Title	**Demonstrate knowledge of pipe jointing systems for water reticulation**		
Level	**4**	**Credits**	**6**

Purpose	People credited with this unit standard are able to demonstrate knowledge of: rubber ring joints and jointing procedures; solvent cement joints and jointing procedures; polyethylene (Pe) jointing; mechanical joints, and repairs to pipelines; tapping systems; steel welding, and steel welded pipe joints; and joint testing.

Classification	Water Industry > Water Reticulation

Available grade	Achieved

Guidance Information

1 Legislation and references relevant to this unit standard include:
Health and Safety at Work Act 2015, and subsequent amendments;
AS 2865: 2009 *Confined spaces,* available from https://infostore.saiglobal.com/*;*
AS/NZS 4129:2008 *Fittings for polyethylene (PE) pipes for pressure applications*;
AS/NZS 2033:2008 *Installation of polyethylene pipe systems*;
NZS 4711:1984 *Qualification tests for metal-arc welders*;
AS/NZS 2032:2006 *Installation of PVC pipe system;*
NZS 4404:2010 *Land Development and Subdivision Infrastructure;*
AS/NZS 4998:2009 *Bolted unrestrained mechanical couplings for waterworks purposes;*
AS/NZS 4793:2009 *Mechanical tapping bands for waterworks purposes;* all available from http://www.standards.govt.nz.

2 Definitions
Organisational procedures – instructions to staff, and procedures which are documented in memo or manual format and are available in the workplace. These requirements include but are not limited to – site specific requirements, manufacturers' specifications, product quality specifications, and legislative or regulatory requirements.
Water reticulation – in this context refers to all pipe systems, pumping systems, and components that contribute to the distribution of water, and collection and disposal of wastewater and stormwater.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of rubber ring joints and jointing procedures.

Performance criteria

1.1 A rubber ring joint is described in terms of manufacturer's specifications for its use.

1.2 Cutting tools and techniques for their use are described in terms of the preparation for installation of rubber ring joints.

1.3 Techniques for jointing pipes using rubber rings are described in accordance with manufacturer's specifications.

Range preparation and cleaning of pipe, position of ring, position of the pipe, chamfering, choice of lubricant.

Outcome 2

Demonstrate knowledge of solvent cement joints and jointing procedures.

Performance criteria

2.1 Procedures for making a solvent cement joint are described in accordance with manufacturer's specifications, health and safety requirements, and AS/NZS 2032:2006.

Outcome 3

Demonstrate knowledge of polyethylene (Pe) jointing.

Range two techniques.

Performance criteria

3.1 Pe jointing is described in terms of the situations suitable for its use.

3.2 Pe jointing is described in terms of the process.

3.3 Pe jointing is described in terms of potential faults and their causes.

3.4 Pe jointing is described in terms of preparation requirements, equipment and fittings required, and storage and handling of materials.

Outcome 4

Demonstrate knowledge of mechanical joints, and repairs to pipelines.

Performance criteria

4.1 Flange types and materials, and their methods for jointing, are described in accordance with manufacturer's specifications.

4.2 Threaded joints in pipelines are described in terms of manufacturer's recommendations for fitting and sealing.

4.3 Flexible joints using couplings are described in terms of manufacturer's specifications for installation.

Range restrained couplers, unrestrained couplers.

4.4 Procedures for pressure and non-pressure repairs to pipelines using repair joints are described in accordance with manufacturer's specifications.

Range evidence is required for two repair joints.

4.5 Procedures for jointing between different pipe types are described in accordance with manufacturer's specifications.

Range evidence is required for two joints of different pipe types.

4.6 Compression fittings for pipeline connections are described in terms of the manufacturer's specifications for installation.

Outcome 5

Demonstrate knowledge of tapping systems.

Range two of – tapping saddles, direct tapping, self tapping ferrule.

Performance criteria

5.1 Tapping systems are described in terms of their uses, limitations, and precautions for use with specified materials.

5.2 Tapping systems are described in terms of mechanical jointing and service connections.

Range live tapping, dry tapping.

Outcome 6

Demonstrate knowledge of steel welding, and steel welded pipe joints.

Performance criteria

6.1 Methods of welding steel pipe joints are described in terms of suitability for different pipe diameters and contractual requirements.

6.2 Steel welding is described in terms of health and safety implications and requirements.

6.3 Materials used for steel welding are described in terms of their compatibility and limitations for use.

6.4 Steel welding is described in terms of repairs of internal and external coatings required following welding.

6.5 Steel welds are described in terms of the procedures for testing.

Outcome 7

Demonstrate knowledge of joint testing.

Performance criteria

7.1 Joint testing is described in accordance with organisational procedures.

Range three different joint tests.

Planned review date	31 December 2023

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	26 October 2005	31 December 2016
Rollover and Revision	2	20 February 2009	31 December 2016
Rollover and Revision	3	21 July 2011	31 December 2018
Review	4	16 March 2017	31 December 2021
Review	5	29 November 2018	N/A

Consent and Moderation Requirements (CMR) reference	0101

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Connexis Infrastructure ITO qualifications@connexis.org.nzif you wish to suggest changes to the content of this assessment standard.