National Certificate in Gas Industry (Gas Engineering) with strands in Gas Network Operations, Gas Network Planning and Development, and Gas Utilisation

Level 6

Credits 136-214

This qualification is **expiring**. The last date to meet the requirements is 31 December 2014 at which time the qualification will be designated discontinued.

Transition Arrangements

This qualification has been reviewed and has been designated expiring without replacement.

For detailed information see Review Summaries on the NZQA website.

NZQF National Qualification Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	June 1999	December 2014
Review	2	November 2013	December 2014

Standard Setting Body

NZ Motor Industry Training Organisation (Inc)
PO Box 10803
WELLINGTON 6143

Telephone 0800 88 21 21
Website www.mito.org.nz

National Certificate in Gas Industry (Gas Engineering) with strands in Gas Network Operations, Gas Network Planning and Development, and Gas Utilisation

level of qualification: **6**

credit total: **136–214**

Credit Range

	Core	Gas Network Operations Strand	
	C	C	E
level 1 credits:	-	2	-
level 2 credits:	21	-	-
level 3 credits:	24	25	-
level 4 credits:	1	31	-
level 5 credits:	10	48	0-4
level 6 credits:	-	38	10-14
minimum totals:	56	144	14

	Gas Network Planning and Development Strand		Gas Utilisation Strand	
	C	E	C	O
level 1 credits:	2	-	-	-
level 2 credits:	-	-	-	-
level 3 credits:	13	-	-	-
level 4 credits:	27	-	11	6
level 5 credits:	32	0-10	24	8
level 6 credits:	50	2-12	45	10
minimum totals:	124	12	80	0

Key:
C = Compulsory
E = Elective
O = Optional

registration date: 25 June 1999

planned review date: 30 June 2003

field, sub-field and domains:

BUSINESS AND FINANCIAL SERVICES
- Management
  - quality management

COMPUTING AND INFORMATION TECHNOLOGY
- Computing
  - generic computing

ENGINEERING AND TECHNOLOGY
- Civil Works and Services
  - civil project management
- Engineering
  - generic engineering
  - process and materials engineering
- Gas Industry
  - gas marketing, business and administration
  - gas measurement
  - gas network construction
  - gas network operations
  - gas network planning and development
  - gas utilisation engineering
- Industrial Measurement and Control
  - industrial measurement and control - theory
- Mechanical Engineering
  - engineering – materials
- Petrochemical Industry
  - petrochemical cathodic protection
  - petrochemical operations communication and responses

HUMANITIES
- Communication Skills
  - writing

PLANNING AND CONSTRUCTION
- Plumbing, Gasfitting and Drainlaying
  - gasfitting

SCIENCES
- Science
  - science-core

standard-setting body responsible for the qualification:

Gas Association Industry Training Organisation

other standard-setting bodies whose unit standards are included in the qualification:

Business and Management National Standards Body
Computing and Information Technology Advisory Group
Core Skills National Standards Body – Communications Skills Advisory Group
ElectroTechnology Industry Training Organisation
NZ Contracting Industry Training Organisation Limited - Civil Sub-committee
NZ Engineering, Food and Manufacturing Industry Training Organisation
NZ Society of Master Plumbers and Gasfitters Industry Training Organisation
Petrochemical Industry Training Organisation
Process and Materials Standard-Setting Body
Science and Technology National Standards Body

Purpose

This qualification recognises the competence, knowledge and skills required to perform gas engineering in the gas network operations, gas planning and development and gas utilisation sectors of the gas industry. It is structured to encourage holders to attain a range of core skills and knowledge as well as those in their chosen fields of expertise.

The flexible structure of the certificate enables the candidate to pursue the qualification that suits their needs and/or the employer's requirements.

2 regulations for the qualification

2.1 entry information for programmes of education and training assessed against the unit standards in the qualification

Open.

2.2 recognition of prior learning

Applications for the recognition of prior learning may be made to either the Gas Association Industry Training Organisation or accredited providers.

2.3 qualification requirements

summary of qualification requirements

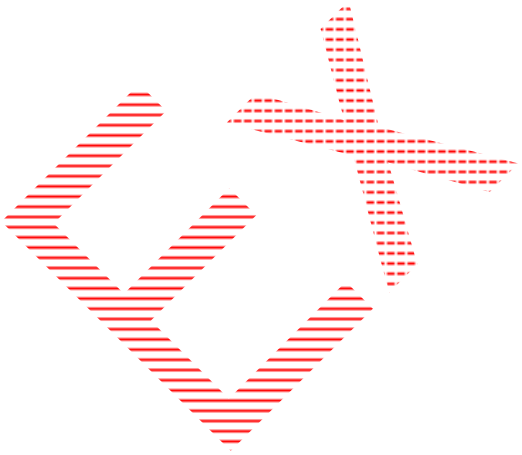
This qualification will be awarded to people credited with all the core compulsory unit standards and who have met the requirements of at least one of the strands.

