



**Australian Government**

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

# **NWP251B Construct open earthen channels or drains**

**Revision Number: 2**

## NWP251B Construct open earthen channels or drains

### Modification History

NWP251B Release 2: Layout adjusted. No changes to content.

NWP251B Release 1: Primary release.

### Unit Descriptor

This unit of competency describes the outcomes required to plan and prepare for the construction of open channels or drains and to complete construction operations and subsequent site restoration according to legislative and organisational requirements.

### Application of the Unit

This unit supports the attainment of skills and knowledge required for field and operational staff involved in the construction of earthen channels and drains for stormwater or irrigation systems or the remodelling or reconstruction of unserviceable 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 <b><i>bold italicised</i></b> 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
<b>1 Plan and prepare for construction work.</b>	<ul style="list-style-type: none"><li>1.1 Determine <i>work requirements</i> from design plans, specifications, instructions and work orders.</li><li>1.2 Check site and identify <i>hazards</i> according to <i>legislative and organisational requirements</i>.</li><li>1.3 Make appropriate <i>drainage and diversion arrangements</i> without damage to environment.</li><li>1.4 Check <i>equipment</i> and open-cut excavation methods to ensure that safety requirements of task and site are met.</li><li>1.5 <i>Prepare site</i> according to specifications and organisational requirements.</li></ul>
<b>2 Construct channels or drains.</b>	<ul style="list-style-type: none"><li>2.1 Construct earthen channels, drains and batters to planned width, depth and gradient.</li><li>2.2 Compact soil, apply additives if necessary, and take earth samples to meet organisational requirements.</li><li>2.3 Check construction works to ensure that specifications are met.</li></ul>
<b>3 Restore work site and equipment.</b>	<ul style="list-style-type: none"><li>3.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures.</li><li>3.2 Restore work site and add <i>environmental improvements or controls</i> to complete work according to plans and organisational requirements.</li></ul>

## 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
- produce reports and logs
- use safety and personal protective equipment
- use tools and machinery
- interpret plans, charts and instructions
- apply procedures and standards
- apply channel, drain and batter construction techniques
- identify soil types, mechanics and compaction rates
- select and operate appropriate compaction plant, such as tamping foot and smooth drum roller
- operate communication systems
- perform work-related calculations
- communicate with employees and customers
- work effectively as part of a team
- use literacy skills in regard to verbal and written communication in the workplace
- give and receive instructions

### Required knowledge:

- channel and drain system design basics
- channel and drain system layout
- environmental aspects of construction
- channel, drain and batter construction processes
- measures to reduce channel deterioration, infestation of weeds, pests and seepage
- relevant utilities and service providers
- safe use of lasers
- use of automatic levels
- basic levelling techniques
- profiles and boning rods
- survey principles
- soil types, mechanics and compaction rates
- capabilities of plant used for construction, including equipment operation, capacity and limitations
- communication systems
- work-related calculations
- hazardous materials handling
- landscape and ground structure of work area
- risk factors and potential hazards of construction processes
- effects of weather and conditions on construction site or plant

- control systems

## 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 construct open earthen channels and drains by:

- planning work and preparing work site according to given specifications and instructions
- cutting channels to specification
- compacting soil
- taking soil samples
- checking that work meets specifications
- cleaning and storing equipment
- restoring work site

### **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:

- confirmation of site availability
- confirmation of statutory approvals, including:
  - vegetation clearing approval
  - riverine protection permits
  - use of borrow approvals
  - preparations for conditions included in statutory approvals for work
- site boundaries
- borrow and spoil areas
- boundary protection
- location, timing and type of work activity
- extent of the work
- access roads
- specifications for depth, width and gradient
- utility location
- safe work methods

***Hazards*** may include:

- damage to other utilities
- soil types and suitability to cut
- those associated with particular plant and equipment

***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

***Drainage and diversion arrangements*** may include:

- statutory approvals and conditions
- environmental

***Equipment*** may include:

- hand and power tools
- on- and off-road vehicles
- off-road plant
- lifting and winching equipment
- compressors
- rotating lasers



- Site preparation* may include:
- profiles
  - automatic level
  - pneumatic spaders and attachments
  - motorised cutting equipment
  - portable pumps
  - communication equipment
  - breathing apparatus
  - gas detection equipment
  - rescue equipment
  - appropriate personal protective equipment
- Environmental improvements or controls* may include:
- installation of temporary erosion control structures
  - cultural heritage monitors
  - safety barricades
  - removal of vegetation, debris, silt and soil
  - revegetation processes
  - drainage measures
  - sedimentation control

## Unit Sector(s)

Not applicable.

## Competency field

Collection and distribution.