Australian Government

MSS11 Sustainability Training Package

Release 2.1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

CONTENTS

MSS11 Sustainability Training Package

Modification History

The version details of this endorsed Training Package are in the table below.

Version	Release Date	Comments

2.1	7 February 2013	**ISC upgrades**
		• Addition of six new Skill Sets
		• Minor corrections to units:
		  • MSS402052A
		  • MSS403044A
		  • MSS405052A
		  • MSS405053A
		  • MSS405075A
		  • MSS407007A

2	8 May 2012	**Endorsed changes** Addition of: • 7 new Competitive Systems and Practices qualifications • 104 new units of competency • One new imported unit. Existing qualification corrected and re-endorsed: • MSS50112 Diploma of Sustainable Operations **ISC upgrades** Superseded competitive manufacturing units imported as electives to MSS11 qualifications replaced with new competitive systems and practices units of competency. Refer to summary mapping for full details.
1	June 2011	Initial release

Published by: Manufacturing Skills Australia
Release Date: 7 February 2013

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 Skills Australia (see Manufacturing Skills Australia - http://www.ISC.net.au/, see Manufacturing Skills Australia - 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 Package's national code (which remains the same during its period of endorsement).

Explanation of the review date
The review date (shown on the title page and in the footer of each page) indicates when the Training Package is expected to be reviewed in the light of changes such as changing technologies and circumstances. The review date is not an expiry date. Endorsed Training Packages and their components remain current until they are reviewed or replaced.

Version modification history
The version details of this endorsed Training Package are in the table below. The latest information is at the top of the table.

MSS11v2 Summary mapping

MSS11v2 Qualifications

MSS11v1 Code	MSS11v2 Code	Title	Comment
	MSS20312	Certificate II in Competitive Systems and Practices	New qualification*
	MSS30312	Certificate III in Competitive Systems and Practices	New qualification*
MSS40111	MSS40111	Certificate IV in Sustainable Operations	Imported CM units replaced
MSS4021	MSS40211	Certificate IV in Environmental Monitoring and	No change

MSS11v1 Code	MSS11v2 Code	Title	Comment
1		Technology	
	MSS40312	Certificate IV in Competitive Systems and Practices	New qualification*
MSS50111	MSS50112	Diploma of Sustainable Operations	Imported CM units replaced. Error in Core corrected – MSACMT675A removed (included in error as duplicated by MSS015002A). Elective requirements adjusted and outcomes equivalent
MSS50211	MSS50211	Diploma of Environmental Monitoring and Technology	No change
	MSS50312	Diploma of Competitive Systems and Practices	New qualification*
	MSS60312	Advanced Diploma of Competitive Systems and Practices	New qualification*
MSS70111	MSS70111	Vocational Graduate Certificate in Sustainable Operations	Imported CM units replaced
MSS70211	MSS70211	Vocational Graduate Certificate in Environmental Management	No change
	MSS70312	Vocational Graduate Certificate in Competitive Systems and Practices	New qualification*
	MSS80312	Vocational Graduate Diploma of Competitive Systems and Practices	New qualification*

**** Refer to below for mapping of new CSP qualifications to superseded Competitive Manufacturing qualifications in MSA07***

Competitive Systems and Practices Qualifications

Mapping to superseded MSA07 Competitive Manufacturing qualifications

Note:

- All units reviewed and updated and new units included in all qualifications.
- More explicit advice in application on targeting along the manufacturing value chain and to non-manufacturing enterprises.
- New units developed to increase relevancy and coverage of lean skills for all departments in a typical enterprise.
- Packaging reviewed against AQF and in some cases number of units required has changed to improve alignment to AQF and differentiation between qualifications – overall outcomes are considered equivalent to previous Competitive Manufacturing qualifications, with additional electives available.

MSA07 Code	MSA07 Title	MSS11v2 Code	MSS11v2 Title	Comment/ equivalence
MSA21108	Certificate II in Competitive Manufacturing	MSS20312	Certificate II in Competitive Systems and Practices	Equivalent outcomes – increased choice of electives
MSA31108	Certificate III in Competitive Manufacturing	MSS30312	Certificate III in Competitive Systems and Practices	Equivalent outcomes – increased choice of electives and unit requirement increased
MSA41108	Certificate IV in Competitive Manufacturing	MSS40312	Certificate IV in Competitive Systems and Practices	Equivalent outcomes – increased choice of electives and unit requirement increased
MSA51108	Diploma of Competitive Manufacturing	MSS50312	Diploma of Competitive Systems and Practices	Equivalent outcomes – increased choice of electives
MSA61108	Advanced Diploma of Competitive Manufacturing	MSS60312	Advanced Diploma of Competitive Systems and Practices	Equivalent outcomes – increased choice of electives
MSA71109	Vocational Graduate Certificate in Competitive Manufacturing	MSS70312	Vocational Graduate Certificate in Competitive Systems and	Equivalent outcomes – increased choice of electives

			Practices	
MSA81109	Vocational Graduate Diploma of Competitive Manufacturing	MSS80312	Vocational Graduate Diploma of Competitive Systems and Practices	Equivalent outcomes – increased choice of electives

MSS11v2 CSP Units of Competency

Mapping of MSA07 competitive manufacturing units to MSS11v2 competitive systems and practices units of competency

Notes:

- All units have had additional information inserted to make them more in line with current Training Package policy. In general:
  - Additional information about targeting has been added to application statements
  - Some PCs have been expanded to make their meaning more clear
  - Previous Skills and Knowledge Statements have been expanded to more clearly indicate the scope of skills and knowledge required. A unit has still been regarded as equivalent if the expanded skills and knowledge relate to elements and performance criteria that are unchanged or only have changes that themselves do not change the units outcome.
  - Range Statements have been expanded to give more information
  - In many units previously brief critical aspects of evidence have been expanded to better relate to the elements and performance criteria
- All units have been assessed to determine whether the above changes and other changes made as a result of consultations result in the outcome of the reviewed unit being not equivalent to the previous Competitive Manufacturing unit. The result of this assessment is shown in the equivalence column where E means equivalent and NE means not equivalent.
- The AQF level of some units has been corrected to indicate the AQF level of the qualification where they are first packaged. Where there is no other change that changes the outcome of the unit, the unit is listed as equivalent.
- Where prerequisites apply, these are listed under the unit title in italics

MSA07 unit code	**MSA07 unit title**	**MSS11v2 unit code**	**MSS11v2 unit title**	**Comment/ equivalence**
		MSS402041A	Apply 5S in an office	New Unit
		MSS402052A	Implement continuous improvements based	New Unit

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
			on standardised work practices	
		MSS402053A	Participate in breakthrough improvements in an office	New Unit
		MSS403006A	Facilitate implementation of competitive systems and practices in an office	New Unit
		MSS403007A	Map an office value stream	New Unit
		MSS403024A	Work within a constrained process	New Unit
		MSS403033A	Map an operational process	New Unit
		MSS403034A	Organise products into groups	New Unit
		MSS403035A	Implement the visual workplace	New Unit
		MSS403039A	Facilitate and improve 5S in an office	New Unit
		MSS403042A	Facilitate mistake proofing in an office	New Unit
		MSS403043A	Facilitate breakthrough improvements in an office	New Unit
		MSS403044A	Facilitate continuous improvement through the use of standardised procedures and	New Unit

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
			practices	
		MSS403084A	Improve changeovers	New Unit
		MSS405024A	Apply the theory of constraints	New Unit
		MSS405033A	Optimise office systems to deliver to customer demand	New Unit
MSACMC210A	Manage the impact of change on own work	MSS402010A	Manage the impact of change on own work	E
MSACMC410A	Lead change in a manufacturing environment	MSS403010A	Facilitate change in an organisation implementing competitive systems and practices	E Alignment corrected
MSACMC411A	Lead a competitive manufacturing team	MSS403011A	Facilitate implementation of competitive systems and practices	NE Element 3 changed Alignment corrected
MSACMC413A	Lead team culture improvement	MSS403013A	Lead team culture improvement	E Alignment corrected
MSACMC610A	Manage relationships with non-customer external organisations	MSS405010A	Manage relationships with non-customer external organisations	E Alignment corrected
MSACMC611A	Manage people relationships	MSS405011A	Manage people relationships	NE New Element 1 Alignment corrected
MSACMC612A	Manage workplace learning	MSS405012A	Manage workplace learning	NE Changed Element 1

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
				including two new PCs Alignment corrected
MSACMC613A	Facilitate holistic culture improvement in a manufacturing enterprise	MSS405013A	Facilitate holistic culture improvement in an organisation	NE Element 2 and PCs changed Alignment corrected
MSACMC614A	Develop a communications strategy to support production	MSS405014A	Develop a communications strategy to support operations	E Alignment corrected
MSACMG700A	Review continuous improvement processes	MSS407013A	Review continuous improvement processes	E
MSACMG701A	Prepare for and implement change	MSS407001A	Prepare for and implement change	E
MSACMG702A	Review manufacturing practice tools and techniques	MSS407002A	Review operations practice tools and techniques	E
MSACMG703A	Analyse process changes	MSS407003A	Analyse process changes	E
MSACMG704A	Facilitate improvements in the internal value chain	MSS407004A	Facilitate improvements in the internal value stream	E
MSACMG705A	Undertake a qualitative review of a process change	MSS407005A	Undertake a qualitative review of a process change	E
MSACMG706A	Build relationships between teams in a manufacturing environment	MSS407006A	Build relationships between teams in an operations environment	E