Core Compulsory
All the unit standards listed are required.

Gas Network Operations Strand
- *All the unit standards listed in the Gas Network Operations Strand Compulsory; and*
- *A minimum of 14 credits, of which a minimum of 10 credits must be at level 6, from the Gas Network Operations Strand Elective.*

Gas Network Planning and Development Strand
- *All the unit standards listed in the Gas Network Planning and Development Strand Compulsory; and*
- *A minimum of 12 credits from the Gas Network Planning and Development Strand Elective.*

Gas Utilisation Strand
- *All the unit standards listed in the Gas Utilisation Strand Compulsory; and*
- *0-24 credits from the Gas Utilisation Strand Optional. These unit standards are not required to meet the requirements of this strand.*



detailed qualification requirements

Core Compulsory
All the unit standards listed below are required.

FIELD: BUSINESS AND FINANCIAL SERVICES
Sub-field: Management
domain: quality management

Unit No.	Unit Standard Title	Level	Credit
8085	Explain fundamental concepts and principles of quality and its management	3	4

FIELD: COMPUTING AND INFORMATION TECHNOLOGY
Sub-field: Computing
domain: generic computing

Unit No.	Unit Standard Title	Level	Credit
5953	Demonstrate an understanding of project management using a computer application	3	3

FIELD: ENGINEERING AND TECHNOLOGY
Sub-field: Engineering
domain: process and materials engineering

Unit No.	Unit Standard Title	Level	Credit
11361	Demonstrate knowledge of engineering thermodynamic principles	5	6

Sub-field: Gas Industry
domain: gas marketing, business and administration

Unit No.	Unit Standard Title	Level	Credit
11327	Identify public relations roles and community liaison responsibilities in a gas environment	2	4
11329	Describe the New Zealand gas industry	2	4
11332	Identify legislative requirements relating to the sales of gas products	3	3

domain: gas measurement

Unit No.	Unit Standard Title	Level	Credit
12450	Demonstrate knowledge of gas meters and correctors	2	3

domain: gas network operations

Unit No.	Unit Standard Title	Level	Credit
12520	Demonstrate a basic overview knowledge of gas distribution networks	2	4
12524	Demonstrate knowledge of gas properties and characteristics	4	1

domain: gas utilisation engineering

Unit No.	Unit Standard Title	Level	Credit
12442	Identify the sources, origin, basic composition, and properties of gas	2	3

Sub-field: Industrial Measurement and Control
domain: industrial measurement and control - theory

Unit No.	Unit Standard Title	Level	Credit
2630	Demonstrate an understanding of pressure measurement systems in industry	3	4
2636	Demonstrate an understanding of flow measurement systems in industry	3	3

Sub-field: Mechanical Engineering
domain: engineering - materials

Unit No.	Unit Standard Title	Level	Credit
4796	Distinguish the characteristics of engineering metals	2	3

FIELD: HUMANITIES
Sub-field: Communication Skills
domain: writing

Unit No.	Unit Standard Title	Level	Credit
3491	Write a report	3	4
9685	Write a short analytical report	5	4

FIELD: SCIENCES
Sub-field: Science
domain: science - core

Unit No.	Unit Standard Title	Level	Credit
9183	Demonstrate knowledge of units and notation in science	3	3

Gas Network Operations Strand Compulsory
All the unit standards listed below are required.

FIELD: ENGINEERING AND TECHNOLOGY
Sub-field: Civil Works and Services
domain: civil project management

Unit No.	Unit Standard Title	Level	Credit
6430	Demonstrate knowledge of the application of contract law to civil construction activities	4	8

Sub-field: Engineering
domain: generic engineering

Unit No.	Unit Standard Title	Level	Credit
11416	Analyse fluid system and components in terms of fluid mechanics principles	4	5

domain: process and materials engineering

Unit No.	Unit Standard Title	Level	Credit
11336	Demonstrate knowledge of fluid statics and fluid dynamics	5	12
11337	Measure fluid flows	5	10
11338	Identify and analyse flow problems	6	8
11375	Demonstrate knowledge of hazard identification and control	5	8

