



Australian Government

Department of Education, Employment and Workplace Relations

PMA08 Chemical, Hydrocarbons and Refining Training Package

Release: 2.1

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Modification History

Version Modification History

Version	Release Date	Comments
2.1	January 2011	<p>Minor corrections to unit listings in qualifications re errors in unit version codes and prerequisites listed, as below:</p> <ul style="list-style-type: none"> Prerequisites listed corrected in qualifications for: MEM07034, PMAOPS222B, PMAOPS301B, PMAOPS402A, PMASUP445A. Version codes corrected in qualifications for MSAPMOHS210B, MSAPMSUP200A, PMAOMIR210B, MSAPMSUP300A, MSASUP441C. <p>Non-existent unit removed from unit list in PMA60108 (MSACMT672A).</p> <p>Error in PC3.1 in PMAOHS311A corrected to include "control" (control/extinguishing as in PC1.3):</p> <p><i>3.1 Initiate control/extinguishing responses</i></p>
2	October 2010	<p>Six new units of competency included as electives in PMA20108, PMA30108 and PMA40108.</p> <p>ISC updates to all qualifications – superseded imported units replaced and all qualifications adjusted for flexibility rules.</p>
1.1	July 2010	<p>ISC updates to PMA20108 to comply with flexibility rules – one unit added to importation allowance.</p>
1	27 August 2008	<p>Primary release, replacing PMA02</p>

PMA08 Version 2

New PMA units of competency

PMAOPS233A	Monitor wells and gathering systems	New to PMA08v2
PMAOPS234A	Monitor and operate low pressure compressors	New to PMA08v2
PMAOPS241A	Operate Joule-Thomson effect device	New to PMA08v2
PMAOPS280B	Interpret process plant schematics	Equivalent outcome. Clarified wording
PMAOPS333A	Operate wells and gathering systems	New to PMA08v2
PMAOPS433A	Manage wells and gathering systems	New to PMA08v2
PMAOPS434A	Commission wells and gathering systems	New to PMA08v2

Revised imported units for confined space entry

MSAPMPER200C	Work in accordance with an issued permit	Equivalent outcome. Updated to reflect changes in MSAPER205C
MSAPMPER205C	Enter confined space	Equivalent outcome. Updated to reflect changes to Australian Standard
MSAPMPER300C	Issue work permits	Equivalent outcome. Updated to reflect changes in MSAPER205C

Imprint

PMA08 Chemical, Hydrocarbons and Refining Training Package

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Preliminary Information

Important Note to Users

Training Packages are not static documents; they are amended periodically to reflect the latest industry practices and are version controlled. It is essential that the latest version is always used.

Check the version number before commencing training or assessment

This Training Package is Version 2.1 - check whether this is the latest version by going to the National Training Information Service (www.ntis.gov.au) and locating information about the Training Package. Alternatively, contact Manufacturing Industry Skills Council at <http://www.mskills.com.au> to confirm the latest version number.

Explanation of version number conventions

The primary release Training Package is Version 1. When changes are made to a Training Package, sometimes the version number is changed and sometimes it is not, depending on the extent of the change. When a Training Package is reviewed it is considered to be a new Training Package for the purposes of version control, and is Version 1. Do not confuse the version number with the Training Packages national code (which remains the same during its period of endorsement).

Summary of AQF qualifications in this Training Package

Qualification Code	Title
PMA20108	Certificate II in Process Plant Operations
PMA30108	Certificate III in Process Plant Operations
PMA40108	Certificate IV in Process Plant Technology
PMA50108	Diploma of Process Plant Technology
PMA60108	Advanced Diploma of Process Plant Technology
PMA70108	Vocational Graduate Certificate in Surface Coating Technology

Units of competency in this Training Package and their prerequisites

Code	Title	Prerequisite
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PMAOHS211 B	Prepare equipment for emergency response	None
PMAOHS213 B	Undertake fire control and emergency rescue	None
PMAOHS214 B	Undertake helicopter safety and escape	None
PMAOHS215 B	Apply offshore facility abandonment and sea survival procedures	None
PMAOHS221 B	Maintain First Aid supplies and records	None
PMAOHS310 B	Investigate incidents	None
PMAOHS311 B	Lead emergency teams	None
PMAOHS312 B	Command the operation of survival craft	
PMAOHS320 C	Provide advanced First Aid response	
PMAOHS321 B	Provide First Aid response in remote and/or isolated area	
PMAOHS420 B	Develop First Aid procedures and manage resources	None
PMAOHS502 B	Contribute to safety case	None
PMAOHS511 A	Manage emergency incidents	PMAOMIR320 B
PMAOMIR210 B	Control evacuation to muster point	None
PMAOMIR301 B	Undertake initial rescue	
PMAOMIR302 B	Respond to a helideck incident	None
PMAOMIR317 B	Facilitate search and rescue operations	None
PMAOMIR320 B	Manage incident response information	None
PMAOMIR321 B	Manage communication systems during an incident	None

PMAOMIR346 B	Assess and secure an incident site	None
PMAOMIR407 B	Audit incident preparedness and established response system	None
PMAOMIR418 B	Coordinate incident response	None
PMAOMIR424 B	Develop and maintain community relationships	None
PMAOMIR430 B	Conduct and assess incident exercises	None
PMAOMIR444 B	Develop incident containment tactics	None
PMAOMIR449 B	Monitor legal compliance obligations during incidents	None
PMAOMIR512 B	Establish incident response preparedness and response systems	None
PMAOMIR523 B	Manage corporate media requirements in a crisis	None
PMAOMIR575 B	Coordinate welfare support activities in response to an incident	None
PMAOMIR622 B	Build partnerships to improve incident response capacity	None
PMAOMIR650 B	Manage a crisis	None
PMAOPS101C	Read dials and indicators	None
PMAOPS105C	Select and prepare materials	None
PMAOPS201B	Operate fluid flow equipment	None
PMAOPS202B	Operate fluid mixing equipment	None
PMAOPS203B	Handle goods	None
PMAOPS204B	Use utilities and services	None
PMAOPS205B	Operate heat exchangers	None
PMAOPS206B	Operate separation equipment	None
PMAOPS207B	Operate powered separation equipment	None
PMAOPS208B	Operate chemical separation equipment	None
PMAOPS210B	Operate particulates handling equipment	None
PMAOPS211B	Operate manufacturing extruders	None

PMAOPS213B	Package product/material	None
PMAOPS216B	Operate local control system	None
PMAOPS217B	Operate wet milling equipment	None
PMAOPS220B	Monitor chemical reactions in the process	None
PMAOPS221B	Operate and monitor prime movers	None
PMAOPS222B	Operate and monitor pumping systems and equipment	None
PMAOPS223B	Operate and monitor valve systems	None
PMAOPS224B	Provide fluids for utilities and support	None
PMAOPS230B	Monitor, operate and maintain pipeline stations and equipment	None
PMAOPS231B	Control gas odourisation	None
PMAOPS232B	Produce product by filtration	None
PMAOPS233A	Monitor wells and gathering systems	None
PMAOPS234A	Monitor and operate low pressure compressors	None
PMAOPS240B	Store liquids in bulk	None
PMAOPS241A	Operate Joule-Thomson effect device	None
PMAOPS280B	Interpret process plant schematics	None
PMAOPS290B	Operate a biotreater	None
PMAOPS300B	Operate a production unit	None
PMAOPS301B	Produce product by distillation	None
PMAOPS302B	Operate reactors and reaction equipment	None
PMAOPS303B	Operate furnaces to induce reaction	None
PMAOPS304B	Operate and monitor compressor systems and equipment	None
PMAOPS305B	Operate process control systems	None
PMAOPS307B	Transfer bulk fluids into/out of storage facility	PMAOPS201B
PMAOPS308B	Organise storage and logistics of general materials	None
PMAOPS309B	Operate particulates handling/ storage equipment	None
PMAOPS312B	Undertake ship loading/unloading operations	None
PMAOPS319A	Adjust batch	None
PMAOPS320B	Conduct artificial lift	None
PMAOPS321B	Undertake well management	None
PMAOPS323A	Operate and monitor heating furnace	None
PMAOPS324A	Operate a gas turbine	None

PMAOPS325B	Generate electrical power	None
PMAOPS326B	Produce product using gas absorption	None
PMAOPS327B	Produce product using fixed bed dehydration	None
PMAOPS329B	Produce product using liquid extraction	None
PMAOPS330B	Communicate pipeline control centre operations	None
PMAOPS333A	Operate wells and gathering systems	None
PMAOPS335A	Conduct pipeline pigging	None
PMAOPS340B	Operate cryogenic processes	None
PMAOPS350B	Match and adjust colour	None
PMAOPS390B	Operate a biochemical process	None
PMAOPS402A	Respond to abnormal process situations	
PMAOPS405A	Operate complex control systems	None
PMAOPS410B	Monitor remote production facilities	None
PMAOPS411B	Manage plant shutdown and restart	None
PMAOPS433A	Manage wells and gathering systems	None
PMAOPS434A	Commission wells and gathering systems	None
PMAOPS450B	Solve colour problems	None
PMAOPS500A	Optimise production systems	None
PMAOPS501A	Provide operational expertise to a project team	None
PMAOPS505A	Control the process in abnormal situations	None
PMAOPS511B	Determine energy transfer loads	None
PMAOPS512B	Determine mass transfer loads	None
PMAOPS520C	Manage utilities	None
PMAOPS521C	Plan plant shutdown	None
PMAOPS522A	Coordinate plant shut down	None
PMAOPS550B	Develop a colour formulation	(PMAOPS350 B PMAOPS450B)
PMAOPS600C	Modify plant	None
PMAOPS601A	Debottleneck plant	None
PMAOPS751A	Apply physiochemical knowledge to select raw materials for surface coatings	None

PMAOPS752A	Develop a decorative coating	None
PMAOPS753A	Develop a non-decorative coating or ink	None
PMAOPS755A	Provide surface coatings application advice	None
PMASMELT2 60B	Form carbon anodes	None
PMASMELT2 61B	Bake carbon anodes	None
PMASMELT2 62B	Clean and strip anode rods	None
PMASMELT2 63B	Spray carbon anodes	None
PMASMELT2 64B	Start up reduction cells	None
PMASMELT2 65B	Operate reduction cells	None
PMASMELT2 66B	Deliver molten metal	None
PMASMELT2 67B	Cast aluminium ingots	None
PMASMELT2 68B	Vertical direct casting	None
PMASMELT2 69A	Operate cell tending equipment	None
PMASMELT2 70A	Supply product from reduction cells	None
PMASUP236B	Operate vehicles in the field	None
PMASUP237B	Undertake crane, dogging and load transfer operations	None
PMASUP241B	Maintain pipeline easements	None
PMASUP242B	Monitor pipeline civil works	None
PMASUP243B	Monitor and maintain pipeline coatings	None
PMASUP305A	Operate offshore cranes	None
PMASUP311A	Operate communications hub	None
PMASUP341B	Monitor and maintain instrument and control systems	
PMASUP342B	Monitor and maintain electrical systems	
PMASUP343B	Monitor and maintain cathodic protection systems	None
PMASUP344B	Monitor and control repairs and modifications on operational pipe	None

PMASUP345A	Monitor vibration	None
PMASUP346A	Control corrosion	None
PMASUP347A	Undertake corrosion inspection in a petrochemical environment	None
PMASUP410B	Develop plant documentation	None
PMASUP420B	Minimise environmental impact of process	None
PMASUP432B	Coordinate pipeline projects	None
PMASUP440B	Commission/recommission plant	None
PMASUP441C	Decommission plant	None
PMASUP445A	Participate in HAZOP studies	PMAOPS280B
PMASUP520B	Review procedures to minimise environmental impact of process	None
PMASUP540B	Analyse equipment performance	None
PMASUP620B	Manage environmental management system	PMASUP520B

Imported Units of Competency in this Training Package

FDFPHGMP1A	Follow work procedures to maintain Good Manufacturing Practice
FDFPHGMP2B	Implement 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	Shut down and isolate machines/equipment
MSACMC411A	Lead a competitive manufacturing team
MSACMC413A	Lead team culture improvement
MSACMC610A	Manage relationships with non-customer external organisations
MSACMC611A	Manage people relationships
MSACMC612A	Manage workplace learning
MSACMS201A	Sustain process improvements

MSACMS401A	Ensure process improvements are sustained
MSACMT230A	Apply cost factors to work practices
MSACMT231A	Interpret product costs in terms of customer requirements
MSACMT240A	Apply 5S procedures in a manufacturing environment
MSACMT250A	Monitor process capability
MSACMT251A	Apply quality standards
MSACMT260A	Use planning software systems in manufacturing
MSACMT270A	Use sustainable energy practices
MSACMT271A	Use sustainable environmental practices
MSACMT280A	Undertake root cause analysis
MSACMT281A	Contribute to the application of a proactive maintenance strategy
MSACMT430A	Improve cost factors in work practices
MSACMT440A	Lead 5S in a manufacturing environment
MSACMT441A	Facilitate continuous improvement in manufacturing
MSACMT450A	Undertake process capability improvements
MSACMT451A	Mistake proof a production process
MSACMT452A	Apply statistics to processes in manufacturing
MSACMT460A	Facilitate the use of planning software systems in manufacturing
MSACMT481A	Undertake proactive maintenance analyses
MSACMT482A	Assist in implementing a proactive maintenance strategy
MSACMT630A	Optimise cost of product
MSACMT640A	Manage 5S system in a manufacturing environment
MSACMT641A	Implement a continuous improvement system
MSACMT650A	Determine and improve process capability
MSACMT660A	Develop the application of enterprise systems in manufacturing
MSACMT661A	Determine and establish information collection requirements and processes
MSACMT670A	Develop and manage sustainable energy practices
MSACMT671A	Develop and manage sustainable environmental practices
MSACMT681A	Develop a proactive maintenance strategy
MSAENV272B	Participate in environmentally sustainable work practices
MSAENV472B	Implement and monitor environmentally sustainable work practices
MSAENV672B	Develop workplace policy and procedures for environmental sustainability

MSAPMOHS100 A	Follow OHS procedures
MSAPMOHS110 A	Follow emergency response procedures
MSAPMOHS200 A	Work safely
MSAPMOHS205 A	Control minor incidents
MSAPMOHS210 B	Undertake first response to non-fire incidents
MSAPMOHS212 A	Undertake first response to fire incidents
MSAPMOHS216 A	Operate breathing apparatus
MSAPMOHS217 A	Gas test atmospheres
MSAPMOHS220 A	Provide initial first aid response
MSAPMOHS300 A	Facilitate the implementation of OHS for a work group
MSAPMOHS400 A	Contribute to OHS management system
MSAPMOHS401 A	Assess risk
MSAPMOHS503 A	Maintain the workplace OHS management system
MSAPMOHS510 A	Manage risk
MSAPMOHS601 A	Establish workplace OHS management system
MSAPMOPS100 A	Use equipment
MSAPMOPS102 A	Perform tasks to support production
MSAPMOPS200 A	Operate equipment
MSAPMOPS212 A	Use enterprise computers or data systems

MSAPMOPS400 A	Optimise process/plant area
MSAPMOPS401 A	Trial new process or product
MSAPMOPS404 A	Co-ordinate maintenance
MSAPMOPS405 A	Identify problems in fluid power system
MSAPMOPS406 A	Identify problems in electronic control systems
MSAPMPER200 C	Work in accordance with an issued permit
MSAPMPER201 A	Monitor and control work permits
MSAPMPER202 A	Observe permit work
MSAPMPER205 C	Enter confined space
MSAPMPER300 C	Issue work permits
MSAPMPER400 A	Coordinate permit process
MSAPMSUP100 A	Apply workplace procedures
MSAPMSUP101 A	Clean workplace or equipment
MSAPMSUP102 A	Communicate in the workplace
MSAPMSUP106 A	Work in a team
MSAPMSUP172 A	Identify and minimise environmental hazards
MSAPMSUP200 A	Achieve work outcomes
MSAPMSUP201 A	Receive or despatch goods
MSAPMSUP204 A	Pack products or materials

MSAPMSUP205 A	Transfer loads
MSAPMSUP210 A	Process and record information
MSAPMSUP240 A	Undertake minor maintenance
MSAPMSUP280 A	Manage conflict at work
MSAPMSUP291 A	Participate in continuous improvement
MSAPMSUP292 A	Sample and test materials and product
MSAPMSUP300 A	Identify and implement opportunities to maximise production efficiencies
MSAPMSUP301 A	Apply HACCP to the workplace
MSAPMSUP303 A	Identify equipment faults
MSAPMSUP309 A	Maintain and organise workplace records
MSAPMSUP310 A	Contribute to development of plant documentation
MSAPMSUP330 A	Develop and adjust a production schedule
MSAPMSUP382 A	Provide coaching/mentoring in the workplace
MSAPMSUP383 A	Facilitate a team
MSAPMSUP390 A	Use structured problem solving tools
MSAPMSUP400 A	Develop and monitor quality systems
MSL936001A	Maintain quality system and continuous improvement processes within work/functional area
MSL952001A	Collect routine site samples
MSL954001A	Obtain representative samples in accordance with sampling plan
MSL973001A	Perform basic tests
MSL976003A	Evaluate and select appropriate test methods and/or procedures

MSL977001A	Contribute to the development of products and applications
MSL977002A	Troubleshoot equipment and/or production processes
MSL977004A	Develop or adapt analyses and procedures
PSPGOV308B	Work effectively with diversity
PSPMNGT604B	Manage change
PSPMNGT605B	Manage diversity
RIIOHS204A	Work safely at heights
RIIRIS201A	Conduct local risk control
TAEASS301A	Contribute to assessment
TAEASS401A	Plan assessment activities and processes
TAEASS402A	Assess competence
TAEASS403A	Participate in assessment validation
TAEDEL301A	Provide work skill instruction
TLID1007C	Operate a forklift
UEPOPS319A	Operate and Monitor Gas Production Plant
UEPOPS340A	Operate and Monitor a Steam Turbine

Mapping to Previous Training Package

Mapping to Previous Training Package

PMA08 Mapping of Qualifications

PMA08v2 to PMA08v1

PMA08 V2		PMA08 V1	
Code	Title	Code	Title
PMA20108	Certificate II in Process Plant Operations	PMA20108	Certificate II in Process Plant Operations
PMA30108	Certificate III in Process Plant Operations	PMA30108	Certificate III in Process Plant Operations

PMA40108	Certificate IV in Process Plant Technology	PMA40108	Certificate IV in Process Plant Technology
PMA50108	Diploma of Process Plant Technology	PMA50108	Diploma of Process Plant Technology
PMA60108	Advanced Diploma of Process Plant Technology	PMA60108	Advanced Diploma of Process Plant Technology
PMA70108	Vocational Graduate Certificate in Surface Coating Technology	PMA70108	Vocational Graduate Certificate in Surface Coating Technology

PMA08 to PMA02

PMA08	PMA02
Qualification code and title	Qualification code and title
	PMA10102 Certificate I in Process Plant Skills
	PMA10202 Certificate I in Process Support
PMA20108 Certificate II in Process Plant Operations	PMA20102 Certificate II in Process Plant Operations
	Certificate II in Process Support PMA20202
PMA30108 Certificate III in Process Plant	PMA30102 Certificate III in Process Plant Operations

Operations		
	Certificate III in Process Support PMA30202	N M R m e
PMA40108 Certificate IV in Process Plant Technology	PMA40102 Certificate IV in Process Plant Technology	E
PMA50108 Diploma of Process Plant Technology	PMA50102 Diploma of Process Plant Technology	E P
PMA60108 Advanced Diploma of Process Plant Technology	PMA60102 Advanced Diploma of Process Plant Technology	E
PMA70108 Vocational Graduate Certificate in Surface Coating Technology		N

Mapping of Units of Competency

PMA08v2 to PMA08v1

PMA08v2			PMA08v1	
Unit Code	Title	Prerequisites	Unit Code	Title
			PUAFIR306A	Render hazard
			PUASAR003A	Undertake tec
			PUASAR004A	Undertake ven
			PUASAR005A	Undertake Co Rescue
FDFPHGMP1A	Follow work procedures to maintain Good Manufacturing Practice		FDFPHGMP1A	Follow work p maintain Good Practice
FDFPHMGMP2B	Apply Good Manufacturing Practice procedures		FDFPHGMP2B	Implement Go Practice proce

PMA08v2			PMA08v1	
FDFPHMGMP3A	Monitor and maintain Good Manufacturing Practice procedures		FDFPHGMP3A	Monitor the in Good Manufac procedures
MEM05012C	Perform routine manual metal arc welding		MEM05012C	Perform routin arc welding
MEM07033B	Operate and monitor basic boiler		MEM07033B	Operate and m boiler
MEM07034A	Operate and monitor intermediate class boiler	MEM07033B	MEM07034A	Operate and m intermediate c
MEM09002B	Interpret technical drawing		MEM09002B	Interpret techn
MEM09003B	Prepare basic engineering drawing	MEM09002B	MEM09003B	Prepare basic drawing
MEM11011B	Undertake manual handling		MEM11011B	Undertake ma
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities		MEM16005A	Operate as a te conduct manu engineering or
MEM18011C	Shutdown and isolate machines/equipment		MEM18011C	Shutdown and machines/equi
MSACMC411A	Lead a competitive manufacturing team		MSACMC411A	Lead a compe manufacturing
MSACMC413A	Lead team culture improvement		MSACMC413A	Lead team cul
MSACMC610A	Manage relationships with non-customer external organisations		MSACMC610A	Manage relatio customer exte
MSACMC611A	Manage people relationships		MSACMC611A	Manage peopl
MSACMC612A	Manage workplace learning		MSACMC612A	Manage workp
MSACMS201A	Sustain process improvements		MSACMS201A	Sustain proces
MSACMS401A	Ensure process improvements are sustained		MSACMS401A	Ensure proces are sustained
MSACMT230A	Apply cost factors to work practices		MSACMT230A	Apply cost fac practices

