Australian Government

Department of Education, Employment and Workplace Relations

NWP706A Review and evaluate water and wastewater sustainability objectives

Revision Number: 2

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Modification History

NWP706A Release 2: Layout adjusted. No changes to content.
NWP706A Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to enable analysis and identification of solutions to issues such as the sustainable use of water, drinking water safety and quality, water recycling and the effectiveness of wastewater treatment. This requires the ability to be able to integrate technical and scientific knowledge of water conservation and recycling, power needs for different technology options, catchment management, domestic and industry requirements for different grades of water, and the environmental impact of various options chosen.

Application of the Unit

This unit supports the attainment of skills and knowledge required for senior managers, water treatment and resource planners and related senior staff.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit of competency contains employability skills.

Elements and Performance Criteria Pre-Content

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

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Analyse water resource issues	1.1 Analyse ***economic*** and ***social issues*** relevant to sustainable ***water*** use to determine implications for specific situations. 1.2 Identify and analyse ***community attitudes*** to use of recycled water for their impact on future initiatives. 1.3 Identify and analyse ***legislation***, ***regulations and policies*** on ***sustainability*** and water recycling issues for relevance to specific situation. 1.4 Determine ***water sustainability objectives*** and targets for specific situation.
2 Determine treatment options for recycling	2.1 Determine water catchment and groundwater protection and management principles for surface and groundwater sources, and recycled water. 2.2 Analyse hydrometric cycle and types and percentage of water use to determine sustainability of specific water resources. 2.3 Analyse impact of stormwater and industrial, agricultural, aquaculture and domestic water use on water quality. 2.4 Analyse ***sustainability issues*** and effect of reduced and more concentrated sewage flows for a specific situation. 2.5 Evaluate treatment options for recycling of treated wastewater and ***alternative water sources*** for their suitability in meeting quality standards for a ***range of uses***.
3 Develop environmental strategies and targets	3.1 Analyse designs of ***model sustainable water systems*** to determine their viability in specific situations. 3.2 Analyse costs and benefits of recycling schemes most appropriate to situation. 3.3 Evaluate existing and planned water recycling systems against ***Australian and international benchmarks***. 3.4 Undertake risk assessment to determine strategies for managing hazards and risks. 3.5 Recommend integrated water resource planning to achieve water sustainability objectives and targets, with consideration of costs.

Required Skills and Knowledge

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

Required skills:

- perform complex research
- analyse technical information
- analyse financial information
- analyse trend data
- research and interpret social trends
- perform relevant statistical analysis
- identify potential or actual operational problems
- undertake evidence-based short, medium and long-range planning
- prepare complex reports
- use computer systems

Required knowledge:

- political, economic and social aspects of water sustainability
- principles of cost benefit analysis
- concept of virtual water in agricultural and manufactured products
- legislative and regulatory requirements relevant to a sustainable water industry
- hydrometric cycle
- methods for evaluating risks to water quality, assets and services
- water sustainability issues and ecosystem quality
- recycling models and performance benchmarks
- water sustainability in domestic, industrial, agricultural and aquaculture contexts, including stormwater
- legislative and regulatory framework for water industry
- relevant Australian standards, international guidelines and best practice systems applicable to water sustainability

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 analyse and identify solutions to issues such as the sustainable use of water, drinking water safety and quality, water recycling and the effectiveness of wastewater treatment including:

- analysing complex technical, social and legislative issues affecting water sustainability
- determining water and wastewater treatment options
- researching and reviewing information and developing evidence-based recommendations for the development of relevant policies relating to environmental sustainability

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.

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.

Economic issues may include:	• costs and benefits of various options • public and private ownership • costing models • increased costs of new developments
Social issues may include:	• land resumption • cost of water supply • damage to ecosystems • equity issues • political exploitation
Water includes:	• water in a watercourse, lake or spring • underground water • overland flow water • water that has been collected in a dam • wastewater of domestic, commercial, industrial or agricultural origin
Community attitudes may include:	• revulsion or fear of contamination • fear of diseases • resistance to change
Legislation, ***regulations and policies*** relevant to the State or Territory may include:	• Environmental Protection and Biodiversity Conservation Act 1999 • relevant state and territory environmental protection legislation • relevant water legislation and regulations • Australian Drinking Water Guidelines • water recycling guidelines • water quality guidelines • National Water Quality Management Strategy
Sustainability may include:	• replenishment of resources • maintaining resources • assault on diminishing resource
Water and wastewater ***sustainability objectives*** may include:	• sustainable use of water • drinking water safety • water recycling • long-term certainty of sources

Sustainability issues may include:	• leakage • evaporation • sewer mining • grey water use • recycling • intelligent use • alternatives
Alternative water sources may include:	• stormwater • bore water • brackish water • process water
Range of uses may include:	• irrigation • aquaculture • industry • fire fighting • recreation • domestic • replenishing raw surface water or groundwater resources
Model sustainable water systems may include examples that are:	• specific to locations (e.g. Australia, Singapore, Israel and California) • specific to industries (e.g. paper, cooling and food processing) • existing or planned • local and international
Australian and International benchmarks may include:	• data from existing systems • published research

Unit Sector(s)

Not applicable.

Competency field

Leadership.