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
MSACMG707A	Respond to a major non-conformance	MSS407007A	Respond to a major non-conformance	E
MSACMG708A	Capture learning from daily activities in a manufacturing organisation	MSS407008A	Capture learning from daily activities in a organisation	E
MSACMG709A	Facilitate improvements in the external value chain	MSS407009A	Facilitate improvements in the external value stream	E
MSACMG710A	Improve visual management in the workplace	MSS407010A	Improve visual management in the workplace	E
MSACMG711A	Manage benchmarking studies	MSS407011A	Manage benchmarking studies	E
MSACMG712A	Lead a problem solving process to determine and solve root cause	MSS407012A	Lead a problem solving process to determine and solve root cause	E
MSACMG800A	Analyse data for relevance to organisational learning	MSS408008A	Analyse data for relevance to organisational learning	E
MSACMG801A	Develop the competitive manufacturing approach	MSS408001A	Develop the competitive systems and practices approach	E
MSACMG802A	Audit the use of competitive tools	MSS408002A	Audit the use of competitive tools	NE New PC 1.2
MSACMG803A	Develop models of future state manufacturing practice	MSS408003A	Develop models of future state operations practice	E
MSACMG804A	Develop the value chain	MSS408004A	Develop the value stream	E

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
MSACMG805A	Develop the learning processes of the manufacturing organisation	MSS408005A	Develop the learning processes of the operations organisation	E
MSACMG806A	Develop and refine systems for continuous improvement in manufacturing organisations	MSS408006A	Develop and refine systems for continuous improvement in operations	E
MSACMG807A	Develop problem solving capability of a manufacturing organisation	MSS408007A	Develop problem solving capability of an organisation	NE New PCs in Elements 1 and 2
MSACMS200A	Apply competitive manufacturing practices	MSS402001A	Apply competitive systems and practices	E Element 1 reworded, PCs remain the same
MSACMS201A	Sustain process improvements	MSS402002A	Sustain process improvements	NE New Element 1 New Critical Aspects
MSACMS400A	Implement a competitive manufacturing system	MSS403001A	Implement competitive systems and practices	E Alignment corrected
MSACMS401A	Ensure process improvements are sustained	MSS403002A	Ensure process improvements are sustained	NE New Element Alignment corrected
MSACMS405A	Lead a manufacturing team using a balanced score card approach	MSS403005A	Facilitate use of a Balanced Scorecard for performance improvement	E Alignment corrected

MSA07 unit code	**MSA07 unit title**	**MSS11v2 unit code**	**MSS11v2 unit title**	**Comment/ equivalence**
MSACMS600A	Develop a competitive manufacturing system	MSS405001A	Develop competitive systems and practices for an organisation	E Alignment corrected
MSACMS601A	Analyse and map a value chain* *MSACMT631A Undertake* value *analysis of product costs in terms of customer requirements*	MSS405002A	Analyse and map a value stream	NE Prerequisite removed Alignment corrected
MSACMS602A	Manage a value chain* *MSACMS601A Analyse and map a value chain* *MSACMT631A Undertake value analysis of product costs in terms of customer requirements*	MSS405003A	Manage a value stream	NE Prerequisites removed Alignment corrected
MSACMS603A	Develop manufacturing related business plans	MSS405004A	Develop business plans in an organisation implementing competitive systems and practices	E Alignment corrected
MSACMS604A	Manage competitive manufacturing processes in a jobbing shop environment* *MSACMS601A Analyse and map a value chain* *MSACMT280A Undertake root cause analysis* *MSACMT631A Undertake value analysis of product costs in terms of customer requirements*	MSS405005A	Manage competitive systems and practices responding to individual and unique customer orders	NE Prerequisites removed Alignment corrected

MSA07 unit code	**MSA07 unit title**	**MSS11v2 unit code**	**MSS11v2 unit title**	**Comment/ equivalence**
MSACMS605A	Develop a Balanced Scorecard for use in competitive manufacturing* *MSACMS601A Analyse and map a value chain* *MSACMT280A Undertake root cause analysis* *MSACMT631A Undertake value analysis of product costs in terms of customer requirements*	MSS405006A	Develop a Balanced Scorecard	NE Prerequisites removed Alignment corrected
MSACMS606A	Introduce competitive manufacturing to a small or medium enterprise	MSS405007A	Introduce competitive systems and practices to a small or medium enterprise	E Alignment corrected
MSACMT220A	Apply quick changeover procedures	MSS402020A	Apply quick changeover procedures	E
MSACMT221A	Apply Just in Time (JIT) procedures	MSS402021A	Apply Just in Time procedures	E
MSACMT230A	Apply cost factors to work practices	MSS402030A	Apply cost factors to work practices	E
MSACMT231A	Interpret product costs in terms of customer requirements	MSS402031A	Interpret product costs in terms of customer requirements	E
MSACMT240A	Apply 5S procedures in a manufacturing environment	MSS402040A	Apply 5S procedures	E
MSACMT250A	Monitor process capability	MSS402050A	Monitor process capability	E

MSA07 unit code	**MSA07 unit title**	**MSS11v2 unit code**	**MSS11v2 unit title**	**Comment/ equivalence**
MSACMT251A	Apply quality standards	MSS402051A	Apply quality standards	E
MSACMT260A	Use planning software systems in manufacturing	MSS402060A	Use planning software systems in operations	NE Additional PCs in Elements 1 and 2
MSACMT261A	Use SCADA systems in manufacturing	MSS402061A	Use SCADA systems in operations	E
MSACMT270A	Use sustainable energy practices			Not carried forward. Replaced by MSAENV272B Includes similar content, but not equivalent
MSACMT271A	Use sustainable environmental practices			Not carried forward. Replaced by MSAENV272B Equivalent outcomes
MSACMT280A	Undertake root cause analysis	MSS402080A	Undertake root cause analysis	E
MSACMT281A	Contribute to the application of a proactive maintenance strategy	MSS402081A	Contribute to the application of a proactive maintenance strategy	E
MSACMT421A	Facilitate a Just in Time (JIT) system	MSS403021A	Facilitate a Just in Time system	E Alignment corrected
MSACMT423A	Monitor a manufacturing levelled pull system* *MSACMT280A*-	MSS403023A	Monitor a levelled pull system of operations	NE Prerequisite

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
	Undertake root cause analysis			removed Alignment corrected
MSACMT430A	Improve cost factors in work practices	MSS403030A	Improve cost factors in work practices	E Alignment corrected
MSACMT432A	Analyse manual handling processes	MSS403032A	Analyse manual handling processes	E Alignment corrected
MSACMT440A	Lead 5S in a manufacturing environment	MSS403040A	Facilitate and improve implementation of 5S	NE New Element 2 Alignment corrected
MSACMT441A	Facilitate continuous improvement in manufacturing	MSS403041A	Facilitate breakthrough improvements	NE 3 new Elements Alignment corrected
MSACMT450A	Undertake process capability improvements* *MSACMT452A Apply statistics to processes in manufacturing*	MSS404050A	Undertake process capability improvements* *MSS404052A Apply statistics to operational processes*	E
MSACMT451A	Mistake proof a production process	MSS403051A	Mistake proof an operational process	E Alignment corrected
MSACMT452A	Apply statistics to processes in manufacturing	MSS404052A	Apply statistics to operational processes	E
MSACMT453A	Use six sigma techniques* *MSACMT452A Apply*	MSS404053A	Use six sigma techniques* *MSS404052A Apply*	E

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
	statistics to processes in manufacturing		*statistics to operational processes*	
MSACMT460A	Facilitate the use of planning software systems in manufacturing* *MSACMT260A Use planning software systems in manufacturing*	MSS404060A	Facilitate the use of planning software systems in a work area or team	NE New Element 1 Prerequisite removed
MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area* *MSACMT261A Use SCADA systems in manufacturing*	MSS404061A	Facilitate the use of SCADA systems in a team or work area	NE Prerequisite removed
MSACMT481A	Undertake proactive maintenance analyses	MSS404081A	Undertake proactive maintenance analyses	E
MSACMT482A	Assist in implementing a proactive maintenance strategy	MSS404082A	Assist in implementing a proactive maintenance strategy	E
MSACMT483A	Support proactive maintenance	MSS404083A	Support proactive maintenance	E
MSACMT620A	Develop quick changeover procedures	MSS405020A	Develop quick changeover procedures	E Alignment corrected
MSACMT621A	Develop a Just in Time (JIT) system* *MSACMC410A Lead change in a manufacturing environment*	MSS405021A	Develop a Just in Time system	NE Prerequisite removed Alignment corrected
MSACMT622	Design a process layout	MSS405022A	Design a process	E

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
A			layout	Alignment corrected
MSACMT623A	Develop a levelled pull system of manufacturing	MSS405023A	Develop a levelled pull system for operations and processes	E Alignment corrected
MSACMT630A	Optimise cost of product* *MSACMT631A Undertake value analysis of product costs in terms of customer requirements*	MSS405030A	Optimise cost of product or service	NE Prerequisite removed Alignment corrected
MSACMT631A	Undertake value analysis of product costs in terms of customer requirements* *MSACMT230A Apply cost factors to work practices*	MSS405031A	Undertake value analysis of a product or process costs in terms of customer requirements	NE Many changes to PCs Prerequisite removed Alignment corrected
MSACMT632A	Analyse cost implications of maintenance strategy	MSS405032A	Analyse cost implications of maintenance strategy	E Alignment corrected
MSACMT640A	Manage 5S system in a manufacturing environment	MSS405040A	Manage 5S system in an organisation	E Alignment corrected
MSACMT641A	Implement a continuous improvement system	MSS405041A	Implement improvement systems in an organisation	NE New and changed Elements and PCs Alignment corrected
MSACMT650A	Determine and improve process capability*	MSS405050A	Determine and improve process	E Alignment

