MSL30109 Certificate III in Laboratory Skills

Modification History

Release 3 - ISC upgrade

- Minor formatting changes
- Prerequisites now marked with an asterisk
- Imported unit updated to current version - equivalent

Release 2 - ISC upgrade

- Prerequisite listed for HLTPAT419A removed – unit has no prerequisite
- HLTPAT units updated to current versions - equivalent
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Description

This qualification covers the skills and knowledge required to perform a limited range of laboratory operations across all industry sectors.

Job roles/employment outcomes
The Certificate III in Laboratory Skills offers entry level technical training in laboratory skills across a range of industries. Employment outcomes targeted by this qualification include laboratory technicians, instrument operators and similar personnel.
Laboratory technicians perform straightforward laboratory work. They follow set procedures and recipes, and apply well developed technical skills and basic scientific knowledge. They generally work inside a laboratory but may also perform technical tasks in the field or within production plants. They may also perform a range of laboratory maintenance and office tasks.

The majority of their work involves a predictable flow of parallel or similar tasks within one scientific discipline. They:

- perform straightforward technical tasks to prepare and test samples using relevant procedures, Australian standards and readily available advice. These tasks generally require close attention to detail and to the accuracy and precision of measurements. They may require the use of manual or semi-automated techniques
- operate test equipment and instruments and make limited adjustments to their controls
- process and record data and recognise trends and out of control conditions
- solve predictable problems using clear information or known solutions. Where alternatives exist, they are limited and apparent
- work under close and regular supervision, although they may have autonomy for specific tasks and responsibility for their own outputs
- take decisions within defined limits of responsibility
- work as part of a team.

Examples of the work of laboratory technician are given below.

- A laboratory technician working at a dairy factory may gather samples from the milk tankers, vats and the processing line, and perform routine chemical and bacteriological tests on the samples.
- A laboratory technician in a pathology laboratory may receive and prepares tissue samples.
- A school laboratory technician may set up for classes, prepare chemicals and instruments for students to undertake practical work.

Application

This qualification is typically used to prepare new employees or develop the skills of existing workers performing a laboratory technician or instrument operator role across all industry sectors.

MSL30109 Certificate III in Laboratory Skills is designed to maximise the portability of this qualification, which is the entry level required for laboratory personnel across all industry sectors.

Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship or Apprenticeship arrangement.

Additional qualification advice

Because specialisation is a requirement in some industry sectors for the Certificate III in Laboratory Skills, Registered Training Organisations (RTOs) may choose to issue a generic:

- Certificate III in Laboratory Skills

or, where elective units of competency are packaged to suit a particular industry sector or specialisation, RTOs might issue a:

- Certificate III in Laboratory Skills

  (specialising in xxxxxxx)

Industry sector/specialisations could include, but are not limited to:

- construction materials testing
- environmental monitoring
- food testing
- pathology testing
- mineral assay
- scientific glassblowing
- wine testing.

It should be noted that a qualification with a specialisation does not change the title of the qualification, although RTOs may choose to record the specialisation. The AQTF requirements must be complied with and the qualification or Statement of Attainment should clearly specify the units of competency achieved and where appropriate, the specialisation.

Pathways Information

Pathways into the qualification

This qualification may be accessed by direct entry. Credit for this qualification may include units contained within relevant skill sets.

Pathways from the qualification
Further training pathways from this qualification include MSL40109 Certificate IV in Laboratory Techniques or MSA40108 Certificate IV in Manufacturing Technology (Laboratory Operations Stream).

Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However depending on the jurisdiction, licensing or regulatory requirements may apply to the use of some units in this qualification. Local regulations should be checked for details.

Entry Requirements

Not applicable.

Employability Skills Summary

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
Employability Skill	**Industry/enterprise requirements for this qualification include**:
Communication	• Receive and pass on written and oral messages, provide relevant information in response to requests and demonstrate effective interpersonal skills including conflict resolution techniques • Record and store data, perform basic calculations of scientific quantities and present information in tables and graphs • Report using verbal responses, data entry into laboratory information management system (LIMS) or enterprise databases and brief written reports using enterprise proformas • Communicate with team members, supervisors and customers
Teamwork	• Work effectively with team members who may have diverse work styles, cultures and perspectives when reporting problems, hazards and incidents and results or contributing to productivity improvements • Promote cooperation and good relations in the team
Problem solving	• Deal with inquiries in accordance with enterprise customer service requirements • Rectify errors in data using enterprise procedures • Resolve simple customer requirements, such as mismatched request forms and specimens
Initiative and enterprise	• Access and provide relevant information that meets own authorisation and confidentiality requirements • Recognise potential incidents and take appropriate corrective action • Identify and report opportunities for improvements in procedures, processes and equipment • Identify hazards associated with samples, preparation methods, reagents and equipment and implement enterprise control measures
Planning and organising	• Plan and organise daily work activities to ensure the timely completion of tasks • Modify work plans to suit changing conditions and priorities • Assemble and organise specified laboratory equipment and materials
Self-management	• Follow enterprise procedures which reflect equal opportunity, anti-discrimination and non-harassment legislative requirements • Maintain enterprise standards of personal hygiene • Conduct work based on ethical values and principles

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
	• Review own strengths, weaknesses and work practices for opportunities to continuously improve performance • Maintain confidentiality of all client/enterprise data and information • Use appropriate protective equipment to ensure personal safety when sampling, processing, transferring or disposing of samples
Learning	• Clarify instructions with supervisors to ensure a complete understanding of the task • Update knowledge and skills and take advantage of skill development opportunities
Technology	• Use communication, emergency, data recording and laboratory equipment. Laboratory equipment includes items such as microscopes, weigh balances, LIMS and centrifuges • Use computers and software to collect and report information

Packaging Rules

To be awarded a Certificate III in Laboratory Skills, competency must be achieved in a total of **thirteen** (**13**) units of competency, consisting of:

- **six** (**6**) core units
- **seven** (**7**) elective units from Groups A and B, chosen as specified below.

Units listed under **core** are considered essential for all laboratory assistants. The units of competency listed as **electives** may only apply to some personnel according to the size and scope of the particular enterprise and laboratory.

Note: Units marked with an asterisk have one or more prerequisite requirements and must be included in the total number of units chosen. Please refer to individual units for details.

Core units of competency

Select **all six** (**6**) units of competency from this list.

Unit code	Unit title	Prerequisites
MSAENV272B	Participate in environmentally sustainable work practices	
MSL913001A	Communicate with other people	

Unit code	Unit title	Prerequisites
MSL913002A	Plan and conduct laboratory/field work	
MSL922001A	Record and present data	
MSL933002A	Contribute to the achievement of quality objectives	
MSL943002A	Participate in laboratory/field workplace safety	

Elective units of competency
Select **seven** (**7**) elective units from Groups A and B, as specified below:

- a minimum of **four** (**4**) units must be chosen from Group A.
- the remainder may be chosen from Groups A and B, to bring the total number of electives to **seven** (**7**).

Note that **two** (**2**) of the electives units may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where those units are available at Certificate III.

Group A

Unit code	Unit title	Prerequisites
MSL933001A	Maintain the laboratory/field workplace fit for purpose	
MSL933003A	Apply critical control point requirements	
MSL933004A	Perform calibration checks on equipment and assist with its maintenance	
MSL943001A	Work safely with instruments that emit ionising radiation	
MSL953001A	Receive and prepare samples for testing	
MSL953002A	Operate a robotic sample preparation system	
MSL963001A	Operate basic handblowing equipment	
MSL963002A	Repair glass apparatus using simple glassblowing equipment	*
MSL973001A	Perform basic tests	
MSL973002A	Prepare working solutions	
MSL973003A	Prepare culture media	

Unit code	Unit title	Prerequisites
MSL973004A	Perform aseptic techniques	
MSL973005A	Assist with fieldwork	
MSL973006A	Prepare trial batches for evaluation	
MSL973007A	Perform microscopic examination	
MSL973008A	Perform histological procedures	
MSL973009A	Conduct field-based acceptance tests for construction materials	
MSL973010A	Conduct laboratory-based acceptance tests for construction materials	
MSL973011A	Perform fire pouring techniques	
MSL973012A	Assist with geotechnical site investigations	
HLTPAT317C	Operate effectively within a pathology testing environment	
TAEDEL301A	Provide work skill instruction	

Group B

Unit code	Unit title	Prerequisites
MSL912001A	Work within a laboratory/field workplace (induction)	
MSL952001A	Collect routine site samples	
MSL952002A	Handle and transport samples or equipment	
MSL972001A	Conduct routine site measurements	
MSL904001A	Perform standard calibrations	
MSL914001A	Prepare practical science classes and demonstrations	
MSL924001A	Process and interpret data	
MSL924002A	Use laboratory application software	
MSL934001A	Contribute to the ongoing development of HACCP plans	
MSL934002A	Apply quality system and continuous improvement processes	