Sub-field: Gas Industry
domain: gas marketing, business and administration

Unit No.	Unit Standard Title	Level	Credit
11325	Regulate and audit worksite systems in a gas distribution network	3	4
11326	Interpret symbols, signs, and terminology specific to a gas distribution network	1	2

domain: gas network construction

Unit No.	Unit Standard Title	Level	Credit
10982	Demonstrate knowledge of steel welding techniques on a gas distribution network	4	6

domain: gas network operations

Unit No.	Unit Standard Title	Level	Credit
12497	Demonstrate knowledge of legislation and documentation relating to gas network operations	5	10
12498	Produce, monitor, and maintain operational and safety procedures in a gas distribution environment	6	8
12499	Stabilise an emergency site in a gas distribution network	3	6
12500	Deal with a building where uncontrolled gas is present	3	6
12501	Control and manage emergency incidents in a gas distribution network	6	12

Unit No.	Unit Standard Title	Level	Credit
12519	Demonstrate knowledge of odorisation in a gas distribution network	3	6
12523	Implement maintenance plans and procedures for a gas network	6	10
12525	Demonstrate knowledge of gas pressure regulators, their use, principles, application and sizing	5	8

Sub-field: Mechanical Engineering
domain: engineering-materials

Unit No.	Unit Standard Title	Level	Credit
4797	Identify the composition of engineering metals	3	3

Sub-field: Petrochemical Industry
domain: petrochemical cathodic protection

Unit No.	Unit Standard Title	Level	Credit
9575	Understand the basics of cathodic protection in a petrochemical environment	4	2
9579	Carry out cathodic protection system trouble shooting in a petrochemical environment	4	4

domain: petrochemical operations communication and responses

Unit No.	Unit Standard Title	Level	Credit
9628	Conduct accident investigations in a petrochemical environment	4	6

Gas Network Operations Strand Elective
A minimum of 14 credits, of which a minimum of 10 credits must be at level 6, from the following unit standards.

FIELD: COMPUTING AND INFORMATION TECHNOLOGY
Sub-field: Computing
domain: generic computing

Unit No.	Unit Standard Title	Level	Credit
6756	Apply the principles of project planning and control	6	7

FIELD: ENGINEERING AND TECHNOLOGY
Sub-field: Engineering
domain: generic engineering

Unit No.	Unit Standard Title	Level	Credit
11406	Demonstrate knowledge of engineering contract law and documentation	6	4
11409	Complete tender analysis and engage a contractor	6	2
11410	Administer contracts on behalf of the client for implementation of an engineering project	6	4
11411	Demonstrate knowledge of contractor obligations for engineering projects	5	4

domain: process and materials engineering

Unit No.	Unit Standard Title	Level	Credit
11347	Demonstrate knowledge of properties and measurement of particulate materials	5	8
11365	Demonstrate knowledge of corrosion	6	8
11368	Demonstrate knowledge of materials joining technology	5	6
11376	Apply measures to control hazards	6	5

Gas Network Planning and Development Strand Compulsory
All the unit standards listed below are required.

FIELD: ENGINEERING AND TECHNOLOGY
Sub-field: Civil Works and Services
domain: civil project management

Unit No.	Unit Standard Title	Level	Credit
6430	Demonstrate knowledge of the application of contract law to civil construction activities	4	8

Sub-field: Engineering
domain: generic engineering

Unit No.	Unit Standard Title	Level	Credit
11416	Analyse fluid systems and components in terms of fluid mechanics principles	4	5

domain: process and materials engineering

Unit No.	Unit Standard Title	Level	Credit
11336	Demonstrate knowledge of fluid statics and fluid dynamics	5	12
11338	Identify and analyse flow problems	6	8

Sub-field: Gas Industry
domain: gas marketing, business and administration

Unit No.	Unit Standard Title	Level	Credit
11325	Regulate and audit worksite systems in a gas distribution network	3	4
11326	Interpret symbols, signs, and terminology specific to a gas distribution network	1	2

domain: gas network operations

Unit No.	Unit Standard Title	Level	Credit
12497	Demonstrate knowledge of legislation and documentation relating to gas network operations	5	10
12498	Produce, monitor, and maintain operational and safety procedures in a gas distribution environment	6	8
12501	Control and manage emergency incidents in a gas distribution network	6	12
12519	Demonstrate knowledge of odorisation in a gas distribution network	3	6

domain: gas network planning and development

Unit No.	Unit Standard Title	Level	Credit
12438	Identify and utilise the principles of gas flow dynamics for network system design	4	12
12439	Plan and design a gas network system	5	10
12440	Plan and design gas regulator and metering stations in a gas distribution network	6	10
12457	Design a cathodic protection system in a gas distribution network	6	12

Sub-field: Mechanical Engineering
domain: engineering-materials

Unit No.	Unit Standard Title	Level	Credit
4797	Identify the composition of engineering metals	3	3

Sub-field: Petrochemical Industry
domain: petrochemical cathodic protection

Unit No.	Unit Standard Title	Level	Credit
9575	Understand the basics of cathodic protection in a petrochemical environment	4	2

Gas Network Planning and Development Strand Elective
A minimum of 12 credits from the following unit standards.