MSA07 unit code	MSA07 unit title	MSS11v2 unit code	MSS11v2 unit title	Comment/ equivalence
	MSACMT452A Apply statistics to processes in manufacturing		capability* *MSS404052A Apply statistics to operational processes*	corrected
MSACMT652A	Design an experiment* *MSACMT452A Apply statistics to processes in manufacturing*	MSS405052A	Design an experiment* *MSS404052A Apply statistics to operational processes*	E Alignment corrected
MSACMT653A	Apply six sigma to process control and improvement* *MSACMT452A Apply statistics to processes in manufacturing*	MSS405053A	Manage application of six sigma for process control and improvement* *MSS404052A Apply statistics to operational processes*	E Alignment corrected
MSACMT660A	Develop the application of enterprise systems in manufacturing	MSS405060A	Develop the application of enterprise control systems in an organisation	E Alignment corrected
MSACMT661A	Determine and establish information collection requirements and processes	MSS405061A	Determine and establish information collection requirements and processes	E Alignment corrected
MSACMT662A	Develop a documentation control strategy for a manufacturing enterprise	MSS405062A	Develop a documentation control strategy for an organisation	E Alignment corrected
MSACMT670A	Develop and manage sustainable energy practices	MSS405070A	Develop and manage sustainable energy practices	E Alignment corrected
MSACMT671A	Develop and manage sustainable environmental practices			Not carried forward. Replaced by MSS015002A

MSA07 unit code	**MSA07 unit title**	**MSS11v2 unit code**	**MSS11v2 unit title**	**Comment/ equivalence**
				Equivalent outcomes
MSACMT675A	Facilitate the development of a new product* *MSACMT452A Apply statistics to processes in manufacturing*	MSS405075A	Facilitate the development of a new product* *MSS404052A Apply statistics to operational processes*	E Alignment corrected
MSACMT681A	Develop a proactive maintenance strategy	MSS405081A	Develop a proactive maintenance strategy	E Alignment corrected
MSACMT682A	Adapt a proactive maintenance strategy to the process manufacturing sector* *MSACMT681A Develop a proactive maintenance strategy*	MSS405082A	Adapt a proactive maintenance strategy to the process operations sector* *MSS405081A Develop a proactive maintenance strategy*	E Alignment corrected
MSACMT683A	Adapt a proactive maintenance strategy for a seasonal or cyclical manufacturing operation* *MSACMT681A Develop a proactive maintenance strategy*	MSS405083A	Adapt a proactive maintenance strategy for a seasonal or cyclical business* *MSS405081A Develop a proactive maintenance strategy*	E Alignment corrected

Imported		**Imported**		
MSAENV272B	Participate in environmentally sustainable work practices	MSAENV272B	Participate in environmentally sustainable work practices	No change
MSAENV472B	Implement and monitor environmentally sustainable work practices	MSAENV472B	Implement and monitor environmentally sustainable work	No change

			practices	
MSAENV672B	Develop workplace policy and procedures for sustainability	MSAENV672B	Develop workplace policy and procedures for sustainability	No change
MSAPMSUP390A	Use structured problem solving tools	MSAPMSUP390A	Use structured problem solving tools	No change
MSAPMOHS200A	Work safely	MSAPMOHS200A	Work safely	No change - new to MSS11

MSS11v1 Summary mapping

MSS11v1 Qualifications

Code	**Title**
MSS40111	Certificate IV in Sustainable Operations
MSS40211	Certificate IV in Environmental Monitoring and Technology
MSS50111	Diploma of Sustainable Operations
MSS50211	Diploma of Environmental Monitoring and Technology
MSS70111	Vocational Graduate Certificate in Sustainable Operations
MSS70211	Vocational Graduate Certificate in Environmental Management

MSS11v1 Units mapped to qualifications, with prerequisites

Unit code	**Unit title**	**Prerequisite**	**MSS40111**	**MSS50111**	**MSS70111**	**MSS40211**	**MSS50211**	**MSS70211**
MSS014001A	Improve sustainability through readily implementable change		X	X				

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
MSS014002A	Evaluate sustainability impact of a work or process area		X					
MSS014003A	Optimise sustainability of a process or plant area		X					
MSS014004A	Develop team strategies for more sustainable use of resources		X					
MSS014005A	Apply proactive maintenance strategies to sustainability		X					
MSS014006A	Contribute to sustainability related audits		X			X	X	
MSS015001A	Measure and report carbon footprint			X		X	X	
MSS015002A	Develop strategies for more sustainable use of resources			X				
MSS015003A	Analyse product life cycle for sustainability			X				
MSS015004A	Design sustainable product or process			X				
MSS015005A	Develop required sustainability reports		X	X				
MSS015006A	Report to Global Reporting Initiative guidelines			X				
MSS015007A	Develop a business case for sustainability improvements			X				
MSS01500	Develop strategic			X				

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
8A	sustainability plans							
MSS015009A	Implement sustainability plans			X				
MSS015010A	Conduct a sustainability water use audit			X		X	X	
MSS015011A	Conduct a sustainability energy audit			X		X	X	
MSS015012A	Conduct an emissions audit			X		X	X	
MSS015013A	Conduct a sustainability related transport audit			X				
MSS015014A	Develop response to sustainability related regulation			X				
MSS015015A	Evaluate sustainability impact of a process			X				
MSS015016A	Implement and monitor reengineering for sustainability			X				
MSS015017A	Develop regulated sustainability reports			X				
MSS015018A	Inform and advise organisation and community representatives on sustainability issues			X		X	X	X
MSS017001A	Analyse and determine organisational risk areas in sustainability				X			
MSS017002A	Determine process loss through mass or energy balancing				X			

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
MSS017003A	Identify and respond to external sustainability factors for an organisation				X			
MSS017004A	Lead sustainable strategy deployment				X			
MSS017005A	Manage a major sustainability non-conformance				X			
MSS017006A	Identify and improve sustainability interactions relations with the community				X			
MSS017007A	Design for sustainability				X			
MSS024001A	Work and communicate effectively as an environmental technician					X	X	
MSS024002A	Implement environmental management plans and procedures		X			X	X	
MSS024003A	Apply an understanding of environmental principles to a site		X	X		X	X	
MSS024004A	Process and present environmental data					X	X	
MSS024005A	Collect spatial and discrete environmental data					X	X	X
MSS024006A	Perform sampling and testing of water					X	X	X
MSS02400	Collect and evaluate					X	X	X

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
7A	meteorological data							
MSS024008A	Recognise common geological landforms and samples					X	X	X
MSS024009A	Assist with assessing and monitoring stormwater systems					X	X	X
MSS024010A	Perform environmental biological techniques					X	X	
MSS024011A	Navigate in urban, regional and remote areas					X	X	
MSS024012A	Undertake simple environmental project activities					X	X	
MSS025001A	Assist with assessing site environmental indicators	MSS024003A		X		X	X	
MSS025002A	Assess the environmental risk or impact of a project activity or process	MSS024003A		X		X	X	
MSS025003A	Report environmental data	MSS024004A				X	X	
MSS025004A	Provide environmental information to customers					X	X	
MSS025005A	Produce site maps	MSS024005A				X	X	X
MSS025006A	Collect and evaluate groundwater data					X	X	X
MSS025007A	Perform sampling and testing of soils	MSS024008A				X	X	X
MSS02500	Monitor and evaluate					X	X	X

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
8A	noise							
MSS025009A	Perform sampling and testing of air					X	X	X
MSS025010A	Assist with odour source assessment					X	X	X
MSS025011A	Assist with odour field assessment					X	X	X
MSS025012A	Perform environmental microbiological tests	MSS024010A				X	X	
MSS025013A	Assist with assessing and monitoring wetlands					X	X	X
MSS025014A	Perform sampling and testing of contaminated sites	MSS024008A				X	X	X
MSS025015A	Plan and conduct environmental project work					X	X	
MSS025016A	Perform sampling and testing of stationary emissions					X	X	X
MSS027001A	Coordinate environmental management activities							X
MSS027002A	Apply environmental legislation, codes and standards				X			X
MSS027003A	Provide environmental advice to clients							X
MSS027004A	Contribute to environmental decision making							X
MSS02700	Contribute to improving							X

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
5A	environmental performance							
MSS027006A	Coordinate water quality management activities	MSS024006A						X
MSS027007A	Coordinate air quality management activities	MSS025009A OR MSS025016A						X
MSS027008A	Coordinate noise management activities	MSS025008A						X
MSS027009A	Coordinate site remediation or rehabilitation activities	Path 1 MSS025006A, MSS025007A, MSS024008A Path 2 MSS025006A, MSS025007A, MSS025013A						X
MSS027010A	Undertake complex environmental project work							X
MSS027011A	Select, commission and maintain environmental monitoring instruments							X
MSS027012A	Implement and monitor the site OHS management system	MSL944001A						X