PMA08v2			PMA08v1	
MSACMT231A	Interpret product costs in terms of customer requirements		MSACMT231A	Interpret product costs in terms of customer requirements
MSACMT240A	Apply 5S procedures in a manufacturing environment		MSACMT240A	Apply 5S procedures in a manufacturing environment
MSACMT250A	Monitor process capability		MSACMT250A	Monitor process capability
MSACMT251A	Apply quality standards		MSACMT251A	Apply quality standards
MSACMT260A	Use planning software systems in manufacturing		MSACMT260A	Use planning software systems in manufacturing
MSACMT270A	Use sustainable energy practices		MSACMT270A	Use sustainable energy practices
MSACMT271A	Use sustainable environmental practices		MSACMT271A	Use sustainable environmental practices
MSACMT280A	Undertake root cause analysis		MSACMT280A	Undertake root cause analysis
MSACMT281A	Contribute to the application of a proactive maintenance strategy		MSACMT281A	Contribute to the application of a proactive maintenance strategy
MSACMT430A	Improve cost factors in work practices		MSACMT430A	Improve cost factors in work practices
MSACMT440A	Lead 5S in a manufacturing environment		MSACMT440A	Lead 5S in a manufacturing environment
MSACMT441A	Facilitate continuous improvement in manufacturing		MSACMT441A	Facilitate continuous improvement in manufacturing
MSACMT450A	Undertake process capability improvements		MSACMT450A	Undertake process capability improvements
MSACMT451A	Mistake proof a production process		MSACMT451A	Mistake proof a production process
MSACMT452A	Apply statistics to processes in manufacturing		MSACMT452A	Apply statistics to processes in manufacturing
MSACMT460A	Facilitate the use of planning software systems in manufacturing		MSACMT460A	Facilitate the use of planning software systems in manufacturing
MSACMT481A	Undertake proactive maintenance		MSACMT481A	Undertake proactive maintenance

PMA08v2			PMA08v1	
	analyses			maintenance a
MSACMT482A	Assist in implementing a proactive maintenance strategy		MSACMT482A	Assist in imple proactive main
MSACMT630A	Optimise cost of product		MSACMT630A	Optimise cost
MSACMT640A	Manage 5S system in a manufacturing environment		MSACMT640A	Manage 5S sy manufacturing
MSACMT641A	Implement a continuous improvement system		MSACMT641A	Implement a c improvement
MSACMT650A	Determine and improve process capability		MSACMT650A	Determine and capability
MSACMT660A	Develop the application of enterprise systems in manufacturing		MSACMT660A	Develop the ap enterprise syst manufacturing
MSACMT661A	Determine and establish information collection requirements and processes		MSACMT661A	Determine and information co requirements a
MSACMT670A	Develop and manage sustainable energy practices		MSACMT670A	Develop and m sustainable en
MSACMT671A	Develop and manage sustainable environmental practices		MSACMT671A	Develop and m sustainable en practices
MSACMT672A	Develop workplace policy and procedures for sustainability		MSACMT672A	Develop work procedures for
MSACMT681A	Develop a proactive maintenance strategy		MSACMT681A	Develop a pro maintenance s
MSAENV272B	Participate in environmentally sustainable work practices		MSAENV272A	Participate in sustainable wo
MSAENV472B	Implement and monitor environmentally sustainable work practices		MSAENV472A	Implement and environmental work practices
MSAENV672B	Develop workplace policy and procedures for environmental		MSAENV672A	Develop work procedures for

PMA08v2			PMA08v1	
	sustainability			
MSAPMOHS10 0A	Follow OHS procedures		MSAPMOHS100 A	Follow OHS p
MSAPMOHS11 0A	Follow emergency response procedures		MSAPMOHS110 A	Follow emerg procedures
MSAPMOHS20 0A	Work safely		MSAPMOHS200 A	Work safely
MSAPMOHS20 5A	Control minor incidents		MSAPMOHS205 A	Control minor
MSAPMOHS21 0B	Undertake first response to non-fire incidents		MSAPMOHS210 B	Undertake first fire incidents
MSAPMOHS21 2A	Undertake first response to fire incidents		MSAPMOHS212 A	Undertake first incidents
MSAPMOHS21 6A	Operate breathing apparatus		MSAPMOHS216 A	Operate breath
MSAPMOHS21 7A	Gas test atmospheres		MSAPMOHS217 A	Gas test atmos
MSAPMOHS22 0A	Provide initial first aid response		MSAPMOHS220 A	Provide initial
MSAPMOHS30 0A	Facilitate the implementation of OHS for a work group		MSAPMOHS300 A	Facilitate the i OHS for a wor
MSAPMOHS40 0A	Contribute to workplace OHS management system		MSAPMOHS400 A	Contribute to management s
MSAPMOHS40 1A	Assess risk		MSAPMOHS401 A	Assess risk
MSAPMOHS50 3A	Maintain the workplace OHS management system		MSAPMOHS503 A	Maintain the v management s
MSAPMOHS51 0A	Manage risk		MSAPMOHS510 A	Manage risk
MSAPMOHS60 1A	Establish workplace OHS management system		MSAPMOHS601 A	Establish worl management s

PMA08v2			PMA08v1	
MSAPMOPS100A	Use equipment		MSAPMOPS100A	Use equipment
MSAPMOPS102A	Perform tasks to support production		MSAPMOPS102A	Perform tasks to support production
MSAPMOPS200A	Operate equipment		MSAPMOPS200A	Operate equipment
MSAPMOPS212A	Use enterprise computers or data systems		MSAPMOPS212A	Use enterprise computers or data systems
MSAPMOPS400A	Optimise process/plant area		MSAPMOPS400A	Optimise process/plant area
MSAPMOPS401A	Trial new process product		MSAPMOPS401A	Trial new process product
MSAPMOPS404A	Co-ordinate maintenance		MSAPMOPS404A	Co-ordinate maintenance
MSAPMOPS405A	Identify problems in fluid power system		MSAPMOPS405A	Identify problems in fluid power system
MSAPMOPS406A	Identify problems in electronic control systems		MSAPMOPS406A	Identify problems in electronic control systems
MSAPMPER200C	Work in accordance with an issued permit		MSAPMPER200B	Work in accordance with an issued permit
MSAPMPER201A	Monitor and control work permits		MSAPMPER201A	Monitor and control work permits
MSAPMPER202A	Observe permit work		MSAPMPER202A	Observe permit work
MSAPMPER205C	Enter confined space		MSAPMPER205B	Enter confined space
MSAPMPER300C	Issue work permits	RIIRIS201A	MSAPMPER300B	Issue work permits
MSAPMPER400A	Coordinate permit process		MSAPMPER400A	Coordinate permit process
MSAPMSUP100A	Apply workplace procedures		MSAPMSUP100A	Apply workplace procedures

PMA08v2			PMA08v1	
MSAPMSUP10 1A	Clean workplace or equipment		MSAPMSUP101A	Clean workpla
MSAPMSUP10 2A	Communicate in the workplace		MSAPMSUP102A	Communicate
MSAPMSUP10 6A	Work in a team		MSAPMSUP106A	Work in a team
MSAPMSUP17 2A	Identify and minimise environmental hazards		MSAPMSUP172A	Identify and m environmental
MSAPMSUP20 0A	Achieve work outcomes		MSAPMSUP200A	Achieve work
MSAPMSUP20 1A	Receive or despatch goods		MSAPMSUP201A	Receive or des
MSAPMSUP20 4A	Pack products or materials		MSAPMSUP204A	Pack products
MSAPMSUP20 5A	Transfer loads		MSAPMSUP205A	Transfer loads
MSAPMSUP21 0A	Process and record information		MSAPMSUP210A	Process and re
MSAPMSUP24 0A	Undertake minor maintenance		MSAPMSUP240A	Undertake min
MSAPMSUP28 0A	Manage conflict at work		MSAPMSUP280A	Manage confl
MSAPMSUP29 1A	Participate in continuous improvement		MSAPMSUP291A	Participate in improvement
MSAPMSUP29 2A	Sample and test materials and product		MSAPMSUP292A	Sample and te product
MSAPMSUP30 0A	Identify and implement opportunities to maximise production efficiencies		MSAPMSUP300A	Identify and in opportunities t production eff
MSAPMSUP30 1A	Apply HACCP to the workplace		MSAPMSUP301A	Apply HACCP
MSAPMSUP30	Identify equipment faults		MSAPMSUP303A	Identify equip

PMA08v2			PMA08v1	
3A				
MSAPMSUP309A	Maintain and organise workplace records		MSAPMSUP309A	Maintain and organise workplace records
MSAPMSUP310A	Contribute to development of plant documentation		MSAPMSUP310A	Contribute to development of plant documentation
MSAPMSUP330A	Develop and adjust a production schedule		MSAPMSUP330A	Develop and adjust a production schedule
MSAPMSUP382A	Provide coaching/mentoring in the workplace		MSAPMSUP382A	Provide coaching/mentoring in the workplace
MSAPMSUP383A	Facilitate a team		MSAPMSUP383A	Facilitate a team
MSAPMSUP390A	Use structured problem solving tools		MSAPMSUP390A	Use structured problem solving tools
MSAPMSUP400A	Develop and monitor quality systems		MSAPMSUP400A	Develop and monitor quality systems
MSL936001A	Maintain quality system and continuous improvement processes within work/functional area		PMLQUAL600B	Maintain quality system and continuous improvement processes within work/functional area
MSL952001A	Collect Routine Site Samples		PMLSAMP200A	Collect Routine Site Samples
MSL954001A	Obtain representative samples in accordance with a sampling plan		PMLSAMP400B	Obtain representative samples in accordance with a sampling plan
MSL973001A	Perform basic tests		PMLTEST300B	Perform basic tests
MSL976003A	Evaluate and select appropriate test methods and procedures		PMLTEST603A	Evaluate and select appropriate test methods and procedures
MSL977001A	Contribute to the development of products and applications	MSL976003A	PMLTEST700B	Contribute to the development of products and applications
MSL977002A	Troubleshoot equipment and production processes	MSL976003A	PMLTEST701B	Troubleshoot equipment and production processes

PMA08v2			PMA08v1	
MSL977004A	Develop or adapt analyses and procedures	MSL976003A	PMLTEST703B	Develop or adapt procedures
PMAOHS211B	Prepare equipment for emergency response		PMAOHS211B	Prepare equipment for emergency response
PMAOHS213B	Undertake fire control and emergency rescue		PMAOHS213B	Undertake fire control and emergency rescue
PMAOHS214B	Undertake helicopter safety and escape		PMAOHS214B	Undertake helicopter safety and escape
PMAOHS215B	Apply offshore facility abandonment and sea survival procedures and practices		PMAOHS215B	Apply offshore facility abandonment and sea survival procedures and practices
PMAOHS221B	Maintain first aid supplies and records		PMAOHS221B	Maintain first aid supplies and records
PMAOHS310B	Investigate incidents		PMAOHS310B	Investigate incidents
PMAOHS311B	Lead emergency teams		PMAOHS311B	Lead emergency teams
PMAOHS312B	Command the operation of survival craft	MSAPMOHS220 A	PMAOHS312B	Command the operation of survival craft
PMAOHS320C	Provide advanced first aid response	MSAPMOHS220 A	PMAOHS320C	Provide advanced first aid response
PMAOHS321B	Provide First Aid response in remote and/or isolated area	MSAPMOHS220 A	PMAOHS321B	Provide First Aid response in remote and/or isolated area
PMAOHS420B	Develop First Aid procedures and manage resources		PMAOHS420B	Develop First Aid procedures and manage resources
PMAOHS502B	Contribute to safety case		PMAOHS502B	Contribute to safety case
PMAOHS511A	Manage emergency incidents	PMAOMIR320B	PMAOHS511A	Manage emergency incidents
PMAOMIR210 B	Control evacuation to muster point		PMAOMIR210B	Control evacuation to muster point
PMAOMIR301 B	Undertake initial rescue	MSAPMOHS216 A MSAPMPER205 C MSAPMOHS220	PMAOMIR301B	Undertake initial rescue

PMA08v2			PMA08v1	
		A MSAPMOHS217 A MSAPMPER200 C		
PMAOMIR302 B	Respond to a helideck incident		PMAOMIR302B	Respond to a helideck incident
PMAOMIR317 B	Facilitate search and rescue operations		PMAOMIR317B	Facilitate search and rescue operations
PMAOMIR320 B	Manage incident response information		PMAOMIR320B	Manage incident response information
PMAOMIR321 B	Manage communication systems during an incident		PMAOMIR321B	Manage communication systems during an incident
PMAOMIR346 B	Assess and secure an incident site		PMAOMIR346B	Assess and secure an incident site
PMAOMIR407 B	Audit incident preparedness and established response system		PMAOMIR407B	Audit incident preparedness and established response system
PMAOMIR418 B	Coordinate incident response		PMAOMIR418B	Coordinate incident response
PMAOMIR424 B	Develop and maintain community relationships		PMAOMIR424B	Develop and maintain community relationships
PMAOMIR430 B	Conduct and assess incident exercises		PMAOMIR430B	Conduct and assess incident exercises
PMAOMIR444 B	Develop incident containment tactics		PMAOMIR444B	Develop incident containment tactics
PMAOMIR449 B	Monitor legal compliance obligations during incidents		PMAOMIR449B	Monitor legal compliance obligations during incidents
PMAOMIR512 B	Establish incident response preparedness and response systems		PMAOMIR512B	Establish incident response preparedness and response systems
PMAOMIR523 B	Manage corporate media requirements in a crisis		PMAOMIR523B	Manage corporate media requirements in a crisis
PMAOMIR575	Coordinate welfare support		PMAOMIR575B	Coordinate welfare support activities in a crisis

PMA08v2			PMA08v1	
B	activities in response to an incident			incident
PMAOMIR622 B	Build partnerships to improve incident response capacity		PMAOMIR622B	Build partners incident respo
PMAOMIR650 B	Manage a crisis		PMAOMIR650B	Manage a crisi
PMAOPS101C	Read dials and indicators		PMAOPS101C	Read dials and
PMAOPS105C	Select and prepare materials		PMAOPS105C	Select and pre
PMAOPS201B	Operate fluid flow equipment		PMAOPS201B	Operate fluid f
PMAOPS202B	Operate fluid mixing equipment		PMAOPS202B	Operate fluid f
PMAOPS203B	Handle goods		PMAOPS203B	Handle goods
PMAOPS204B	Use utilities and services		PMAOPS204B	Use utilities an
PMAOPS205B	Operate heat exchangers		PMAOPS205B	Operate heat e
PMAOPS206B	Operate separation equipment		PMAOPS206B	Operate separa
PMAOPS207B	Operate powered separation equipment		PMAOPS207B	Operate power equipment
PMAOPS208B	Operate chemical separation equipment		PMAOPS208B	Operate chem equipment
PMAOPS210B	Operate particulates handling equipment		PMAOPS210B	Operate partic equipment
PMAOPS211B	Operate manufacturing extruders		PMAOPS211B	Operate manu extruders
PMAOPS213B	Package product/material		PMAOPS213B	Package produ
PMAOPS216B	Operate local control system		PMAOPS216B	Operate local
PMAOPS217B	Operate wet milling equipment		PMAOPS217B	Operate wet m
PMAOPS220B	Monitor chemical reactions in the process		PMAOPS220B	Monitor chem the process
PMAOPS221B	Operate and monitor prime movers		PMAOPS221B	Operate and m movers

PMA08v2			PMA08v1	
PMAOPS222B	Operate and monitor pumping systems and equipment	Co-requisite unit - PMAOPS221B	PMAOPS222B	Operate and m systems and e
PMAOPS223B	Operate and monitor valve systems		PMAOPS223B	Operate and m systems
PMAOPS224B	Provide fluids for utilities and support		PMAOPS224B	Provide fluids support
PMAOPS230B	Monitor, operate and maintain pipeline stations and equipment		PMAOPS230B	Monitor, opera pipeline station
PMAOPS231B	Control gas odourisation		PMAOPS231B	Control gas oc
PMAOPS232B	Produce product by filtration		PMAOPS232B	Produce produ
PMAOPS233A	Monitor wells and gathering systems			
PMAOPS234A	Monitor and operate low pressure compressors			
PMAOPS240B	Store liquids in bulk		PMAOPS240B	Store liquids i
PMAOPS241A	Operate Joule-Thomson effect device			
PMAOPS280B	Interpret process plant schematics		PMAOPS280A	Interpret proce schematics
PMAOPS290B	Operate a biotreater		PMAOPS290B	Operate a biot
PMAOPS300B	Operate a production unit		PMAOPS300B	Operate a prod
PMAOPS301B	Produce products by distillation	PMAOPS201B and Co-requisite unit PMAOPS205B	PMAOPS301B	Produce produ
PMAOPS302B	Operate reactors and reaction equipment		PMAOPS302B	Operate reacto equipment
PMAOPS303B	Operate furnaces to induce reaction		PMAOPS303B	Operate furnac reaction
PMAOPS304B	Operate and monitor compressor	Co-requisite unit	PMAOPS304B	Operate and m

PMA08v2			PMA08v1	
	systems and equipment	- PMAOPS221B		compressor sy equipment
PMAOPS305B	Operate process control systems		PMAOPS305B	Operate proce
PMAOPS307B	Transfer bulk fluids into/out of storage facility	PMAOPS201B	PMAOPS307B	Transfer bulk storage facility
PMAOPS308B	Organise storage and logistics of general materials		PMAOPS308B	Organise stora of general mat
PMAOPS309B	Operate particulates handling/ storage equipment		PMAOPS309B	Operate partic storage equipm
PMAOPS312B	Undertake ship loading/unloading operations		PMAOPS312B	Undertake ship loading/unloa
PMAOPS319A	Adjust batch		PMAOPS319A	Adjust batch
PMAOPS320B	Conduct artificial lift		PMAOPS320B	Conduct artifi
PMAOPS321B	Undertake well management		PMAOPS321B	Undertake we
PMAOPS323A	Operate and monitor heating furnace		PMAOPS323A	Operate and m furnace
PMAOPS324A	Operate a gas turbine		PMAOPS324A	Operate a gas
PMAOPS325B	Generate electrical power		PMAOPS325B	Generate elect
PMAOPS326B	Produce product using gas absorption		PMAOPS326B	Produce produ absorption
PMAOPS327B	Produce product using fixed bed dehydration		PMAOPS327B	Produce produ dehydration
PMAOPS329B	Produce product using liquid extraction		PMAOPS329B	Produce produ extraction
PMAOPS330B	Communicate pipeline control centre operations		PMAOPS330B	Communicate centre operatio
PMAOPS333A	Operate wells and gathering systems			
PMAOPS335A	Conduct pipeline pigging		PMAOPS335A	Conduct pipel

PMA08v2			PMA08v1	
PMAOPS340B	Operate cryogenic processes		PMAOPS340B	Operate cryog
PMAOPS350B	Match and adjust colour		PMAOPS350B	Match and adj
PMAOPS390B	Operate a biochemical process		PMAOPS390B	Operate a bio
PMAOPS402A	Respond to abnormal process situations	MSAPMSUP390A	PMAOPS402A	Respond to ab situations
PMAOPS405A	Operate complex control systems		PMAOPS405A	Operate comp systems
PMAOPS410B	Monitor remote production facilities		PMAOPS410B	Monitor remon facilities
PMAOPS411B	Manage plant shutdown and restart		PMAOPS411B	Manage plant restart
PMAOPS433A	Manage wells and gathering systems			
PMAOPS434A	Commission wells and gathering systems			
PMAOPS450B	Solve colour problems		PMAOPS450B	Solve colour p
PMAOPS500A	Optimise production systems		PMAOPS500A	Optimise prod
PMAOPS501A	Provide operational expertise to a project team		PMAOPS501A	Provide operat a project team
PMAOPS505A	Control the process in abnormal situations		PMAOPS505A	Control the pr situations
PMAOPS511B	Determine energy transfer loads		PMAOPS511B	Determine ene
PMAOPS512B	Determine mass transfer loads		PMAOPS512B	Determine ma
PMAOPS520C	Manage utilities		PMAOPS520C	Manage utiliti
PMAOPS521C	Plan plant shutdown		PMAOPS521C	Plan plant shu
PMAOPS522A	Coordinate plant shut down		PMAOPS522A	Coordinate pla
PMAOPS550B	Develop a colour formulation	PMAOPS350B PMAOPS450B	PMAOPS550B	Develop a col

PMA08v2			PMA08v1	
PMAOPS600C	Modify plant		PMAOPS600C	Modify plant
PMAOPS601A	Debottleneck plant		PMAOPS601A	Debottleneck plant
PMAOPS751A	Use of physiochemical knowledge to select raw materials for surface coatings		PMAOPS751A	Use of physiochemical knowledge to select raw materials for surface coatings
PMAOPS752A	Develop a decorative coating		PMAOPS752A	Develop a decorative coating
PMAOPS753A	Develop a non-decorative coating or ink		PMAOPS753A	Develop a non-decorative coating or ink
PMAOPS755A	Provide surface coatings application advice		PMAOPS755A	Provide surface coatings application advice
PMASMELT260B	Form carbon anodes		PMASMELT260B	Form carbon anodes
PMASMELT261B	Bake carbon anodes		PMASMELT261B	Bake carbon anodes
PMASMELT262B	Clean and strip anode rods		PMASMELT262B	Clean and strip anode rods
PMASMELT263B	Spray carbon anodes		PMASMELT263B	Spray carbon anodes
PMASMELT264B	Start up reduction cells		PMASMELT264B	Start up reduction cells
PMASMELT265B	Operate reduction cells		PMASMELT265B	Operate reduction cells
PMASMELT266B	Deliver molten metal		PMASMELT266B	Deliver molten metal
PMASMELT267B	Cast aluminium ingots		PMASMELT267B	Cast aluminium ingots
PMASMELT268B	Vertical direct casting		PMASMELT268B	Vertical direct casting
PMASMELT269A	Operate cell tending equipment		PMASMELT269A	Operate cell tending equipment
PMASMELT27	Supply product from reduction		PMASMELT270A	Supply product from reduction

PMA08v2			PMA08v1	
0A	cells			cells
PMASUP236B	Operate vehicles in the field		PMASUP236B	Operate vehic
PMASUP237B	Undertake crane, dogging and load transfer operations		PMASUP237B	Undertake cra load transfer o
PMASUP241B	Maintain pipeline easements		PMASUP241B	Maintain pipe
PMASUP242B	Monitor pipeline civil works		PMASUP242B	Monitor pipeli
PMASUP243B	Monitor and maintain pipeline coatings		PMASUP243B	Monitor and n coatings
PMASUP305A	Operate Offshore Cranes		PMASUP305A	Operate Offsh
PMASUP311A	Operate communications hub		PMASUP311A	Operate comm
PMASUP341B	Monitor and maintain instrument and control systems	MSAPMPER300 C	PMASUP341B	Monitor and n instrument and
PMASUP342B	Monitor and maintain electrical systems	MSAPMPER300 C	PMASUP342B	Monitor and n systems
PMASUP343B	Monitor and maintain cathodic protection systems		PMASUP343B	Monitor and n protection syst
PMASUP344B	Monitor and control repairs and modifications on operational pipe		PMASUP344B	Monitor and c modifications pipe
PMASUP345A	Monitor vibration		PMASUP345A	Monitor vibra
PMASUP346A	Control corrosion		PMASUP346A	Control corros
PMASUP347A	Undertake corrosion inspection in a petrochemical environment		PMASUP347A	Undertake cor in a petrochem
PMASUP410B	Develop plant documentation		PMASUP410B	Develop plant
PMASUP420B	Minimise environmental impact of process		PMASUP420B	Minimise envi of process
PMASUP432B	Coordinate pipeline projects		PMASUP432B	Coordinate pip

