-type: none">• sample records, field detail sheets or chain of custody forms, including information such as:<ul style="list-style-type: none">○ time sample was taken○ details of person collecting sample○ sample point○ volume of sample○ data gathered at time of collection○ preservation techniques.

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 perform blue green algae sampling, including:

- planning and preparing for sampling tasks
- collecting samples according to sampling plan
- maintaining integrity of samples
- recording required information.

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

EVIDENCE GUIDE

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.

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.