MSS11v1 Imported units

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
BSBOHS406C	Use equipment to conduct workplace monitoring					X	X	
BSBOHS605B	Apply occupational hygiene principles to control OHS risk							X
BSBRSK401A	Identify risk and apply risk management processes		X					
CUVPHI05B	Use a 35mm SLR camera or digital equivalent					X	X	
HLTFA301B	Apply first aid					X	X	
LGAPLEM506A	Improve community knowledge and skills in environmental management practices							X
LMFFDT4003A	Assess and record the lifecycle of a product		X					
LMFFT4007B	Sample, inspect and test products to specifications		X					
LMTGN4002A	Participate in product engineering		X					
LMTGN4016A	Contribute to the development of products or processes		X					
MEM13002B	Undertake occupational health and safety activities in the workplace		X					

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
MEM30016A	Assist in the analysis of a supply chain		X					
MSACMC410A	Lead change in a manufacturing environment		X	X				
MSACMC411A	Lead a competitive manufacturing team		X					
MSACMC413A	Lead team culture improvement		X					
MSACMC610A	Manage relationships with non-customer external organisations			X				
MSACMC611A	Manage people relationships			X				
MSACMC612A	Manage workplace learning			X				
MSACMC613A	Facilitate holistic culture improvement in a manufacturing enterprise			X				
MSACMC614A	Develop a communications strategy to support production			X				
MSACMG700A	Review continuous improvement processes				X			
MSACMG701A	Prepare for and implement change				X			
MSACMG702A	Review manufacturing practice tools and techniques				X			
MSACMG70	Analyse process				X			

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
3A	changes							
MSACMG704A	Facilitate improvements in the value chain				X			
MSACMG705A	Undertake a qualitative review of a process change				X			
MSACMG706A	Build relationships between teams in a manufacturing environment				X			
MSACMG708A	Capture learning from daily activities in a manufacturing organisation				X			
MSACMG709A	Facilitate improvements in the external value chain				X			
MSACMG710A	Improve visual management in the workplace				X			
MSACMG711A	Manage benchmarking studies				X			
MSACMG712A	Lead a problem solving process to determine and solve root cause				X			
MSACMG800A	Analyse data for relevance to organisational learning				X			
MSACMG801A	Develop the competitive manufacturing approach				X			
MSACMG802A	Audit the use of competitive tools				X			

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
MSACMS400A	Implement a competitive manufacturing system		X	X				
MSACMS401A	Ensure process improvements are sustained		X					
MSACMS405A	Lead a manufacturing team using a balanced score card approach		X					
MSACMS600A	Develop a competitive manufacturing system			X				
MSACMS601A	Analyse and map a value chain	MSACMT631A MSACMT230A		X				
MSACMS602A	Manage a value chain	MSACMS601A MSACMT631A MSACMT230A		X				
MSACMS603A	Develop manufacturing related business plans			X				
MSACMT230A	Apply cost factors to work practices		X	X				
MSACMT260A	Use planning software systems in manufacturing		X	X				
MSACMT261A	Use SCADA systems in manufacturing		X	X				
MSACMT280A	Undertake root cause analysis		X	X				

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
MSACMT423A	Monitor a manufacturing levelled pull system		X	X				
MSACMT430A	Improve cost factors in work practices		X					
MSACMT440A	Lead 5S in a manufacturing environment		X					
MSACMT441A	Facilitate continuous improvement in manufacturing		X					
MSACMT450A	Undertake process capability improvements	MSACMT452A	X					
MSACMT451A	Mistake proof a production process		X	X				
MSACMT452A	Apply statistics to processes in manufacturing		X	X				
MSACMT453A	Use six sigma techniques	MSACMT452A	X	X				
MSACMT460A	Facilitate the use of planning software systems in manufacturing	MSACMT260A	X	X				
MSACMT461A	Facilitate SCADA systems in a manufacturing team or work area	MSACMT261A	X					
MSACMT481A	Undertake proactive maintenance analyses		X	X				
MSACMT482A	Assist in implementing a proactive maintenance		X					

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
	strategy							
MSACMT483A	Support proactive maintenance		X					
MSACMT620A	Develop quick changeover procedures			X				
MSACMT621A	Develop a Just in Time (JIT) system	MSACMC410A		X				
MSACMT631A	Undertake value analysis of product costs in terms of customer requirements	MSACMT230A		X				
MSACMT632A	Analyse cost implications of maintenance strategy			X				
MSACMT640A	Manage 5S system in a manufacturing environment			X				
MSACMT641A	Implement a continuous improvement system			X				
MSACMT650A	Determine and improve process capability	MSACMT452A		X				
MSACMT660A	Develop the application of enterprise systems in manufacturing			X				
MSACMT661A	Determine and establish information collection requirements and processes			X				
MSACMT662A	Develop a documentation control strategy for a manufacturing enterprise			X				

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
MSACMT670A	Develop and manage sustainable energy practices			X				
MSACMT671A	Develop and manage sustainable environmental practices			X				
MSACMT675A	Facilitate the development of a new product	MSACMT452A		X				
MSACMT681A	Develop a proactive maintenance strategy			X				
MSAENV272B	Participate in environmentally sustainable work practices					X	X	
MSAENV472B	Implement and monitor environmentally sustainable work practices		X			X	X	X
MSAENV672B	Develop workplace policy and procedures for sustainability			X	X			X
MSAPMOHS401A	Assess risk		X					
MSAPMOHS510A	Manage risk			X				
MSAPMSUP301A	Apply HACCP to the workplace		X					
MSAPMSUP390A	Use structured problem solving tools		X	X				
MSL904001A	Perform standard calibrations					X	X	

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
MSL924002A	Use laboratory application software					X	X	
MSL933003A	Apply critical control point requirements		X					
MSL934001A	Contribute to the ongoing development of HACCP plans		X					
MSL935004A	Maintain instruments and equipment					X	X	
MSL943002A	Participate in laboratory/field workplace safety					X	X	
MSL944001A	Maintain laboratory/field workplace safety							X
MSL952001A	Collect routine site samples					X	X	
MSL954001A	Obtain representative samples in accordance with sampling plan					X	X	
MSL973001A	Perform basic tests					X	X	
MSL973002A	Prepare working solutions					X	X	
MSL973004A	Perform asceptic techniques					X	X	
MSL973007A	Perform microscopic examination					X	X	
MSL973012A	Assist with geotechnical site investigations						X	

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
MSL974002A	Conduct geotechnical site investigations	MSL973012A					X	
MSL974003A	Perform chemical tests and procedures					X	X	
MSL974006A	Perform biological procedures	MSL973004A MSL973007A				X	X	
MSL974007A	Undertake environmental field-based monitoring		X			X	X	X
MSL974009A	Undertake field-based, remote-sensing monitoring		X			X	X	X
MSL975011A	Design and supervise complex environmental field surveys	MSL974007A				X	X	X
MSL975017A	Perform laboratory-based ecological techniques	MSL974006A MSL973004A MSL973007A				X	X	
MSL975023A	Supervise geotechnical site investigations	MSL974002A MSL973012A				X	X	
PMASUP520B	Review procedures to minimise environmental impact of process		X	X				
PMASUP540B	Analyse equipment performance		X	X				

Unit code	Unit title	Prerequisite	MSS 40111	MSS 50111	MSS 70111	MSS 40211	MSS 50211	MSS 70211
PMASUP620B	Manage environmental management system			X				
PRMWM01B	Plan waste audit					X	X	
PRMWM02B	Carry out waste audit					X	X	
PSPRAD703A	Perform basic radiation measurements					X	X	
PSPRAD707A	Monitor radiation					X	X	X
PUAWER009B	Participate as a member of a workplace emergency initial response team					X	X	
PUAWER010B	Lead a workplace emergency initial response team							X
RIINHB408A	Supervise environmental drilling operations							X
RIIPRM501A	Implement, monitor, rectify and report on contracts							X
TAEDEL301A	Provide work skill instruction					X	X	

MSS11v2 AQF Qualifications

Qualification code	Qualification title
MSS20312	Certificate II in Competitive Systems and Practices

Qualification code	Qualification title
MSS20312	Certificate II in Competitive Systems and Practices
MSS30312	Certificate III in Competitive Systems and Practices
MSS40111	Certificate IV in Sustainable Operations
MSS40211	Certificate IV in Environmental Monitoring and Technology
MSS40312	Certificate IV in Competitive Systems and Practices
MSS50112	Diploma of Sustainable Operations
MSS50211	Diploma of Environmental Monitoring and Technology
MSS50312	Diploma of Competitive Systems and Practices
MSS60312	Advanced Diploma of Competitive Systems and Practices
MSS70111	Vocational Graduate Certificate in Sustainable Operations
MSS70211	Vocational Graduate Certificate in Environmental Management
MSS70312	Vocational Graduate Certificate in Competitive Systems and Practices
MSS80312	Vocational Graduate Diploma of Competitive Systems and Practices

MSS11v2 List of all units of competency within training package

Unit code	Unit title
MSS014001A	Improve sustainability through readily implementable change
MSS014002A	Evaluate sustainability impact of a work or process area
MSS014003A	Optimise sustainability of a process or plant area
MSS014004A	Develop team strategies for more sustainable use of resources
MSS014005A	Apply proactive maintenance strategies to sustainability
MSS014006A	Contribute to sustainability related audits
MSS015001A	Measure and report carbon footprint