PMA08v2			PMA08v1	
PMASUP440B	Commission/recommission plant		PMASUP440B	Commission/recommission plant
PMASUP441C	Decommission plant		PMASUP441C	Decommission plant
PMASUP445A	Participate in HAZOP studies	PMAOPS280B	PMASUP445A	Participate in HAZOP studies
PMASUP520B	Review procedures to minimise environmental impact of process		PMASUP520B	Review procedures to minimise environmental impact of process
PMASUP540B	Analyse equipment performance		PMASUP540B	Analyse equipment performance
PMASUP620B	Manage environmental management system	PMASUP520B	PMASUP620B	Manage environmental management system
PSPGOV308B	Work effectively with diversity		PSPGOV308B	Work effectively with diversity
PSPMNGT604B	Manage change		PSPMNGT604B	Manage change
PSPMNGT605B	Manage diversity		PSPMNGT605B	Manage diversity
RIOHS204A	Work safely at heights		MNMMG237A	Work safely at heights
RIIRIS201A	Conduct local risk control		MNMC205A	Conduct Local Risk Control
TAEASS301A	Contribute to assessment		TAAASS301A	Contribute to assessment
TAEASS401A	Plan assessment activities and processes		TAAASS401A	Plan and organise assessment activities and processes
TAEASS402A	Assess competence		TAAASS402A	Assess competence
TAEASS403A	Participate in assessment validation		TAAASS404A	Participate in assessment validation (participate in validation)
TAEDEL301A	Provide work skill instruction		TAADEL301A	Provide training instruction and supervision

PMA08v2			PMA08v1	
				work skills
TLID1007C	Operate a forklift		TDTD1097C	Operate a fork
UEPOPS319A	Operate and Monitor Gas Production Plant		UTPNEG167A	Operate and M Production Pla
UEPOPS340A	Operate and Monitor a Steam Turbine		UEPOPS340A	Operate and M Turbine

PMA08 to PMA02

PMA08			Related unit in PMA02
Unit code	Unit title	Unit code	Unit title
PMAOHS211B	Prepare equipment for emergency response	PMAOHS211A	Prepare equipment for emergency
PMAOHS213B	Undertake fire control and emergency rescue	PMAOHS213A	Undertake fire control and emerge
PMAOHS214B	Undertake helicopter safety and escape	PMAOHS214A	Undertake helicopter safety and es
PMAOHS215B	Apply offshore facility abandonment and sea survival procedures	PMAOHS215A	Apply offshore facility abandonm survival procedures
PMAOHS221B	Maintain First Aid supplies and records	PMAOHS221A	Maintain First Aid supplies and re
PMAOHS310B	Investigate incidents	PMAOHS310A	Investigate incidents
PMAOHS311B	Lead emergency teams	PMAOHS311A	Lead emergency teams
PMAOHS312B	Command the operation of survival craft	PMAOHS312A	Command the operation of survival
PMAOHS320C	Provide advanced First Aid response	PMAOHS320B	Provide advanced First Aid respon
PMAOHS321B	Provide First Aid response in	PMAOHS321A	Provide First Aid response in rem

PMA08			Related unit in PMA02
	remote and/or isolated area		isolated area
PMAOHS420B	Develop First Aid procedures and manage resources	PMAOHS420A	Develop First Aid procedures and resources
PMAOHS502B	Contribute to safety case	PMAOHS502A	Contribute to safety case
PMAOHS511A	Manage emergency incidents	PMAOHS410B	Manage emergency incidents
PMAOMIR210B	Control evacuation to muster point	PMAOMIR210A	Control evacuation to muster point
PMAOMIR301B	Undertake initial rescue	PMAOMIR301A	Undertake initial rescue
PMAOMIR302B	Respond to a helideck incident	PMAOMIR302A	Respond to a helideck incident
PMAOMIR317B	Facilitate search and rescue operations	PMAOMIR317A	Facilitate search and rescue operations
PMAOMIR320B	Manage incident response information	PMAOMIR320A	Manage incident response information
PMAOMIR321B	Manage communication systems during an incident	PMAOMIR321A	Manage communication systems during an incident
PMAOMIR346B	Assess and secure an incident site	PMAOMIR346A	Assess and secure an incident site
PMAOMIR407B	Audit incident preparedness and established response system	PMAOMIR407A	Audit incident preparedness and established response system
PMAOMIR418B	Coordinate incident response	PMAOMIR418A	Coordinate incident response
PMAOMIR424B	Develop and maintain community relationships	PMAOMIR424A	Develop and maintain community relationships
PMAOMIR430B	Conduct and assess incident exercises	PMAOMIR430A	Conduct and assess incident exercises
PMAOMIR444B	Develop incident containment tactics	PMAOMIR444A	Develop incident containment tactics
PMAOMIR449B	Monitor legal compliance obligations during incidents	PMAOMIR449A	Monitor legal compliance obligations during incidents
PMAOMIR512B	Establish incident response preparedness and response	PMAOMIR512A	Establish incident response preparedness and response systems

PMA08			Related unit in PMA02
	systems		
PMAOMIR523B	Manage corporate media requirements in a crisis	PMAOMIR523A	Manage corporate media requirements
PMAOMIR575B	Coordinate welfare support activities in response to an incident	PMAOMIR575A	Coordinate welfare support activities in response to an incident
PMAOMIR622B	Build partnerships to improve incident response capacity	PMAOMIR622A	Build partnerships to improve incident response capacity
PMAOMIR650B	Manage a crisis	PMAOMIR650A	Manage a crisis
PMAOPS101C	Read dials and indicators	PMAOPS101B	Read dials and indicators
PMAOPS105C	Select and prepare materials	PMAOPS105B	Select and prepare materials
PMAOPS201B	Operate fluid flow equipment	PMAOPS201A	Operate fluid flow equipment
PMAOPS202B	Operate fluid mixing equipment	PMAOPS202A	Operate fluid mixing equipment
PMAOPS203B	Handle goods	PMAOPS203A	Handle goods
PMAOPS204B	Use utilities and services	PMAOPS204A	Use utilities and services
PMAOPS205B	Operate heat exchangers	PMAOPS205A	Operate heat exchangers
PMAOPS206B	Operate separation equipment	PMAOPS206A	Operate separation equipment
PMAOPS207B	Operate powered separation equipment	PMAOPS207A	Operate powered separation equipment
PMAOPS208B	Operate chemical separation equipment	PMAOPS208A	Operate chemical separation equipment
PMAOPS210B	Operate particulates handling equipment	PMAOPS210A	Operate particulates handling equipment
PMAOPS211B	Operate manufacturing extruders	PMAOPS211A	Operate manufacturing extruders
PMAOPS213B	Package product/material	PMAOPS213A	Package product/material
PMAOPS216B	Operate local control system	PMAOPS216A	Operate local control system
PMAOPS217B	Operate wet milling equipment	PMAOPS217A	Operate wet milling equipment
PMAOPS220B	Monitor chemical reactions in the	PMAOPS220A	Monitor chemical reactions in the

PMA08			Related unit in PMA02
	process		
PMAOPS221B	Operate and monitor prime movers	PMAOPS221A	Operate and monitor prime movers
PMAOPS222B	Operate and monitor pumping systems and equipment	PMAOPS222A	Operate and monitor pumping systems and equipment
PMAOPS223B	Operate and monitor valve systems	PMAOPS223A	Operate and monitor valve systems
PMAOPS224B	Provide fluids for utilities and support	PMAOPS224A	Provide fluids for utilities and support
PMAOPS230B	Monitor, operate and maintain pipeline stations and equipment	PMAOPS230A	Monitor, operate and maintain pipeline stations and equipment
PMAOPS231B	Control gas odourisation	PMAOPS231A	Control gas odourisation
PMAOPS232B	Produce product by filtration	PMAOPS232A	Produce product by filtration
PMAOPS240B	Store liquids in bulk	PMAOPS240A	Store liquids in bulk
PMAOPS280A	Interpret process plant schematics		
PMAOPS290B	Operate a biotreater	PMAOPS290A	Operate a biotreater
PMAOPS300B	Operate a production unit	PMAOPS300A	Operate a production unit
PMAOPS301B	Produce product by distillation	PMAOPS301A	Produce product by distillation
PMAOPS302B	Operate reactors and reaction equipment	PMAOPS302A	Operate reactors and reaction equipment
PMAOPS303B	Operate furnaces to induce reaction	PMAOPS303A	Operate furnaces
PMAOPS304B	Operate and monitor compressor systems and equipment	PMAOPS304A	Operate and monitor compressor systems and equipment
PMAOPS305B	Operate process control systems	PMAOPS305A	Operate process control systems

PMA08			Related unit in PMA02
PMAOPS307B	Transfer bulk fluids into/out of storage facility	PMAOPS307A	Transfer bulk fluids into/out of storage facility
PMAOPS308B	Organise storage and logistics of general materials	PMAOPS308A	Organise storage and logistics of general materials
PMAOPS309B	Operate particulates handling/storage equipment	PMAOPS309A	Operate particulates handling/storage equipment
PMAOPS312B	Undertake ship loading/unloading operations	PMAOPS312A	Undertake ship loading/unloading operations
PMAOPS319A	Adjust batch		
PMAOPS320B	Conduct artificial lift	PMAOPS320A	Conduct artificial lift
PMAOPS321B	Undertake well management	PMAOPS321A	Undertake well management
PMAOPS323A	Operate and monitor heating furnace		
PMAOPS324A	Operate a gas turbine		
PMAOPS325B	Generate electrical power	PMAOPS325A	Generate electrical power
PMAOPS326B	Produce product using gas absorption	PMAOPS326A	Produce product using gas absorption
PMAOPS327B	Produce product using fixed bed dehydration	PMAOPS327A	Produce product using fixed bed dehydration
PMAOPS329B	Produce product using liquid extraction	PMAOPS329A	Produce product using liquid extraction
PMAOPS330B	Communicate pipeline control centre operations	PMAOPS330A	Communicate pipeline control centre operations
PMAOPS335A	Conduct pipeline pigging	PMASUP340A	Conduct pipeline pigging

PMA08			Related unit in PMA02
PMAOPS340B	Operate cryogenic processes	PMAOPS340A	Operate cryogenic processes
PMAOPS350B	Match and adjust colour	PMAOPS350A	Match and adjust colour
PMAOPS390B	Operate a biochemical process	PMAOPS390A	Operate a biochemical process
PMAOPS402A	Respond to abnormal process situations		
PMAOPS405A	Operate complex control systems		
PMAOPS410B	Monitor remote production facilities	PMAOPS410A	Monitor remote production facilities
PMAOPS411B	Manage plant shutdown and restart	PMAOPS411A	Manage plant shutdown and restart
PMAOPS450B	Solve colour problems	PMAOPS450A	Solve colour problems
PMAOPS500A	Optimise production systems		
PMAOPS501A	Provide operational expertise to a project team		
PMAOPS505A	Control the process during abnormal situations		
PMAOPS511B	Determine energy transfer loads	PMAOPS511A	Determine energy transfer loads
PMAOPS512B	Determine mass transfer loads	PMAOPS512A	Determine mass transfer loads
PMAOPS520C	Manage utilities	PMAOPS520B	Manage utilities
PMAOPS521C	Plan plant shutdown	PMAOPS521B	Plan plant shutdown
PMAOPS522A	Coordinate plant shut down		
PMAOPS550B	Develop a colour formulation	PMAOPS550A	Develop a colour formulation
PMAOPS600C	Modify plant	PMAOPS600B	Modify plant

PMA08			Related unit in PMA02
PMAOPS601A	Debottleneck plant		
PMAOPS751A	Apply physiochemical knowledge to select raw materials for surface coatings		
PMAOPS752A	Develop a decorative coating		
PMAOPS753A	Develop a non-decorative coating or ink		
PMAOPS755A	Provide surface coatings application advice		
PMASMELT260B	Form carbon anodes	PMASMELT260 A	Form carbon anodes
PMASMELT261B	Bake carbon anodes	PMASMELT261 A	Bake carbon anodes
PMASMELT262B	Clean and strip anode rods	PMASMELT262 A	Clean and strip anode rods
PMASMELT263B	Spray carbon anodes	PMASMELT263 A	Spray carbon anodes
PMASMELT264B	Start up reduction cells	PMASMELT264 A	Start up reduction cells
PMASMELT265B	Operate reduction cells	PMASMELT265	Operate reduction cells

PMA08			Related unit in PMA02
		A	
PMASMELT266B	Deliver molten metal	PMASMELT266 A	Deliver molten metal
PMASMELT267B	Cast aluminium ingots	PMASMELT267 A	Cast aluminium ingots
PMASMELT268B	Vertical direct casting	PMASMELT268 A	Vertical Direct Casting
PMASMELT269A	Operate cell tending equipment	PMASMELT269 A	Operate cell tending equipment
PMASMELT270A	Supply product from reduction cells		
PMASUP236B	Operate vehicles in the field	PMASUP236A	Operate vehicles in the field
PMASUP237B	Undertake crane, dogging and load transfer operations	PMASUP237A	Undertake crane, dogging and load operations
PMASUP241B	Maintain pipeline easements	PMASUP241A	Maintain pipeline easements
PMASUP242B	Monitor pipeline civil works	PMASUP242A	Monitor pipeline civil works
PMASUP243B	Monitor and maintain pipeline coatings	PMASUP243A	Monitor and maintain pipeline coatings
PMASUP305A	Operate Offshore Cranes	PMASUP305A	Operate Offshore Cranes
PMASUP311A	Operate communications hub		
PMASUP341B	Monitor and maintain instrument and control systems	PMASUP341A	Monitor and maintain instrument and control systems
PMASUP342B	Monitor and maintain electrical systems	PMASUP342A	Monitor and maintain electrical systems
PMASUP343B	Monitor and maintain cathodic protection systems	PMASUP343A	Monitor and maintain cathodic protection systems
PMASUP344B	Monitor and control repairs and modifications on operational pipe	PMASUP344A	Monitor and control repairs and modifications on operational pipe
PMASUP345A	Monitor vibration		

PMA08			Related unit in PMA02
PMASUP346A	Control corrosion		
PMASUP347A	Undertake corrosion inspection in a petrochemical environment	9597 v 3	Undertake corrosion inspection in environment
PMASUP410B	Develop plant documentation	PMASUP410A	Develop plant documentation
PMASUP420B	Minimise environmental impact of process	PMASUP420A	Minimise environmental impact of process
PMASUP432B	Coordinate pipeline projects	PMASUP432A	Coordinate pipeline projects
PMASUP440B	Commission/recommission plant	PMASUP440A	Commission/recommission plant
PMASUP441C	Decommission plant	PMASUP441B	Decommission plant
PMASUP445A	Participate in HAZOP studies	9630 v 3	Demonstrate knowledge of HAZOP and QRA in a petrochemical environment
PMASUP520B	Review procedures to minimise environmental impact of process	PMASUP520A	Review procedures to minimise environmental impact of process
PMASUP540B	Analyse equipment performance	PMASUP540A	Analyse equipment performance
PMASUP620B	Manage environmental management system	PMASUP620A	Manage environmental management system
		PMAPER units	
Imported units			
FDFPHGMP1A	Follow work procedures to maintain Good Manufacturing Practice	FDFCORGMP1A	Apply basic good manufacturing practice
FDFPHGMP2B	Implement Good Manufacturing Practice procedures	FDFCORGMP2A	Implement good manufacturing practice

PMA08			Related unit in PMA02
FDFPHGMP3A	Monitor the implementation of Good Manufacturing Practice procedures	FDFCORGMP3A	Monitor the implementation of good practice
MEM05012C	Perform routine manual metal arc welding		
MEM07033B	Operate and monitor basic boiler	UTPNEG162A	Operate and monitor boiler steam/
MEM07034A	Operate and monitor intermediate class boiler	UTPNEG162A	Operate and monitor boiler steam/
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	BSATEM201A	Participate in the allocation and co tasks
MEM18011C	Shutdown and isolate machines/equipment		
MNMC205A	Conduct Local Risk Assessment		
MNMG237A	Work safely at heights		
MSACMC411A	Lead a competitive manufacturing team		
MSACMC413A	Lead team culture improvement		
MSACMC610A	Manage relationships with non-customer external organisations		
MSACMC611A	Manage people relationships		

PMA08			Related unit in PMA02
MSACMC612A	Manage workplace learning		
MSACMS201A	Sustain process improvements		
MSACMS401A	Ensure process improvements are sustained		
MSACMT230A	Apply cost factors to work practices		
MSACMT231A	Interpret product costs in terms of customer requirements		
MSACMT240A	Apply 5S procedures in a manufacturing environment		
MSACMT250A	Monitor process capability		
MSACMT251A	Apply quality standards		
MSACMT260A	Use planning software systems in manufacturing		
MSACMT270A	Use sustainable energy practices		
MSACMT271A	Use sustainable environmental practices		
MSACMT280A	Undertake root cause analysis		
MSACMT281A	Contribute to the application of a proactive maintenance strategy		
MSACMT430A	Improve cost factors in work practices		
MSACMT440A	Lead 5S in a manufacturing environment		
MSACMT441A	Facilitate continuous improvement in manufacturing		
MSACMT450A	Undertake process capability improvements		
MSACMT451A	Mistake proof a production process		

PMA08			Related unit in PMA02
MSACMT452A	Apply statistics to processes in manufacturing		
MSACMT460A	Facilitate the use of planning software systems in manufacturing		
MSACMT481A	Undertake proactive maintenance analyses		
MSACMT482A	Assist in implementing a proactive maintenance strategy		
MSACMT630A	Optimise cost of product		
MSACMT640A	Manage 5S system in a manufacturing environment		
MSACMT641A	Implement a continuous improvement system		
MSACMT650A	Determine and improve process capability		
MSACMT660A	Develop the application of enterprise systems in manufacturing		
MSACMT661A	Determine and establish information collection requirements and processes		
MSACMT670A	Develop and manage sustainable energy practices		
MSACMT671A	Develop and manage sustainable environmental practices		
MSACMT681A	Develop a proactive maintenance strategy		
MSAENV272A	Participate in environmentally sustainable work practices	PMASUP220A	Monitor and control environmental
MSAENV472A	Implement and monitor environmentally sustainable work practices	PMASUP320A	Implement and monitor environm

PMA08			Related unit in PMA02
MSAENV672A	Develop workplace policy and procedures for sustainability		
MSAPMOHS100A	Follow OHS procedures	PMAOHS100C	Follow OHS procedures
MSAPMOHS110A	Follow emergency response procedures	PMAOHS110B	Respond to emergency situation
MSAPMOHS200A	Work safely	PMAOHS200B	Participate in workplace safety pro
MSAPMOHS205A	Control minor incidents	PMAOMIR205A	Control minor incidents
MSAPMOHS210B	Undertake first response to non-fire incidents	PMAOHS210B	Undertake first response to non-fi
MSAPMOHS212A	Undertake first response to fire incidents	PMAOHS212B	Undertake first response to fire inc
MSAPMOHS216A	Operate breathing apparatus	PMAOHS216B	Operate breathing apparatus
MSAPMOHS217A	Gas test atmospheres	PMAOMIR217A	Gas test atmospheres
MSAPMOHS220A	Provide initial First Aid response	PMAOHS220A	Provide initial First Aid response
MSAPMOHS300A	Facilitate the implementation of OHS for a work group	PMAOHS300B	Implement and monitor OHS poli cedures for a workgroup
MSAPMOHS400A	Contribute to workplace OHS management system	PMAOHS400B	Contribute to workplace OHS mar
MSAPMOHS401A	Assess risk	PMAOHS401B	Assess risk
MSAPMOHS503A	Maintain the workplace OHS management system	PMAOHS503A	Maintain workplace OHS manage
MSAPMOHS510A	Manage risk	PMAOHS510B	Manage risk

PMA08			Related unit in PMA02
MSAPMOHS601A	Establish workplace OHS management system	PMAOHS601A	Establish workplace OHS management system
MSAPMOPS100A	Use equipment	PMAOPS100A	Use equipment to procedures
MSAPMOPS102A	Perform tasks to support production		
MSAPMOPS200A	Operate equipment	PMAOPS200A	Operate and monitor an item of equipment
MSAPMOPS212A	Use enterprise computers or data systems	PMAOPS212A	Use enterprise data system
MSAPMOPS400A	Optimise process/plant area	PMAOPS400A	Optimise operating systems
MSAPMOPS401A	Trial new process product	PMAOPS401B	Trial new process/product
MSAPMOPS404A	Co-ordinate maintenance		
MSAPMOPS405A	Identify problems in fluid power system		
MSAPMOPS406A	Identify problems in electronic control systems		
		PMAPER302B	Issue work permits (hot work/cooling)
MSAPMPER200B	Work in accordance with an issued permit	PMAPER200C	Work in accordance with an issued permit
MSAPMPER201A	Monitor and control work permits	PMAPER201C	Monitor and control work permits
MSAPMPER202A	Observe permit work		
MSAPMPER205B	Enter confined space	PMAPER205B	Enter confined space
MSAPMPER300B	Issue work permits	PMAPER300C	Issue work permits

PMA08			Related unit in PMA02
MSAPMPER400A	Coordinate permit process		
MSAPMSUP100A	Apply workplace procedures	PMASUP100B	Apply workplace procedures
MSAPMSUP101A	Clean workplace or equipment	PMAOPS102A	Undertake housekeeping operation
MSAPMSUP102A	Communicate in the workplace	PMASUP110A	Relay and respond to information
		PMASUP130B	Follow established work plan
MSAPMSUP106A	Work in a team	BSATEM101A	Participate in team to achieve desir
MSAPMSUP172A	Identify and minimise environmental hazards	PMASUP120A	Follow environmental work practi
MSAPMSUP200A	Achieve work outcomes	PMASUP200B	Implement production efficiencies
MSAPMSUP201A	Receive or despatch goods	MSASUP201A	Receive or despatch goods
MSAPMSUP204A	Pack products or materials		
MSAPMSUP205A	Transfer loads		
MSAPMSUP210A	Process and record information	PMASUP210A	Process and record information
MSAPMSUP240A	Undertake minor maintenance	PMASUP240A	Undertake minor maintenance
MSAPMSUP280A	Manage conflict at work		
MSAPMSUP291A	Participate in continuous improvement		
MSAPMSUP292A	Sample and test materials and product	PMCSUP292A	Sample and test materials and prod
MSAPMSUP300A	Identify and implement opportunities to maximise production efficiencies	PMASUP300B	Identify and implement opportuni
MSAPMSUP301A	Apply HACCP to the workplace		
MSAPMSUP303A	Identify equipment faults	PMBMAINT303 B	Identify equipment faults

PMA08			Related unit in PMA02
MSAPMSUP309A	Maintain and organise workplace records	MSASUP309A	Maintain and organise workplace
MSAPMSUP310A	Contribute to development of plant documentation		
MSAPMSUP330A	Develop and adjust a production schedule	PMASUP330B	Schedule production
MSAPMSUP382A	Provide coaching/mentoring in the workplace		
MSAPMSUP383A	Facilitate a team	BSATEM301A	Negotiate with team members to a complete tasks
MSAPMSUP390A	Use structured problem solving tools	PMASUP390A	Use structured problem solving to
MSAPMSUP400A	Develop and monitor quality systems		
PMLQUAL600B	Maintain quality system and continuous improvement processes within work/functional area		
PMLSAMP200A	Collect routine site samples		
PMLSAMP400B	Obtain representative samples in accordance with a sampling plan	PMLSAMP400A	Obtain representative samples in a sampling plan
PMLTEST300B	Perform basic tests	PMLTEST300A	Perform basic tests
PMLTEST603A	Evaluate and select appropriate test methods and/or procedures		
PMLTEST700B	Contribute to the development of products and applications		
PMLTEST701B	Troubleshoot equipment and production processes		
PMLTEST703B	Develop or adapt analyses and procedures		
PSPGOV308B	Work effectively with diversity	PSPGOV308A	Work effectively with diversity

PMA08			Related unit in PMA02
PSPMNGT604B	Manage change	PSPMNGT604A	Manage change
PSPMNGT605B	Manage diversity	PSPMNGT605A	Manage diversity
PUAFIR306A	Render hazardous materials safe	PUAFIR306A	Render hazardous materials safe
PUASAR003A	Undertake technical rescue	PUASAR003A	Undertake technical rescue
PUASAR004A	Undertake vertical rescue	PUASAR004A	Undertake vertical rescue
PUASAR005A	Undertake Confined Space Rescue		
TAAASS301A	Contribute to assessment		
TAAASS401A	Plan and organise assessment	BSZ401A	Plan assessment
TAAASS402A	Assess competence	BSZ402A	conduct assessment
TAAASS404A	Participate in assessment validation (partial equivalence)	BSZ403A	review assessment
TAADEL301A	Provide training through instruction and demonstration of work skills	BSZ404A	Train small groups
TLID1007C	Operate a forklift	TDTD1097B	Operate a forklift
UEPOPS340A	Operate and Monitor a Steam Turbine	UTPNEG210A	Manage, operate and monitor turb
UTPNEG167A	Operate and Monitor Gas Production Plant		
		BSBCM402A	Develop work priorities
		BSBCM404A	Develop teams and individuals
		BSBCM410A	Coordinate implementation of cus strategies

PMA08			Related unit in PMA02
		BSBCMN412A	Promote innovation and change
		BSBFLM402A	Show leadership in the workplace
		BSBFLM403A	Manage effective workplace relations
		BSBFLM404A	Lead work teams
		BSBFLM405A	Implement operational plan
		BSBFLM406A	Implement workplace information systems
		BSBFLM409A	Implement continuous improvement
		BSBFLM504A	Facilitate work teams
		BSBFLM505A	Manage operational plan
		BSBFLM509A	Promote continuous improvement
		BSBFLM510A	Facilitate and capitalise on change
		BSBFLM511A	Develop a workplace learning environment

Overview

What is a Training Package?