Unit code	Unit title	Prerequisites
MSL934003A	Maintain and control stocks	
MSL944001A	Maintain laboratory/field workplace safety	
MSL954001A	Obtain representative samples in accordance with sampling plan	
MSL954002A	Prepare mineral samples for analysis	
MSL974001A	Prepare, standardise and use solutions	
MSL974002A	Conduct geotechnical site investigations	*
MSL974003A	Perform chemical tests and procedures	
MSL974004A	Perform food tests	
MSL974005A	Perform physical tests	
MSL974006A	Perform biological procedures	*
MSL974007A	Undertake environmental field-based monitoring	
MSL974008A	Capture and manage scientific images	
MSL974009A	Undertake field-based, remote-sensing monitoring	
MSL974010A	Perform mechanical tests	
MSL974011A	Prepare tissue and cell cultures	*
MSL974012A	Perform tests to determine the properties of construction materials	*
MSL974013A	Monitor performance of structures	*
MSAENV472B	Implement and monitor environmentally sustainable work practices	
HLTPAT419C	Perform pathology tests	

MSL40109 Certificate IV in Laboratory Techniques

Modification History

Release 4 - ISC upgrade

- Publishing errors corrected
- Prerequisites not marked with an asterisk
- Imported unit updated to latest version

Release 3 - ISC upgrade

- Correction of wrong MSAENV unit listed in core and elective units in release 2
- Prerequisite listed for HLTPAT419A removed – unit has no prerequisite
- HLTPAT units updated to current versions - equivalent

Release 2 - inclusion of new electives for forensic testing

Description

This qualification covers the skills and knowledge required to perform a range of laboratory techniques to conduct tests and sampling in a variety of industry sectors.

Job roles/employment outcomes
The Certificate IV in Laboratory Techniques offers technical training in laboratory techniques across a range of industries. Employment outcomes targeted by this qualification include technical assistants, technicians, instrument operators and similar personnel.

Technical assistants undertake a wide range of sampling and testing that requires the application of a broad range of technical skills and some scientific knowledge. Although technical assistants generally work in a laboratory, they often work closely with other personnel throughout the workplace and with suppliers. They may assist other personnel to solve technical problems and to adjust formulations and production mixes. They may also train them to collect samples and conduct basic tests reliably.

The work of technical assistants involves similar tasks within one scientific discipline with occasional peak periods and some interruptions. They:

- work according to established procedures in a structured environment
- collect and prepare samples
- conduct a wide range of basic tests and a limited range of specialised tests and measurements using manual, semi-automated and fully automated techniques
- define and solve problems of limited complexity where the information available is less obvious, but not contradictory, and can be determined by direct reasoning
- work under the direction and regular supervision of senior technical staff, laboratory or quality managers, or scientific/medical personnel. The work of technical assistants is normally subject to frequent progress and quality checks
- generally work in a team and may have responsibility for their own work outputs.

An example of the work of technical assistants is given below.

- A technical assistant who works in a mineral preparation plant receives and logs incoming ore samples and operates handling equipment to move samples to treatment points. In the laboratory, the assistant conducts routine chemical and physical tests and redirects other sub-samples for specialised analyses.

Application
This qualification is typically used to prepare new employees or develop the skills of existing workers performing a technical assistant role in a variety of industry sectors.

This qualification recognises that some industry sectors employ technicians who have broad technical-scientific knowledge and skills, but without substantial depth in one specialisation as provided by the Diploma of Laboratory Technology. This qualification also addresses the concerns of industry representatives who stated that a gap between the Certificate III and Diploma in the Qualifications Framework could represent a barrier to career progression in some sectors.

Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship or Apprenticeship arrangement.

Pathways Information

Pathways into the qualification
This qualification may be accessed by direct entry. Credit may be granted towards this qualification by those who have completed the MSL30109 Certificate III in Laboratory Skills. Credit for this qualification may include units contained within relevant skill sets.

Pathways from the qualification
Further training pathways from this qualification include MSL50109 Diploma of Laboratory Technology.

Additional qualification advice
Because specialisation is a requirement in some industry sectors for the Certificate IV, Registered Training Organisations (RTOs) may choose to issue a generic:

- Certificate IV in Laboratory Technology

or, where elective units of competency are packaged to suit a particular industry sector or specialisation, RTOs might issue a:

- Certificate IV in Laboratory Technology

  (specialising in xxxxxxx)

Industry sector/specialisations could include, but are not limited to:

- biological testing
- chemical testing
- construction materials testing
- environmental monitoring
- food testing
- manufacturing testing
- mineral assay
- scientific glassblowing
- wine testing.
-

Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, depending on the jurisdiction, licensing or regulatory requirements may apply to the use of some units of competency in this qualification. Local regulations should be checked for details.

Entry Requirements

Not applicable.

Employability Skills Summary

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
Employability Skill	**Industry/enterprise requirements for this qualification include**:
Communication	• Receive and pass on written and oral messages, provide relevant information in response to requests and demonstrate effective interpersonal skills including conflict resolution techniques • Record and store data, perform basic calculations of scientific quantities and present information in tables and graphs • Report using verbal responses, data entry into laboratory information management system (LIMS) and brief written reports • Communicate with team members, supervisors and customers • Interpret standard operating procedures (SOPs) and material safety data sheets (MSDS)
Teamwork	• Work effectively with team members who may have diverse work styles, cultures and perspectives when reporting problems, hazards and incidents and results or contributing to productivity improvements • Promote cooperation and good relations in the team
Problem solving	• Deal with inquiries in accordance with enterprise customer service requirements • Rectify errors in data using enterprise procedures • Recognise and report non-conformances or problems to appropriate personnel
Initiative and enterprise	• Access and provide relevant information that meets own authorisation and confidentiality requirements • Recognise potential incidents and take appropriate corrective action • Identify and report opportunities for improvements in procedures, processes, quality and equipment • Identify hazards associated with samples, preparation methods, reagents and equipment and implement enterprise control measures
Planning and organising	• Plan and organise daily work activities to ensure the timely completion of tasks • Modify work plans to suit changing conditions and priorities • Assemble and organise specified laboratory equipment and materials
Self-management	• Follow enterprise procedures which reflect equal opportunity, anti-discrimination and non-harassment legislative requirements

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY	
	• Maintain enterprise standards of personal hygiene • Conduct work based on ethical values and principles and ensure quality and integrity of own work • Review own strengths, weaknesses and work practices for opportunities to continuously improve performance • Maintain security and confidentiality of all client/enterprise data and information • Use appropriate personal protective equipment to ensure personal safety when sampling, processing, transferring or disposing of samples
Learning	• Clarify instructions with supervisors to ensure a complete understanding of the task • Update knowledge and skills and take advantage of skill development opportunities • Coach others in participating in occupational health and safety (OHS) and environmental management issues
Technology	• Use communication, emergency, data recording and equipment, including items such as instruments that emit ionising radiation, calibration standards, laboratory information management systems and earth moving equipment. • Select and use computers and software to collect and report information

Packaging Rules

To be awarded a Certificate IV in Laboratory Techniques competency must be achieved in a total of **seventeen (17)** units of competency, consisting of:

- **six (6)** core units of competency
- **eleven (11)** elective units of competency.

Units listed under **core** are considered essential for all technical assistants. The units listed as **electives** may only apply to some personnel according to the size and scope of the particular enterprise and laboratory.

Note: Units marked with an asterisk have one or more prerequisite requirements and must be considered in the total number of units. Please refer to individual units for details.

Core units of competency

- Select all **six (6)** units of competency listed below.

Unit code	**Unit title**
MSL913001A	Communicate with other people
MSL913002A	Plan and conduct laboratory/field work
MSL924001A	Process and interpret data
MSL934002A	Apply quality system and continuous improvement processes
MSL943002A	Participate in laboratory/field workplace safety
MSAENV272B	Participate in environmentally sustainable work practices

Elective units of competency

Select **eleven (11)** elective units from Groups A, B and C as specified below:

- a minimum of **five (5)** units must be selected from Group A
- the remainder may be chosen from Groups A, B and C, with a maximum of **four (4)** from Group B and a maximum of **three (3)** from Group C, to bring the total number of electives to **eleven (11)**.

Note that **three (3)** of the elective units may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where those units are available at Certificate IV.

