



**Australian Government**

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

# **NWP230B Maintain and repair irrigation channels and drains**

**Revision Number: 2**

## NWP230B Maintain and repair irrigation channels and drains

### Modification History

NWP230B Release 2: Layout adjusted. No changes to content.  
NWP230B Release 1: Primary release.

### Unit Descriptor

This unit of competency describes the outcomes required to maintain and repair irrigation or stock and domestic supply channels and drains.

### 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.

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

- 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

## 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 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.

## 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
- 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
  - 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

## **Unit Sector(s)**

Not applicable.

## **Competency field**

Collection and distribution.