A Training Package is an integrated set of nationally endorsed competency standards, assessment guidelines and Australian Qualifications Framework (AQF) qualifications for a specific industry, industry sector or enterprise.

Each Training Package:

- provides a consistent and reliable set of components for training, recognising and assessing peoples skills, and may also have optional support materials

- enables nationally recognised qualifications to be awarded through direct assessment of workplace competencies
- encourages the development and delivery of flexible training which suits individual and industry requirements
- encourages learning and assessment in a work-related environment which leads to verifiable workplace outcomes.

How do Training Packages fit within the National Skills Framework?

The National Skills Framework applies nationally, is endorsed by the Ministerial Council for Vocational and Technical Education, and comprises the Australian Quality Training Framework 2007 (AQTF 2007), and Training Packages endorsed by the National Quality Council (NQC).

How are Training Packages developed?

Training Packages are developed by Industry Skills Councils or enterprises to meet the identified training needs of specific industries or industry sectors. To gain national endorsement of Training Packages, developers must provide evidence of extensive research, consultation and support within the industry area or enterprise.

How do Training Packages encourage flexibility?

Training Packages describe the skills and knowledge needed to perform effectively in the workplace without prescribing how people should be trained.

Training Packages acknowledge that people can achieve vocational competency in many ways by emphasising what the learner can do, not how or where they learned to do it. For example, some experienced workers might be able to demonstrate competency against the units of competency, and even gain a qualification, without completing a formal training program.

With Training Packages, assessment and training may be conducted at the workplace, off-the-job, at a training organisation, during regular work, or through work experience, work placement, work simulation or any combination of these.

Who can deliver and assess using Training Packages?

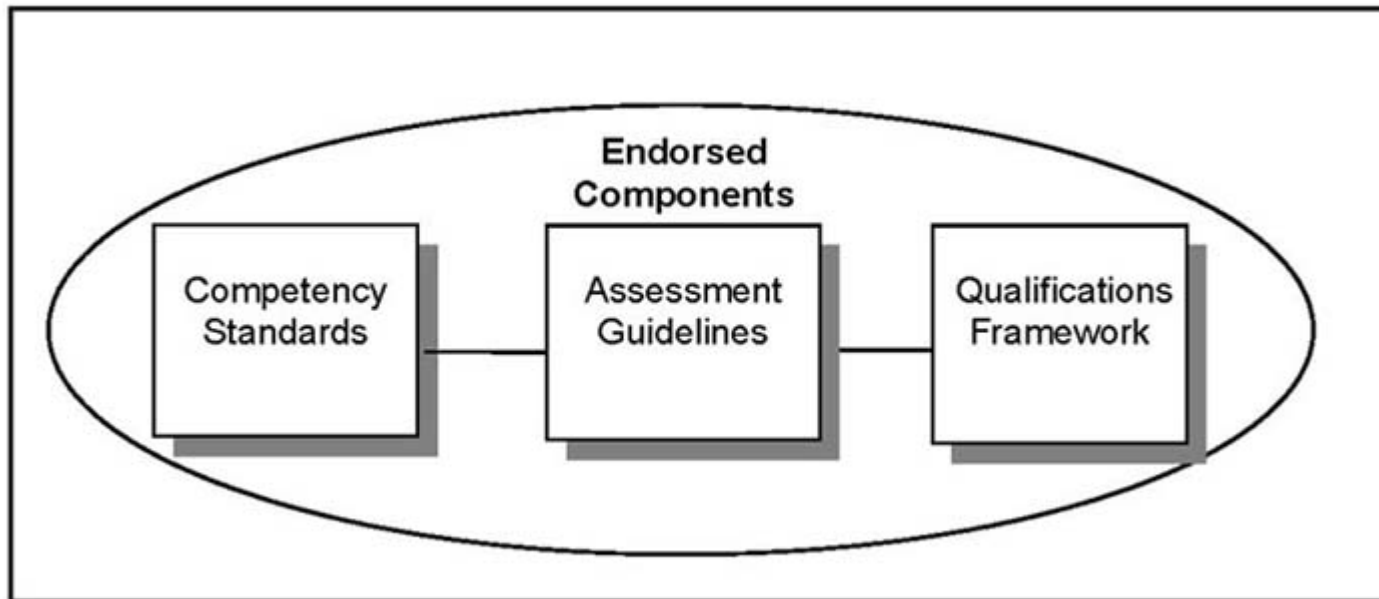
Training and assessment using Training Packages must be conducted by a Registered Training Organisation (RTO) that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO, as specified in the AQTF 2007.

Training Package Components

Training Packages are made up of mandatory components endorsed by the NQC, and optional support materials.

Training Package Endorsed Components

The nationally endorsed components include the Competency Standards, Assessment Guidelines and Qualifications Framework. These form the basis of training and assessment in the Training Package and, as such, they must be used.



Competency Standards

Each unit of competency identifies a discrete workplace requirement and includes the knowledge and skills that underpin competency as well as language, literacy and numeracy; and occupational health and safety requirements. The units of competency must be adhered to in training and assessment to ensure consistency of outcomes.

Assessment Guidelines

The Assessment Guidelines provide an industry framework to ensure all assessments meet industry needs and nationally agreed standards as expressed in the Training Package and the AQTF 2007. The Assessment Guidelines must be followed to ensure the integrity of assessment leading to nationally recognised qualifications.

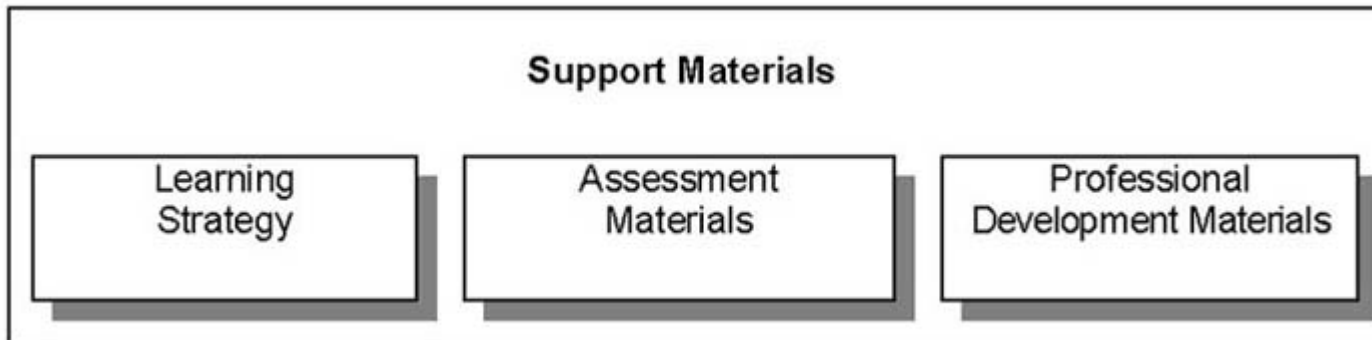
Qualifications Framework

Each Training Package provides details of those units of competency that must be achieved to award AQF qualifications. The rules around which units of competency can be combined to make up a valid AQF qualification in the Training Package are referred to as the "packaging rules". The packaging rules must be followed to ensure the integrity of nationally recognised qualifications issued.

Training Package Support Materials

The endorsed components of Training Packages are complemented and supported by optional support materials that provide for choice in the design of training and assessment to meet the needs of industry and learners.

Training Package support materials can relate to single or multiple units of competency, an industry sector, a qualification or the whole Training Package. They tend to fall into one or more of the categories illustrated below.



Training Package support materials are produced by a range of stakeholders such as RTOs, individual trainers and assessors, private and commercial developers and Government agencies.

Where such materials have been quality assured through a process of "noting" by the NQC, they display the following official logo. Noted support materials are listed on the National Training Information Service (NTIS), together with a detailed description and information on the type of product and its availability < www.ntis.gov.au >



It is not compulsory to submit support materials for noting; any resources that meet the requirements of the Training Package can be used.

Training Package, Qualification and Unit of Competency Codes

There are agreed conventions for the national codes used for Training Packages and their components. Always use the correct codes, exactly as they appear in the Training Package, and with the code always before the title.

Training Package Codes

Each Training Package has a unique five-character national code assigned when the Training Package is endorsed, for example PMA08. The first three characters are letters identifying the Training Package industry coverage and the last two characters are numbers identifying the year of endorsement.

Qualification Codes

Within each Training Package, each qualification has a unique eight-character code, for example PMA20108. Qualification codes are developed as follows:

- the first three letters identify the Training Package;
- the first number identifies the qualification level (noting that, in the qualification titles themselves, arabic numbers are not used);
- the next two numbers identify the position in the sequence of the qualification at that level; and
- the last two numbers identify the year in which the qualification was endorsed. (Where qualifications are added after the initial Training Package endorsement, the last two numbers may differ from other Training Package qualifications as they identify the year in which those particular qualifications were endorsed.)

Unit of Competency Codes

Within each Training Package, each unit of competency has a unique code. Unit of competency codes are assigned when the Training Package is endorsed, or when new units of competency are added to an existing endorsed Training Package. Unit codes are developed as follows:

- a typical code is made up of 12 characters, normally a mixture of uppercase letters and numbers, as in PMAOHS511A;
- the first three characters signify the Training Package - PMA08 - in the above example and up to eight characters, relating to an industry sector, function or skill area, follow;
- the last character is always a letter and identifies the unit of competency version. An "A" at the end of the code indicates that this is the original unit of competency. "B", or another incremented version identifier means that minor changes have been made. Typically this would mean that wording has changed in the range statement or evidence guide, providing clearer intent; and
- where changes are made that alter the outcome, a new code is assigned and the title is changed.

Training Package, Qualification and Unit of Competency Titles

There are agreed conventions for titling Training Packages and their components. Always use the correct titles, exactly as they appear in the Training Package, and with the code always placed before the title.

Training Package Titles

The title of each endorsed Training Package is unique and relates the Training Packages broad industry coverage.

Qualification Titles

The title of each endorsed Training Package qualification is unique. Qualification titles use the following sequence:

- first, the qualification is identified as either Certificate I, Certificate II, Certificate III, Certificate IV, Diploma, Advanced Diploma, Vocational Graduate Certificate, or Vocational Graduate Diploma;
- this is followed by the words "in" for Certificates I to IV, and "of" for Diploma, Advanced Diploma, Vocational Graduate Certificate and Vocational Graduate Diploma;
- then, the industry descriptor, for example Telecommunications; and
- then, if applicable, the occupational or functional stream in brackets, for example (Computer Systems).

For example:

- PMA20108 Certificate II in Process Plant Operations

Unit of Competency Titles

Each unit of competency title is unique. Unit of competency titles describe the competency outcome concisely, and are written in sentence case.

For example:

- PMAOHS211B Prepare equipment for emergency response

Development of PMA08v2

As part of MSA's Continuous Improvement Plan, Kevin Hummel of Total Training and Performance Solutions (TaPS) was commissioned to undertake minor changes to PMA08. Industry users had noted that:

- the new area of coal seam gas gathering and processing required some additional skills to those currently in PMA08

- there was a gap in the cryogenic processing skills in the area of Joule-Thomson devices. MSA supported the development of these new units of competency.

Industry drivers for change

The major industry drivers for the improvements to PMA08 Chemical, Hydrocarbons and Refining Training Package are outlined below.

- Coal seam gas (CSG) is a new and rapidly growing subsector within the hydrocarbons sector of PMA. The Queensland Government estimates that CSG may employ an additional 18 000 persons, most of whom will be new to the sector. It is important that formal training and qualification be available for the entrants to this dynamic new subsector of the upstream hydrocarbons sector.

Liquefied natural gas (LNG) and the liquefaction of aerolean gases are established subsectors of growing importance, particularly the growth in LNG. While this subsector is already largely covered by PMA08 Chemical, Hydrocarbons and Refining Training Package, it was identified that one critical process was not currently covered (the operation of a Joule-Thomson device) and so this needed to be addressed. Again this was brought into a sharp focus by the growth of this downstream hydrocarbons sector

Development of PMA08 version 1

PMA98

The original Chemical, Hydrocarbons and Oil Refining Training Package was developed by Manufacturing Learning Australia (MLA), the national ITAB, with funding provided by the Australian National Training Authority (ANTA). The development was done by Total Training and Performance Solutions (TaPS) during the second half of 1997. The Training Package was endorsed early in 1998.

PMA02 - Version 1

The review, undertaken by MLA, occurred in two stages. Phase I of the review to determine the strengths and weaknesses of PMA98 and the scope of revisions needed was conducted from May to October 2000. The Phase II review (conducted by TaPS) commenced in August 2001 and was concluded in July 2002.

The review was held in the 'post Longford' environment. This had a serious impact on the emphases of the industry, particularly those in Victoria where many were expending significant effort to develop their safety case as required under the new major hazard facility regulations. In addition to this the States had generally just introduced new OHS legislation and regulations requiring a risk management approach to health and safety. This was a major factor and led to the incorporation of an element on controlling hazards in each OPS unit.

The industry steering committee contained a wide spread of both industry and RTO representation, as well as STA and ITAB representation. It contributed to the design of the reviewed Training Package as well as providing critical feedback on all components.

PMA02 - Version 2

One issue which became clear during the review which led to PMA02 was that units of competency related to incident preparedness and response were not well handled in the PMA Training Package and that units from the Public Safety Training Package which on the face of it might be appropriate were a very poor fit for this industry and there was a total lack of units in some areas. This led to MLA mounting the 'Off shore and Major hazard facility Incident Response (OMIR) project, conducted by Training and Assessment Services (TAS) and resulted in the creation of a suite of units (generally including 'OMIR' in the code) which were then incorporated into PMA02. The industry did not seek any specific qualifications relating to these units, preferring to concentrate on the competencies. This project was completed in 2004. Some other consequent changes were made to existing OHS units to ensure they matched the new OMIR units.

Version 3 - Aluminium Smelting

Due to an industry request to modify PMA02 to also cover the technical skills required in aluminium smelting, a small project was funded in late 2005 by Manufacturing Skills Australia (MSA - the Industry Skills Council with coverage of PMA). The development was undertaken by TaPS and the new units of competency completed by mid 2006. Due to some dislocations in the national VET system these units were not endorsed for incorporation into PMA02 until mid 2007.

PMA08 Chemical, Hydrocarbons and Refining Training Package

The scheduled review of PMA02 by MSA commenced early in 2006 with MSA conducting the Phase 1 Review, commencing late 2006. Again TaPS conducted the Phase 2 Review. This part of the review, due to some dislocations in the national VET system, was suspended for a period, finally recommencing in the second half of 2007 with the work being completed towards the end of 2007.

Consultations focussed on specific issues raised both during the Phase 1 Review and other issues identified during the development period. The main vehicle for consultation was specific 'Interest Groups' formed to address these specific issues. Membership of interest groups was predominantly industry personnel who responded to a general email to the MSA database asking for people with interest and expertise in the specific issue. Two special purpose 'interest groups' (one east coast and one west coast) were also held with assistance from State ITABs for RTOs in this sector, primarily to examine packaging rules and other related issues.

These interest groups led to the development of some new units of competency, an attempt to restructure the Certificate IV (ultimately unsuccessful) and a restructuring of the Diploma and the Advanced Diploma.

While these working groups were small and specific, broader general consultation was encouraged both by placing all drafts on the MSA web site and by emails to the general data base advising of progress and the availability of drafts. Drafts were also sent to interested parties directly on request.

This concentration on electronic consultation allowed the broadest participation by industry personnel in an industry where employment is often remote and off shore, and shifts may be 3 weeks on and 3 weeks off. Input was received from people working off shore and even in Papua New Guinea where they are using PMA. The email trail also ensured comments were not lost. This was important due to work being placed on hold in the middle of the project. The review also occurred during a major rationalisation project being undertaken by MSA. This saw many units of competency which had previously been 'owned' by PMA move into the generic Manufacturing Training Package (MSA07). This has increased the number of

imported units of competency as many units which would normally have resided in PMA are now sourced from the general banks in MSA07.

Similarly, MLA and subsequently MSA had been attempting for many years to rationalise the three 'support qualifications' in the three process manufacturing Training Packages (PMA, PMB and PMC). The development of MSA07 finally allowed this to occur, resulting in nine very similar qualifications being reduced to three.

At the same time, it was recognised that the 'technical' Certificate I in PMA was in reality not a technical qualification and it was agreed it also could be replaced by MSA10207. This has resulted in four essentially duplicated qualifications in PMA02 not being carried forward.

As a result of a specific approach by the surface coatings industry, a Vocational Graduate Certificate has been developed in PMA08. This history of this particular qualification can be traced back 30 years or more. It has always been an industry run qualification, first by OCCA (Oil and Colour Chemists Association) and more recently by SCAA (Surface Coatings Association of Australia - an updated OCCA). While TAFE facilities have been used to deliver the course and qualifications, industry has provided most of the lecturers and also encouraged the students to enrol. With the move to competency based qualifications, it was essential to update the course structure and to develop appropriate units of competency. Industry representatives developed the units of competency (with some guidance and editing by TaPS) and an appropriate qualification structure was created. This has always been a national course and its inclusion in PMA08 will help it maintain and grow its national importance and enrolment. There are already existing industry developed learning resources to support individual learning should participants wish to learn that way.

The project reference group (PRG)

The project was overseen by a group of technical experts (RTOs and industry) who contributed much time and expertise to this project and their contribution is gratefully acknowledged. The PRG members were:

- Don Sanders (Chair, APPEA)
- David Graham (Huntsman)
- Lina.Dickins - Lina was later replaced by Ken Rhodes (Santos)
- Keith.Butler (Gladstone TAFE, representing Peter Claughton [manager])
- Joe Calabrese (Agility) - Joe later retired and was replaced by Kim Peterson, TAFE NSW
- Gerald Crawford (DEST)
- Derek Cupp (MISAC [SA ITAB])
- Vince Lloyd (Qenos - AWU)
- John Lamont (Nowra Chemicals)
- Celeste Howden (MLA)
- Brenda Micale (DET WA)

Sherelee Rose (DFEEST, SA) also attended one meeting.

The industry participants

Many people made time in their busy schedule to participate in this project. Without their expertise and input, the project would not have been able to achieve its objectives and this is also gratefully acknowledged.

The industry also made available resources for meetings (including catering) and provided examples of their resources to assist in the development of new and revised units of competency. Their assistance is gratefully acknowledged.

Summary of changes resulting from the review

Environmental changes

The review of PMA02 occurred in an environment of rationalisation and as a step towards laying the foundation for ongoing continuous improvement. There had been some significant changes in the broader Training Package environment since the last review of PMA02, including:

- development and endorsement of MCM04 Competitive Manufacturing
- development and endorsement of MSA07 Manufacturing
- introduction of Vocational Graduate Certificates and Diplomas
- introduction of Skill Sets.

In addition to these changes in the VET scene the industry's use of PMA was increasing and maturing with most of the majors now accepting Certificate II and/or III as a basic qualification for their plant operators/technicians and with a significant body of plant technicians now looking at the Certificate IV and Diploma.

Change of name to 'Chemical, Hydrocarbons and Refining'

To add to the texture of the PMA environment, Australian companies with operations overseas, and individual Australians working overseas are now beginning to seek access to this Australian suite of qualifications.

In addition, industry sectors which had previously been covered by PMA, but which had not actively participated in previous reviews were now also actively involved and these include aluminium smelting and alumina refining and the surface coatings (paint) sectors.