Unit code	Unit title
MSS015002A	Develop strategies for more sustainable use of resources
MSS015003A	Analyse product life cycle for sustainability
MSS015004A	Design sustainable product or process
MSS015005A	Develop required sustainability reports
MSS015006A	Report to Global Reporting Initiative guidelines
MSS015007A	Develop a business case for sustainability improvements
MSS015008A	Develop strategic sustainability plans
MSS015009A	Implement sustainability plans
MSS015010A	Conduct a sustainability water use audit
MSS015011A	Conduct a sustainability energy audit
MSS015012A	Conduct an emissions audit
MSS015013A	Conduct a sustainability related transport audit
MSS015014A	Develop response to sustainability related regulation
MSS015015A	Evaluate sustainability impact of a process
MSS015016A	Implement and monitor reengineering for sustainability
MSS015017A	Develop regulated sustainability reports
MSS015018A	Inform and advise organisation and community representatives on sustainability issues
MSS017001A	Analyse and determine organisational risk areas in sustainability
MSS017002A	Determine process loss through mass or energy balancing
MSS017003A	Identify and respond to external sustainability factors for an organisation
MSS017004A	Lead sustainable strategy deployment
MSS017005A	Manage a major sustainability non-conformance
MSS017006A	Identify and improve sustainability interactions relations with the community

Unit code	Unit title
MSS017007A	Design for sustainability
MSS024001A	Work and communicate effectively as an environmental technician
MSS024002A	Implement environmental management plans and procedures
MSS024003A	Apply an understanding of environmental principles to a site
MSS024004A	Process and present environmental data
MSS024005A	Collect spatial and discrete environmental data
MSS024006A	Perform sampling and testing of water
MSS024007A	Collect and evaluate meteorological data
MSS024008A	Recognise common geological landforms and samples
MSS024009A	Assist with assessing and monitoring stormwater systems
MSS024010A	Perform environmental biological techniques
MSS024011A	Navigate in urban, regional and remote areas
MSS024012A	Undertake simple environmental project activities
MSS025001A	Assist with assessing site environmental indicators
MSS025002A	Assess the environmental risk or impact of a project activity or process
MSS025003A	Report environmental data
MSS025004A	Provide environmental information to customers
MSS025005A	Produce site maps
MSS025006A	Collect and evaluate groundwater data
MSS025007A	Perform sampling and testing of soils
MSS025008A	Monitor and evaluate noise
MSS025009A	Perform sampling and testing of air
MSS025010A	Assist with odour source assessment
MSS025011A	Assist with odour field assessment

Unit code	Unit title
MSS025012A	Perform environmental microbiological tests
MSS025013A	Assist with assessing and monitoring wetlands
MSS025014A	Perform sampling and testing of contaminated sites
MSS025015A	Plan and conduct environmental project work
MSS025016A	Perform sampling and testing of stationary emissions
MSS027001A	Coordinate environmental management activities
MSS027002A	Apply environmental legislation, codes and standards
MSS027003A	Provide environmental advice to clients
MSS027004A	Contribute to environmental decision making
MSS027005A	Contribute to improving environmental performance
MSS027006A	Coordinate water quality management activities
MSS027007A	Coordinate air quality management activities
MSS027008A	Coordinate noise management activities
MSS027009A	Coordinate site remediation or rehabilitation activities
MSS027010A	Undertake complex environmental project work
MSS027011A	Select, commission and maintain environmental monitoring instruments
MSS027012A	Implement and monitor the site OHS management system
MSS402001A	Apply competitive systems and practices
MSS402002A	Sustain process improvements
MSS402010A	Manage the impact of change on own work
MSS402020A	Apply quick changeover procedures
MSS402021A	Apply Just in Time procedures
MSS402030A	Apply cost factors to work practices
MSS402031A	Interpret product costs in terms of customer requirements

Unit code	Unit title
MSS402040A	Apply 5S procedures
MSS402041A	Apply 5S in an office
MSS402050A	Monitor process capability
MSS402051A	Apply quality standards
MSS402052A	Implement continuous improvements based on standardised work practices
MSS402053A	Participate in breakthrough improvements in an office
MSS402060A	Use planning software systems in operations
MSS402061A	Use SCADA systems in operations
MSS402080A	Undertake root cause analysis
MSS402081A	Contribute to the application of a proactive maintenance strategy
MSS403001A	Implement competitive systems and practices
MSS403002A	Ensure process improvements are sustained
MSS403005A	Facilitate use of a Balanced Scorecard for performance improvement
MSS403006A	Facilitate implementation of competitive systems and practices in an office
MSS403007A	Map an office value stream
MSS403010A	Facilitate change in an organisation implementing competitive systems and practices
MSS403011A	Facilitate implementation of competitive systems and practices
MSS403013A	Lead team culture improvement
MSS403021A	Facilitate a Just in Time system
MSS403023A	Monitor a levelled pull system of operations
MSS403024A	Work within a constrained process
MSS403030A	Improve cost factors in work practices
MSS403032A	Analyse manual handling processes

Unit code	Unit title
MSS403033A	Map an operational process
MSS403034A	Organise products into groups
MSS403035A	Implement the visual workplace
MSS403039A	Facilitate and improve 5S in an office
MSS403040A	Facilitate and improve implementation of 5S
MSS403041A	Facilitate breakthrough improvements
MSS403042A	Facilitate mistake proofing in an office
MSS403043A	Facilitate breakthrough improvements in an office
MSS403044A	Facilitate continuous improvement through the use of standardised procedures and practices
MSS403051A	Mistake proof an operational process
MSS403084A	Improve changeovers
MSS404050A	Undertake process capability improvements
MSS404052A	Apply statistics to operational processes
MSS404053A	Use six sigma techniques
MSS404060A	Facilitate the use of planning software systems in a work area or team
MSS404061A	Facilitate the use of SCADA systems in a team or work area
MSS404081A	Undertake proactive maintenance analyses
MSS404082A	Assist in implementing a proactive maintenance strategy
MSS404083A	Support proactive maintenance
MSS405001A	Develop competitive systems and practices for an organisation
MSS405002A	Analyse and map a value stream
MSS405003A	Manage a value stream
MSS405004A	Develop business plans in an organisation implementing competitive systems and practices

Unit code	Unit title
MSS405005A	Manage competitive systems and practices in an organisation responding to individual and unique customer orders
MSS405006A	Develop a Balanced Scorecard
MSS405007A	Introduce competitive systems and practices to a small or medium enterprise
MSS405010A	Manage relationships with non-customer external organisations
MSS405011A	Manage people relationships
MSS405012A	Manage workplace learning
MSS405013A	Facilitate holistic culture improvement in an organisation
MSS405014A	Develop a communications strategy to support operations
MSS405020A	Develop quick changeover procedures
MSS405021A	Develop a Just in Time system
MSS405022A	Design a process layout
MSS405023A	Develop a levelled pull system for operations and processes
MSS405024A	Apply the theory of constraints
MSS405030A	Optimise cost of product or service
MSS405031A	Undertake value analysis of a product or process costs in terms of customer requirements
MSS405032A	Analyse cost implications of maintenance strategy
MSS405033A	Optimise office systems to deliver to customer demand
MSS405040A	Manage 5S system in an organisation
MSS405041A	Implement improvement systems in an organisation
MSS405050A	Determine and improve process capability
MSS405052A	Design an experiment
MSS405053A	Manage application of six sigma for process control and improvement
MSS405060A	Develop the application of enterprise control systems in an organisation

Unit code	Unit title
MSS405061A	Determine and establish information collection requirements and processes
MSS405062A	Develop a documentation control strategy for an organisation
MSS405070A	Develop and manage sustainable energy practices
MSS405075A	Facilitate the development of a new product
MSS405081A	Develop a proactive maintenance strategy
MSS405082A	Adapt a proactive maintenance strategy to the process operations sector
MSS405083A	Adapt a proactive maintenance strategy for a seasonal or cyclical business
MSS407001A	Prepare for and implement change
MSS407002A	Review operations practice tools and techniques
MSS407003A	Analyse process changes
MSS407004A	Facilitate improvements in the internal value stream
MSS407005A	Undertake a qualitative review of a process change
MSS407006A	Build relationships between teams in an operations environment
MSS407007A	Respond to a major non-conformance
MSS407008A	Capture learning from daily activities in a organisation
MSS407009A	Facilitate improvements in the external value stream
MSS407010A	Improve visual management in the workplace
MSS407011A	Manage benchmarking studies
MSS407012A	Lead a problem solving process to determine and solve root cause
MSS407013A	Review continuous improvement processes
MSS408001A	Develop the competitive systems and practices approach
MSS408002A	Audit the use of competitive tools
MSS408003A	Develop models of future state operations practice
MSS408004A	Develop the value stream

Unit code	Unit title
MSS408005A	Develop the learning processes of the operations organisation
MSS408006A	Develop and refine systems for continuous improvement in operations
MSS408007A	Develop problem solving capability of an organisation
MSS408008A	Analyse data for relevance to organisational learning

Imported units

BSBOHS406C	Use equipment to conduct workplace monitoring
BSBOHS605B	Apply occupational hygiene principles to control OHS risk
BSBRSK401A	Identify risk and apply risk management processes
CUVPHI05B	Use a 35mm SLR camera or digital equivalent
HLTFA301B	Apply first aid
LGAPLEM506A	Improve community knowledge and skills in environmental management practices
LMFFDT4003A	Assess and record the lifecycle of a product
LMFFT4007B	Sample, inspect and test products to specifications
LMTGN4002A	Participate in product engineering
LMTGN4016A	Contribute to the development of products or processes
MEM13002B	Undertake occupational health and safety activities in the workplace
MEM30016A	Assist in the analysis of a supply chain
MSAENV272B	Participate in environmentally sustainable work practices
MSAENV472B	Implement and monitor environmentally sustainable work practices
MSAENV672B	Develop workplace policy and procedures for sustainability
MSAPMOHS200A	Work safely
MSAPMOHS40	Assess risk