Group A

Unit code	Unit title	Prerequisites
MSL904001A	Perform standard calibrations	
MSL914001A	Prepare practical science classes and demonstrations	
MSL924002A	Use laboratory application software	
MSL934001A	Contribute to the ongoing development of HACCP plans	
MSL934003A	Maintain and control stocks	
MSL944001A	Maintain laboratory/field workplace safety	
MSL954001A	Obtain representative samples in accordance with sampling plan	
MSL954002A	Prepare mineral samples for analysis	
MSL974001A	Prepare, standardise and use solutions	
MSL974002A	Conduct geotechnical site investigations	*
MSL974003A	Perform chemical tests and procedures	
MSL974004A	Perform food tests	
MSL974005A	Perform physical tests	
MSL974006A	Perform biological procedures	*
MSL974007A	Undertake environmental field-based monitoring	
MSL974008A	Capture and manage scientific images	
MSL974009A	Undertake field-based, remote-sensing monitoring	
MSL974010A	Perform mechanical tests	
MSL974011A	Prepare tissue and cell cultures	*
MSL974012A	Perform tests to determine the properties of construction materials	*
MSL974013A	Monitor performance of structures	*
MSAENV472B	Implement and monitor environmentally sustainable work practices	
HLTPAT419C	Perform pathology tests	

- **Group B**

Unit code	Unit title	Prerequisites
MSL933001A	Maintain the laboratory/field workplace fit for purpose	
MSL933002A	Contribute to the achievement of quality objectives	
MSL933003A	Apply critical control point requirements	
MSL933004A	Perform calibration checks on equipment and assist with its maintenance	
MSL943001A	Work safely with instruments that emit ionising radiation	
MSL953001A	Receive and prepare samples for testing	
MSL953002A	Operate a robotic sample preparation system	
MSL963001A	Operate basic handblowing equipment	
MSL963002A	Repair glass apparatus using simple glassblowing equipment	*
MSL973001A	Perform basic tests	
MSL973002A	Prepare working solutions	
MSL973003A	Prepare culture media	
MSL973004A	Perform aseptic techniques	
MSL973005A	Assist with fieldwork	
MSL973006A	Prepare trial batches for evaluation	
MSL973007A	Perform microscopic examination	
MSL973008A	Perform histological procedures	
MSL973009A	Conduct field-based acceptance tests for construction materials	
MSL973010A	Conduct laboratory-based acceptance tests for construction materials	
MSL973011A	Perform fire pouring techniques	
MSL973012A	Assist with geotechnical investigations	
TAEDEL301A	Provide work skill instruction	
HLTPAT317C	Operate effectively within a pathology testing environment	

Group C

Unit code	Unit title	Prerequisites
MSL905001A	Perform non-standard calibrations	*
MSL905002A	Create or modify calibration procedures	*
MSL905003A	Create or modify automated calibration procedures	*
MSL915001A	Provide information to customers	
MSL915002A	Schedule laboratory work for a small team	
MSL925001A	Analyse data and report results	*
MSL925002A	Analyse measurements and estimate uncertainties	*
MSL935001A	Monitor the quality of test results and data	*
MSL935002A	Assist in the maintenance of reference materials	
MSL935003A	Authorise the issue of test results	*
MSL935004A	Maintain instruments and equipment	
MSL955001A	Supervise a robotic sample preparation system	*
MSL965001A	Design and manufacture glass apparatus and glass systems	*
MSL965002A	Perform glass coating, grinding and finishing operations	*
MSL965003A	Construct, modify and maintain high vacuum systems	*
MSL975001A	Perform microbiological tests	*
MSL975002A	Perform haematological tests	*
MSL975003A	Perform histological tests	*
MSL975004A	Perform chemical pathology tests	*
MSL975005A	Conduct sensory analysis	
MSL975006A	Perform immunohaematological tests	*
MSL975007A	Supervise sampling, inspections and testing at construction sites	*
MSL975008A	Apply electrophoretic techniques	*
MSL975009A	Apply routine chromatographic techniques	*
MSL975010A	Perform fire assay techniques	*
MSL975011A	Design and supervise complex environmental field surveys	*
MSL975012A	Provide input to production trials	*

MSL975013A	Perform tissue and cell culture techniques	*
MSL975014A	Perform molecular biology tests and procedures	*
MSL975015A	Prepare animal and plant material for display	*
MSL975016A	Perform complex tests to measure engineering properties of materials	*
MSL975017A	Perform laboratory-based ecological techniques	*
MSL975018A	Perform complex tests to measure chemical properties of materials	*
MSL975019A	Apply complex instrumental techniques	*
MSL975020A	Apply routine spectrometric techniques	*
MSL975021A	Apply routine electrometric techniques	*
MSL975022A	Perform food analyses	*
MSL975023A	Supervise geotechnical site investigations	*
MSL975024A	Locate record and collect forensic samples	
MSL975025A	Perform complex laboratory testing of forensic samples	
MSL975026A	Perform physical examination of forensic samples	

NWP30107 Certificate III in Water Operations

Modification History

NWP30107 Release 2:	Layout adjusted. Minor editorial changes.
NWP30107 Release 1:	Primary release.

Description

To achieve this qualification the candidate must demonstrate competency in 11 units of competency, comprising three core and eight elective units.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

Employability Skills Summary

Qualification code: NWP30107
Qualification title: Certificate III in Water Operations
The following table contains a summary of the employability skills as identified by the water industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include the following facets**:

Communication	• communicates effectively and appropriately with customers, colleagues and contractors
	• communicates effectively in a diverse workforce
	• negotiates and resolves disputes and minimises customer concerns
	• uses complex communication techniques, including:
	  • verbal and non-verbal language
	  • two-way interaction
	  • constructive feedback
	  • active listening
	  • questioning to clarify and confirm understanding
	  • interpreting verbal and non-verbal messages
	  • observation techniques
	  • uses positive, confident and cooperative language
	  • controls tone of voice and body language
	• uses language and concepts appropriate to cultural differences
	• clear presents options and consequences
	• demonstrates flexibility and willingness to negotiate
	• communicates OHS policies and procedures
	• communicates environmental plans and procedures within the workplace
	• understands and interprets a range of technical documents, including relevant:
	  • regulatory, legislative, licensing and organisational requirements
	  • codes and standards
	  • plans
	  • specifications
	  • organisational policies
	• understands relevant definitions, terminology, symbols and language
	• discusses organisational issues
	• reports and records hazards and risks
	• participates in ensuring compliance with standards, regulations and policies
	• maintains calibration records and certificates according to

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	organisational and statutory requirements • collects and analyses data on system performance and usage and reports according to organisational requirements • prepares clear and concise reports for use in court proceedings according to stakeholder and organisational requirements • maintains and checks records and documents
Teamwork	• works collaboratively and effectively with team members and contractors • participates in regular reviews of environmental procedures • uses resources to undertake team tasks and meet customer service levels • refers customer concerns related to organisational liability to appropriate persons or departments according to organisational policy • monitors work processes and ensures safe work practices • contributes to the development, refinement and improvement of organisational quality service policies and standards • relates positively to fellow workers and the management team
Problem solving	• responds effectively to hazards, risks and emergencies • conducts relevant tests and monitoring procedures • inspects water facilities (e.g. dams, distribution systems and treatment facilities) to identify actual or potential problems • takes steps to resolve customer concerns or complaints according to organisational policies and procedures • analyses problems and applies appropriate remedial solutions • controls and integrates processes to maintain and optimise operating parameters • detects faults in operational condition of system and network • performs various calculations • rectifies equipment faults
Initiative and enterprise	• identifies risks and hazards • identifies typical faults and problems and takes necessary remedial action • applies knowledge of the effects of weather and conditions on operation of collection and transfer systems • identifies opportunities for improved water management • proactively implements effective customer service strategies and tactics
Planning and	• participates in effective implementation of organisation's operational

Employability Skill	**Industry/enterprise requirements for this qualification include the following facets**:
organising	plans • monitors and assesses relevant water tests • investigates water quality problems and investigates the causes according to organisational and statutory requirements • contributes to effective management of water operation's assets • installs and commissions new assets and equipment
Self management	• manages own performance to ensure required levels of service standards, work quality and professional competence • manages work priorities • plans and applies team and work activities to meet customer satisfaction and minimise inconvenience • uses feedback to improve own performance
Learning	• seeks feedback on personal performance • uses information effectively to improve work performance • learns from colleagues as part of effective teamwork • reviews personal work performance to identify opportunities to improve service provision to customers • identifies opportunities to improve services or processes and communicates them to colleagues

Technology	• reads meters
	• uses water management equipment, including:
	  • pipes and fittings
	  • gravity systems
	  • pumping and valving systems
	  • control systems
	  • system hydraulics
	• uses workplace computer equipment
	• maintains and understands capabilities and limitations of plant, equipment and tools
	• conducts maintenance on devices and equipment
	• uses technology to improve efficiency and effectiveness of managing work

The high proportion of electives required by this qualification means that the facets of the above employability skills are representative of the water industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines. This table is a summary of employability skills that are typical of this qualification and should not be interpreted as definitive.

Packaging Rules

11 units of competency are required for this qualification including:

- 3 core units
- 8 elective units

Choose a minimum of 4 elective from the list below.
Choose the remaining 4 units from either the list below, **or** elsewhere in this Training Package, **or** another endorsed Training Package **or** Accredited Course, as long as:

- no more than three water industry specific elective units (coded NWP) are chosen from the Certificate II in this Training Package;
- no more than three units are chosen from the Certificate IV in this Training Package;
- no more than three units are chosen from a Certificate III or IV from another endorsed Training Package or Accredited Course.