The review also occurred in the midst of a resources led boom. This led to a high state of activity among the industry participants and if anything increased the already high mobility between organisations for hydrocarbon companies.

In keeping with this extension of focus of PMA, and after much deliberation, it was decided that by simply removing 'Oil' from the name resulted in a title that covered the refining of minerals, which is a growing sector for PMA. Industry stakeholders agreed that as the 'oil refining' sector is actually seen as part of 'hydrocarbons', the new name provides a more inclusive title, without loss of the good will and recognition associated with the previous name.

Changes to qualifications in PMA08

PMA02 provided a range of both 'technical' and non-technical or 'support' qualifications.

These had an integrated vertical structure, with some facility for moving between technical and support qualifications.

PMA08 only retains the technical qualifications within its structure. The non-technical PMA02

Certificates I, II and III in Process Support have not been carried forward (see below re the rationalised process manufacturing support qualifications available in MSA07).

Certificate I in Process Plant Skills has not been carried forward. In reality, this certificate was not a technical certificate and it is agreed that where there is a workplace need for a Certificate I, the generic MSA10207 Certificate I in Process Manufacturing is an appropriate qualification, with a similar selection of units.

The Certificates II, III and IV remain essentially unchanged, although there are some additional units.

The Diploma has been restructured to remove the implicit assumption in PMA50102 that the previous Certificates had also been achieved. People with the Certificate IV may achieve some advanced standing depending on the units selected. The structure has been chosen to keep the increment between Certificate IV and Diploma approximately constant.

The Advanced Diploma builds on the Diploma as is currently the case.

Changes to layout of PMA08 qualifications

'Units are now shown in 'banks' in the qualifications framework. This change in format is intended to reduce the confusion which sometimes arose from the PMA02 format. It is also consistent with the format used for other manufacturing Training Packages.

In PMA08, the banks are as follows:

- Group 1 units are the mandatory units (previously called 'core' units)
- Group 2 units are the technical units (previously called 'OPS' or 'operations' units)
- Group 3 units are the support units, and typically will be split into:
 - Group 3A: support units introduced for the qualification and that level
- Group 3B: support and technical units which may be used for that qualification level but have been available for qualifications at lower levels.

The overall structure and principles of the packaging rules have not changed.

Relocation of support qualifications

Previous reviews of the process manufacturing Training Packages have attempted to rationalise the three support qualifications provided by PMA, PMB and PMC. The creation of MSA07 has allowed this to occur. The three support qualifications (PMA10202, PMA20202 and PMA30202) have not been carried forward into PMA08. These qualifications have been rationalised and moved into MSA07 for use across all of process manufacturing. These qualifications now access a broader range of units, and provide continued access to a similar range of units as in PMA02.

Certificate I

As noted above, PMA10102 Certificate I in Process Plant Skills has also been replaced by MSA10207 in recognition of its role as a non-technical qualification. Appropriate technical units may still be chosen for those wishing to use it as a first step towards PMA20108 Certificate II in Process Plant Operations. While this is not common for the workforces of the major Australian companies, it is still an important route for some to enter formal qualifications.

Addition of a Vocational Graduate Certificate

Advantage has been taken of the new availability of Vocational Graduate Certificates to take an accredited course which has had strong industry support for over 30 years and bring it within the Training Package environment. This has led to PMA70108 Vocational Graduate Certificate in Surface Coating Technology.

Skill Sets

Given the emphasis on safety and incident preparedness/response across the PMA sectors, the industry has supported the inclusion of a range of Skill Sets in PMA08. These have been created to address specific and ongoing training needs.

Transition arrangements

People with existing qualifications from PMA98 or PMA02 will still have that qualification recognised.

People who have some units of competency recognised (while not having a full qualification) should have the equivalent unit of competency in PMA08 granted and then be assessed for the relevant qualification under PMA08.

People who have enrolled in a course under PMA02 should consult the State Training Authority rules that apply in their State. Typically these will allow a 'phase out' period for the completion of the existing qualification before compulsorily moving them to the PMA08 qualification.

It is not expected that moving to the PMA08 qualification should cause any disadvantage.

Changes to units of competency

New units

There have been some additional units created where the industry had perceived some gaps, or to provide appropriate units for a newly active sector.

Rationalisation

Whereas PMA02 mainly used its own 'native' support units, PMA08 predominantly uses support units drawn from MSA07. This then provides common support units across PMA, PMB and PMC and eventually across a broader range of manufacturing Training Packages. This is expected to facilitate the creation of better resources in somewhat thin markets and to assist RTOs operating across the sectors to have more efficient delivery and assessment tools.

This move is also expected to allow industry a wider choice of units. While the rationalisation process has removed duplicated units, it has also made available more units in total from which to choose.

Prerequisites in PMA08

All prerequisites have been reassessed as part of the review of PMA02. The advice from stakeholders was that with the increase in sectors accessing PMA, unnecessary prerequisites restrict the flexibility of application of a unit of competency.

The prerequisites in PMA08 have been determined on the basis that it is considered essential that the proposed prerequisite unit be gained BEFORE commencing the unit in question. Where this is not necessary, the prerequisite units have been removed.

Competitive Manufacturing

A significant set of units has been imported from the Competitive Manufacturing suite of units recently placed in MSA07v3. This is expected to help industry access units which are better focussed on leading edge manufacturing practice. As a consequence the older Front Line Management units have not been formally imported (although are still available for importation under the importation rules). While industry had used these units, usually in highly contextualised form, the information provided during the review indicated it would be more appropriate to replace them with Competitive Manufacturing units.

Coding issues

The PMA specific technical and support units retain the PMA prefix.

Most support units, and some technical units now come with the MSAPM code indicating they are process manufacturing units drawn from MSA07.

Structure of units

Technical units in PMA02 usually had both an element on hazard control and an element on problem solving. Review of these units showed that this had led to some inadvertent repetition within the units. As working safely and solving problems is an integral part of the job and of competency in any unit, these elements have generally been integrated back into the other elements of the unit.

This is not seen as weakening the emphasis on either of these two aspects, but rather of better placing it in the context of it being part of everything that is done.

TAA units

As the BSZ training and assessment units have been withdrawn and are no longer available for importation to a Training Package, they have been replaced with the TAA units required to become a workplace assessor. Only those units required to be a qualified workplace assessor have been included. The other units leading to the Certificate IV have not been included.

Note people with the existing BSZ units are not required to retrain to the TAA units to continue assessing (unless they are assessing the TAA units). Please consult the ATQF2007 for details.

Two Certificate III units have also been imported, on industry advice, for those not requiring the full assessor qualification of three TAA units.

Assessment Guidelines

The Assessment Guidelines are the current version provided by DEST. The industry specific section provides similar information to that provided in PMA02.

The process manufacturing Industry

The process manufacturing industries include the major industry sectors of:

- chemical, hydrocarbons, and minerals processing and oil refining (ANZSIC classification 12 and 251 to 254) represented by PMA08 Training Package
- iron and steel (ANZSIC classification 271) - currently no Training Package
- manufactured mineral products (statistically the non-metallic minerals sector ANZSIC classification 26) represented by PMC04 Training Package
- plastics, rubber and cabling (ANZSIC classifications 255 and 2852) represented by PMB07 Training Package.

Many units of competency also reside in the general manufacturing Training Package MSA07. The process manufacturing industries have common boundaries with the extractive industries

(Mining and Drilling Training Packages) on the upstream end and the automotive, general manufacturing, building and construction and food and beverage industries on the downstream end (as shown in figure 1).

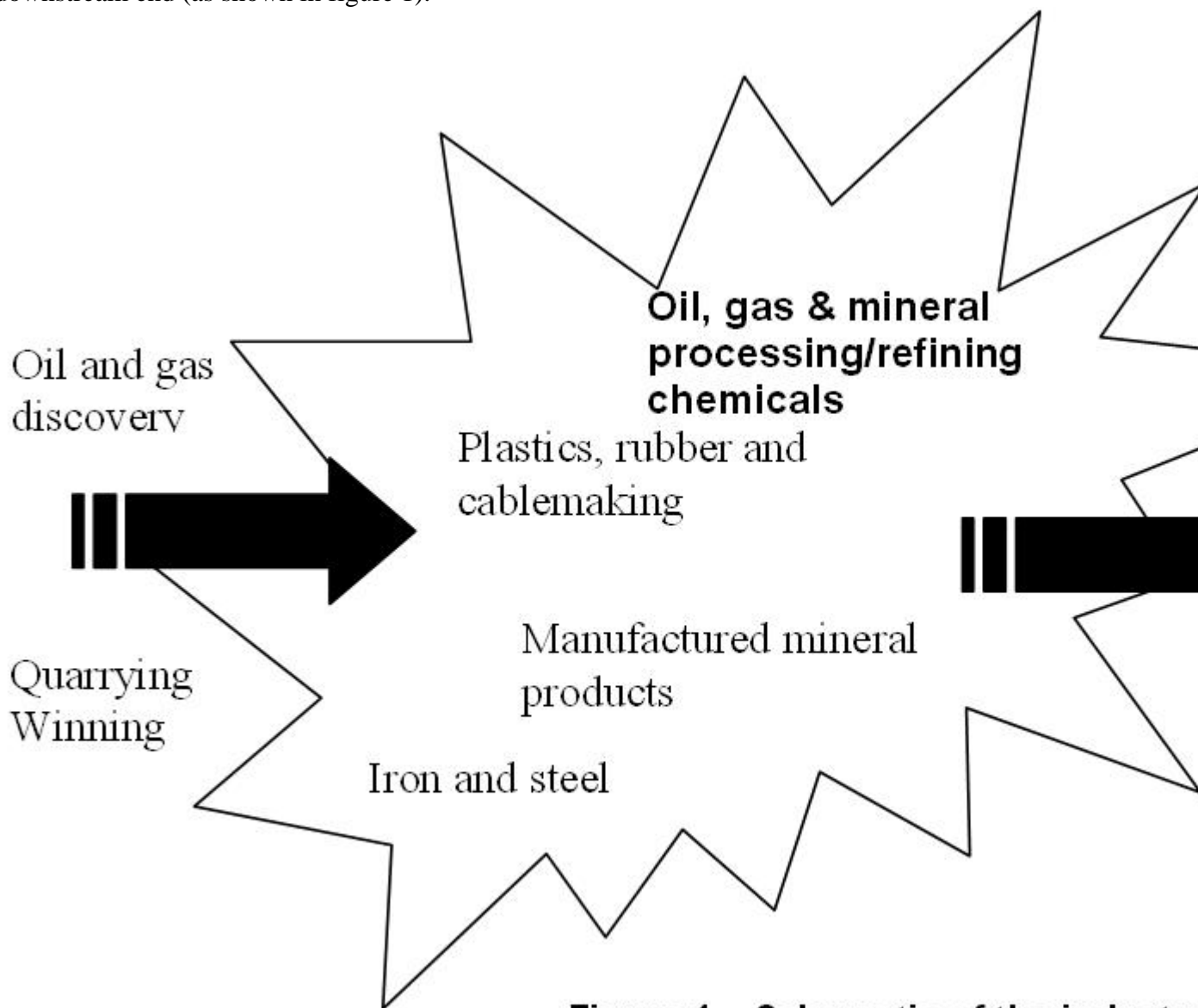


Figure 1 – Schematic of the industry

Process manufacturing is a sector within the Manufacturing industry. The manufacturing industry as a whole saw a growth of 8% in industry value added, 5% in wages and salaries and employment growth of 2% (2004/05). Manufacturing as a whole contributed 12.4% of the national GDP in 2005/06 - second only to the services sector and over twice the contribution of the next sector - mining.

The industry naturally overlaps with the supporting and service industries such as maintenance trades (Metal and Engineering Training Package), administration (Business Services Training Package), sales and marketing (Wholesale and Retail Training Packages) and the professional areas of technical and management support.

In reality, of course, the boundaries are not as neat and tidy as this implies. Some companies belong in multiple sectors and have a production workforce spanning more than one Training Package and even more than one ISC. These companies may find the process manufacturing qualifications in MSA07 suitable to their entire workforce.

The process manufacturing sector as a total represents:

- 160 000 workers (representing 15% of all manufacturing)
- \$10 000 000 000 in wages and salaries paid (representing 21% of all manufacturing)
- \$105 000 000 000 of sales and service income (representing 31% of all manufacturing)
- \$25 500 000 000 value added (representing 26% of all manufacturing)
- \$159 000 value added per person (compared to all manufacturing of \$92 000 per person).

(All statistics in this sector are drawn from ABS 8221.0, Manufacturing Industry, 2004 - 05, released 2006).

The three process manufacturing sectors

The three process manufacturing Training Packages are:

- PMA08 Chemical, Hydrocarbons and Refining (this Training Package) - covering ANZSIC 25, 251 - 254, 2721 - 2722,
- PMB07 Plastic, Rubber and Cablemaking - covering ANZSIC 255 - 256, 2852
- PMC04 Manufactured Mineral Products - covering ANZSIC 26

Steel is not represented by a Training Package.

The chemical, hydrocarbons and refining industry

This industry sector is downstream to the minerals and hydrocarbons exploration and drilling and mineral mining sectors and commences once a production well/mine is established. Its products are distributed to the downstream processing plants as well as the utilities industry, other manufacturing and food and beverage sectors. Other sectors will start with raw materials such as common salt, sulphur or starch to produce their products. Most products from this industry are not used directly by the consumer but rather are transformed by downstream industries such as plastics, food and clothing into consumer products. The major exceptions to this rule would be oil refinery products (petrol and lube oil) and paint.

This sector as a whole (in 2004-05):

- employed 224 486 persons (21% of manufacturing)
- paid wages and salaries of \$13 174 M (27% of manufacturing)
- made sales and service income of \$144 648M (43% of manufacturing)
- added value of \$32 224M (33% of manufacturing)

These figures include all those in the sector, not just those employees who might be covered by PMA08.

Qualifications Framework

The Australian Qualifications Framework

What is the Australian Qualifications Framework?

A brief overview of the Australian Qualifications Framework (AQF) follows. For a full explanation of the AQF, see the *AQF Implementation Handbook*. The 2007 version of the *AQF Implementation Handbook* is expected to be available on the Australian Qualifications Framework Advisory Board (AQFAB) website www.aqf.edu.au during September 2007, and in print in October 2007 (obtain the hard copy by contacting AQFAB on phone 03 9639 1606 or email at aqfab@curriculum.edu.au).

The AQF provides a comprehensive, nationally consistent framework for all qualifications in post-compulsory education and training in Australia. In the vocational education and training (VET) sector it assists national consistency for all trainees, learners, employers and providers by enabling national recognition of qualifications and Statements of Attainment.

Training Package qualifications in the VET sector must comply with the titles and guidelines of the AQF. Endorsed Training Packages provide a unique title for each AQF qualification which must always be reproduced accurately.

Qualifications

Training Packages can incorporate the following eight AQF qualifications.

- Certificate I in ...
- Certificate II in ...
- Certificate III in ...
- Certificate IV in ...
- Diploma of ...
- Advanced Diploma of ...
- Vocational Graduate Certificate of ...
- Vocational Graduate Diploma of ...

On completion of the requirements defined in the Training Package, a Registered Training Organisation (RTO) may issue a nationally recognised AQF qualification. Issuance of AQF qualifications must comply with the advice provided in the *AQF Implementation Handbook* and the AQTF 2007 *Essential Standards for Registration*.

Statement of Attainment

A Statement of Attainment is issued by a Registered Training Organisation when an individual has completed one or more units of competency from nationally recognised qualification(s)/course(s). Issuance of Statements of Attainment must comply with the advice provided in the current *AQF Implementation Handbook* and the AQTF 2007 *Essential Standards for Registration*.

Under the AQTF 2007, RTOs must recognise the achievement of competencies as recorded on a qualification or Statement of Attainment issued by other RTOs. Given this, recognised competencies can progressively build towards a full AQF qualification.

AQF Guidelines and Learning Outcomes

The *AQF Implementation Handbook* provides a comprehensive guideline for each AQF qualification. A summary of the learning outcome characteristics and their distinguishing features for each VET related AQF qualification is provided below.

Certificate I

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and skills would prepare a person to perform a defined range of activities most of which may be routine and predictable.

Applications may include a variety of employment related skills including preparatory access and participation skills, broad-based induction skills and/or specific workplace skills. They may also include participation in a team or work group.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate knowledge by recall in a narrow range of areas;
- demonstrate basic practical skills, such as the use of relevant tools;
- perform a sequence of routine tasks given clear direction
- receive and pass on messages/information.

Certificate II

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and skills would prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of operations to be applied.

Performance of a prescribed range of functions involving known routines and procedures and some accountability for the quality of outcomes.

Applications may include some complex or non-routine activities involving individual responsibility or autonomy and/or collaboration with others as part of a group or team.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate basic operational knowledge in a moderate range of areas;
- apply a defined range of skills;
- apply known solutions to a limited range of predictable problems;
- perform a range of tasks where choice between a limited range of options is required;
- assess and record information from varied sources;
- take limited responsibility for own outputs in work and learning.

Certificate III

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and competencies would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available.

Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgement is required in the selection of equipment, services or contingency measures and within known time constraints.

Applications may involve some responsibility for others. Participation in teams including group or team co-ordination may be involved.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate some relevant theoretical knowledge
- apply a range of well-developed skills
- apply known solutions to a variety of predictable problems
- perform processes that require a range of well-developed skills where some discretion and judgement is required
- interpret available information, using discretion and judgement
- take responsibility for own outputs in work and learning
- take limited responsibility for the output of others.

Certificate IV

Characteristics of Learning Outcomes

Breadth, depth and complexity of knowledge and competencies would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature. Performance of a broad range of skilled applications including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills. Applications involve responsibility for, and limited organisation of, others.

Distinguishing Features of Learning Outcomes

Do the competencies enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating some theoretical concepts
- apply solutions to a defined range of unpredictable problems
- identify and apply skill and knowledge areas to a wide variety of contexts, with depth in some areas
- identify, analyse and evaluate information from a variety of sources
- take responsibility for own outputs in relation to specified quality standards
- take limited responsibility for the quantity and quality of the output of others.

Diploma

Characteristics of Learning Outcomes

Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination.

The self directed application of knowledge and skills, with substantial depth in some areas where judgment is required in planning and selecting appropriate equipment, services and techniques for self and others.

Applications involve participation in development of strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team co-ordination may be involved.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

Distinguishing Features of Learning Outcomes

Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas
- analyse and plan approaches to technical problems or management requirements
- transfer and apply theoretical concepts and/or technical or creative skills to a range of situations
- evaluate information, using it to forecast for planning or research purposes
- take responsibility for own outputs in relation to broad quantity and quality parameters
- take some responsibility for the achievement of group outcomes.

Advanced Diploma

Characteristics of Learning Outcomes

Breadth, depth and complexity involving analysis, design, planning, execution and evaluation across a range of technical and/or management functions including development of new criteria or applications or knowledge or procedures.

The application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts in relation to either varied or highly specific functions. Contribution to the development of a broad plan, budget or strategy is involved and accountability and responsibility for self and others in achieving the outcomes is involved.

Applications involve significant judgement in planning, design, technical or leadership/guidance functions related to products, services, operations or procedures.

The degree of emphasis on breadth as against depth of knowledge and skills may vary between qualifications granted at this level.

Distinguishing Features of Learning Outcomes

Do the competencies or learning outcomes enable an individual with this qualification to:

- demonstrate understanding of specialised knowledge with depth in some areas
- analyse, diagnose, design and execute judgements across a broad range of technical or management functions
- generate ideas through the analysis of information and concepts at an abstract level
- demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills
- demonstrate accountability for personal outputs within broad parameters
- demonstrate accountability for personal and group outcomes within broad parameters.

Vocational Graduate Certificate

Characteristics of competencies or learning outcomes

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth and complexity involving the initiation, analysis, design, planning, execution and evaluation of technical and management functions in highly varied and highly specialised contexts.
- Applications involve making significant, high-level, independent judgements in major broad or planning, design, operational, technical and management functions in highly varied and specialised contexts. They may include responsibility and broad-ranging accountability for the structure, management and output of the work or functions of others.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

Distinguishing features of learning outcomes

- Demonstrate the self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Initiate, analyse, design, plan, execute and evaluate major broad or technical and management functions in highly varied and highly specialised contexts.
- Generate and evaluate ideas through the analysis of information and concepts at an abstract level.
- Demonstrate a command of wide-ranging, highly specialised technical, creative or conceptual skills in complex contexts.
- Demonstrate responsibility and broad-ranging accountability for the structure, management and output of the work or functions of others.

Vocational Graduate Diploma

Characteristics of competencies or learning outcomes

- The self-directed development and achievement of broad and specialised areas of knowledge and skills, building on prior knowledge and skills.
- Substantial breadth, depth and complexity involving the initiation, analysis, design, planning, execution and evaluation of major functions, both broad and highly specialised, in highly varied and highly specialised contexts.
- Further specialisation within a systematic and coherent body of knowledge.
- Applications involve making high-level, fully independent, complex judgements in broad planning, design, operational, technical and management functions in highly varied and highly specialised contexts. They may include full responsibility and accountability for all aspects of work and functions of others, including planning, budgeting and strategy development.
- The degree of emphasis on breadth, as opposed to depth, of knowledge and skills may vary between qualifications granted at this level.