Unit code	Unit title
1A	
MSAPMOHS510A	Manage risk
MSAPMSUP301A	Apply HACCP to the workplace
MSAPMSUP390A	Use structured problem solving tools
MSL904001A	Perform standard calibrations
MSL924002A	Use laboratory application software
MSL933003A	Apply critical control point requirements
MSL934001A	Contribute to the ongoing development of HACCP plans
MSL935004A	Maintain instruments and equipment
MSL943002A	Participate in laboratory/field workplace safety
MSL944001A	Maintain laboratory/field safety
MSL952001A	Collect routine site samples
MSL954001A	Obtain representative samples in accordance with sampling plan
MSL973001A	Perform basic tests
MSL973002A	Prepare working solutions
MSL973004A	Perform asceptic techniques
MSL973007A	Perform microscopic examination
MSL973012A	Assist with geotechnical site investigations
MSL974002A	Conduct geotechnical site investigations
MSL974003A	Perform chemical tests and procedures
MSL974006A	Perform biological procedures
MSL974007A	Undertake environmental field-based monitoring
MSL974009A	Undertake field-based, remote-sensing monitoring

Unit code	Unit title
MSL975011A	Design and supervise complex environmental field surveys
MSL975017A	Perform laboratory-based ecological techniques
MSL975023A	Supervise geotechnical site investigations
PMASUP520B	Review procedures to minimise environmental impact of process
PMASUP540B	Analyse equipment performance
PMASUP620B	Manage environmental management system
PRMWM01B	Plan waste audit
PRMWM02B	Carry out waste audit
PSPRAD703A	Perform basic radiation measurements
PSPRAD707A	Monitor radiation
PUAWER009B	Participate as a member of a workplace emergency initial response team
PUAWER010B	Lead a workplace emergency initial response team
RIINHB408A	Supervise environmental drilling operations
RIIPRM501A	Implement, monitor, rectify and report on contracts
TAEDEL301A	Provide work skill instruction

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 2010 (AQTF 2010), 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?

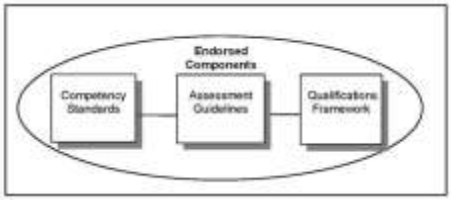
Training and assessment using Training Packages must be conducted by a Registered Training Organisation (RTO) that has the qualifications or specific units of competency on its scope of registration, or that works in partnership with another RTO, as specified in the AQTF 2010.

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 2010. The Assessment Guidelines must be followed to ensure the integrity of assessment leading to nationally recognised qualifications.

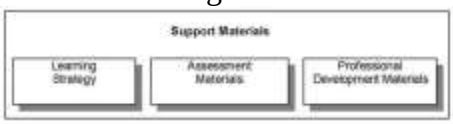
Qualifications Framework

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.

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 XYZ08. 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 XYZ10108. 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 MSS015003A
- the first three characters signify the Training Package – MSS11 Sustainability Training Package – 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: MSS50111 Certificate IV in Sustainable 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: MSSS015003A Analyse product life cycle for sustainability

Introduction

MSS11v1 - Background to development of the Sustainability Training Package

Sustainability is a strategic priority for MSA

Since its inception as an Industry Skills Council (ISC) in 2004, productivity, sustainability and strategic workforce development have been the key pillars that support Manufacturing Skills Australia's (MSA's) vision.
MSA's strategic actions focus on achieving business improvements. MSA's flagship, the competitive manufacturing units of competency and qualifications, have been critical components of this focus with its lean principles and practices.
Sustainability is now recognised as a key driver for new directions in manufacturing and includes the entire value stream and culture of the organisation. Whilst the foundation principles of lean remain essential we need to showcase that it is not just about doing 'more with less' but when correctly integrated into the business culture provides the enterprise with sustainable and competitive advantages.

Project background

During 2009-10, MSA commissioned two development projects to:

- examine the significance of various reports and initiatives by federal and state/territory governments about 'environmental sustainability'
- respond to repeated requests by industry representatives and registered training organisations (RTOs) to better address the skilling needs of workers in the 'environment' and 'sustainability' industry sectors.

This work was influenced by a number of strategic drivers. In 2009, the ISCs jointly developed a paper, *Environmental Sustainability – An Industry Response*, that expressed concern about:

- The lack of an overarching picture and broad understanding of how skills relating to sustainable practice are being developed and embedded within industry.
- The growing plethora of accredited courses and policy.

There has also been a strong and sustained interest by some of MSA's stakeholders in the development of a stand-alone cross industry Training Package to address the very diverse needs of the 'environment' and 'sustainability' industry sectors. This is because:

- The skilling needs of the 'environment' sector are not adequately addressed by the small number of 'environmental' units of competency developed during the continuous improvement of the Laboratory Operations Training Package (PML99, PML04 and MSL09) and the existing accredited courses.
- Similarly, the needs of the 'sustainability' sector are not fully met by the MSAENV272B, MSAENV472B and MSAENV672B units of competency.

In Australia, 'environmental' technicians and paraprofessionals work in diverse fields, such as:

- environmental monitoring of air, clean water (catchments/water supply/surface and groundwater, and environmental flows), contaminated land and groundwater, soil and noise
- environmental compliance inspection
- clean-up of spills, hazardous materials and site remediation
- energy technologies and services
- environmental laboratory services
- environmental information management systems
- environmental site management
- geotechnical services and civil engineering
- water treatment, storm and wastewater management
- health and safety (e.g. noise and air quality)
- natural resources management
- pollution control and prevention
- solid and hazardous waste management.

They are also employed in the rapidly growing industry sectors of 'sustainability' and 'resource efficiency' (e.g. carbon/energy/water/waste auditing).

In the private sector, most technicians and paraprofessionals are employed by large companies associated with environmental consultancies, manufacturing, mining and major infrastructure projects. In the public sector, the emphasis of work is more about sustainable management of natural resources, compliance and community education.

Two MSA initiatives to develop products to address the skilling needs of these workers are outlined below.

Sustainable Operations Qualifications

Manufacturing Skills Australia commissioned Richard Jenkins & Associates to examine ways to respond to increased industry interest and need in the area of skills required to increase the sustainability performance of manufacturing operations and operations of suppliers and customers along their manufacturing value chain. The new qualifications and units of competency are designed to provide the skills to enable enterprises to:

- audit their own sustainability performance
- develop a strategic plan and response to non-conformances
- develop strategies for increasing the sustainability performance inside their own operations and with their customers and suppliers.

The units of competency provide the skills needed to respond to current and new sustainability compliance regimes and environmental standards especially those associated with carbon and carbon equivalent use and management. While the units are not specific to any one regime they enable an RTO to provide training in skills required for National Greenhouse Response Strategy (NGRS) reporting, internationally accepted reporting arrangements, such as the Global Reporting Initiative (GRI), and likely Australian compliance and reporting arrangements, including carbon pricing or trading arrangements.
The skills covered by the units include technical skills, such as mass balancing and auditing, and more strategic units with a strong similarity to processes used in lean manufacturing to identify and minimise waste.
MSA has met these needs through the development of Sustainable Operations qualifications and units of competency.

Environmental Monitoring and Technology qualifications

Dr Ivan Johnstone (CIT Solutions) was commissioned to canvass the need for VET sector qualifications in the broad fields of environmental monitoring and technology and environmental management and to conduct a detailed competency analysis for the relevant occupational groups.
Consultations involving both private and public sector enterprises throughout Australia identified the need for the following qualifications to cover the three highest priority occupational groups:

- environmental managers, environmental site coordinators, senior environmental officers, natural resource managers, water catchment managers and other job titles (Vocational Graduate Certificate in Environmental Management)
- environmental officers, environmental protection officers, environmental compliance officers, technical officers and other job titles (Diploma of Environmental Monitoring and Technology)
- environmental assistants, technical assistants and other job titles (Certificate IV in Environmental Monitoring and Technology).

MSA supported the findings and contracted Dr Johnstone to undertake the development of three new qualifications.

MSS11v2 – Background to development of the Competitive Systems and Practices qualifications

Manufacturing Skills Australia (MSA) commenced a review of the existing competitive manufacturing qualifications in September 2009. The qualifications were first endorsed in 2004 and cover the skills needed for employees in an enterprise to apply a range of common efficiency-improvement techniques. These techniques are usually known under the broad name of lean manufacturing or lean techniques.

The skills covered by the competitive systems and practices qualifications are widely used in many industries and are generally regarded as best practice for enterprise efficiency improvement. It is worth noting that many of the aims of the original development of the competitive manufacturing qualifications are still relevant. For example:

- to provide a mechanism for public recognition of skills gained by employees when they are trained in lean techniques
- to enable the VET system to offer best practice skills training to assist Australian enterprises to improve their performance
- to offer a range of units of competency that, as well as being available in specialist competitive systems and practices qualifications, are also very suitable for importing into other VET qualifications.

The review was undertaken by Richard Jenkins and Associates (RJA). The project team were Richard Jenkins (Project Manager), Kevin Hummel and Celeste Howden, with Sue Thomson providing administrative support.