All elective units selected from outside this qualification must be selected from qualifications aligned to AQF level 2, 3, or 4.
Elective units selected must not duplicate content already covered by other units in this qualification.
Specialisations are possible within this qualification. Details and examples of specialisation rules are included under the Industry Specialisation (see "Qualifications Framework" on page **Error! Bookmark not defined.**) heading in the Qualification Framework section of this Training Package.

Core	
NWP301B	Implement, monitor and coordinate environmental procedures
BSBOHS303B	Contribute to OHS hazard identification and risk assessment
BSBWOR301B	Organise personal work priorities and development
Electives	
NWP300B	Provide and promote customer service
NWP302A	Install meters for non-potable, non-urban water supplies
NWP303A	Monitor and control maintenance of water and wastewater system assets
NWP304A	Maintain meters for non-potable, non-urban water supplies
NWP305B	Monitor and conduct minor maintenance of complex flow-control and

	metering devices
NWP308B	Test and commission wastewater collection systems
NWP309B	Test and commission water distribution systems
NWP310B	Monitor and operate water distribution systems
NWP311B	Monitor and operate wastewater collection and transfer systems
NWP315B	Investigate and report breaches of water industry legislation
NWP316B	Monitor and schedule water deliveries
NWP317B	Control water quality in distribution systems
NWP318A	Monitor and operate gated spillways
NWP319A	Monitor and control dam operations
NWP320B	Monitor and implement dam maintenance
NWP321B	Inspect and operate groundwater regulation
NWP322B	Inspect and operate surface water systems
NWP323B	Monitor and coordinate catchment operations
NWP324B	Inspect and report river regulation operations
NWP326A	Conduct and report dam safety instrumentation monitoring
NWP327A	Inspect and report on concrete dam safety
NWP328A	Inspect and report on embankment dam safety
NWP330B	Establish positions of underground utilities using locating devices
NWP331B	Inspect conduit and report on condition and features
NWP332B	Monitor, operate and control drainage operations
NWP333B	Monitor and control rural water distribution operations
NWP338B	Perform odour and infiltration investigations
NWP339B	Perform leak detection
NWP340A	Measure and process hydrometric stream discharge data using wading gaugings
NWP342A	Commission, decommission and monitor hydrometric sites, stations and facilities
NWP345B	Monitor, operate and control water treatment processes
NWP346B	Monitor, operate and control wastewater treatment processes

NWP347B	Monitor, operate and control coagulation and flocculation processes
NWP348B	Monitor, operate and control sedimentation and clarification processes
NWP349B	Monitor operate and control incineration processes
NWP350B	Monitor, operate and control aerobic bioreactor processes
NWP351B	Monitor, operate and control activated sludge processes
NWP352B	Monitor, operate and control dissolved air flotation processes
NWP353B	Monitor, operate and control anaerobic bioreactor processes
NWP354B	Monitor, operate and control granular media filtration processes
NWP355B	Monitor, operate and control membrane filtration processes
NWP356B	Monitor, operate and control ion exchange processes
NWP357B	Monitor, operate and control reverse osmosis and nano filtration processes
NWP359B	Monitor, operate and control nutrient removal processes
NWP360B	Monitor, operate and control dewatering processes
NWP361B	Monitor, operate and control gas scrubber treatment processes
NWP362B	Monitor, operate and control reclaimed water irrigation
NWP363B	Monitor performance and control maintenance of treatment plant assets
NWP364B	Perform laboratory testing
NWP365A	Identify and confirm blue green algae outbreaks
NWP366A	Monitor, operate and control chloramination disinfection processes
NWP367A	Monitor, operate and control activated carbon adsorption processes
NWP368A	Respond to blue green algae incidents
NWP369	Monitor, operate and control lagoon processes
NWP370	Perform water industry calculations
BSBSUS201A	Participate in environmentally sustainable work practices
LGAWORK405A	Plan and supervise roadworks
LGAWORK406A	Supervise concrete works

NWP40107 Certificate IV in Water Operations

Modification History

NWP40107 Release 2:	Layout adjusted. Minor editorial changes. Imported units updated.
NWP40107 Release 1:	Primary release.

Description

The Certificate IV in Water Operations supports candidates seeking competency and requiring increasingly specialised technical skills or those who require a broad range of skills.
To achieve this qualification the candidate must demonstrate competency in nine units, comprising two core and seven elective units of competency.

Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

Employability Skills Summary

Qualification code: NWP40107
Qualification title: Certificate IV in Water Operations
The following table contains a summary of the employability skills as identified by the water industry for this qualification. The employability skills facets described here are broad industry requirements that may vary depending on qualification packaging options.

Employability Skill	**Industry/enterprise requirements for this qualification include the following facets**:

Communication	• communicates OHS policies and procedures
	• communicates environmental plans and procedures within the workplace
	• communicates effectively with customers
	• interprets a range of complex and technical documents, including relevant:
	  • regulatory, legislative, licensing and organisational requirements
	  • codes and standards
	  • specifications
	  • organisational policies
	• understands relevant definitions, terminology, symbols and language
	• discusses organisational issues
	• reports and records hazards and risks
	• participates in ensuring compliance with standards, regulations and policies
	• maintains and checks records and documents
	• communicates effectively with a range of relevant parties
	• articulates complex ideas clearly
	• analyses and evaluates reports and reference materials

Teamwork	• demonstrates leadership within work teams • conducts briefing with team members • collaboratively and effectively implements operational plans • works collaboratively with relevant stakeholders • supervises and checks others' work, monitors work processes and ensures safe work practices • verifies competence of operators undertaking inspections • coordinates a range of team members and activities • ensures that relevant workforce participates in reviews of environmental procedures and prepares reports according to organisational procedures

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
	• relates positively to fellow workers and the management team
Problem solving	• responds effectively to hazards, risks and emergencies • oversees processes within the water industry to ensure the effective and continuous provision of water services • analyses problems and applies appropriate remedial solutions • performs various calculations to provide data for the analysis and development of options and solutions • monitors assets to ensure performance meets specifications in management plans • identifies and rectifies faults • identifies links between operational problems and maintenance activities • identifies hazards and develops appropriate responses to control and mitigate risks in accordance with regulations and legislation
Initiative and enterprise	• proactively implements effective customer service strategies and tactics • identifies risks and hazards • identifies typical faults and problems and takes necessary remedial action • investigates breaches of contracts • develops and checks contingency plans for new types of industries or processes • establishes processes to identify and report non-compliance • identifies opportunities for improved water management
Planning and organising	• participates in effective implementation of organisation's operational plans • schedules activities to meet current and potential problems • participates in and coordinates elements of effective delivery of services • participates in the provision of appropriate information to inform workplace processes • monitors and assesses relevant water tests • contributes to the management of workplace contracts
Self management	• manages own performance to ensure required levels of service standards, work quality and professional competence • manages work priorities • monitors assets to ensure that progress follows plans • uses feedback to improve own performance

Employability Skill	Industry/enterprise requirements for this qualification include the following facets:
Learning	• seeks feedback on personal performance • uses information effectively to improve work performance • learns from colleagues as part of effective teamwork
Technology	• reads meters • monitors water management equipment • uses relevant computer equipment • maintains and understands capabilities and limitations of plant, equipment and tools • uses technology to improve efficiency and effectiveness of managing work

The high proportion of electives required by this qualification means that the facets of the above employability skills are representative of the water industry in general and may not reflect specific job roles. Learning and assessment strategies for this qualification should be based on the requirements as identified in units of competency that meet packaging guidelines. This table is a summary of employability skills that are typical of this qualification and should not be interpreted as definitive.

Packaging Rules

9 units of competency are required for this qualification including:

- 2 core units
- 7 elective units

Choose a minimum of 3 units from the list below.
Choose the remaining 4 units from either the list below, **or** elsewhere in this Training Package, **or** another endorsed Training Package **or** Accredited Course, as long as:

- no more than two water industry specific elective units (coded NWP) are chosen from the Certificate III in this Training Package;
- no more than three units are chosen from the Diploma in this Training Package;
- no more than three units are chosen from a Certificate IV or Diploma from another endorsed Training Package or Accredited Course.

All elective units selected from outside this qualification must be selected from qualifications aligned to AQF level 3, 4, or 5.
Elective units selected must not duplicate content already covered by other units in this qualification.
Specialisations are possible within this qualification. Details and examples of specialisation rules are included under the Industry Specialisation (see "Qualifications Framework" on page **Error! Bookmark not defined.**) heading in the Qualification Framework section of this Training Package.