Distinguishing features of learning outcomes

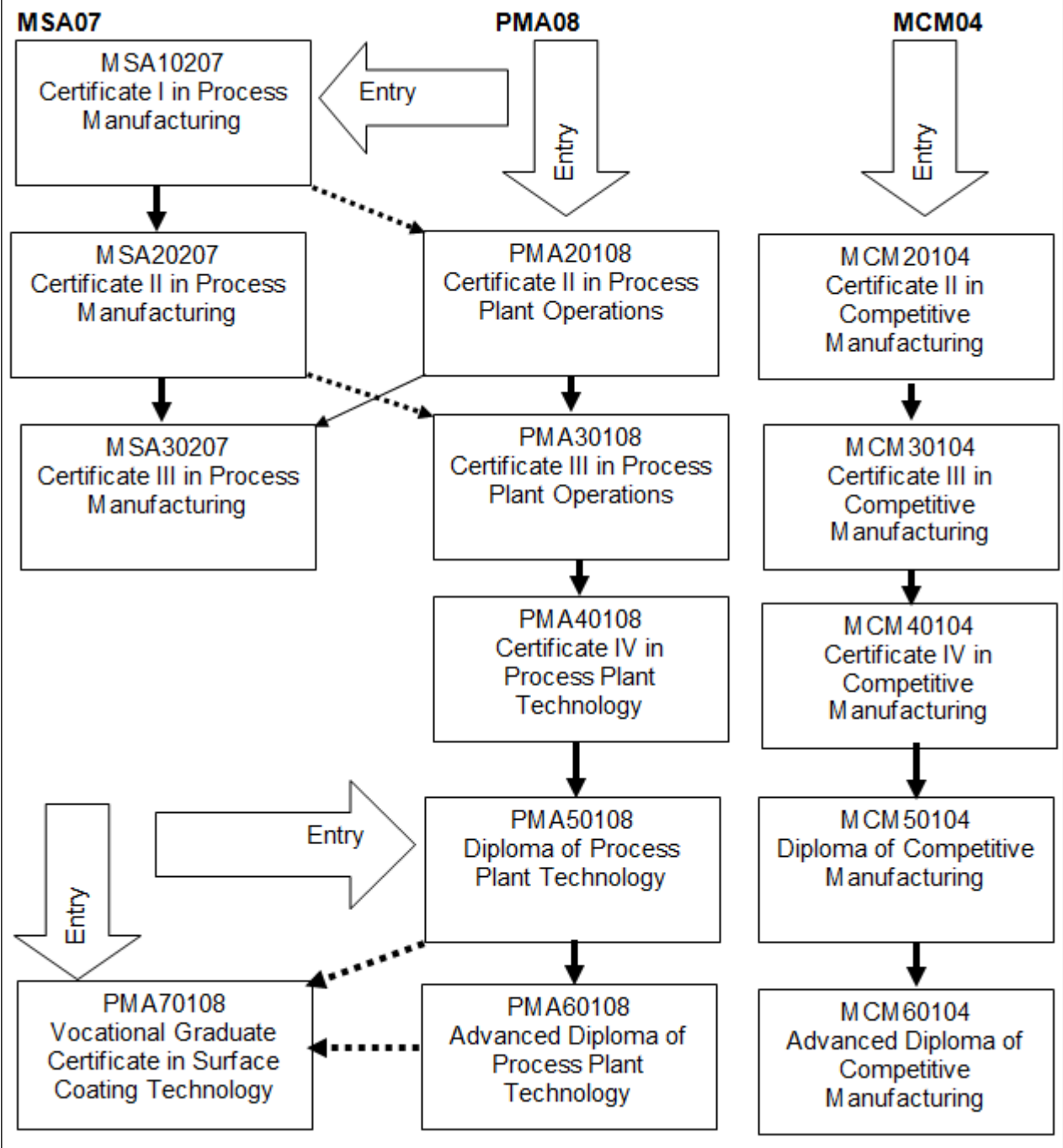
- Demonstrate the self-directed development and achievement of broad and highly specialised areas of knowledge and skills, building on prior knowledge and skills.
- Initiate, analyse, design, plan, execute and evaluate major functions, both broad and within highly varied and highly specialised contexts.
- Generate and evaluate complex ideas through the analysis of information and concepts at an abstract level.
- Demonstrate an expert command of wide-ranging, highly specialised, technical, creative or conceptual skills in complex and highly specialised or varied contexts.
- Demonstrate full responsibility and accountability for personal outputs.
- Demonstrate full responsibility and accountability for all aspects of the work or functions of others, including planning, budgeting and strategy.
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Qualification Pathways

Qualification Pathways

Qualification Pathways

This Training Package (PMA08) contains the technical qualifications for this industry. Additional relevant qualifications are contained within MSA07. With appropriate choice of units within a qualification from MSA07 there may be articulation to PMA08 qualifications.



Skill Sets

Skill Sets

Definition

Skill sets are defined as single units of competency, or combinations of units of competency from an endorsed Training Package, which link to a licence or regulatory requirement, or defined industry need.

Wording on Statements of Attainment

Skill sets are a way of publicly identifying logical groupings of units of competency which meet an identified need or industry outcome. Skill sets are not qualifications.

Where skill sets are identified in a Training Package, the Statement of Attainment can set out the competencies a person has achieved in a way that is consistent and clear for employers and others. This is done by including the wording "these competencies meet [insert skill set title or identified industry area] need" on the Statement of Attainment. This wording applies only to skill sets that are formally identified as such in the endorsed Training Package. See the 2007 edition of the AQF Implementation Handbook for advice on wording on Statements of Attainmentthe updated version is expected to be available on the AQFAB website www.aqf.edu.au during September 2007 and in print in October 2007.

Skill Sets in this Training Package

Industry has supported the creation of a range of Skill Sets, mainly in safety and incident preparedness/response areas.

Some job roles in some sectors of the industry do require a licence, however, there is no overall industry requirement for this and so no Skill Sets associated with licensing have been proposed.

The industry manages the competency requirements of its workforce to ensure compliance with a vast web of regulatory requirements. The Skill Sets below have been developed in consultation with the industry and are based on logical clusters of units which meet critical industry needs, particularly in the area of safety and incident preparedness and response. These Skill Sets consist of clusters of competencies which are commonly practiced (and possibly trained) together. They reflect an industry-wide need to be able to recognise that a person can undertake these defined roles.

Employability Skills

Employability Skills replacing Key Competency information from 2006

In May 2005, the approach to incorporate Employability Skills within Training Package qualifications and units of competency was endorsed. As a result, from 2006 Employability Skills will progressively replace Key Competency information in Training Packages.

Background to Employability Skills

Employability Skills are also sometimes referred to as generic skills, capabilities or Key Competencies. The Employability Skills discussed here build on the Mayer Committee's Key Competencies, which were developed in 1992 and attempted to describe generic competencies for effective participation in work.

The Business Council of Australia (BCA) and the Australian Chamber of Commerce and Industry (ACCI), produced the Employability Skills for the Future report in 2002 in consultation with other peak employer bodies and with funding provided by the Department of Education, Science and Training (DEST) and the Australian National Training Authority (ANTA). Officially released by Dr Nelson (Minister for Education, Science and Training) on 23 May 2002, copies of the report are available from the DEST website at: http://www.dest.gov.au/archive/ty/publications/employability_skills/index.htm.

The report indicated that business and industry now require a broader range of skills than the Mayer Key Competencies Framework and featured an Employability Skills Framework identifying eight Employability Skills*:

- communication
- teamwork
- problem solving
- initiative and enterprise
- planning and organising
- self-management
- learning
- technology.

The report demonstrated how Employability Skills can be further described for particular occupational and industry contexts by sets of facets. The facets listed in the report are the aspects of the Employability Skills that the sample of employers surveyed identified as being important work skills. These facets were seen by employers as being dependent both in their nature and priority on an enterprise's business activity.

*Personal attributes that contribute to employability were also identified in the report but are not part of the Employability Skills Framework.

Employability Skills Framework

The following table contains the Employability Skills facets identified in the report Employability Skills for the Future.

	Employability Skills replacing Key Competency information from 2006
	In May 2005, the approach to incorporate Employability Skills within Training Package qualifications and units of competency was endorsed. As a result, from 2006 Employability Skills will progressively replace Key Competency information in Training Packages.
and harmonious relations across employees and customers	<ul style="list-style-type: none"> • writing to the needs of the audience • negotiating responsively • reading independently • empathising

	<ul style="list-style-type: none"> • using numeracy effectively • understanding the needs of internal and external customers • persuading effectively • establishing and using networks • being assertive • sharing information • speaking and writing in languages other than English
Teamwork that contributes to productive working relationships and outcomes	<ul style="list-style-type: none"> • working across different ages irrespective of gender, race, religion or political persuasion • working as an individual and as a member of a team • knowing how to define a role as part of the team • applying teamwork to a range of situations e.g. futures planning and crisis problem solving • identifying the strengths of team members • coaching and mentoring skills, including giving feedback
Problem solving that contributes to productive outcomes	<ul style="list-style-type: none"> • developing creative, innovative and practical solutions • showing independence and initiative in identifying and solving problems • solving problems in teams • applying a range of strategies to problem solving • using mathematics, including budgeting and financial management to solve problems • applying problem-solving strategies across a range of areas • testing assumptions, taking into account the context of data and circumstances • resolving customer concerns in relation to complex project issues
Initiative and enterprise that contribute to innovative outcomes	<ul style="list-style-type: none"> • adapting to new situations • developing a strategic, creative and long-term vision • being creative • identifying opportunities not obvious to others • translating ideas into action • generating a range of options • initiating innovative solutions
Planning and organising that contribute to long and short-term strategic planning	<ul style="list-style-type: none"> • managing time and priorities - setting time lines, coordinating tasks for self and with others • being resourceful • taking initiative and making decisions • adapting resource allocations to cope with contingencies • establishing clear project goals and deliverables • allocating people and other resources to tasks • planning the use of resources, including time management • participating in continuous improvement and planning processes • developing a vision and a proactive plan to accompany it

	<ul style="list-style-type: none"> • predicting - weighing up risk, evaluating alternatives and applying evaluation criteria • collecting, analysing and organising information • understanding basic business systems and their relationships
Self-management that contributes to employee satisfaction and growth	<ul style="list-style-type: none"> • having a personal vision and goals • evaluating and monitoring own performance • having knowledge and confidence in own ideas and visions • articulating own ideas and visions • taking responsibility
Learning that contributes to ongoing improvement and expansion in employee and company operations and outcomes	<ul style="list-style-type: none"> • managing own learning • contributing to the learning community at the workplace • using a range of mediums to learn - mentoring, peer support and networking, IT and courses • applying learning to technical issues (e.g. learning about products) and people issues (e.g. interpersonal and cultural aspects of work) • having enthusiasm for ongoing learning • being willing to learn in any setting - on and off the job • being open to new ideas and techniques • being prepared to invest time and effort in learning new skills • acknowledging the need to learn in order to accommodate change
Technology that contributes to the effective carrying out of tasks	<ul style="list-style-type: none"> • having a range of basic IT skills • applying IT as a management tool • using IT to organise data • being willing to learn new IT skills • having the OHS knowledge to apply technology • having the appropriate physical capacity

Employability Skills Summary

An Employability Skills Summary exists for each qualification. Summaries provide a lens through which to view Employability Skills at the qualification level and capture the key aspects or facets of the Employability Skills that are important to the job roles covered by the qualification. Summaries are designed to assist trainers and assessors to identify and include important industry application of Employability Skills in learning and assessment strategies. The following is important information for trainers and assessors about Employability Skills Summaries.

- Employability Skills Summaries provide examples of how each skill is applicable to the job roles covered by the qualification.
- Employability Skills Summaries contain general information about industry context which is further explained as measurable outcomes of performance in the units of competency in each qualification.
- The detail in each Employability Skills Summary will vary depending on the range of job roles covered by the qualification in question.
- Employability Skills Summaries are not exhaustive lists of qualification requirements or checklists of performance (which are separate assessment tools that should be

Industry Requirements for Employability Skills

Industry Requirements for Employability Skills

This is a technology based industry and a key role of operations personnel is the solving of problems. They are largely self managed and are expected to operate in both permanent and *ad hoc* teams as required. The communication of key safety, health, environmental and operational information to other personnel on site is a vital requirement.

Assessment Guidelines

Introduction

These Assessment Guidelines provide the endorsed framework for assessment of units of competency in this Training Package. They are designed to ensure that assessment is consistent with the AQTF 2007. Assessments against the units of competency in this Training Package must be carried out in accordance with these Assessment Guidelines.

Assessment System Overview

This section provides an overview of the requirements for assessment when using this Training Package, including a summary of the AQTF requirements; licensing/registration requirements; and assessment pathways.

Quality assessment underpins the credibility of the vocational education and training sector. The Assessment Guidelines of a Training Package are an important tool in supporting quality assessment.

Assessment within the National Skills Framework is the process of collecting evidence and making judgements about whether competency has been achieved to confirm whether an individual can perform to the standards expected in the workplace, as expressed in the relevant endorsed unit of competency.

Assessment must be carried out in accordance with the:

- benchmarks for assessment
- specific industry requirements
- principles of assessment
- rules of evidence
- assessment requirements set out in the AQTF

Benchmarks for Assessment

The endorsed units of competency in this Training Package are the benchmarks for assessment. As such, they provide the basis for nationally recognised Australian Qualifications Framework (AQF) qualifications and Statements of Attainment issued by Registered Training Organisations (RTOs).

Australian Quality Training Framework Assessment Requirements

Assessment leading to nationally recognised AQF qualifications and Statements of Attainment in the vocational education and training sector must meet the requirements of the AQTF as expressed in the AQTF 2007 *Essential Standards for Registration*.

The AQTF 2007 *Essential Standards for Registration* can be downloaded from < www.training.com.au/aqtf2007>. The following points summarise assessment requirements.

Registration of Training Organisations

Assessment must be conducted by, or on behalf of, an RTO formally registered by a State or Territory Registering/Course Accrediting Body in accordance with the AQTF 2007 *Essential Standards for Registration*. The RTO must have the specific units of competency and/or AQF qualifications on its scope of registration.

Quality Training and Assessment

Each RTO must provide quality training and assessment across all its operations. See the AQTF 2007 *Essential Standards for Registration*, Standard 1.

Assessor Competency Requirements

Each person involved in training, assessment or client service must be competent for the functions they perform. See the AQTF 2007 *Essential Standards for Registration*, Standard 1, for assessor (and trainer) competency requirements.

Assessment Requirements

The RTOs assessments, including RPL, must meet the requirements of the relevant endorsed Training Package. See the AQTF 2007 *Essential Standards for Registration*, Standard 1.

Assessment Strategies

Each RTO must have strategies for training and assessment that meet the requirements of the relevant Training Package or accredited course and are developed in consultation with industry stakeholders. See the AQTF 2007 *Essential Standards for Registration*, Standard 1.

National Recognition

Each RTO must recognise the AQF qualifications and Statements of Attainment issued by any other RTO. See the AQTF 2007 *Essential Standards for Registration*, Condition of Registration 7: Recognition of qualifications issued by other RTOs.

Access and Equity and Client Outcomes

Each RTO must adhere to the principles of access and equity and maximise outcomes for its clients. See the AQTF 2007 *Essential Standards for Registration*, Standard 2.

Monitoring Assessments

Training and/or assessment provided on behalf of the RTO must be monitored to ensure that it is in accordance with all aspects of the *Essential Standards for Registration*. See the AQTF 2007 *Essential Standards for Registration*, Standard 3.

Recording Assessment Outcomes

Each RTO must manage records to ensure their accuracy and integrity. See the AQTF 2007 *Essential Standards for Registration*, Standard 3.

Issuing AQF Qualifications and Statements of Attainment

Each RTO must issue AQF qualifications and Statements of Attainment that meet the requirements of the current AQF Implementation Handbook and the endorsed Training Packages within the scope of its registration. An AQF qualification is issued once the full requirements for a qualification, as specified in the nationally endorsed Training Package are met. A Statement of Attainment is issued when an individual has completed one or more units of competency from nationally recognised qualification(s)/course(s). See the AQTF 2007 and the 2007 edition of the AQF Implementation Handbook-available on the AQFAB website < www.aqf.edu.au>.

Licensing is not generally required in this industry. Licenses may be required in some States for some units of competency. Check local regulations for details.

Requirements for Assessors

Assessors will be required to meet the AQTF requirements. This includes demonstrated technical competency for the PMA units assessed.

Where assessment relates to a unit which may have a licensing requirements the assessor may also need to be licensed.

Requirements for RTOs

RTOs will need to be able to gather evidence from the workplace for determining competency in technical units at Certificate II, III and IV.

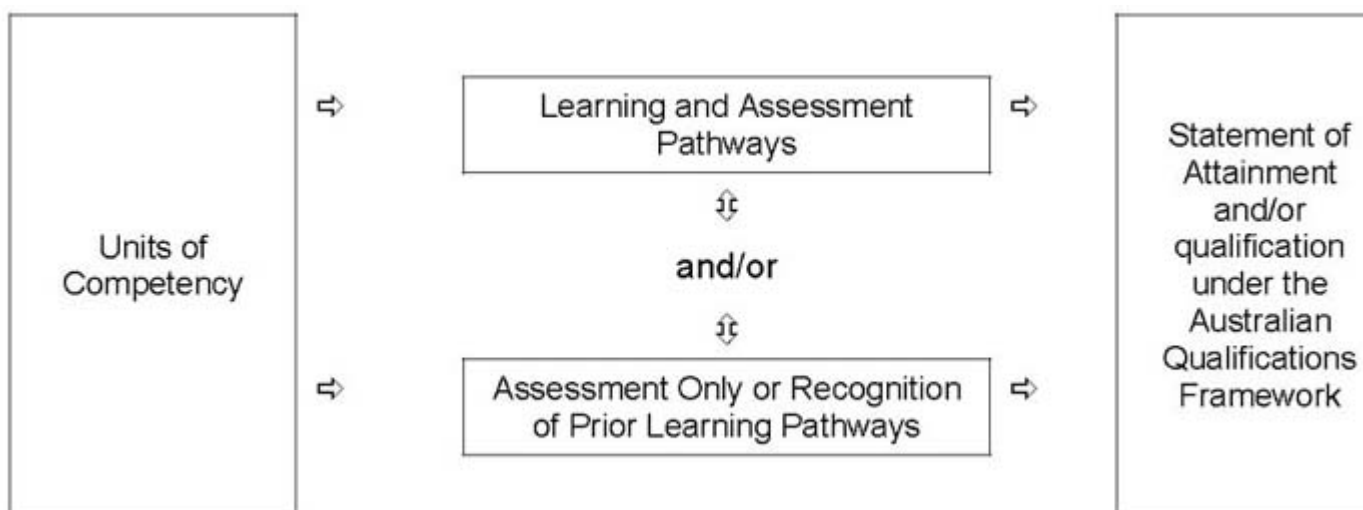
Where delivery and assessment relates to units which may have a licensing requirement the RTO may also need to satisfy the requirements of the local licensing authority.

Pathways

The competencies in this Training Package may be attained in a number of ways including through:

- formal or informal education and training
- experiences in the workplace
- general life experience, and/or
- any combination of the above.

Assessment under this Training Package leading to an AQF qualification or Statement of Attainment may follow a learning and assessment pathway, an assessment-only or recognition pathway, or a combination of the two as illustrated in the following diagram.



Each of these assessment pathways leads to full recognition of competencies held - the critical issue is that the candidate is competent, not how the competency was acquired.

Assessment, by any pathway, must comply with the assessment requirements set out in the Assessment Guidelines of the Training Package and the AQTF 2007.

Learning and Assessment Pathways

Usually, learning and assessment are integrated, with assessment evidence being collected and feedback provided to the candidate at anytime throughout the learning and assessment process.

Learning and assessment pathways may include structured programs in a variety of contexts using a range of strategies to meet different learner needs. Structured learning and assessment programs could be: group-based, work-based, project-based, self-paced, action learning-based; conducted by distance or e-learning; and/or involve practice and experience in the workplace.

Learning and assessment pathways to suit Australian Apprenticeships have a mix of formal structured training and structured workplace experience with formative assessment activities through which candidates can acquire and demonstrate skills and knowledge from the relevant units of competency.

Assessment-Only or Recognition of Prior Learning Pathway

Competencies already held by individuals can be formally assessed against the units of competency in this Training Package, and should be recognised regardless of how, when or where they were achieved.

In an assessment-only or Recognition of Prior Learning (RPL) pathway, the candidate provides current, quality evidence of their competency against the relevant unit of competency. This process may be directed by the candidate and verified by the assessor, such as in the compilation of portfolios; or directed by the assessor, such as through observation of workplace performance and skills application, and oral and/or written assessment. Where the outcomes of this process indicate that the candidate is competent, structured training is not required. The RPL requirements of the AQTF 2007 must be met (Standard 1).

As with all assessment, the assessor must be confident that the evidence indicates that the candidate is currently competent against the endorsed unit of competency. This evidence may take a variety of forms and might include certification, references from past employers, testimonials from clients, and work samples. The onus is on candidates to provide sufficient evidence to satisfy assessors that they currently hold the relevant competencies. In judging evidence, the assessor must ensure that the evidence of prior learning is:

- authentic (the candidate's own work)
- valid (directly related to the current version of the relevant endorsed unit of competency)
- reliable (shows that the candidate consistently meets the endorsed unit of competency)
- current (reflects the candidate's current capacity to perform the aspect of the work covered by the endorsed unit of competency), and
- sufficient (covers the full range of elements in the relevant unit of competency and addresses the four dimensions of competency, namely task skills, task management skills, contingency management skills, and job/role environment skills).

The assessment only or recognition of prior learning pathway is likely to be most appropriate in the following scenarios:

- candidates enrolling in qualifications who want recognition for prior learning or current competencies
- existing workers
- individuals with overseas qualifications
- recent migrants with established work histories
- people returning to the workplace, and
- people with disabilities or injuries requiring a change in career.

Combination of Pathways

Where candidates for assessment have gained competencies through work and life experience and gaps in their competence are identified, or where they require training in new areas, a combination of pathways may be appropriate.

In such situations, the candidate may undertake an initial assessment to determine their current competency. Once current competency is identified, a structured learning and assessment program ensures that the candidate acquires the required additional competencies identified as gaps.

Assessor Requirements

This section identifies the mandatory competencies for assessors, and clarifies how others may contribute to the assessment process where one person alone does not hold all the required competencies.

Assessor Competencies

The AQTF 2007 specifies mandatory competency requirements for assessors. For information, Standard 1, Element 1.4 from the AQTF 2007 Essential Standards for Registration follows:

1.4		<i>Training and assessment is delivered by trainers and assessors who:</i>
	a)	<i>have the necessary training and assessment competencies as determined by the National Quality Council or its successors</i>
	b)	<i>have the relevant vocational competencies at least to the level being delivered or</i>
		<i>assessed</i>
	c)	<i>continue developing their vocational and training and assessment competencies to support continuous improvements in the delivery of the RTO's services.</i>

Designing Assessment Tools

This section provides an overview on the use and development of assessment tools.

Use of Assessment Tools

Assessment tools provide a means of collecting the evidence that assessors use in making judgments about whether candidates have achieved competency.

There is no set format or process for the design, production or development of assessment tools. Assessors may use prepared assessment tools, such as those specifically developed to support this Training Package, or they may develop their own.

Using Prepared Assessment Tools

If using prepared assessment tools, assessors should ensure these are benchmarked, or mapped, against the current version of the relevant unit of competency. This can be done by checking that the materials are listed on the National Training Information Service < www.ntis.gov.au >. Materials on the list have been noted by the National Quality Council as meeting their quality criteria for Training Package support materials.

Developing Assessment Tools

When developing assessment tools, assessors must ensure that they:

- are benchmarked against the relevant unit or units of competency
- are reviewed as part of the continuous improvement of assessment strategies as required under Standard 1 of the AQTF 2007
- meet the assessment requirements expressed in Standard 1 of the AQTF 2007.