The review specifically considered:

- uptake of the current competitive manufacturing qualifications
- alignment and structure of the competitive manufacturing qualifications
- the suitability of the content and scope of existing units of competency.

In addition, consultations were required to be conducted with New Zealand Industry Training Organisations as the Australian competitive manufacturing qualifications have been used as the basis of endorsed training in lean operations in the NZ VET system.

Industry drivers for change

There is strong support for the existing competitive manufacturing units and qualifications. However, industry circumstances have changed since the first endorsement in 2004 and consultations revealed that industry was looking at changes to the existing qualifications and units of competency that gave more emphasis to:

- application of competitive systems and practices to all members of a manufacturing value chain, including non-manufacturing areas, such as administration, logistics and other support services areas
- application to enterprises in non-manufacturing industries
- the informal facilitative role of senior operators and others who have competitive systems and practices skills and who are not in a formally designated supervisory role (the current competitive manufacturing qualifications were seen as having an over-emphasis on skills for people in formal leadership positions, such as team leaders)
- skills related to standardisation of processes and operations.

One concern during the Review was the concentration of delivery of the current competitive manufacturing qualifications at the AQF III and AQF IV level. This was primarily seen by those consulted as a consequence of funding policies. However, many enterprises and RTOs commented that implementation of the higher competitive manufacturing qualifications also depended on first establishing a cadre of competent people at the senior operator/team leader level. Feedback also indicated that while the Diploma and Advanced Diploma qualifications allow for direct entry there was also likely to be significant demand for progression from the Certificate IV to Diploma or Advanced Diploma qualifications. Given this support the Advanced Diploma qualification has been retained even though there has not been substantial past delivery.

MSA expects the overall demand for competitive systems and practices qualifications to increase as enterprises continue to come under competitive pressures and the consequent need for efficiency improvement becomes stronger across the economy. The anticipated increased demand for competitive systems and practices delivery into new sectors has been confirmed by the strong support for the new lean office units and feedback from RTOs indicating that the reviewed drafts were being favourably received by non-manufacturing clients.

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 Organisations (RTOs) may contextualise units of competency in this endorsed Training Package to reflect required local outcomes. 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 Training Package must be within the bounds of the following advice:

- RTOs must not remove or add to the number and content of elements and performance criteria.
- RTOs can include specific industry terminology in the range statement.
- Any amendments and additions to the range statement made by RTOs must not diminish the breadth of application of the competency, or reduce its portability.
- RTOs may add detail to the evidence guide in areas such as the critical aspects of evidence or required resources and infrastructure—but only where these expand the breadth of the competency and 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
This sub-section contains a statement that the unit contains Employability skills.

Pre-requisite 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
- the required underpinning knowledge and skills
-

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.

Sample unit of competency components showing Employability Skills

The following table shows the sequence of a unit of competency, and each cell contains text taken from a range of units. It provides examples of where and how various Employability Skills could be embedded in each component.

Please note that in the example, the bracketed Employability Skills are provided for clarification only and would not be present in units of competency within this Training Package.

Unit Title	Give formal presentations and take part in meetings **(Communication)**
Unit Descriptor	This unit covers the skills and knowledge required to promote the use and implementation of innovative work practices to effect change. **(Initiative and enterprise)**
Element	Proactively resolve issues. (problem solving)
Performance Criteria	Information is organised in a format suitable for analysis and dissemination in accordance with organisational requirements. **(Planning and organising)**
Range Statement	Software applications may include email, internet, word processing, spreadsheet, database or accounting packages. (technology)

Required Skills and Knowledge	Modify activities depending on differing workplace contexts, risk situations and environments. **(Learning)** Work collaboratively with others during a fire emergency. (teamwork) Instructions, procedures and other information relevant the maintenance of vessel and port security. **(Communication)**
Evidence Guide	Evidence of having worked constructively with a wide range of community groups and stakeholders to solve problems and adapt or design new solutions to meet identified needs in crime prevention. In particular, evidence must be obtained on the ability to: • assess response options to identified crime-prevention needs and determine the optimal action to be implemented • in consultation with relevant others, design an initiative to address identified issues. **(Initiative and enterprise).**

Employability Skills Summaries and units of competency

An Employability Skills Summary exists for each qualification. Summaries include broad advice on industry expectations with regard to Employability Skills at the qualification level. Summaries should be used by trainers and assessors to assist in identifying the Employability Skills requirements contained within units of competency.

Employability Skills in MSS11

These qualifications are directed at scientific and technology based occupations. It is a key requirement for people working in these roles to recognise and report non-conformance, and maintain security and confidentiality of all client/enterprise data and information. They generally work under strict operating procedures and must be able to access, record and present information accurately. Initiative and planning is required at all levels.

Examples from MSS11 of Employability Skills embedded within unit components	
Unit component	**Example of embedded Employability Skill**
Unit Title	Analyse and determine organisational risk areas in sustainability (Organising, problem solving, initiative, enterprise)
Unit Descriptor	This unit of competency covers the analysis of an organisation's interactions with its environment, the specifics of the local situation and determining risks and vulnerabilities (hot spots) for close monitoring or action. It may be applied to an entire organisation, part of a large organisation or part/all of a value chain. (Problem solving, planning, technology, initiative)

Examples from MSS11 of Employability Skills embedded within unit components	
Unit component	**Example of embedded Employability Skill**
Element	Communicate required responses as appropriate (Communication, problem solving, self-management, teamwork, enterprise)
Performance Criteria	Analyse data which may be appropriate to communicate with stakeholders (Technology, self-management, learning, communication, team work)
Range Statement	Process mapping is a technique for visualising/drawing a set of interrelated work activities characterised by a set of inputs and value-added tasks that produce a set of outputs. It applies to any process producing a good or a service (Learning, technology, initiative, planning, problem solving)
Required Skills and Knowledge	• sources and impacts of pollution and other ecological degradation and methods of eliminating, controlling or reducing them • interpreting specifications, operating procedures, manuals, regulations and other complex documents (Learning, technology, self-management, communication)
Evidence Guide	Critical aspects of assessment and evidence include: • analysing sustainability susceptibilities for a chosen portion of a value chain • identifying appropriate responses • communicating the above, as appropriate. (Initiative and enterprise, learning, planning and organising, communication, problem solving, technology, self management, teamwork)

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 *Australian Quality Training Framework (AQTF) Essential Standards for Initial and Continuing Registration*. 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 and 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).

Principles of Assessment

All assessments carried out by RTOs are required to demonstrate compliance with the principles of assessment:

- validity
- reliability
- flexibility
- fairness
- sufficiency

These principles must be addressed in the:

- design, establishment and management of the assessment system for this Training Package
- development of assessment tools, and
- the conduct of assessment.

Validity
Assessment is valid when the process is sound and assesses what it claims to assess. Validity requires that:
(a) assessment against the units of competency must cover the broad range of skills and knowledge that are essential to competent performance
(b) assessment of knowledge and skills must be integrated with their practical application
(c) judgement of competence must be based on sufficient evidence (that is, evidence gathered on a number of occasions and in a range of contexts using different assessment methods). The specific evidence requirements of each unit of competency provide advice on sufficiency

Reliability
Reliability refers to the degree to which evidence presented for assessment is consistently interpreted and results in consistent assessment outcomes. Reliability requires the assessor to have the required competencies in assessment and relevant vocational competencies (or to assess in conjunction with someone who has the vocational competencies). It can only be achieved when assessors share a common interpretation of the assessment requirements of the unit(s) being assessed.

Flexibility
To be flexible, assessment should reflect the candidate's needs; provide for recognition of competencies no matter how, where or when they have been acquired; draw on a range of methods appropriate to the context, competency and the candidate; and support continuous competency development.

Fairness
Fairness in assessment requires consideration of the individual candidate's needs and characteristics, and any reasonable adjustments that need to be applied to take account of them. It requires clear communication between the assessor and the candidate to ensure that the candidate is fully informed about, understands and is able to participate in, the assessment process, and agrees that the process is appropriate. It also includes an opportunity for the person being assessed to challenge the result of the assessment and to be reassessed if necessary.

Sufficiency
Sufficiency relates to the quality and quantity of evidence assessed. It requires collection of enough *appropriate* evidence to ensure that all aspects of competency have been satisfied and that competency can be demonstrated repeatedly. Supplementary sources of evidence may be necessary. The specific evidence requirements of each unit of competency provide advice on sufficiency. Sufficiency is also one of the rules of evidence.

Rules of Evidence

The rules of evidence guide the collection of evidence that address the principles of validity and reliability, guiding the collection of evidence to ensure that it is valid, sufficient, current and authentic.

Valid

Valid evidence must relate directly to the requirements of the unit of competency. In ensuring evidence is valid, assessors must ensure that the evidence collected supports demonstration of the outcomes and performance requirements of the unit of competency together with the knowledge and skills necessary for competent performance. Valid evidence must encapsulate the breadth and depth of the unit of competency, which will necessitate using a number of different assessment methods.

Sufficient

Sufficiency relates to the quality and quantity of evidence assessed. It requires collection of enough appropriate evidence to ensure that all aspects of competency have been satisfied and that competency can be demonstrated repeatedly. Supplementary sources of evidence may be necessary. The specific evidence requirements of each unit of competency provide advice on sufficiency.

Current

In assessment, currency relates to the age of the evidence presented by a candidate to demonstrate that they are still competent. Competency requires demonstration of current performance, so the evidence collected must be from either the present or the very recent past.

