



Australian Government

UEGNSG220A Construct and lay Polyethylene gas distribution mains

Release 1

UEGNSG220A Construct and lay Polyethylene gas distribution mains

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit covers excavated bed preparation and the construction and laying of Polyethylene gas distribution mains, including the installation of the meter connections to the service riser.

It encompasses the use of relevant tools and equipment, working safely using standard operating procedures, complying with relevant legislative, standard and code requirements and completing necessary documentation.

Application of the Unit

Application of the Unit **2)**

This competency standard shall apply to any safe work site where gas distribution pipeline operations occur, subject to all Workplace Health and Safety (WHS)/Occupational Health and Safety (OHS) and duty of care requirements being met for the workplace.

This unit is intended as an entry level AQF 3 competency for new entrants in the gas industry. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice 3)

During Training:

Competency development activities are subject to regulations directly related to licensing, occupational health and safety and where applicable contracts of training such as apprenticeships.

In the workplace:

The skills and knowledge described in this unit are not subject to licence regulation other than those directly related to Workplace Health and Safety/Occupational Health and Safety, gas/electricity/

water industry safety and compliance, industrial relations, environmental protection, telecommunications, anti-discrimination and training.

Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of those who can operate certain equipment. Other conditions may apply to this competency under State and Territory legislative and regulatory requirements.

Pre-Requisites

Prerequisite Unit(s) 4)

Competencies 4.1)

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed:

UEGNSG141A Apply Workplace Health and Safety regulations, codes and practices in the gas industry

Prerequisite Unit(s) 4)

UEGNSG005A	Prepare to work in the Australian gas industry
UEGNSG132A	Carry out basic work activities in a gas industry work environment
UEGNSG140A	Apply environmental policies and procedures in the utilities industry
UEGNSG134A	Establish a utilities infrastructure work site

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3
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Employability Skills Information**Employability Skills 5)**

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit *Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.*

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare to construct and lay Polyethylene gas distribution mains	1.1 WHS/OHS and environmental measures for the site are identified, obtained and understood.
	1.2 Relevant requirements, including alignment of main and services and established procedures for the site are discussed with relevant persons to establish and confirm the work schedule
	1.3 WHS/OHS, environmental and sustainable energy policies and procedures are received and confirmed
	1.4 Hazards are identified, WHS/OHS risks assessed and control measures are prioritised, implemented and monitored according to established procedures including keeping emergency exits clear.
	1.5 Scope of responsibility under the relevant work permit and/or relevant notification is received and confirmed according to requirements and established procedures
	1.6 Equipment, tools and personal protective equipment needed to carry out the work are identified, obtained and checked for correct

ELEMENT	PERFORMANCE CRITERIA
	operation and safety.
	1.7 Appropriate persons are consulted to ensure the work is coordinated effectively with others involved
	1.8 Materials, plans, diagrams, drawings and resources required to construct and lay PE gas distribution mains are confirmed, scheduled and obtained in accordance with established procedures
	1.9 Relevant responsibilities associated with safety and emergency procedures for an incident are checked and confirmed.
	1.10 Third party issues are referred to appropriate persons in accordance with established procedures.
	1.11 Site preparation, safety plan and the work schedule are confirmed in accordance with established procedures
	1.12 Road signs, barriers and warning devices are positioned in accordance with given instructions and requirements including traffic management plans
2 Construct and lay Polyethylene gas distribution mains	2.1 WHS/OHS and control measures schedule of work and standard operation procedures for carrying out the work are followed
	2.2 Appropriate materials, tools, equipment and measuring devices are selected and used correctly and safely.

ELEMENT	PERFORMANCE CRITERIA
2.3	Hazardous activities such as lifting, climbing, working in confined spaces, excavations, trenches and use of power tools, techniques and practices are conducted safely in accordance with given instructions and requirements
2.4	Excavation is prepared for laying of pipe according to appropriate standards and procedures
2.5	Construction and laying of PE gas distribution main are conducted according to appropriate standards and procedures
2.6	Work is carried out efficiently, to the required standard without waste of materials or damage to apparatus, equipment, the surrounding environment or services and using sustainable energy principles.
2.7	WHS/OHS risks and incidents are reported to the immediate authorised persons for directions according to established procedures.
2.8	Procedures for referring non-routine events to the immediate authorised persons for directions are followed
2.9	Routine quality checks are carried out in accordance with work instructions including testing of pipework.
3 Complete work and relevant documentation	3.1 WHS/OHS risk control work completion measures and procedures are followed
	3.2 Work site is rehabilitated, cleaned up and made safe in accordance with and established procedures

ELEMENT**PERFORMANCE CRITERIA**

- 3.3 Tools, equipment and any surplus resources and materials are cleaned, checked and securely stored.
- 3.4 Appropriate persons are notified of work completion according to established procedures
- 3.5 Work completion documentation is completed accurately and provided to the appropriate persons in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

7) *This describes the skills and knowledge and their level, required for this unit.*

Evidence shall show that knowledge has been acquired of safe working practices for constructing and laying Polyethylene distribution mains.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies. The extent of the required knowledge and associated skills (EKAS) is provided below. It forms an integral part of this unit.