Core	
LGACOM405B	Implement and monitor the organisation's OHS policies, procedures and programs within the work group
NWP401B	Coordinate and monitor the application of environmental plans and procedures
Electives	
NWP219A	Work safely in confined spaces
NWP403A	Investigate and plan the optimisation of potable water distribution systems
NWP404A	Apply principles of chemistry to water systems and processes
NWP406A	Investigate and plan the optimisation of granular media filtration processes
NWP407A	Investigate and plan the optimisation of dissolved air flotation processes
NWP408A	Investigate and plan the optimisation of sedimentation and clarification processes
NWP409A	Investigate and plan to optimise the operation of chemical addition processes
NWP410C	Coordinate and monitor asset construction and maintenance
NWP411A	Select treatment requirements for waterborne microorganisms
NWP412A	Investigate and plan the optimisation of activated sludge processes
NWP413A	Investigate and plan the optimisation of anaerobic treatment processes
NWP414A	Select strategies to control microbial impact on wastewater treatment processes
NWP415B	Coordinate and monitor surface water systems
NWP416B	Coordinate and monitor water storage catchment activities
NWP417B	Coordinate and monitor groundwater system usage
NWP418B	Coordinate and monitor bulkwater system operations
NWP419B	Coordinate and monitor river system usage
NWP420A	Install, operate and maintain hydrologic instruments and equipment
NWP421A	Collect, measure and process hydrometric stream discharge gauging
NWP425B	Coordinate and monitor the operation of irrigation delivery systems

NWP427B	Coordinate and monitor the operation of drainage systems
NWP428B	Coordinate and monitor the operation of wastewater collection systems
NWP429B	Coordinate, implement and report trade waste monitoring procedures
NWP430A	Evaluate, implement and monitor standard low-risk trade waste discharge approvals
NWP431A	Investigate, rectify and report on trade waste incidents
NWP432A	Contribute to the continuous improvement of quality systems
NWP440A	Supervise conduit inspection and reporting
AHCLPW306A	Undertake sampling and testing of water
BSBMGT402A	Implement operational plan
BSBSUS301A	Implement and monitor environmentally sustainable work practices
BSBWOR404B	Develop work priorities
LGAWORK404A	Manage a civil works project
MEM30027A	Prepare basic programs for programmable logic controllers
MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area
PSPPROC414A	Manage contracts

PMA30113 Certificate III in Process Plant Operations

Modification History

Release 3 - inclusion of 3 new electives in Group C.

Description

The PMA30113 Certificate III in Process Plant Operations has been developed as a technical qualification for use in the PMA08 Chemical, Hydrocarbons and Refining Training Package.

Job roles/employment outcomes
The PMA30113 Certificate III in Process Plant Operation is intended for advanced operators and operations technicians who use production equipment to directly produce products. At this level, operators/technicians would undertake more advanced operations, typically of integrated plant units in accordance with the operating procedures, and would apply their knowledge to anticipate problems. They would be expected to solve a range of foreseen and unforeseen problems, using product and process knowledge to develop solutions to problems which do not have a known solution, or a solution recorded in the procedures.

The MSA30107Certificate III in Process Manufacturing is available for production support employees at this level and should be used where the job requirements do not allow for the development of competency in sufficient technical units of competency. The Certificate III in MSA31108 Competitive Manufacturing is available for employees at this level where the job requires sophisticated manufacturing practice skills rather than technical skills.

Application
This qualification is typically used to develop employees performing an advanced operational role that includes an ability to work independently and conduct technical problem solving according to the needs of the work in the chemical, hydrocarbons or refining sectors.

Operators may specialise in one of the following areas:

- fine chemicals
- heavy chemicals
- petrochemicals
- polymer manufacture
- hydrocarbon extraction
- hydrocarbon transmission
- hydrocarbon processing/refining
- minerals processing/refining
- metalliferous processing/refining
- metals smelting/processing
- other related areas.

Specialisations must be reflected by the selection of units identified for specialised streams.

Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship or Apprenticeship arrangement.

Pathways Information

Pathways into the qualification
This qualification may be accessed by direct entry. Credit may be granted towards this qualification by those who have completed MSA20107 Certificate II in Process Manufacturing, PMA20113 Certificate II in Process Plant Operations or other relevant qualifications. Credit for this qualification may also include units contained within relevant skill sets.

Pathways from the qualification
Further training pathways from this qualification include PMA40110 Certificate IV in Process Plant Technology, MSA41108 Certificate IV in Competitive Manufacturing or MSA40108 Certificate IV in Manufacturing Technology or other relevant qualifications.

Additional qualification advice
An industry specialisation should include a range of units (typically production or other units relevant to the specialisation) that focus more on the industry speciality than a generic qualification.

MSA30107 Certificate III in Process Manufacturing, in the MSA07 Manufacturing Training Package is available for production support employees at this level and should be used where the job requirements do not allow for the development of competency in sufficient technical units of competency.

MSA31108 Certificate III in Competitive Manufacturing is available for employees at this level who already possess technical skills and who require additional manufacturing practice skills above those available in this qualification.

Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, in some jurisdictions some units of competency in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

Entry Requirements

Not applicable.

Employability Skills Summary

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• maintain communication about multiple subjects and with multiple audiences • complete incident and other reports • use technical information and manufacturer's information • collect, analyse and organise information • communicate ideas and information • use and contribute to workplace documentation • maintain workplace records
Teamwork	• identify and describe own role and role of other • work within a team • resolve conflicts between team members • teamwork strategies
Problem-solving	• recognise a problem or a potential problem in a plant unit, system or area • determine problems needing priority action • refer problems outside area of responsibility to appropriate person, with possible causes • identify appropriate theory base for problem • seek information and assistance as required to solve problems • solve problems within area of responsibility for plant unit, system or area • follow through items initiated until final resolution has occurred • identify and isolate faults in equipment • use a range of formal problem solving techniques
Initiative and enterprise	• identify the most appropriate process conditions for unit, system or area • make adjustments to improve performance of unit, system or area • anticipate the impact of the process on the product and other process areas • determine problems needing action • recommend required action • report problems outside area of responsibility • distinguish between causes of faults

Planning and organising	• priortise actions to achieve required outcomes for unit, system or area • plan own work requirements and assist others to plan theirs • plan scope of unit, system or plant area checks • plan and organise activities • identify tasks to achieve team goals • organise allocation of tasks • monitor completion of allocated tasks • develop and adjust a production schedule
Self-management	• plan own work requirements from production requests • operate within appropriate time constraints and work standards • select and use appropriate equipment, materials, processes and procedures • plan to ensure effective production • apply workplace procedures • identify resource requirements, document and monitor • recognise limitations and seek timely advice
Learning	• ask questions to gain information • identify sources of information to expand knowledge and understanding • participate in improvement procedures • participate in development of continuous improvement strategies • helps others develop competency
Technology	• operation and adjustment of unit, system or plant area processes • start up and shut down unit, system or plant area • set up unit, equipment or plant area • monitor product/process quality • function and operating principles of unit, system or plant area • maintain workplace records

Packaging Rules

To be awarded the PMA30113 Certificate III in Process Plant Operations competency must be achieved in **twenty one (21)** units of competency chosen:
five (5) core units of competency
sixteen (16) elective units of competency as specified below.
Note Where prerequisite units apply, these must be considered in the total number of units chosen.

Core units of competency

Unit code	**Unit title**
MSAENV272B	Participate in environmentally sustainable work practices
MSAPMOHS110A	Follow emergency response procedures
MSAPMOHS200A	Work safely
MSAPMSUP100A	Apply workplace procedures
MSAPMSUP102A	Communicate in the workplace

Elective units of competency

Select **sixteen (16)** units as specified below:
A minimum of **two (2)** from Group A
The remainder may be chosen from Groups A, B and C (with a maximum of **twelve (12)** from Group C) to bring the total number of electives to **sixteen (16)**.

Note that up to **four (4)** of the elective units can be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Groups B and C.

Group A – Specialist electives

Unit code	Unit title	Prerequisites
PMAOMIR305A	Operate panel during an emergency	*
PMAOPS300B	Operate a production unit	
PMAOPS301B	Produce products by distillation	*
PMAOPS302B	Operate reactors and reaction equipment	
PMAOPS303B	Operate furnaces to induce reaction	
PMAOPS304B	Operate and monitor compressor systems and equipment	*
PMAOPS305B	Operate process control systems	
PMAOPS307B	Transfer bulk fluids into/out of storage facility	*
PMAOPS308B	Organise storage and logistics of general materials	
PMAOPS309B	Operate particulates handling/ storage equipment	
PMAOPS312B	Undertake ship loading/unloading operations	
PMAOPS319A	Adjust batch	
PMAOPS320B	Conduct artificial lift	
PMAOPS321B	Undertake well management	
PMAOPS323A	Operate and monitor heating furnace	
PMAOPS324A	Operate a gas turbine	
PMAOPS325B	Generate electrical power	
PMAOPS326B	Produce product using gas absorption	
PMAOPS327B	Produce product using fixed bed dehydration	
PMAOPS329B	Produce product using liquid extraction	
PMAOPS330B	Communicate pipeline control centre operations	
PMAOPS333A	Operate wells and gathering systems	
PMAOPS335A	Conduct pipeline pigging	
PMAOPS340B	Operate cryogenic processes	
PMAOPS350B	Match and adjust colour	
PMAOPS390B	Operate a biochemical process	
PMAOPS360A	Operate a metalliferous kiln/furnace	

PMAOPS361A	Operate a smelting furnace	
PMAOPS362A	Operate a blast furnace	
PMAOPS364A	Operate an electrochemical process	
PMAOPS365A	Operate pelletising equipment	
PMAOPS366A	Operate sintering equipment	
PMAOPS460A	Monitor and operate tailings management facilities	
FDFPHGMP3A	Monitor the implementation of Good Manufacturing Practice procedures	
MEM07033B	Operate and monitor basic boiler	
MEM07034A	Operate and monitor intermediate class boiler	*
MEM18011C	Shutdown and isolate machine	
NWP357B	Monitor, operate and control reverse osmosis and nano-filtration processes	
UEPOPS340B	Operate and monitor a steam turbine	

One (1) unit may be chosen from Group A in PMA40113 Certificate IV in Process Plant Technology.

