



Australian Government

Department of Education, Employment and Workplace Relations

NWP511B Manage dam safety surveillance

Revision Number: 2

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Modification History

NWP511B Release 2: Layout adjusted. No changes to content.

NWP511B Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to plan, schedule, implement and report on dam safety surveillance.

Application of the Unit

This unit supports the attainment of skills and knowledge required for staff with a specific responsibility for managing the safety surveillance of large 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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan and prepare for dam safety surveillance.	1.1 Access and apply the Australian National Committee on Large Dams guidelines and other regulatory requirements. 1.2 Develop safety surveillance policies, plans and procedures according to organisational and statutory requirements. 1.3 Access and interpret historical and design information. 1.4 Determine monitoring frequency and surveillance sites for inspecting dam structure conditions and behaviour. 1.5 Assess and document dam behaviour and potential failure modes. 1.6 Determine instrumentation requirements and data collection methods.
2 Implement dam safety surveillance plans.	2.1 Inform stakeholders of policies and plans. 2.2 Develop inspection programs and implement inspection and monitoring procedures. 2.3 Communicate procedures for the collection and recording of information to field staff. 2.4 Collate, process, validate, record and store data from instruments and personnel. 2.5 Analyse data and determine, record and evaluate structural, material and/or behavioural problems.
3 Complete safety surveillance reports.	3.1 Prepare and distribute clear and concise reports to meet the dam owners', stakeholders' and regulatory requirements. 3.2 Communicate consequences of failure to dam owners and other stakeholders. 3.3 Include recommendations for remedial action. 3.4 Undertake economic evaluations, cost estimates and work schedules according to enterprise requirements. 3.5 Assess the timeliness of all stages of communication and reporting.

Required Skills and Knowledge

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

Required skills:

- analyse and process data
- communicate
- use equipment and instruments
- interpret plans and charts
- produce reports
- Inspect and operate instruments

Required knowledge:

- properties of stored water
- dam design principles
- materials science (e.g. corrosion, paint coating)
- communication systems
- relevant utilities
- principles of hydraulics
- principles of soil mechanics
- concrete structure
- strengths and deterioration
- construction procedure
- safe dam operating procedures
- principles of dam surveillance
- risk management techniques
- maintenance practices

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, schedule, implement and report on dam safety surveillance including:

- planning and preparing for dam safety surveillance
- implementing dam safety surveillance plans
- completing safety surveillance 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.

Organisational and statutory requirements may include:

- 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 government or state committees
- asset management plan

Historical and design information may include:

- past surveillance reports
- observation and associated comments and reports
- original design plans
- design modifications
- construction records and reports
- survey information

Surveillance sites may include:

- earthen walls
- concrete walls
- hydraulic structures
- electrical equipment
- spillways
- outlets
- pipes
- conduits
- foundations
- mechanical equipment, such as:
 - gates
 - valves
- tunnels and galleries
- reservoir perimeter
- weirs

Stakeholders may include:

- dam owners
- water authorities
- government
- water consumers

- downstream land owners
 - meteorological bureau
 - local government
 - emergency organisations
 - police
 - land care and water watch groups
 - industry
- Inspections** may include:
- interaction and communication with employees and the general public
 - visual observation
 - use of electronic and/or computer equipment
 - specialist investigations such as drilling and core sampling
 - operational preparedness checks
 - specialist inspections
- Data** may include:
- current and past monitoring records
 - flood information
 - seismic details
 - previous safety reviews
 - geological and foundation investigation reports
 - hydrometrical reports
 - past remedial works
 - past incidents
 - past surveillance reports
 - inspection reports
 - original design plans
 - design modifications
 - construction records and reports
 - operation and maintenance performance data
- Instruments** may include:
- simple manual devices through to complex computer controlled systems

Unit Sector(s)

Not applicable.

Competency field

Dam safety.