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Evidence shall show an understanding of constructing and laying Polyethylene gas distribution mains in accordance with relevant legislation, standards, codes and established procedures to an extent indicated by the following aspects:

T1. Polyethylene gas pipelines

- characteristics and specifications
- differences to other pipe materials
- applications in which a PE pipeline is used/not used
- handling and storage
- advantages and disadvantages
- pipe sizes and range of fitting and accessories
- dimensions for series 2 pipe - Gas (SDR) from AS/NZS 4130
- allowable pipe damage
- static electricity in gas PE pipes

T2. Relevant legislation, Australian Standards, codes, regulations and procedures requirements

T3. Safety requirements

- hazards, risk assessment and control measures
- dangers of working with live gas
- MSDS and handling of Solvents and jointing materials

T4. Cutting and tapping PE pipe

- requirements under various conditions, inclement weather etc.
- methods, procedures and safety requirements
- selection and use of equipment, tools and materials

T5. Joining PE pipe, pipelines and fittings

- requirements under various conditions, inclement weather etc.

REQUIRED SKILLS AND KNOWLEDGE

- methods, procedures and safety requirements
- selection and use of equipment, tools and materials
- Compression fitting joints
 - procedures, equipment, tools and materials
- Fusion joints
 - procedures, equipment, tools and materials for:
 - Butt fusion; manual and hydraulic
 - Saddle fusion
 - Electro fusion
 - Socket Fusion
 - fusion times
 - difference between a quality and bad joint

T6. Transition fittings and adaptors to other piping materials

- types
- selection
- Adapting metal risers to installation requirements, bending and cutting to fit above ground requirements

T7. Bedding requirements for PE pipeline

- trench width and depth
- required coverage depth in various locations
- obstacles affecting minimum depth of cover for pipeline
- solutions for dealing with obstacles affecting the depth of cover including transitioning to other approved materials and applying protection.
- pipeline support
- backfilling requirements

T8. Conditions for direct installation or insertion of PE pipeline

T9. Installation of PE pipeline

- requirements
- procedures
- trace wire
- marker tape

T10. Termination and testing of PE pipeline

- requirements
- procedures

T11. Static Electricity in PE gas pipes

- causes
- dangers

REQUIRED SKILLS AND KNOWLEDGE

- prevention

Evidence Guide

EVIDENCE GUIDE

8) The Evidence Guide forms an integral part of this Unit and shall be used in conjunction with all components parts of this unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment 8.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the

assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

**Critical aspects 8.2)
of evidence
required to
demonstrate
competency in
this unit**

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines — UEG11'. Evidence shall also comprise.

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and range
 - Apply sustainable energy principles and practices as specified in the Performance Criteria and range
 - Demonstrate an understanding of the required skills and knowledge as described in this unit to such an extent that the learner's performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment
 - Demonstrate an appropriate level of employability skills
 - Conduct work observing the relevant anti-discrimination legislation, regulations, policies and workplace procedures
- Demonstrate performance across a representative range of contexts from the prescribed items below.
 - Carry out Polyethylene distribution pipeline construction work activities as described in 9.) Range Statement and including:
 - A. Identifying and interpreting correctly drawings, diagrams, schedules, procedures and manuals relevant

to the work to be undertaken.

- B. Selecting correct materials, equipment, tools, personal protection equipment and measurement devices
- C. Cutting, joining, laying, covering and connecting Nylon/PVC gas distribution pipelines in accordance with requirements
- D. Isolating, venting, purging and testing for soundness and leaks, commissioning and making safe on gas services
- E. Completing required documentation and reporting.
- F. Dealing with unplanned events by drawing on required skills and knowledge, procedures/ protocols to provide appropriate solutions incorporated in the holistic assessment with the above listed items, for example encroachment and/or contact with assets

Context of and 8.3) specific resources for assessment

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- WHS/OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this Competency Standard Unit.
- Appropriate environmental regulation and work practices.
- Appropriate organisational requirements.
- Appropriate work environment, equipment and tools.

These should be part of the formal learning/assessment environment.

Assessment of this competency must also be undertaken in either an actual workplace or under a simulated work environment.

Assessment must also integrate the employability skills.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to locating, proving and protecting utility assets.

Method of assessment

8.4)

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note: Competent performance with inherent safe working practices is expected in the Industry to which this Competency Standard Unit applies. This requires that the required Skills and Knowledge are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the required skills and knowledge described in this unit.

Concurrent assessment and relationship with other units

8.5)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied Competency Standard Units where listed.

UEGNSG132A Carry out work activities in a gas industry work environment

UEGNSG133A Comply with environmental policies and procedures in the utilities industry

UEGNSG134A Establish a utilities infrastructure work site

Range Statement

RANGE STATEMENT

9) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to the construction and laying of Polyethylene gas distribution mains in accordance with relevant legislation, standards, codes and established procedures. This includes laying and cutting pipes and joining pipes and fittings and the installation of the meter connection to the service riser.

The following constants and variables included in the Element/Performance Criteria in this unit are fully described in the Definitions Section of this volume and form an integral part of the Range Statement of this unit:

- Services
- Appropriate persons
- Materials
- Tools and equipment
- Safe working procedures
- Legislative requirements

Unit Sector(s)

Gas Industry.

Competency Field

Competency Field **11)**
Gas Distribution.