Group B

Unit code	Unit title	Prerequisites
MEM09003B	Prepare basic engineering drawing	*
MSAPMOHS300A	Facilitate the implementation of OHS for a work group	*
MSAPMPER300C	Issue work permits	*
MSAPMSUP300A	Identify and implement opportunities to maximise production efficiencies	*
MSAPMSUP301A	Apply HACCP to the workplace	
MSAPMSUP303A	Identify equipment faults	
MSAPMSUP309A	Maintain and organise workplace records	
MSAPMSUP310A	Contribute to development of plant documentation	
MSAPMSUP330A	Develop and adjust a production schedule	
MSAPMSUP382A	Provide coaching/mentoring in the workplace	
MSAPMSUP383A	Facilitate a team	
MSAPMSUP390A	Use structured problem solving tools	
PMAOHS310B	Investigate incidents	
PMAOHS311B	Lead emergency teams	
PMAOHS312B	Command the operation of survival craft	*
PMAOHS320C	Provide advanced first aid response	*
PMAOHS321B	Provide first aid response in remote and/or isolated area	*
PMAOMIR301B	Undertake initial rescue	*
PMAOMIR302B	Respond to a helideck incident	
PMAOMIR317B	Facilitate search and rescue operations	
PMAOMIR320B	Manage incident response information	
PMAOMIR321B	Manage communication systems during an incident	
PMAOMIR346B	Assess and secure an incident site	
PMASUP305A	Operate Offshore Cranes	
PMASUP311A	Operate communications hub	

PMASUP341B	Monitor and maintain instrument and control systems	*
PMASUP342B	Monitor and maintain electrical systems	*
PMASUP343B	Monitor and maintain cathodic protection systems	
PMASUP344B	Monitor and control repairs and modifications on operational pipe	
PMASUP345A	Monitor vibration	
PMASUP346A	Control corrosion	
PMASUP347A	Undertake corrosion inspection in a petrochemical environment	
MSL973001A	Perform basic tests	
PSPGOV308B	Work effectively with diversity	
TAEASS301B	Contribute to assessment	
TAEDEL301A	Provide work skill instruction	

Up to **one (1)** relevant unit may be chosen from this Training Package, other endorsed Training Packages and accredited courses where the unit is available at Certificates III or IV.

Group C

Unit code	Unit title	Prerequisites
FDFPH1001A	Follow work procedures to maintain Good Manufacturing Practice	
FDFPH2001A	Apply Good Manufacturing Practice procedures	
MEM04001B	Operate melting furnaces	
MEM05012C	Perform routine manual metal arc welding	
MEM09002B	Interpret technical drawing	
MEM11011B	Undertake manual handling	
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	
MSAPMOHS100A	Follow OHS procedures	
MSAPMOHS205A	Control minor incidents	
MSAPMOHS210B	Undertake first response to non-fire incidents	
MSAPMOHS212A	Undertake first response to fire incidents	
MSAPMOHS216A	Operate breathing apparatus	
MSAPMOHS217A	Gas test atmospheres	
MSAPMOHS220A	Provide initial first aid response	
MSAPMOPS100A	Use equipment	
MSAPMOPS102A	Perform tasks to support production	
MSAPMOPS200A	Operate equipment	
MSAPMOPS212A	Use enterprise computers or data systems	
MSAPMPER200C	Work in accordance with an issued permit	
MSAPMPER201A	Monitor and control work permits	
MSAPMPER202A	Observe permit work	*
MSAPMPER205C	Enter confined space	*
MSAPMSUP101A	Clean workplace or equipment	
MSAPMSUP106A	Work in a team	
MSAPMSUP172A	Identify and minimise environmental hazards	
MSAPMSUP200A	Achieve work outcomes	

MSAPMSUP201A	Receive or despatch goods	
MSAPMSUP204A	Pack products or materials	
MSAPMSUP205A	Transfer loads	
MSAPMSUP210A	Process and record information	
MSAPMSUP240A	Undertake minor maintenance	
MSAPMSUP280A	Manage conflict at work	
MSAPMSUP291A	Participate in continuous improvement	
MSAPMSUP292A	Sample and test materials and product	
MSL952001A	Collect routine site samples	
MSS402002A	Sustain process improvements	
MSS402030A	Apply cost factors to work practices	
MSS402031A	Interpret product costs in terms of customer requirements	
MSS402040A	Apply 5S procedures	
MSS402050A	Monitor process capability	
MSS402051A	Apply quality standards	
MSS402060A	Use planning software systems in operations	
MSS402080A	Undertake root cause analysis	
MSS402081A	Contribute to the application of a proactive maintenance strategy	
PMAOHS211B	Prepare equipment for emergency response	
PMAOHS213B	Undertake fire control and emergency rescue	
PMAOHS214B	Undertake helicopter safety and escape	
PMAOHS215B	Apply offshore facility abandonment and sea survival procedures	
PMAOHS221B	Maintain first aid supplies and records	
PMAOMIR210B	Control evacuation to muster point	
PMAOPS101C	Read dials and indicators	
PMAOPS105C	Select and prepare materials	
PMAOPS201B	Operate fluid flow equipment	
PMAOPS202B	Operate fluid mixing equipment	

PMAOPS203B	Handle goods	
PMAOPS204B	Use utilities and services	
PMAOPS205B	Operate heat exchangers	
PMAOPS208B	Operate chemical separation equipment	
PMAOPS210B	Operate particulates handling equipment	
PMAOPS211B	Operate manufacturing extruders	
PMAOPS213B	Package product/material	
PMAOPS216B	Operate local control system	
PMAOPS217B	Operate wet milling equipment	
PMAOPS220B	Monitor chemical reactions in the process	
PMAOPS221B	Operate and monitor prime movers	
PMAOPS222B	Operate and monitor pumping systems and equipment	*
PMAOPS223B	Operate and monitor valve systems	
PMAOPS224B	Provide fluids for utilities and support	
PMAOPS226A	Monitor and operate flare systems	
PMAOPS230B	Monitor, operate and maintain pipeline stations and equipment	
PMAOPS231B	Control gas odourisation	
PMAOPS232B	Produce product by filtration	
PMAOPS233A	Monitor wells and gathering systems	
PMAOPS234A	Monitor and operate low pressure compressors	
PMAOPS240B	Store liquids in bulk	
PMAOPS241A	Operate Joule-Thomson effect device	
PMAOPS242A	Moor ships for transfer of bulk processed particulates or fluids	
PMAOPS246A	Operate separation equipment	
PMAOPS247A	Operate powered separation equipment	
PMAOPS260A	Conduct screening operations	
PMAOPS261A	Operate bulk solids loading equipment	
PMAOPS262A	Operate digestion equipment	

PMAOPS263A	Operate leaching equipment	
PMAOPS264A	Operate solvent extraction equipment	
PMAOPS265A	Operate magnetic/electrical separation equipment	
PMAOPS280B	Interpret process plant schematics	
PMAOPS290B	Operate a biotreater	
PMASMELT260B	Form carbon anodes	
PMASMELT261B	Bake carbon anodes	
PMASMELT262B	Clean and strip anode rods	
PMASMELT263B	Spray carbon anodes	
PMASMELT264B	Start up reduction cells	
PMASMELT265B	Operate reduction cells	
PMASMELT266B	Deliver molten metal	
PMASMELT267B	Cast aluminium ingots	
PMASMELT268B	Vertical direct casting	
PMASMELT269A	Operate cell tending equipment	
PMASMELT270A	Supply product from reduction cells	
PMASUP236B	Operate vehicles in the field	
PMASUP237B	Undertake crane, dogging and load transfer operations	
PMASUP241B	Maintain pipeline easements	
PMASUP242B	Monitor pipeline civil works	
PMASUP243B	Monitor and maintain pipeline coatings	
PMASUP244A	Prepare and isolate plant	
PMASUP245A	Break and make flanged joints using hand tools	
PMASUP246A	Disconnect and reconnect non-flared tube fitting joints	
PMC552002C	Operate equipment to blend/mix materials	
PMC552003C	Operate grinding equipment	
PMC552008B	Operate crushing equipment	
PMC562070B	Move materials	

RIIOHS204A	Work safely at heights	
RIIRIS201B	Conduct local risk control	
TLID2010A	Operate a forklift	
UEPOPS319B	Operate and monitor gas production plant	

Up to **three (3)** relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses where those units are available at Certificates II or III.

