



Australian Government

Department of Education, Employment and Workplace Relations

NWP253B Install and repair water services

Revision Number: 2

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Modification History

NWP253B Release 2: Layout adjusted. No changes to content.
NWP253B Release 1: Primary release.

Unit Descriptor

This unit of competency describes the outcomes required to install and repair water service pipes running from the main supply to the consumer connection.

Application of the Unit

This unit supports the attainment of skills and knowledge required for field staff with specific responsibility for ensuring that water pipes are installed and repaired in a safe and timely manner.

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 service installation.	1.1 Determine work requirements for installation of services from plans, specifications and organisational procedures. 1.2 Determine materials and configuration from plans, specifications and organisational procedures. 1.3 Determine location of other utilities and services according to legislative and organisational requirements. 1.4 Identify and apply system operation requirements. 1.5 Select, fit and use equipment, including personal protective equipment. 1.6 Determine location, size and number of tappings from plans, specifications and organisational procedures.
2 Drill and tap main pipe.	2.1 Set up and operate tapping machine according to manufacturer specifications and organisational procedures. 2.2 Install main tap according to specifications and organisational requirements. 2.3 Recognise and correct faults or malfunctions in drilling and tapping. 2.4 Apply corrosion protection measures where required.
3 Install conduits under roads and pathways.	3.1 Coordinate installation of conduits with road and path construction. 3.2 Install conduits according to specifications, drawings and organisational requirements.
4 Install pipes and fittings.	4.1 Measure pipes and cut to length within acceptable tolerance for length and squareness. 4.2 Prepare pipe ends and make joints according to manufacturer specifications. 4.3 Set out configuration of pipes and fittings according to plans, specifications and organisational requirements, with allowance for thermal movement if required. 4.4 Recognise and correct joining faults or malfunctions. 4.5 Select bedding and backfill material and place according to manufacturer specifications and organisational requirements.
5 Maintain water system hygiene.	5.1 Store service pipes and fittings clear of potential pollutants or damaging substances and remove debris or filling from pipes before installation. 5.2 Flush service pipe work before final commissioning. 5.3 Plug pipe openings during work breaks.
6 Locate and repair leaks.	6.1 Determine locations of leaks and isolate and dewater. 6.2 Identify and apply electrical safety procedures.

ELEMENT	PERFORMANCE CRITERIA
	6.3 Identify and apply appropriate repair techniques to maintain integrity of service.
7 Test water service.	7.1 Apply test or operational pressures to service and all joints. 7.2 Check pipes, connections and fittings are operable without leakage under test or operational conditions.
8 Finalise work.	8.1 Check, maintain and store equipment, tools and materials according to manufacturer guidelines and organisational procedures. 8.2 Restore work site to meet environmental and organisational requirements. 8.3 Complete workplace records and process as required.

Required Skills and Knowledge

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

Required skills:

- install and repair service pipes and fittings
- identify control system faults
- use safety equipment and personal protective equipment
- use tools and equipment
- identify hazards
- work effectively as part of a team
- perform work-related calculations
- identify and respond to operational problems
- use communication systems
- interpret plans, instructions and procedures
- follow procedures and standards
- complete documentation
- use literacy skills in regard to verbal and written communication in the workplace
- communicate with customers and other employees

Required knowledge:

- OHS procedures
- personal work site safety
- risk factors
- equipment operation
- environmental aspects of service installation
- pipe systems and installation requirements
- characteristics of pipe materials
- work-related calculations
- systems' operation
- testing systems
- corrosion principles applicable to service pipes and fittings
- operation of water meters

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 install and repair water services between the main supply and customer connection by:

- planning work and preparing work site
- performing installation and repair tasks according to manufacturer specifications and legislative and organisational requirements
- ensuring system hygiene and operational performance
- 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 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 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:

- confined spaces
- lifting and moving materials in a trench

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

Equipment used may include:

- hand and power tools
- lifting and winching equipment
- mechanical excavation equipment
- pneumatic and motorised equipment
- pressure drilling and tapping machines
- pipe cutting and bending apparatus
- thread cutting equipment
- communication equipment
- bridging clamps
- insulating gloves
- personal protective equipment

Pipes may include:

- copper
- polybutylene
- brass
- polyethylene
- polyvinyl chloride (PVC)
- galvanised steel

Joints may be:

- threaded
- electrofusion
- push fit
- solvent welded
- butt welded
- compression
- silver soldered

Fittings may include:

- tapping bands
- main taps
- ferrules
- ball valves
- dirt boxes
- meter boxes

Unit Sector(s)

Not applicable.

Competency field

Collection and distribution.