



Australian Government

Department of Education, Employment and Workplace Relations

NWP606 Plan water reticulation systems

Release: 1

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Modification History

NWP606 Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to plan water reticulation systems.

Application of the Unit

This unit applies to engineering para-professionals required to plan water reticulation systems such as town water supplies.

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

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the tasks you need to be able to perform, to demonstrate that you can achieve 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

Elements	Performance Criteria
1 Develop servicing strategy	1.1 Determine existing water system demand requirements and calculate future demand in accordance with organisational strategic and business plans and contracts. 1.2 Determine and assess the environmental impacts of these demands. 1.3 Analyse constraints that may be applied to meet demand requirements. 1.4 Define a variety of future scenario options and determine their parameters. 1.5 Conduct network analyses to determine catchment and supply impacts.
2 Plan and prepare concept proposal	2.1 Identify and investigate proposals that meet the project design requirements and design standards and specifications. 2.2 Consider operations and maintenance requirements. 2.3 Determine lifecycle costs. 2.4 Analyse selected proposals to identify preferred options consistent with output quality specifications. 2.5 Prepare preferred options as the planning concept based on analysis of proposals.
3 Prepare and manage supporting documents	3.1 Prepare supporting documentation in accordance with legislative and organisation requirements. 3.2 Maintain engineering and project records in accordance with legislative or organisation requirements.
4 Evaluate planning methods and outcomes	4.1 Review concept proposals against the planning requirements and implementation applicability. 4.2 Review parameters of the planning process using initial data and using approved modelling systems. 4.3 Conduct consultations with parties with an interest in the proposal. 4.4 Make recommendations for changes to the concept proposal. 4.5 Make final recommendations for system design.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills:

- interpret and apply legislative requirements
- assess environmental impacts
- apply quality requirements
- analyse complex information
- operate computer software
- conduct data modelling
- conduct investigations
- prepare documentation
- collaborate with a diverse team of specialists
- conduct consultations with a range of industry and community interests
- project planning

Required knowledge:

- application of civil engineering principles, mathematics, computer software and file handling is required
- legislative requirements for the design of water distribution systems including environmental protection and occupational health and safety
- water network systems
- output quality specification requirements
- cost benefit analysis procedures
- risk analysis procedures
- computer software for planning, modelling and system analysis
- data modelling procedures
- investigation procedures and methodologies
- documentation and information management requirements
- OH&S and environmental legislation, acts and procedures

Evidence Guide

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

Overview of assessment

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

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

The candidate should demonstrate the ability to plan either water collection or distribution systems including:

- identifying, analysing and defining water distribution and reticulation system planning requirements, conditions and constraints
- identifying and interpreting legislative, environmental, business and project management requirements
- developing scenario options for future needs and conditions
- analysing a range of factors to determine catchment and supply impacts
- planning, preparing and selecting options for system design
- managing and securing documentation to support and report project management
- evaluating, and consulting on proposals to gauge impact and support
- making recommendations on the planning and design requirements for water distribution and reticulation systems

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
- workplace specific equipment and technology
- supervision and experienced team members to provide observations, feedback and third party reports
- enterprise operating procedures and work allocation
- 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.

Method of assessment

The following methods are suggested:

- assessment in the workplace or in a simulated workplace and under the normal range of workplace conditions
- assessment should also be conducted in conjunction with aspects of technical competencies that are consistent with the work environment
- techniques for gathering evidence of competency may include:
 - observation of performance
 - written and/or oral questioning to assess knowledge and understanding
 - completion of workplace documents and reports produced as part of routine work activities
 - third-party reports from experienced practitioners
 - completion of performance feedback from supervisors and colleagues

Guidance information for assessment

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 require that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice
- a decision of competence only taken at the point when the assessor has complete confidence in the person's competence over time and in various contexts
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence
- where assessment is for the purpose of recognition (RCC/RPL), the evidence provided will need to be authenticated and show that it represents competency demonstrated over a period of time
- assessment can be through simulated project-based activity and must include evidence relating to each of the elements in this unit

In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in a manner

appropriate to the skill levels of the operator and cultural issues that may affect responses to the questions, and will reflect the requirements of the competency and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording, if used in the performance criteria, is detailed below. 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.

- Water systems*** may include:
- urban potable water supply
 - regional source management and water transfer
 - reclaimed and wastewater supply for non potable use
 - collection and distribution of treated wastewater into potable and non-potable water supply
- Environmental impacts*** may include:
- visual
 - odour
 - noise
 - social
 - political
 - natural
 - cultural
 - infrastructure
- Project design requirements*** may include:
- reticulation main sizes and locations
 - pressure reducing valve locations and settings
 - staging of developments
 - preliminary reticulation main layouts
 - system configuration
 - service and operating pressures
 - pressure zone boundaries
 - water main sizes
 - water quality
 - pumping stations
 - storage tanks
 - future system expansion options
- Design standards and specifications*** may include:
- legislation and by-laws
 - enterprise and organisational plans, policies and procedures
 - Australian standards
 - ISO standards
 - specific design guidelines and manufacturers' and contractors' conditions, contracts and standards
- Analysis of proposals*** may include:
- cost benefit analyses
 - net present value
 - feasibility study
 - risk analysis

Legislative and organisation requirements may include:

- life cycle cost
- management requirements and conditions
- community interests and submissions
- federal and state legislation
- national guidelines
- environmental protection agencies
- water quality management strategy
- industry codes of practice

Initial data may include:

- costs
- existing and future flows
- input and output quality
- customer requirements
- locations
- catchments
- demographics
- land use
- pressure
- hydrological information
- meteorological information
- topographic information

Modelling systems may include:

- manual models
- computer models

Unit Sector(s)

Not applicable.

Competency Field

Asset Creation.