Custom Content Section

Not applicable.

PMA40113 Certificate IV in Process Plant Technology

Modification History

Release 3 - inclusion of 3 new electives in Group C.

Description

The PMA40113 Certificate IV in Process Plant Technology has been developed as a technical qualification for use in the PMA08 Chemical, Hydrocarbons and Refining Training Package.

Job roles/employment outcomes
The PMA40113 Certificate IV in Process Plant Technology is intended for plant technicians. The technician will typically be involved in solving complex problems which require theoretical knowledge, combined with an understanding of the production process and equipment across the plant.

Application
This qualification is typically used to develop employees performing a technical role that includes an ability to work independently and conduct technical problem solving according to the needs of the work in the manufactured mineral products industries.

Non-technical team leaders, coordinators and supervisors may be better served by a qualification in competitive manufacturing. The MSA41108 Certificate IV in Competitive Manufacturing is available for team leaders at this level where the job requires sophisticated manufacturing practice skills rather than technical skills.

People with this qualification may be expected to work in one of the following sectors:

- fine chemicals
- heavy chemicals
- petrochemicals
- polymer manufacture
- hydrocarbon extraction
- hydrocarbon transmission
- hydrocarbon processing/refining
- minerals processing/refining
- metalliferous processing/refining
- metals smelting/processing
- other related areas.

Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship or Apprenticeship arrangement.

Pathways Information

Pathways into the qualification
This qualification may be accessed by direct entry. Credit may be granted towards this qualification by those who have completed PMA30113 Certificate III in Process Plant Operations, MSA30107 Certificate III in Process Manufacturing, MSA30208 Certificate III in Manufacturing Technology or other relevant qualifications. Credit for this qualification may also include units contained within relevant skill sets.

Pathways from the qualification
Further training pathways from this qualification include PMA50110 Diploma of Process Plant Technology, MSA51108 Diploma of Competitive Manufacturing, MSA50108 Diploma of Manufacturing Technology or other relevant qualifications, including appropriate vocational graduate qualifications.

Additional qualification advice
MSA41108 Certificate IV in Competitive Manufacturing is available for team leaders at this level who already possess technical skills and who require additional manufacturing practice skills above those available in this qualification.

Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, in some jurisdictions some units of competency in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

Entry Requirements

Not applicable.

Employability Skills Summary

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	• maintain communication about multiple subjects and with multiple audiences • complete incident and other reports • communicate technical information • update workplace documentation • maintain workplace records
Teamwork	• identify and describe own role and role of other • assist others identify role • lead team teams either formally or on an ad hoc basis • resolve conflicts between teams
Problem-solving	• recognise persistent problems or those not definable by direct observation • determine problems needing priority action • investigate and analyse problems and potential solutions • work with technical experts to define problems and develop possible solutions • apply appropriate theory base for problem • follow through items initiated until final resolution has occurred • identify and isolate faults in entire plant • use a range of formal problem solving techniques
Initiative and enterprise	• proactive in fine tuning of entire plant • seeks out areas requiring improvement • anticipate the impact of the process on customers and value chain members
Planning and organising	• prioritise actions to achieve required outcomes for plant • plan work requirements for plant • plan plant maintenance or shutdowns/turnarounds • identify tasks to achieve plant goals • allocate tasks • monitor completion of allocated tasks • develop and adjust schedules
Self-management	• plan own work requirements from plant requirements • operate within appropriate time constraints and work standards • select and use appropriate techniques • identify resource requirements, document and monitor • recognise limitations and seek timely advice

Learning	• maintain and develop own competency • assist others to develop their required competencies • lead improvement procedures/strategies
Technology	• improvements to and fine tuning of entire process • start up and shut down planning and coordinating a shut down/start up of plant • solving of problems not directly observable • monitor product/process quality • function and operating principles of unit, system or plant area • maintain workplace records

Packaging Rules

To be awarded the PMA40113 Certificate IV in Process Plant Technology competency must be achieved in **twenty six (26)** units of competency:

- **five (5)** core units of competency
- **twenty one (21)** elective units of competency chosen as specified below.

Note: Where prerequisite units apply, these must be considered in the total number of units chosen.

Core units of competency

Unit code	**Unit title**
MSAENV272B	Participate in environmentally sustainable work practices
MSAPMOHS110A	Follow emergency response procedures
MSAPMOHS200A	Work safely
MSAPMSUP100A	Apply workplace procedures
MSAPMSUP102A	Communicate in the workplace

Elective units of competency

Select **twenty one (21)** units as specified below:

- A minimum of **one (1)** from Group A
- The remainder may be chosen from Groups A, B and C (with a maximum of **eighteen (18)** from Group C) to bring the total number of electives to **twenty one (21).**

Note that up to **five (5)** units can be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Groups B and C.

Group A – Specialist electives

Unit code	**Unit title**	**Prerequisites**
MSAPMOPS400A	Optimise process/plant area	*
MSAPMOPS401A	Trial new process product	
PMAOPS402A	Respond to abnormal process situations	*
PMAOPS405A	Operate complex control systems	
PMAOPS410B	Monitor remote production facilities	
PMAOPS411B	Manage plant shutdown and restart	
PMAOPS433A	Manage wells and gathering systems	
PMAOPS434A	Commission wells and gathering systems	
PMAOPS450B	Solve colour problems	
PMAOPS460A	Monitor and operate tailings management facilities	

One (1) unit may be chosen from Group A in PMA50110 Diploma of Process Plant Technology

Group B

Unit code	Unit title	Prerequisites
MSS403011A	Lead a competitive manufacturing team	
MSS403013A	Lead team culture improvement	
MSS403002A	Ensure process improvements are sustained	
MSS403030A	Improve cost factors in work practices	
MSS403040A	Facilitate and improve implementation of 5S	
MSS403041A	Facilitate breakthough improvements	
MSS403051A	Mistake proof an operational process	
MSS404051A	Undertake process capability improvements	*
MSS405052A	Apply statistics to operational processes	
MSS404060A	Facilitate the use of planning software systems in a work area or team	*
MSS404081A	Undertake proactive maintenance analyses	
MSS404082A	Assist in implementing a proactive maintenance strategy	
MSAENV472B	Implement and monitor environmentally sustainable work practices	
MSAPMOHS400A	Contribute to workplace OHS management system	*
MSAPMOHS401A	Assess risk	
MSAPMOPS404A	Co-ordinate maintenance	
MSAPMOPS405A	Identify problems in fluid power system	
MSAPMOPS406A	Identify problems in electronic control systems	
MSAPMPER400A	Coordinate permit process	*
MSAPMSUP400A	Develop and monitor quality systems	
MSL954001A	Obtain representative samples in accordance with a sampling plan	
PMAOHS420B	Develop first aid procedures and manage resources	
PMAOMIR305A	Operate panel during an emergency	*
PMAOMIR407B	Audit incident preparedness and established response system	
PMAOMIR418B	Coordinate incident response	
PMAOMIR424B	Develop and maintain community relationships	

PMAOMIR430B	Conduct and assess incident exercises	
PMAOMIR444B	Develop incident containment tactics	
PMAOMIR449B	Monitor legal compliance obligations during incidents	
PMASUP410B	Develop plant documentation	
PMASUP420B	Minimise environmental impact of process	
PMASUP432B	Coordinate pipeline projects	
PMASUP440B	Commission/recommission plant	
PMASUP441C	Decommission plant	
PMASUP444A	Plan plant preparation and isolation	
PMASUP445A	Participate in HAZOP studies	*
TAEASS401B	Plan assessment activities and processes	
TAEASS402B	Assess competence	
TAEASS403B	Participate in assessment validation	

Up to **one (1)** relevant unit may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where that unit is available at Certificate IV or Diploma.