A key reference for assessors developing assessment tools is TAA04 Training and Assessment Training Package and the unit of competency TAAASS403A Develop assessment tools. There is no set format or process for the design, production or development of assessment materials.

Conducting Assessment

This section details the mandatory assessment requirements and provides information on equity in assessment including reasonable adjustment.

Assessment Requirements

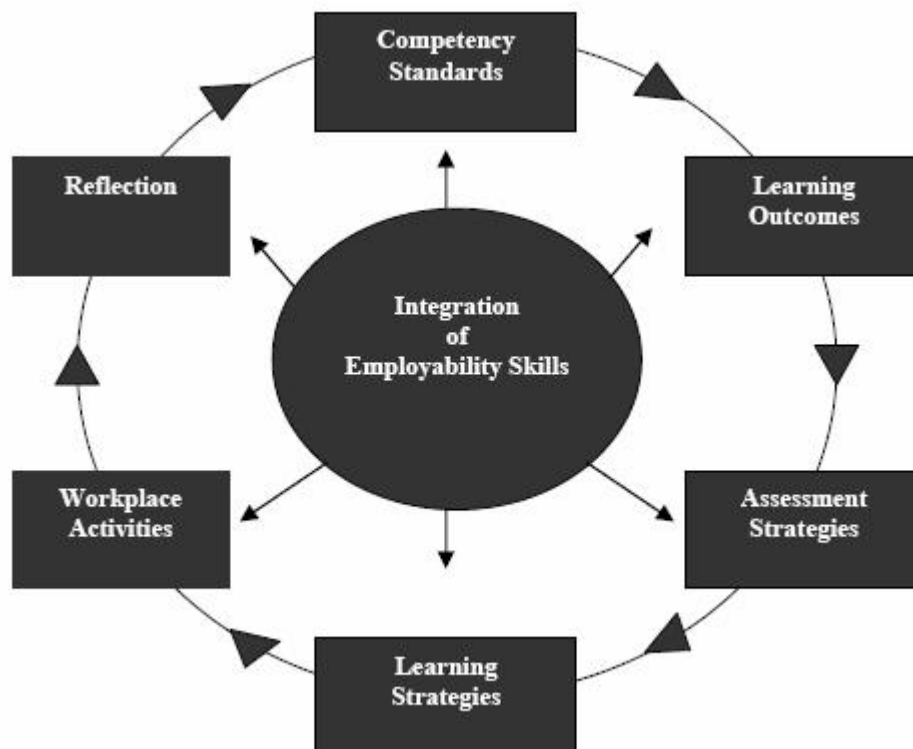
Assessments must meet the criteria set out in the AQTF 2007 Essential Standards for Registration.

For information, the mandatory assessment requirements from Standard 1 from the AQTF 2007 Essential Standards for Registration are as follows:

1.5		<i>Assessment, including Recognition of Prior Learning:</i>
	a)	<i>meets the requirements of the relevant Training Package or accredited course,</i>
	b)	<i>is conducted in accordance with the principles of assessment and the rules of evidence, and</i>
	c)	<i>meets workplace and, where relevant, regulatory requirements.</i>

Assessment of Employability Skills

Employability Skills are integral to workplace competency. As such they must be considered in the design, customisation, delivery and assessment of vocational education and training programs in an integrated and holistic way, as represented diagrammatically below.



Employability Skills are embedded and explicit within each unit of competency. Training providers must use Employability Skills information in order to design valid and reliable training and assessment strategies. This analysis could include:

- reviewing units of competency to locate relevant Employability Skills and determine how they are applied within the unit
- analysing the Employability Skills Summary for the qualification in which the unit or units are packaged to help clarify relevant industry and workplace contexts and the application of Employability Skills at that qualification outcome
- designing training and assessment to address Employability Skills requirements.

Employability Skills in the Chemical, Hydrocarbons and Refining context

Employability skills are embedded in the units of this Training Package. In particular the use of technology and the solving of problems in a safe and healthy environment are the key focus of the technical units.

For more information on Employability Skills in Manufacturing Industry Skills Council Training

Packages go to the Manufacturing Industry Skills Council website at <http://www.mskills.com.au>.

Access and Equity

An individual's access to the assessment process should not be adversely affected by restrictions placed on the location or context of assessment beyond the requirements specified in this Training Package: training and assessment must be bias-free.

Under the rules for their development, Training Packages must reflect and cater for the increasing diversity of Australia's VET clients and Australia's current and future workforce. The flexibilities offered by Training Packages should enhance opportunities and potential outcomes for all people so that we can all benefit from a wider national skills base and a shared contribution to Australia's economic development and social and cultural life.

Reasonable adjustments

It is important that education providers take meaningful, transparent and reasonable steps to consult, consider and implement reasonable adjustments for students with disability.

Under the Disability Standards for Education 2005, education providers must make reasonable adjustments for people with disability to the maximum extent that those adjustments do not cause that provider unjustifiable hardship. While "reasonable adjustment" and "unjustifiable hardship" are different concepts and involve different considerations, they both seek to strike a balance between the interests of education providers and the interests of students with and without disability.

An adjustment is any measure or action that a student requires because of their disability, and which has the effect of assisting the student to access and participate in education and training on the same basis as students without a disability. An adjustment is reasonable if it achieves this purpose while taking into account factors such as the nature of the student's disability, the views of the student, the potential effect of the adjustment on the student and others who might be affected, and the costs and benefits of making the adjustment.

An education provider is also entitled to maintain the academic integrity of a course or program and to consider the requirements or components that are inherent or essential to its nature when assessing whether an adjustment is reasonable. There may be more than one adjustment that is reasonable in a given set of circumstances; education providers are required to make adjustments that are reasonable and that do not cause them unjustifiable hardship. See Part 4, Chapter 2 of the Training Package Development Handbook (DEST, September 2007) for more information on reasonable adjustment, including examples of adjustments.

Further Sources of Information

The section provides a listing of useful contacts and resources to assist assessors in planning, designing, conducting and reviewing of assessments against this Training Package.

Contacts

Manufacturing Skills Australia

Level 7, 80 Arthur Street

North Sydney

PO Box 289

North Sydney 2059

P 02 9955 5500

F 02 9955 8044

E info@mskills.com.au

W <http://www.mskills.com.au/>

Technical and Vocational Education and Training (TVET) Australia Limited

Level 21, 390 St Kilda Road, Melbourne VIC 3150

PO Box 12211, A"Beckett Street Post Office

MELBOURNE VICTORIA 8006

Ph: +61 3 9832 8100

Fax: +61 3 9832 8198

Email: sales@tvetaustralia.com.au

Web: www.tvetaustralia.com.au

For information on the TAA04 Training and Assessment Training Package contact:

Innovation & Business Skills Australia Level 2, Building B, 192 Burwood Road

HAWTHORN VIC 3122

Telephone: (03) 9815 7000

Facsimile: (03) 9815 7001

Web: www.ibsa.org.au

Email: virtual@ibsa.org.au

General Resources

Refer to <http://antapubs.dest.gov.au/publications/search.asp> to locate the following ANTA publications.

AQF Implementation Handbook, third Edition. Australian Qualifications Framework Advisory Board, 2002, aqf.edu.au

Australian Quality Training Framework 2007 (AQTF 2007) - for information and resources go to < www.training.com.au/aqtf2007 >

AQTF 2007 Essential Standards for Registration. Training organisations must meet these standards in order to deliver and assess nationally recognised training and issue nationally recognised qualifications. They include three standards, a requirement for registered training organisations to gather information on their performance against three quality indicators, and nine conditions of registration

AQTF 2007 User"s Guide to the Essential Standards for Registration. A Users" Guide for training organisations who must meet these standards in order to deliver and assess nationally recognised training and issue nationally recognised qualifications.

AQTF 2007 Standards for Accredited Courses. State and Territory accrediting bodies are responsible for accrediting courses. This standard provides a national operating framework and template for the accreditation of courses.

TAA04 Training and Assessment Training Package. This is available from the Innovation and Innovation & Business Skills Australia (IBSA) Industry Skills Council and can be viewed, and components downloaded, from the National Training Information Service (NTIS). National Training Information Service, an electronic database providing comprehensive information about RTOs, Training Packages and accredited courses - www.ntis.gov.au Training Package Development Handbook (DEST, August 2007). Can be downloaded from www.dest.gov.au

Assessment Resources

Training Package Assessment Guides - a range of resources to assist RTOs in developing Training Package assessment materials (originally developed by ANTA with funding from the Department of Education, Training and Youth Affairs) and made up of 10 separate titles, as described at the publications page of www.dest.gov.au. Go to www.resourcegenerator.gov.au/loadpage.asp?TPAG.htm

Printed and/or CD ROM versions of the Guides can be purchased from Technical and Vocational Education and Training (TVET) Australia Limited. The resource includes the following guides:

- Training Package Assessment Materials Kit
- Assessing Competencies in Higher Qualifications
- Recognition Resource
- Kit to Support Assessor Training
- Candidates Kit: Guide to Assessment in New Apprenticeships
- Assessment Approaches for Small Workplaces
- Assessment Using Partnership Arrangements
- Strategies for ensuring Consistency in Assessment
- Networking for Assessors
- Quality Assurance Guide for Assessment

An additional guide "Delivery and Assessment Strategies" has been developed to complement these resources.

Assessment Tool Design and Conducting Assessment

VETASSESS & Western Australian Department of Training and Employment 2000, Designing

Tests - Guidelines for designing knowledge based tests for Training Packages.

Vocational Education and Assessment Centre 1997, Designing Workplace Assessment Tools, A self-directed learning program, NSW TAFE.

Manufacturing Learning Australia 2000, Assessment Solutions, Australian Training Products, Melbourne.

Rumsey, David 1994, Assessment practical guide, Australian Government Publishing Service, Canberra.

Assessor Training

Australian Committee on Training Curriculum (ACTRAC) 1994, Assessor training program - learning materials, Australian Training Products, Melbourne.

Australian National Training Authority, A Guide for Professional Development, ANTA, Brisbane.

Australian Training Products Ltd Assessment and Workplace Training, Training Package - Toolbox, ATPL Melbourne (available from TVET).

Green, M, et al. 1997, Key competencies professional development Package, Department for Education and Children's Services, South Australia.

Victorian TAFE Association 2000, The professional development CD: A learning tool, VTA, Melbourne.

Assessment System Design and Management

Office of Training and Further Education 1998, Demonstrating best practice in VET project - assessment systems and processes, OTFE (now OTTE) Victoria.

Toop, L., Gibb, J. & Worsnop, P. Assessment system designs, Australian Government Publishing Service, Canberra.

Competency Standards

What is competency?

The broad concept of industry competency concerns the ability to perform particular tasks and duties to the standard of performance expected in the workplace. Competency requires the application of specified skills, knowledge and attitudes relevant to effective participation in an industry, industry sector or enterprise.

Competency covers all aspects of workplace performance and involves performing individual tasks; managing a range of different tasks; responding to contingencies or breakdowns; and, dealing with the responsibilities of the workplace, including working with others. Workplace competency requires the ability to apply relevant skills, knowledge and attitudes consistently over time and in the required workplace situations and environments. In line with this concept of competency Training Packages focus on what is expected of a competent individual in the workplace as an outcome of learning, rather than focussing on the learning process itself.

Competency standards in Training Packages are determined by industry to meet identified industry skill needs. Competency standards are made up of a number of units of competency each of which describes a key function or role in a particular job function or occupation. Each unit of competency within a Training Package is linked to one or more AQF qualifications.

Contextualisation of Units of Competency by RTOs

Registered Training Organisation (RTOs) may contextualise units of competency to reflect local outcomes required. Contextualisation could involve additions or amendments to the unit of competency to suit particular delivery methods, learner profiles, specific enterprise equipment requirements, or to otherwise meet local needs. However, the integrity of the overall intended outcome of the unit of competency must be maintained.

Any contextualisation of units of competency in this endorsed Training Package must be within the bounds of the following advice. In contextualising units of competency, RTOs:

- must not remove or add to the number and content of elements and performance criteria
- may add specific industry terminology to performance criteria where this does not distort or narrow the competency outcomes
- may make amendments and additions to the range statement as long as such changes do not diminish the breadth of application of the competency and reduce its portability, and/or

- may add detail to the evidence guide in areas such as the critical aspects of evidence or resources and infrastructure required where these expand the breadth of the competency but do not limit its use.

Components of Units of Competency

The components of units of competency are summarised below, in the order in which they appear in each unit of competency.

Unit Title

The unit title is a succinct statement of the outcome of the unit of competency. Each unit of competency title is unique, both within and across Training Packages.

Unit Descriptor

The unit descriptor broadly communicates the content of the unit of competency and the skill area it addresses. Where units of competency have been contextualised from units of competency from other endorsed Training Packages, summary information is provided. There may also be a brief second paragraph that describes its relationship with other units of competency, and any licensing requirements.

Employability Skills statement

A standard Employability Skills statement appears in each unit of competency. This statement directs trainers and assessors to consider the information contained in the Employability Skills Summary in which the unit of competency is packaged.

Prerequisite Units (optional)

If there are any units of competency that must be completed before the unit, these will be listed.

Application of the Unit

This sub-section fleshes out the unit of competency's scope, purpose and operation in different contexts, for example, by showing how it applies in the workplace.

Competency Field (Optional)

The competency field either reflects the way the units of competency are categorised in the Training Package or denotes the industry sector, specialisation or function. It is an optional component of the unit of competency.

Sector (optional)

The industry sector is a further categorisation of the competency field and identifies the next classification, for example an elective or supervision field.

Elements of Competency

The elements of competency are the basic building blocks of the unit of competency. They describe in terms of outcomes the significant functions and tasks that make up the competency.

Performance Criteria

The performance criteria specify the required performance in relevant tasks, roles, skills and in the applied knowledge that enables competent performance. They are usually written in passive voice. Critical terms or phrases may be written in bold italics and then defined in range statement, in the order of their appearance in the performance criteria.

Required Skills and Knowledge

The essential skills and knowledge are either identified separately or combined. Knowledge identifies what a person needs to know to perform the work in an informed and effective manner. Skills describe the application of knowledge to situations where understanding is converted into a workplace outcome.

Range Statement

The range statement provides a context for the unit of competency, describing essential operating conditions that may be present with training and assessment, depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. As applicable, the meanings of key terms used in the performance criteria will also be explained in the range statement.

Evidence Guide

The evidence guide is critical in assessment as it provides information to the Registered Training Organisation (RTO) and assessor about how the described competency may be demonstrated. The evidence guide does this by providing a range of evidence for the assessor to make determinations, and by providing the assessment context. The evidence guide describes:

- conditions under which competency must be assessed including variables such as the assessment environment or necessary equipment
- relationships with the assessment of any other units of competency
- suitable methodologies for conducting assessment including the potential for workplace simulation
- resource implications, for example access to particular equipment, infrastructure or situations
- how consistency in performance can be assessed over time, various contexts and with a range of evidence, and expectations at the AQF qualification level involved

Employability Skills in units of competency

The detail and application of Employability Skills facets will vary according to the job-role requirements of each industry. In developing Training Packages, industry stakeholders are consulted to identify appropriate facets of Employability Skills which are incorporated into the relevant units of competency and qualifications.

Employability Skills are not a discrete requirement contained in units of competency (as was the case with Key Competencies). Employability Skills are specifically expressed in the context of the work outcomes described in units of competency and will appear in elements, performance criteria, range statements and evidence guides. As a result, users of Training Packages are required to review the entire unit of competency in order to accurately determine Employability Skills requirements.

How Employability Skills relate to the Key Competencies

The eight nationally agreed Employability Skills now replace the seven Key Competencies in Training Packages. Trainers and assessors who have used Training Packages prior to the introduction of Employability Skills may find the following comparison useful.

Employability Skills	Mayer Key Competencies
Communication	Communicating ideas and information
Teamwork	Working with others and in teams
Problem solving	Solving problems Using mathematical ideas and techniques
Initiative and enterprise	
Planning and organising	Collecting, analysing and organising information Planning and organising activities
Self-management	
Learning	
Technology	Using technology

When analysing the above table it is important to consider the relationship and natural overlap of Employability Skills. For example, using technology may involve communication skills and combine the understanding of mathematical concepts.

Explicitly embedding Employability Skills in units of competency

This Training Package seeks to ensure that industry-endorsed Employability Skills are explicitly embedded in units of competency. The application of each skill and the level of detail included in each part of the unit will vary according to industry requirements and the nature of the unit of competency.

Employability Skills must be both explicit and embedded within units of competency. This means that Employability Skills will be:

- embedded in units of competency as part of the other performance requirements that make up the competency as a whole
- explicitly described within units of competency to enable Training Packages users to identify accurately the performance requirements of each unit with regards to Employability Skills.

This Training Package also seeks to ensure that Employability Skills are well-defined and written into units of competency so that they are apparent, clear and can be delivered and assessed as an essential component of unit work outcomes.

The following table contains examples of embedded Employability Skills for each component of a unit of competency. Please note that in the examples below the bracketed skills are provided only for clarification and will not be present in units of competency within this Training Package.

Example Employability Skills unit

Unit component	Example of embedded Employability Skill
Unit Title	Operate fluid flow equipment (organising, problem solving, technology)
Unit Descriptor	This competency covers the operation of the range of pumps and valves typically encountered in the fluid flow system of a processing plant. It includes identifying, operating, monitoring and troubleshooting these items. (planning, organising, problem solving, technology)
Element	Prepare for work (planning and organising) Respond to fluid system problems (technology, problem solving)
Performance Criteria	Coordinate with appropriate personnel (communication, teamwork) Take appropriate action (initiative and enterprise, technology, communication)
Range Statement	Following through items initiated (learning, communication, initiative and enterprise)
Required Skills and Knowledge	Recognise and resolve operational problems (technology, problem solving, learning) Take corrective action appropriate to the
	problem cause (initiative and enterprise, planning and organising, communication, technology, problem solving, team work)

Evidence Guide	<p>Assessment of this unit should demonstrate competence on actual plant and equipment in a work environment. The unit will be assessed in as holistic a manner as is practical</p> <p>(Initiative and enterprise, Learning, Planning and organising, Communication, Problem solving, Technology, Self management, Teamwork)</p>
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Competency Standards ' Industry Contextualisation

Competency Standards – Industry Contextualisation

PMA08 – Contextualisation advice

Competency units may, and in some cases should be contextualised to the sub-sector and type of plant/process involved. Contextualisation which:

- replaces general directions with enterprise specific needs
- replaces generic equipment/process names with enterprise specific names
- replaces general processes/specifications with enterprise specific needs

is allowed and encouraged, provided the contextualised unit is of similar level and rigour to the original competency unit.

Note that contextualising cannot be used to generate an additional competency which is closely related to an existing competency. Contextualisation can only be used to generate an alternative competency for qualifications purposes.

Contextualisation may only be done if it does not significantly change the level and rigour or change the application of the unit. Contextualisation may be done within the required knowledge, range of variables and the evidence guide. Lists in these sections should be regarded as indicative lists unless otherwise stated.

Note also that contextualisation of the elements or performance criteria is not permitted. As a minimum, the contextualised unit should:

- be of similar level and rigour
- be of a similar breadth, complexity and size
- be relevant to the industry sector and the enterprise
- not reduce the health, safety or environmental requirements
- retain the original unit code and title.

Customising 'technical (group 2)' units

Technical (group 2) units may not be substituted with other units. Technical (group 2) units may be contextualised within the bounds specified above in this section.

Two technical units:

- MSAPMOPS200A Operate equipment
- PMAOPS300B Operate a production unit

are intended to be used primarily in a contextualised form. These two units apply to situations where no other technical (group 2) unit in the Training Package is deemed to be appropriate. OPS200 and OPS300 should be contextualised to suit individual situations, within the general contextualisation rules of this section. Again, contextualisation cannot be used to generate an additional competency which is closely related to an existing competency.

New units

Where there is no suitable equivalent unit of competency in any endorsed Training Package that can be used or contextualised to the enterprise requirements, new units may be developed and submitted to DEST via Manufacturing Skills Australia (MSA) for endorsement and inclusion in the Training Package. Any proposed new units will be treated as a 'Category 2' change under the

Competency Standards – Industry Contextualisation

DEST continuous improvement guidelines and must be endorsed by the National Quality Council for listing on the National Training Information Service.

Importing units from other Training Packages

Competency units may be imported from another endorsed Training Package to customise a qualification. In PMA08, imported units may be used to replace the maximum number of 'support' (group 3) units only. The use of imported units is allowed if:

- they are from an endorsed Training Package packaged at an equivalent AQF level certificate (original unit code and title must be retained).
- they are appropriate to the needs of the enterprise
- any prerequisites and co-requisites specified in the original unit and any specific assessment requirements in the host Training Package are also observed

AND provided no more replacement units are used than the allowable number of support units. Mandatory and technical units may not be substituted (however, see Contextualising technical units above). Note also that there may be units with similar outcomes from other endorsed Training Packages and that appropriate evidence of competency should be accepted to the extent that it applies to units within PMA08.

Exporting units to other Training Packages

Manufacturing Skills Australia encourages other industries and ISCs to access the units of competency in this Training Package which might be appropriate to their needs. These competencies may be used provided:

- the original unit code and title are retained
- they are only contextualised to the extent permitted above
- any specified prerequisites and co-requisites are observed
- Manufacturing Skills Australia is advised of the specific competencies to be used to facilitate ongoing communication in the event of an update.
-

Appendices

Appendices

Appendices

Appendix 1 – PMA08 Glossary

In this Training Package the following terms are used with the meanings given below. These meanings may be slightly more restrictive than common usage but have been adopted to allow greater clarity and definition within this Training Package. When used in a unit of competency, these words are underlined.

BOD

Biochemical oxygen demand — the amount of oxygen consumed by micro-organisms as they biodegrade. This is measured using a standard test over 5 days and so is called BOD₅.

business sustainability

Means a business is profitable and competitive in the foreseeable future. Effective management of environmental impacts and opportunities can contribute to business sustainability by reducing costs, differentiating goods and services and contributing to a better corporate image.

confined space

The Australian standard definition given for confined space entry is used in this Training Package, viz:

an enclosed or partially enclosed space which:

- a. *is at atmospheric pressure during occupancy*
- b. *is not intended or designed primarily as a place of work*
- c. *may have restricted means for entry and exit, and*
- d. *may:*
 - (i) *have an atmosphere which contains potentially harmful levels of contaminant;*
 - (ii) *not have a safe oxygen level; or*
 - (iii) *cause engulfment.*

Any other 'tight spot' has been referred to as a 'restricted space'. Examples include:

- storage tanks, tank cars, process vessels, boilers, pressure vessels, silos and other tank-like compartments
- open-topped spaces such as pits or degreasers
- pipes, sewers, shafts, ducts and similar structures
- shipboard spaces entered through a small hatchway or access point, cargo tanks, cellular double bottom tanks, duct keels, ballast and oil tanks and void spaces (but not including dry cargo holds).

customer

Any person who is the recipient of the product or service which flows from the unit of competency.