FIELD: COMPUTING AND INFORMATION TECHNOLOGY
Sub-field: Computing
domain: generic computing

Unit No.	Unit Standard Title	Level	Credit
6756	Apply the principles of project planning and control	6	7

FIELD: ENGINEERING AND TECHNOLOGY
Sub-field: Engineering
domain: generic engineering

Unit No.	Unit Standard Title	Level	Credit
11406	Demonstrate knowledge of engineering contract law and documentation	6	4
11409	Complete tender analysis and engage a contractor	6	2
11410	Administer contracts on behalf of a client for implementation of an engineering project	6	4
11411	Demonstrate knowledge of contractor obligations for engineering projects	5	4

Sub-field: Gas Industry
domain: gas network planning and development

Unit No.	Unit Standard Title	Level	Credit
12441	Design an odorisation system in a gas distribution network	5	6

Gas Utilisation Strand Compulsory
All the unit standards listed below are required.

FIELD: COMPUTING AND INFORMATION TECHNOLOGY
Sub-field: Computing
domain: generic computing

Unit No.	Unit Standard Title	Level	Credit
6756	Apply the principles of project planning and control	6	7

FIELD: ENGINEERING AND TECHNOLOGY
Sub-field: Engineering
domain: process and materials engineering

Unit No.	Unit Standard Title	Level	Credit
11340	Analyse and monitor heat transfer equipment performance	6	15
11342	Provide data for heat exchange equipment procurement	6	8
11343	Perform process mass and energy balances	5	6

Sub-field: Gas Industry
domain: gas marketing, business and administration

Unit No.	Unit Standard Title	Level	Credit
11333	Demonstrate knowledge of commercial gas sales processes to installation	4	4

domain: gas utilisation engineering

Unit No.	Unit Standard Title	Level	Credit
12443	Support industrial and commercial gas customers with training, maintenance programmes and service	6	6
12444	Provide an industrial heating solution in a gas distribution network	5	8

Unit No.	Unit Standard Title	Level	Credit
12445	Provide an industrial steam and hot water solution in a gas distribution network	6	9
12449	Define the combustion characteristics of gas, burner design, control systems and flame protection systems	4	7

FIELD: PLANNING AND CONSTRUCTION
Sub-field: Plumbing, Gasfitting and Drainlaying
domain: gasfitting

Unit No.	Unit Standard Title	Level	Credit
2120	Design gas supply pipework	5	10

Gas Utilisation Strand Optional
0-24 credits. These unit standards are not required to meet the requirements of this strand.

FIELD: ENGINEERING AND TECHNOLOGY
Sub-field: Gas Industry
domain: gas utilisation engineering

Unit No.	Unit Standard Title	Level	Credit
12446	Provide an industrial co-generation solution in a gas distribution network	6	10
12447	Provide an industrial air conditioning solution in a gas distribution network	5	8
12448	Provide an industrial or commercial catering solution in a gas distribution network	4	6

3 accreditation option

Evaluation of documentation and visit
NZQA Core Skills National Standards Body – Communications Skills Advisory Group NZ Engineering, Food and Manufacturing Industry Training Organisation Gas Association Industry Training Organisation

Further accreditation requirements depend on the electives undertaken, and can be found on the unit standards concerned.

4 certification

The certificate will include the logos of NZQA and the Gas Association Industry Training Organisation.

5 transition arrangements

5.1 non National Qualifications Framework transition

None. There are no NZQA approved courses that will be affected by the introduction of this qualification.

5.2 National Qualifications Framework transition

Any version of a unit standard contained within this qualification which retains its original unit standard identification number will continue to meet the requirements of this qualification.

Comments to:

NZ Motor Industry Training Organisation (Incorporated) (MITO)
PO Box 10803
Wellington 6143

Telephone 0800 88 2121
Fax 04 494 0006
Email info@mito.org.nz
Website www.mito.org.nz

by 30 June 2003.

Please Note: Providers must be accredited by the Qualifications Authority before they can offer programmes of education and training assessed against unit standards.

Accredited providers assessing against unit standards must engage with the moderation system that applies to those unit standards.

Prerequisite Diagram