



Australian Government

Department of Education, Employment and Workplace Relations

NWP320B Monitor and implement dam maintenance

Revision Number: 2

NWP320B Monitor and implement dam maintenance

Modification History

NWP320B Release 2: Layout adjusted. No changes to content.

NWP320B Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to conduct inspections of dams and implement dam maintenance programs, including maintenance of dam safety mechanisms. The ability to interpret technical documentation, investigate and resolve maintenance problems and to collect and analyse technical information are essential to performance.

Application of the Unit

This unit supports the attainment of skills and knowledge required for field and operational staff with a specific responsibility for the maintenance of ungated dams.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

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

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan and prepare for dam maintenance.	1.1 Apply <i>guidelines and regulatory requirements for large dam maintenance</i> to maintenance plans. 1.2 Apply relevant organisational policies, standard operating procedures and incident management plans to <i>dam maintenance plans and preparations</i>. 1.3 Undertake <i>inspection procedures</i> according to organisational requirements.
2 Implement dam maintenance plans.	2.1 Apply dam maintenance plans according to <i>organisational and statutory requirements</i>. 2.2 Maintain and repair <i>dam assets</i> according to manufacturer's guidelines and organisational requirements.
3 Compile maintenance and inspection reports.	3.1 Collect required <i>data</i> from inspections, measurement instruments and delegated personnel. 3.2 Collate, process, validate, record and store data according to organisational and requirements. 3.3 Evaluate data and record and report structural, material and/or equipment problems. 3.4 Recommend remedial action.

Required Skills and Knowledge

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

Required skills:

- identify and correct maintenance problems
- identify security maintenance issues
- identify access maintenance issues
- conduct inspections
- coordinate maintenance activities
- interpret plans, drawings, instructions, standard operating procedures, policies and standards
- use safety equipment and personal protective equipment
- use rescue equipment
- use relevant tools and machinery
- identify safety hazards
- give and receive instructions
- communicate with other employees and customers
- carry out maintenance of specified assets
- propose and justify maintenance activities
- analyse and process data
- interpret diagrams, drawings and charts
- inspect and operate relevant equipment and instruments
- produce reports

Required knowledge:

- dam design principles
- risks to dams
- historic dam information
- potential earthquake effects
- properties of stored water
- dam maintenance principles and practices
- basic materials science (corrosion, paint coating)
- communication systems
- basic principles of hydraulics
- system layout
- environmental aspects of maintenance
- lock out procedures for mechanical and electrical installations
- control systems
- equipment operation
- relevant utilities and service bodies
- hazardous materials handling
- effects of weather and conditions on bulkwater assets

- basic principles of soil mechanics
- basic concrete structure, strengths and deterioration
- basic dam construction procedures
- principles of dam inspection
- dam failure mechanisms
- risk management techniques
- occupational health and safety
- personal work site safety
- risk factors and potential hazards of maintenance of dam assets
- maintenance standard operating procedures
- organisational and statutory requirements

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 inspections of dams and implement dam maintenance programs including:

- monitoring and implementing dam maintenance in conformance with standard operating procedures
- interpreting technical documentation
- identifying and investigating maintenance problems
- collecting and evaluating technical information
- preparing required 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/or 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, any cultural issues that may affect responses to the questions, and reflecting 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.

Guidelines and regulatory requirements for large dam maintenance include:

- Australian National Committee on Large Dams (ANCOLD) guidelines

Dam maintenance plans and preparations may include:

- owner's operation and maintenance manuals
- owner's inspection manuals
- Safety Evaluation of Existing Dams (SEED) guidelines

Inspection procedures may include:

- owner's inspection manuals
- owner's operation and maintenance manuals
- Safety Evaluation of Existing Dams (SEED) guidelines

Organisational and statutory requirements may include:

- occupational health and safety, including the use of personal protective equipment
- environmental laws and policies
- by-laws and organisational policies
- Water Acts
- construction and occupational health and safety regulations
- public safety and disaster plans
- Australian National Committee on Large Dams guidelines
- state and local government or state regulatory committees
- asset management plan.

Dam assets may include:

- earthen walls or embankments
- concrete walls and structures
- hydraulic structures
- electrical equipment
- spillways and dissipaters
- outlets and intake structures
- pipes
- conduits
- foundations
- mechanical equipment, for example:
 - gates
 - valves
 - standby equipment
 - baulks

Data may include:

- bulkheads
- cranes
- trashracks
- reservoir perimeter
- weirs
- drainage systems (surface and sub-surface)
- access roads
- hoists, ladders and platforms
- tunnels and galleries
- monitoring equipment
- survey monuments and monitoring points
- operation and maintenance manuals
- past inspection reports
- operation, monitoring and testing records
- observation and associated comments and reports
- original design plans
- design modifications
- construction records and reports
- survey information
- maintenance records
- performance data

Unit Sector(s)

Not applicable.

Competency field

Dam safety.