	They may be internal or external to the organisation.
environmental performance	This may be defined as a measure of an organisation's impact on the environment and of its ability to manage that impact.
FPSO	Floating production, storage and off-loading (facility/vessel)
FSO	Floating storage and off-loading (facility/vessel)
hazard	<p>Something with the potential to cause harm. Hazards may include:</p> <ol style="list-style-type: none"> 1) any operation that could possibly cause a catastrophic release of toxic, flammable or explosive chemicals 2) any action or environmental factor that could result in injury to personnel. <p>A routine hazard is any potential hazard that needs to be identified on a regular basis. A potential hazard may or may not be associated with a high risk.</p>
HAZCHEM	A system of labelling which codifies the hazard and the hazard control procedures for classes of chemicals. This provides simpler advice than the interpretation of toxicological data such as might be in an MSDS. However, to be effective, the hazchem system and codes need to be known.
hierarchy of control	<p>The preferred order of risk control measures from most to least preferred, that is:</p> <ol style="list-style-type: none"> 3) elimination 4) substitution 5) isolation 6) engineering controls 7) administrative controls 8) personal protective equipment.
Integral	Equipment which forms part of the operation of a main item of equipment is regarded as 'integral' to that main item. Examples include valves and lubricators. Typically equipment is regarded as 'integral' to the main item if:

	<ul style="list-style-type: none"> • it is close/attached to the main item • it has simultaneous operation with the main item • its operation does not require significant additional knowledge or skills. <p>Equipment is not integral if it has independent operation of its own.</p>
L_e/d	The describing of the relative head loss of a pipe fitting etc in terms of the equivalent length of straight pipe so that overall head loss can be estimated/compared
locked out	Equipment which is not to be operated for any reason may be padlocked, or otherwise prevented from operation using a keyed lock. The term 'locked out' is commonly used. A lock out may be accompanied by a tag out, or a lock out system may incorporate a tag.
LO/TO	A system requiring both a lock out and an accompanying tag.
MSDS	Material safety data sheets — all manufacturers and suppliers of chemicals are obliged to produce MSDS for each chemical. MSDS contain statements about potential hazards and the correct methods of handling to minimise the hazard.
muda	(Waste) — activities and results to be eliminated; within manufacturing, categories of waste, according to Shigeo Shingo, include: <ul style="list-style-type: none"> • excess production and early production • delays • movement and transport • poor process design • inventory • inefficient performance of a process • making defective items.
operability	Can be defined as any operation inside the design envelope that would cause a shutdown which could possibly lead to a violation of environmental, health or safety regulations or negatively impact on profitability.

P&ID	<p>Piping and instrumentation drawing — a common and basic engineering drawing in this industry showing all major items of equipment and their piping linkages and the instrumentation which controls them.</p> <p>Different organisations may have slightly different versions of these and may use a slightly different name.</p>
packaged	<p>The term ‘packaged’ plant means an item of plant which may or may not be skid mounted and is brought in ready to operate. This is how the industry typically uses this term.</p> <p>It is also used in this Training Package to include all items of plant which are operated with minimal need to understand the operation of the unit, regardless of the size and complexity of the item itself.</p> <p>It also covers plant where the operation is basically restricted to turning it on and off with minimal monitoring, control and understanding of its operation by the user. Typical packaged plant may include compressors (large and small), boilers, cooling towers (where the servicing and control is outsourced), air conditioning units, etc.</p>
pig (pigging)	<p>A device sent through a pipeline to separate products or for pipe cleaning and maintenance.</p> <p>The act of sending a pig through a pipe is pigging.</p>
place of work	<p>Defined under the Occupational Health and Safety Regulations 2001, it is ‘premises where persons work’.</p>
PPE	<p>Personal protective equipment — the last line of defence against workplace hazards — includes items such as safety boots, gloves, goggles, ear muffs.</p>
premises	<p>Defined under the Occupational Health and Safety Regulations 2001, it includes ‘any place’, and in particular includes:</p> <ol style="list-style-type: none">any land, building or part of any building, orany vehicle, vessel or aircraft, orany installation on land, on the bed of any waters or floating on any waters, orany tent or movable structure.

prerequisites	<p>A prerequisite unit of competency has knowledge/skills which are required to achieve a subsequent competency. In a structured training program, units with prerequisites would normally be taught after the prerequisite unit. In an assessment situation, they would often be assessed concurrently.</p>
procedures	<p>Includes all work instructions, standard operating procedures, formulas/recipes, batch sheets, temporary instructions and similar instructions provided for the smooth running of the plant. They may be written, verbal, computer based or in some other form.</p> <p>For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.</p>
reports	<p>Includes the filling out of forms, completing logs/log sheets, entering data into a computer based record system, noting required items on a whiteboard or communicating verbally.</p>
risk	<p>A 'risk' can be defined as the likelihood that harm will occur and the severity of the consequences of that harm. The more significant the risk, the more complex the risk assessment process may need to be.</p>
risk assessment	<p>There are different types of risk assessments:</p> <ol style="list-style-type: none">9) an assessment done in an office by looking at potential hazards and operability problems as a 'one off' for a new/modified design or a periodic review of an existing plant eg using the HAZOP methodology10) JSA/JHA (Job Safety Analysis/Job Hazard Analysis) – a process for systematically identifying hazards and hazard/risk controls – typically required before the issue of a permit or other similar circumstances.11) possibly known as 'routine hazard identification and risk assessment' — it is live, real time and ongoing in a facility, and is conducted on a daily/hourly basis for situations that would/could have previously been identified in a 'one off' assessment. Examples of assessment

	tools include DuPont STOP, Hazpak.
risk register	A register of all identified risks and documentation of the strategies/plans in place to deal with any event/incident that might occur.
semi-bulk	A generic industry term used to describe large containers such as bulker boxes and pallecons, which may be known by their brand name within a company. These containers, which may store around a tonne of material are larger than normal containers but are not bulk. They are a common delivery more and may also be used for intermediate storage.
senses	The use of the senses of sight, hearing, smell and where appropriate touch. Taste would rarely, if ever, be an appropriate sense in this context.
tagged out	Equipment not to be operated for any reason will carry a 'tag' indicating this and so the term 'tagged out' is commonly used. A tag out may be accompanied by a lock out, or a lock out may be used to replace a tag out.
triple bottom line principles	Can be defined as the integration of environmental, commercial and social aspects of business operations.
utilities	<ul style="list-style-type: none">• Utilities is used to mean:• steam (saturated and/or superheated)• air (instrument, safety, process and/or mechanical)• water (cooling and/or process)• fuel (gas, oil)• other heating/cooling mediums (oil, 'Dowtherm', brine)• electricity• inerting/purging agents such as nitrogen or steam.
workplace	See 'place of work'.

Appendix 2 – List of contributors

1. Interest groups: permits/panel operators/packaging rules

First name	Second name	Organisation	State	Packaging rules	Panel	Permits
Craig	Connor	Alinta	NSW		X	X
Joe	Calabrese	Alinta	NSW	X		
Leslie	Faulstone	MECAT	NSW	X		
Celeste	Howden	MLA	NSW	X		
Leanne	Reid	Qenos	NSW		X	X
Brendan	Rounds	S C Johnson	NSW			
John	Gardner	Shell, Clyde	NSW			X
Kim	Peterson	TAFE NSW	NSW	X		
Rob	Armstrong	Conoco Phillips	NT			
Geoff	Teale	BP Refining	Qld		X	X
Peter	Claughton	Central TAFE, Gladstone	Qld	X		
Lee	Baker	Incitec Pivot Ltd	Qld			X
Stuart	Hansford	Rio Tinto	Qld			
Wolfie	Baart	Santos	SA		X	X
Daniel	Stevens	Safetec Enterprises	Tas	X		
Trevor	Lange		Vic	X		
John	Molenaar		Vic	X	X	
Jenny	Smith	AGR Asia Pacific	Vic			

Chris	Dafter	Alinta	Vic		X	
Michael	Grout	Australian Vinyls	Vic		X	
Eddie	Hoyer	Bassell	Vic		X	
Tony	O'Donnell	Box Hill TAFE	Vic		X	
Paul	McIntyre	Esso	Vic		X	X
John	Jarvis	Esso	Vic		X	
Marie	Vassallo	Futurum Australia	Vic	X		
Patrick	Boland	Gordon Institute of TAFE	Vic	X		
Bill	Walley	Gordon TAFE	Vic		X	
David	Graham	Huntsman Chemical	Vic		X	
Phillip	Murphy	Nufarm	Vic		X	
Helen	Daniel	Orica Laverton	Vic		X	
Judy	Douglas	Qenos	Vic		X	
Don	Potter	Qenos	Vic		X	
Stephen	Gravolin	Shell	Vic		X	
Stuart	Hall	Shell	Vic		X	
Glen	Butterworth	Shell Geelong Refinery	Vic			X
Peter	Hancock	Workplace Initiatives	Vic		X	
Steve	Rogers		WA			X
Bill	Hamlet	Bunbury TAFE	WA	X		
Alex	Harrison	Central TAFE, Gladstone	WA	X		
Alan	Latto	Chevron	WA			X
Glenn	Iles	ERG Training	WA	X		

Sam	Zacha	MOXI skills + learning	WA	X		
Ron	Baker	TCC Group Skills Training	WA	X		
Grant	O'Keefe	Wild Geese International	WA	X		
Allan	Hill	Woodside	WA		X	
Ross	Trainer	Woodside Energy	WA	X		

2. Phase 2 participants

First Name	Second Name	Organisation	Sector	state
Rebecca	Lee	Bayer Australia Limited	Paint	NSW
Bill	Berwick	BML Worksafe Solutions	RTO	NSW
Dorothy		BOC	Gas	NSW
Ross	Huggett	BOC Limited	Gas	NSW
Peter	Re	BOC Limited	Gas	NSW
Paul	Farrell	Caltex Refineries	Oil	NSW
Celeste	Howden	Manufacturing Learning Australia	RTO	NSW
Brendan	Rounds	S C Johnson	small	NSW
John	Gardner	Shell Clyde Refining	Oil	NSW
Greg	Martin	Shell Clyde Refining	Oil	NSW
Leslie	Faulstone	TAFE NSW	RTO	NSW
Patrick	O'Flannery	Thales Australia (ADI)	Chem	NSW
Sarah	Veale	Workstar	RTO	NSW
Sue	Bartlett		Paint	NSW

Peter	Burkhard	Charles Darwin University	RTO	NT
Michael	Hatfield	ConocoPhillips (91-12) Pty Ltd	Hyd	NT
Alison	Smith	ConocoPhillips (91-12) Pty Ltd	Hyd	NT
David	Coleman	Coogee Resources	Hyd	NT
Karlo	Terz	InterOil Products LTD	Oil	PNG
Antonio	Alejandre	LGL Oxygen Plant	Gas	PNG
Luke	Miller	LGL Oxygen Plant	Gas	PNG
Geoff	Teale	BP Refining	Oil	Qld
Keith	Butler	Central Queensland Institute of TAFE	RTO	Qld
Lee	Baker	Incitec Pivot Ltd	Chem	Qld
David	Brown	Origin Energy	Hyd	Qld
Eric	Sheehan	QFRA	RTO	Qld
Paul	Hughes	Signet Pty Ltd	Paint	QLD
Graham	Macgowan	Further Education Employment Science & Technology	STA	SA
Robert	Baxter	KD Fisher & Co Pty Ltd	RTO	SA
Tony	Beer Smith	KD Fisher & Co Pty Ltd	RTO	SA
Sidney	Bowring	KD Fisher & Co Pty Ltd	RTO	SA
John	Corstens	KD Fisher & Co Pty Ltd	RTO	SA
Andrew	Goold	KD Fisher & Co Pty Ltd	RTO	SA
Wolfie	Baart	Santos	Hyd	SA
Ken	Rhodes	Santos	Hyd	SA
Lina	Dickens		Hyd	Sin
Jenny	Smith	AGR Asia Pacific	Chem	Vic
Chris	Dafter	Alinta	Hyd	Vic
Michael	Grout	Australian Vinyls	Chem	Vic

Eddie	Hoyer	Bassell	Chem	Vic
Barry	Tomlin	Bassell	Chem	Vic
Tony	O'Donnell	Box Hill TAFE	RTO	Vic
Kristain	Leszczyski	CSR Ethanol	Chem	Vic
Margaret	Flynn	East Gippsland Institute of TAFE -	RTO	VIC
John	Jarvis	Esso	Hyd	Vic
Pat	Boland	Gordon TAFE	RTO	Vic
Bill	Walley	Gordon TAFE	RTO	Vic
David	Graham	Huntsman Chemicals	Chem	Vic
Michael	Whitely	Jasol	Chem	Vic
John	Molenaar	Manufacturing and Engineering Skills	ITAB	Vic
Herb	Pride	Mobil Altona Refinery	Oil	VIC
Phillip	Murphy	Nufarm Australia Ltd	Chem	Vic
Tina	Berghella	OGGI Consulting	Con	Vic
Helen	Daniel	Orica Laverton	Chem	Vic
Eddie	Hargrave	OTTE	STA	Vic
Bill	Norris	OTTE	STA	Vic
Lisa	Afxendis	PZ Cussons	Chem	Vic
Johnathon	Clancy	Qenos	Chem	Vic
Julie	Crushaw	Qenos	Chem	Vic
Judy	Douglas	Qenos	Chem	Vic
Don	Potter	Qenos	Chem	Vic
Stephen	Gravolin	Shell	Oil	Vic
Glen	Butterworth	Shell Geelong Refinery	Oil	VIC
Stuart	Hall	Shell Refining Geelong	Oil	Vic

Colin	Davis	Sustainable Infrastructure Australia	RTO	Vic
Trevor	Lange	TAFE VIC	RTO	Vic
Paul	Quinane	Thales Australia (ADI)	Chem	Vic
Mike	Valentine	Victoria university	RTO	Vic
Peter	Hancock	Workplace Initiatives	RTO	Vic
Craig	Connor	Alinta Asset Management 3 Pty Ltd	Hyd	WA
Steve	Rogers	Apache Energy	Hyd	WA
Tim	McGrath	Australian Petroleum Production & Exploration Association Limited	Assoc	WA
Dorothy	Sinclair	Central TAFE	RTO	WA
Alex	Harrison	Central TAFE, Leederville Campus	RTO	WA
Allyn	Cooper	Chevron Australia Pty Ltd	Hyd	WA
Mike	Jakins	Chevron Australia Pty Ltd	Hyd	WA
Alan	Latto	Chevron Australia Pty Ltd	Hyd	WA
Ian	Stephenson	Conoco Phillips	Hyd	WA
Neville	Carrington	ConocoPhillips (91-12) Pty Ltd	Hyd	WA
Rosa Maria (Rosemarie)	Iuliano	Department of Education and Training (DET)	STA	WA
James	Kernaghan	ENI Australia	Hyd	WA
Martin	Ralph	IFAP	RTO	WA
Sam	Zacha	MOXI skills + learning	RTO	WA
Jo	Nobelius	Nobelius Consulting		WA
Garry	Round	Skills Training & Assessment Centre	RTO	WA
Kamal	Haddad	Skills Training and Engineering Services(50091)	RTO	WA
Lisa	Chegwidden	wapl	Chem	WA
Grant	O'Keefe	Wild Geese International	RTO	WA

Ross	Trainer	Woodside Energy	Hyd	WA
Annie	Archer	Rio Tinto	Chem	WA
Garry	Eglinton	CINA	Hyd	WA

3. Phase 1 participants

First Name	Second name	Organisation	Sector	State
Michele	Kissin	Vertical Horizonz Australia	RTO	Qld
Jeff	Butler	Incitec	Chemical	Qld
Alan	Bartlett	Alan Bartlett Consulting	Chemical	Qld
Morrie	Bellaver	Queensland DET	STA	Qld
Roger	Cater	Chemical ITC	ITAB	Qld
Peter	Claughton	Central TAFE, Gladstone	RTO	Qld
Darren	Radel	Central TAFE, Gladstone	RTO	Qld
Brian	Davey	Central TAFE, Gladstone	RTO	Qld
Leigh	Gowler	Comalco Aluminium Refinery	Smelting	Qld
Wendy	Beale	Queensland Alumina	Smelting	Qld
Bruce	Oppel	Orica, Yarwun	Chem	Qld
Paul	Brooks	Incitec Pivot	Chem	Qld
Malcolm	Campbell	Consultant, QMITB	ITAB	Qld
Terri	Pienaar	Boyne Smelter Ltd	Smelting	Qld
Anne	Porter	Boyne Smelter Ltd	Smelting	Qld
Warren	Dredge	Boyne Smelter Ltd	Smelting	Qld
Johan	Peenz	Boyne Smelter Ltd	Smelting	Qld
Stuart	Hansford	Rio Tinto Aluminium Limited	Smelting	Qld

Wendy	Beale	Queensland Alumina	Smelting	Qld
Carolyn	Paul	HPG Consulting	RTO	Qld
Gary	Sears	Hydratight	Consultant	Qld
Tony	O'Donnell	Box Hill Institute	RTO	Vic
Bill	Walley	Box Hill Institute	RTO	Vic
Marie	Vassallo	Futurum Australia	RTO	Vic
John	Molenaar	MESAB	ITAB	Vic
Liz	Stafford	OTTE	STA	Vic
Wayne	Harris	Exxon Mobil, Altona	Oil	Vic
Herb	Pride	Exxon Mobil, Altona	Oil	Vic
Pat	Boland	Gordon Institute of TAFE	RTO	Vic
Jenny	Smith	Upstream Petroleum	Hyd	Vic
Vince	Lloyd	Qenos (AWU)	Chem	Vic
David	Graham	Huntsman Chemical	Chem	Vic
Alan	Bugg	Huntsman Chemical	Chem	Vic
Michael	Grout	Australian Vinyls	Chem	Vic
David	Benson	Holmesglen Institute of TAFE	RTO	Vic
Paul	McIntyre	Esso Australia Pty Ltd	Oil	Vic
Mike	Valentine	Jobs Plus	NAC	Vic
Peter	Wakefield	Newskills	RTO	Vic
Trevor	Lange	Chisholm Institute	RTO	Vic
Vin	Tully	DIMIA	Govt	Vic
Brett	Noonan	Alcoa Point Henry	Smelting	Vic
Andrew	Morphett	Alcoa Point Henry	Smelting	Vic
Bob	Bryden	In-Train	RTO	Vic

Jane	Noonan	Red Alert	RTO	Vic
Kim	Peterson	MECAT, TAFE NSW	RTO	NSW
Joe	Calabrese	Agility Training	RTO	NSW
Eddie	Beveridge	Shell Refining	Oil	NSW
Quinton	Weston	Shell Refining	Oil	NSW
Andrew	George	TAFE NSW	RTO	NSW
Mostafa	Choudhury	TAFE NSW	RTO	NSW
Mike	McLeay	MD & Associates	RTO	NSW
Leanne	Reid	Qenos	Chem	NSW
Lisa	James	Caltex Refineries	Oil	NSW
Ravi	Bindiga	Qenos	Chem	NSW
Garry	Whitaker	Orica Explosives	Chem	NSW
Stephen	Holland	PACIA	Assoc	NSW
Sean	Le	NSW DET	STA	NSW
Celeste	Howden	MLA	ITAB	NSW
John	Lamont	Nowra Chemical Manufacturers	Small	NSW
Deb	Doherty	OPCET	STA	Tas
Colin	Berry	Tasmanian Alkaloids	RTO	Tas
Matthew	Double	Zinifex Hobart Smelter	RTO	Tas
Bill	Fitzgerald	Australian Mines & Metals Assoc	RTO	Tas
Brian	Hevey		STA	Tas
Daniel	Stevens	Safetec Enterprises	RTO	Tas
Max	Thompson	Aust Employment Services	RTO	Tas
Colin	Davis	SUSTAINABLE INFRASTRUCTURE AUSTRALIA	RTO	Vic
Tim	McGrath	Australian Petroleum Production &	Assoc	WA

		Exploration Association Limited		
Martin	Ralph	IFAP	RTO	WA
Brian	Acreman	ACEPT	RTO	WA
J	Dunne	ACEPT	RTO	WA
M	Nelson	ACEPT	RTO	WA
Mike	Jakins	Chevron Australia Pty Ltd		WA
Trevor	Tyers	ACEPT	RTO	WA
Ron	Baker	TCC Group Skills Training	RTO	WA
Glenn	Iles	ERG Training	RTO	WA
Chris	Busing	ERG Training	RTO	WA
Geoffrey	Graham	Geographe Energy	Chem	WA
Barry	Shackles	BP Refinery Kwinana	Oil	WA
A	Jones	BP Refinery Kwinana	Oil	WA
Ian	Vincent	Fire & Emergency Services Auth	Govt	WA
Ian	Eldred	Fire & Emergency Services Auth	Govt	WA
Roy	Hebden	Fire & Emergency Services Auth	Govt	WA
Kevin	Davis	Transfield Worley	Hyd	WA
Ian	Cahill	WAPL	Hyd	WA
Rob	Armstrong	Origin Energy	Hyd	Qld
Bill	Hamlet	Bunbury TAFE	RTO	WA
Ian	Wynn	Bunbury TAFE	RTO	WA
Ivor	Alexander	Apache	Hyd	WA
Robert	Lonie	Shell	Hyd	WA
Peter	Gipson	Woodside	Hyd	WA
Allan	Hill	Woodside Energy Ltd.	Hyd	WA
Sean	Blake	Woodside	Hyd	WA

Keith	Mackintosh	Wesfarmers LPG	Hyd	WA
David	Arnold	Alcoa	Chem	WA
Mary-Lou	Barry	Millennium Chemical	Chem	WA
Colin	Merritt	ANTCER	NAC	WA
Steve	Starling	ANTCER	NAC	WA
Don	Sanders	APPEA	Assoc	WA
Peter	Agnew	Orica Mining Services	Chem	WA
Lisa	Chegwidden	Worsley Alumina	Chem	WA
Jo	Nobelius	Nobelius Consulting	Consultant	WA
Wayne	Mason	Santos	Hyd	SA
Gordon	Moseby	Beach Petroleum Ltd	Oil	SA
Lina	Dickins	Santos	Hyd	SA
Ken	Rhodes	Santos	Hyd	SA
Woolfie	Baart	Santos	Hyd	SA
Sherelee	Rose	DFEEST	STA	SA
Rachel	Munich	NT ETAB	STA	NT
Tim	Schinkel	Major Industries TAC	ITAB	NT
Jeannie	Cotterell	ACT DET	STA	ACT