Group C

Unit code	Unit title	Prerequisites
FDFPH1001A	Follow work procedures to maintain Good Manufacturing Practice	
FDFPH2001A	Apply Good Manufacturing Practice procedures	
FDFPHGMP3A	Monitor the implementation of Good Manufacturing Practice procedures	
MEM05012C	Perform routine manual metal arc welding	
MEM07033B	Operate and monitor basic boiler	
MEM07034A	Operate and monitor intermediate class boiler	*
MEM09002B	Interpret technical drawing	
MEM09003B	Prepare basic engineering drawing	*
MEM11011B	Undertake manual handling	
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	
MEM18011C	Shutdown and isolate machines/equipment	
MEM40001B	Operate melting furnaces	
MSAPMOHS100A	Follow OHS procedures	
MSAPMOHS205A	Control minor incidents	
MSAPMOHS210B	Undertake first response to non-fire incidents	
MSAPMOHS212A	Undertake first response to fire incidents	
MSAPMOHS216A	Operate breathing apparatus	
MSAPMOHS217A	Gas test atmospheres	
MSAPMOHS220A	Provide initial first aid response	
MSAPMOHS300A	Facilitate the implementation of OHS for a work group	
MSAPMOPS100A	Use equipment	
MSAPMOPS102A	Perform tasks to support production	
MSAPMOPS200A	Operate equipment	
MSAPMOPS212A	Use enterprise computers or data systems	
MSAPMPER200C	Work in accordance with an issued permit	
MSAPMPER201A	Monitor and control work permits	
MSAPMPER202A	Observe permit work	

MSAPMPER205C	Enter confined space	
MSAPMPER300C	Issue work permits	*
MSAPMSUP101A	Clean workplace or equipment	
MSAPMSUP106A	Work in a team	
MSAPMSUP172A	Identify and minimise environmental hazards	
MSAPMSUP200A	Achieve work outcomes	
MSAPMSUP201A	Receive or despatch goods	
MSAPMSUP204A	Pack products or materials	
MSAPMSUP205A	Transfer loads	
MSAPMSUP210A	Process and record information	
MSAPMSUP240A	Undertake minor maintenance	
MSAPMSUP280A	Manage conflict at work	
MSAPMSUP291A	Participate in continuous improvement	
MSAPMSUP292A	Sample and test materials and product	
MSAPMSUP300A	Identify and implement opportunities to maximise production efficiencies	*
MSAPMSUP301A	Apply HACCP to the workplace	
MSAPMSUP303A	Identify equipment faults	
MSAPMSUP309A	Maintain and organise workplace records	
MSAPMSUP310A	Contribute to development of plant documentation	
MSAPMSUP330A	Develop and adjust a production schedule	
MSAPMSUP382A	Provide coaching/mentoring in the workplace	
MSAPMSUP383A	Facilitate a team	
MSAPMSUP390A	Use structured problem solving tools	
MSL952001A	Collect routine site samples	
MSL973001A	Perform basic tests	
MSS402002A	Sustain process improvements	
MSS402030A	Apply cost factors to work practices	
MSS402031A	Interpret product costs in terms of customer requirements	
MSS402040A	Apply 5S procedures	

MSS402050A	Monitor process capability	
MSS402051A	Apply quality standards	
MSS402060A	Use planning software systems in operations	
MSS402080A	Undertake root cause analysis	
MSS402081A	Contribute to the application of a proactive maintenance strategy	
NWP357B	Monitor, operate and control reverse osmosis and nano-filtration processes	
PMAOHS211B	Prepare equipment for emergency response	
PMAOHS213B	Undertake fire control and emergency rescue	
PMAOHS214B	Undertake helicopter safety and escape	
PMAOHS215B	Apply offshore facility abandonment and sea survival procedures	
PMAOHS221B	Maintain first aid supplies and records	
PMAOHS310B	Investigate incidents	
PMAOHS311B	Lead emergency teams	
PMAOHS312B	Command the operation of survival craft	
PMAOHS320C	Provide advanced first aid response	
PMAOHS321B	Provide first aid response in remote and/or isolated area	
PMAOMIR210B	Control evacuation to muster point	
PMAOMIR301B	Undertake initial rescue	
PMAOMIR302B	Respond to a helideck incident	
PMAOMIR317B	Facilitate search and rescue operations	
PMAOMIR320B	Manage incident response information	
PMAOMIR321B	Manage communication systems during an incident	
PMAOMIR346B	Assess and secure an incident site	
PMAOPS101C	Read dials and indicators	
PMAOPS105C	Select and prepare materials	
PMAOPS201B	Operate fluid flow equipment	
PMAOPS202B	Operate fluid mixing equipment	
PMAOPS203B	Handle goods	

PMAOPS204B	Use utilities and services	
PMAOPS205B	Operate heat exchangers	
PMAOPS208B	Operate chemical separation equipment	
PMAOPS210B	Operate particulates handling equipment	
PMAOPS211B	Operate manufacturing extruders	
PMAOPS213B	Package product/material	
PMAOPS216B	Operate local control system	
PMAOPS217B	Operate wet milling equipment	
PMAOPS220B	Monitor chemical reactions in the process	
PMAOPS221B	Operate and monitor prime movers	
PMAOPS222B	Operate and monitor pumping systems and equipment	*
PMAOPS223B	Operate and monitor valve systems	
PMAOPS224B	Provide fluids for utilities and support	
PMAOPS226A	Monitor and operate flare systems	
PMAOPS230B	Monitor, operate and maintain pipeline stations and equipment	
PMAOPS231B	Control gas odourisation	
PMAOPS232B	Produce product by filtration	
PMAOPS233A	Monitor wells and gathering systems	
PMAOPS234A	Monitor and operate low pressure compressors	
PMAOPS240B	Store liquids in bulk	
PMAOPS241A	Operate Joule-Thomson effect device	
PMAOPS242A	Moor ships for transfer of bulk processed particulates or fluids	
PMAOPS246A	Operate separation equipment	
PMAOPS247A	Operate powered separation equipment	
PMAOPS260A	Conduct screening operations	
PMAOPS261A	Operate bulk solids loading equipment	
PMAOPS262A	Operate digestion equipment	
PMAOPS263A	Operate leaching equipment	
PMAOPS264A	Operate solvent extraction equipment	

PMAOPS265A	Operate magnetic/electrical separation equipment	
PMAOPS280B	Interpret process plant schematics	
PMAOPS290B	Operate a biotreater	
PMAOPS300B	Operate a production unit	
PMAOPS301B	Produce products by distillation	*
PMAOPS302B	Operate reactors and reaction equipment	
PMAOPS303B	Operate furnaces to induce reaction	
PMAOPS304B	Operate and monitor compressor systems and equipment	*
PMAOPS305B	Operate process control systems	
PMAOPS307B	Transfer bulk fluids into/out of storage facility	*
PMAOPS308B	Organise storage and logistics of general materials	
PMAOPS309B	Operate particulates handling/ storage equipment	
PMAOPS312B	Undertake ship loading/unloading operations	
PMAOPS319A	Adjust batch	
PMAOPS320B	Conduct artificial lift	
PMAOPS321B	Undertake well management	
PMAOPS323A	Operate and monitor heating furnace	
PMAOPS324A	Operate a gas turbine	
PMAOPS325B	Generate electrical power	
PMAOPS326B	Produce product using gas absorption	
PMAOPS327B	Produce product using fixed bed dehydration	
PMAOPS329B	Produce product using liquid extraction	
PMAOPS330B	Communicate pipeline control centre operations	
PMAOPS333A	Operate wells and gathering systems	
PMAOPS335A	Conduct pipeline pigging	
PMAOPS340B	Operate cryogenic processes	
PMAOPS350B	Match and adjust colour	
PMAOPS360A	Operate a metalliferous kiln/furnace	

PMAOPS361A	Operate a smelting furnace	
PMAOPS362A	Operate a blast furnace	
PMAOPS364A	Operate an electrochemical process	
PMAOPS365A	Operate pelletising equipment	
PMAOPS366A	Operate sintering equipment	
PMAOPS390B	Operate a biochemical process	
PMASMELT260B	Form carbon anodes	
PMASMELT261B	Bake carbon anodes	
PMASMELT262B	Clean and strip anode rods	
PMASMELT263B	Spray carbon anodes	
PMASMELT264B	Start up reduction cells	
PMASMELT265B	Operate reduction cells	
PMASMELT266B	Deliver molten metal	
PMASMELT267B	Cast aluminium ingots	
PMASMELT268B	Vertical direct casting	
PMASMELT269A	Operate cell tending equipment	
PMASMELT270A	Supply product from reduction cells	
PMASUP236B	Operate vehicles in the field	
PMASUP237B	Undertake crane, dogging and load transfer operations	
PMASUP241B	Maintain pipeline easements	
PMASUP242B	Monitor pipeline civil works	
PMASUP243B	Monitor and maintain pipeline coatings	
PMASUP244A	Prepare and isolate plant	
PMASUP245A	Break and make flanged joints using hand tools	
PMASUP246A	Disconnect and reconnect non-flared tube fitting joints	
PMASUP305A	Operate offshore cranes	
PMASUP311A	Operate communications hub	
PMASUP341B	Monitor and maintain instrument and control systems	*
PMASUP342B	Monitor and maintain electrical systems	*

PMASUP343B	Monitor and maintain cathodic protection systems	
PMASUP344B	Monitor and control repairs and modifications on operational pipe	
PMASUP345A	Monitor vibration	
PMASUP346A	Control corrosion	
PMASUP347A	Undertake corrosion inspection in a petrochemical environment	
PMC552002C	Operate equipment to blend/mix materials	
PMC552003C	Operate grinding equipment	
PMC552008B	Operate crushing equipment	
PMC562070B	Move materials	
PSPGOV308B	Work effectively with diversity	
RIIOHS204A	Work safely at heights	
RIIRIS201B	Conduct local risk control	
TAEASS301B	Contribute to assessment	
TAEDEL301A	Provide work skill instruction	
TLID2010A	Operate a forklift	
UEPOPS319B	Operate and monitor gas production plant	
UEPOPS340B	Operate and monitor a steam turbine	

Up to **four (4)** relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses where those units are available at Certificates III and IV.

Custom Content Section

Not applicable.