Authentic

To accept evidence as authentic, an assessor must be assured that the evidence presented for assessment is the candidate's own work.

Assessment Requirements of the Australian Quality Training Framework

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 2010 *Essential Standards for Registration.*

The AQTF 2010 *Essential Standards for Initial and Continuing Registration* can be downloaded from <www.training.com.au>.

The following points summarise the 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 Body in accordance with the AQTF. 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 2010 *Essential Standards for Initial and Continuing Registration*, Standard 1.

Assessor Competency Requirements

Each person involved in training and assessment must be competent for the functions they perform. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*, Standard 1 for assessor (and trainer) competency requirements. See also the AQTF 2010 *Users' Guide to the Essential Standards for Registration* – Appendix 2.

Assessment Requirements

The RTOs assessments, including RPL, must meet the requirements of the relevant endorsed Training Package. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

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 2010 *Essential Standards for Initial and Continuing Registration*.

National Recognition

Each RTO must recognise the AQF qualifications and Statements of Attainment issued by any other RTO. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*..

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 2010 *Essential Standards for Initial and Continuing Registration.*

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 AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Recording Assessment Outcomes

Each RTO must manage records to ensure their accuracy and integrity. See the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

Issuing AQF qualifications and Statement 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)/courses(s). See the AQTF and the edition of the *AQF Implementation Handbook*—available on the AQF Council website <www.aqf.edu.au >

Licensing/Registration Requirements

This section provides information on licensing/registration requirements for this Training Package, with the following important disclaimer.

Licensing and registration requirements that apply to specific industries, and vocational education and training, vary between each State and Territory, and can regularly change. The developers of this Training Package consider that the licensing/registration requirements described in this section apply to RTOs, assessors or candidates with respect to this Training Package. While reasonable care has been taken in its preparation, the developers of this Training Package and the Department cannot guarantee that the list is definitive or accurate at the time of reading; the information in this section is provided in good faith on that basis.

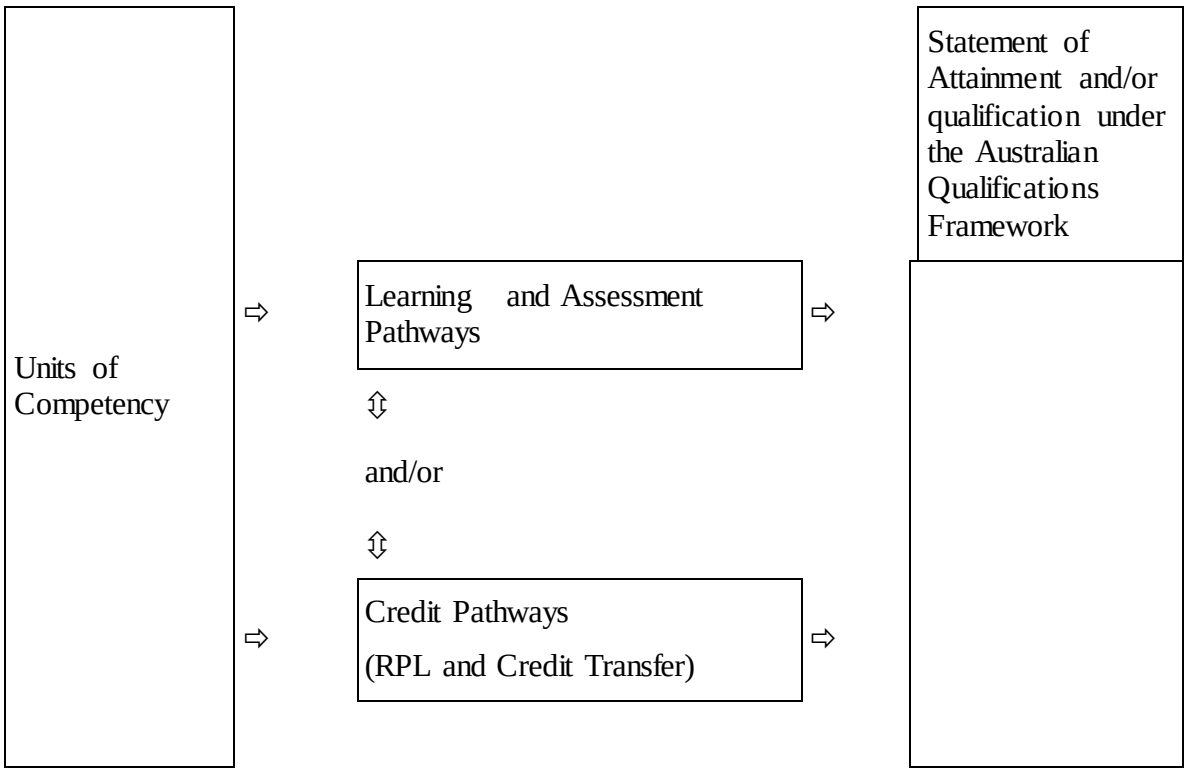
Contact the relevant State or Territory Department(s) to check if the licensing/registration requirements described below still apply, and to check if there are any others with which you must comply. For further information contact Manufacturing Skills Australia (see Manufacturing Skills Australia - http://www.ISC.net.au/, see Manufacturing Skills Australia - http://www.mskills.com.au).

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, or a 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 , the AQTF and, where relevant, the Australian Qualifications Framework.

Learning and Assessment Pathways

Usually, learning and assessment are integrated, with 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.

Credit Pathways

Credit is the value assigned for the recognition of equivalence in content between different types of learning and/or qualifications which reduces the volume of learning required to achieve a qualification.

Credit arrangements must be offered by all RTOs that offer Training Package qualifications. Each RTO must have a systematic institutional approach with clear, accessible and transparent policies and procedures.

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 acquired, provided that the learning is relevant to the unit of competency outcomes.

Recognition of Prior Learning

Recognition of Prior Learning (RPL) is an assessment process which determines the credit outcomes of an individual application for credit.

The availability of Recognition of Prior Learning (RPL) provides all potential learners with access to credit opportunities.
The recognition of prior learning pathway is appropriate for candidates who have previously attained skills and knowledge and who, when enrolling in qualifications, seek to shorten the duration of their training and either continue or commence working. This may include the following groups of people:

- 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.
-

As with all assessment, RPL assessment should be undertaken by academic or teaching staff with expertise in the subject, content of skills area, as well as knowledge of and expertise in RPL assessment policies and procedures.

Assessment methods used for RPL should provide a range of ways for individuals to demonstrate that they have met the required outcomes and can be granted credit. These might include:

- questioning (oral or written)
- consideration of a portfolio and review of contents
- consideration of third party reports and/or other documentation such as documentation such as articles, reports, project material, papers, testimonials or other products prepared by the RPL applicant that relate to the learning outcomes of the relevant qualification component
- mapping of learning outcomes from prior formal or non-formal learning to the relevant qualification components
- observation of performance, and
- participation in structured assessment activities the individual would normally be required to undertake if they were enrolled in the qualification component/s.

In a 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. Where the outcomes of this process indicate that the candidate is competent, structured training is not required. The RPL requirements of the AQTF must be met.
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, work samples and/or observation of the candidate. 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).

Credit Transfer

Credit transfer is a process which provides learners with agreed and consistent credit outcomes based on equivalences in content between matched qualifications.

This process involves education institutions:

- mapping, comparing and evaluating the extent to which the defined *learning outcomes and assessment requirements* of the individual *components of one qualification* are equivalent to the learning outcomes and assessment requirements of the individual components of another qualification
- making an educational judgment of the credit outcomes to be assigned between the matched components of the two qualifications
- setting out the agreed credit outcomes in a documented arrangement or agreement, and
- publicising the arrangement/agreement and credit available.

Combination of Pathways

Credit may be awarded on the basis of a combination of credit transfer plus an individual RPL assessment for additional learning. Once credit has been awarded on the basis of RPL, subsequent credit transfer based on these learning outcomes should not include revisiting the RPL assessment but should be based on credit transfer or articulation or other arrangements between providers.

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 specific requirements on the vocational competence and experience for assessors, to ensure that they meet the needs of industry and their obligations under AQTF, 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 specifies mandatory competency requirements for assessors. For information, Element 1.4 from the AQTF 2007 *Essential Standards for Registration* follows:

1.4 Training and assessment are conducted by trainers and assessors who:

a) have the necessary training and assessment competencies as determined by the National Quality Council or its successors, and

b) have the relevant vocational competencies at least to the level being delivered or assessed, and

c) can demonstrate current industry skills directly relevant to the training/assessment being undertaken, and

d) continue to develop their Vocational Education and Training (VET) knowledge and skills as well as their industry currency and trainer/assessor competence.

* See AQTF 2010 *Users' Guide to the Essential Standards for Registration* – Appendix 2

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 judgements 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 relate to the current version of the relevant unit of competency. The current unit of competency can be checked on the National Register <*www.ntis.gov.au*>.

Developing Assessment Tools

When developing their own assessment tools, assessors must ensure that the tools:

- are benchmarked against the relevant unit or units of competency;
- are reviewed as part of the validation of assessment strategies required under the AQTF; and
- meet the assessment requirements expressed in the AQTF 2010 *Essential Standards for Initial and Continuing Registration*.

A key reference for assessors developing assessment tools is TAE10 Training and Education Training Package.

Language, Literacy and Numeracy

The design of assessment tools must reflect the language, literacy and numeracy competencies required for the performance of a task in the workplace and not exceed these expectations.

Conducting Assessment

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

Mandatory Assessment Requirements

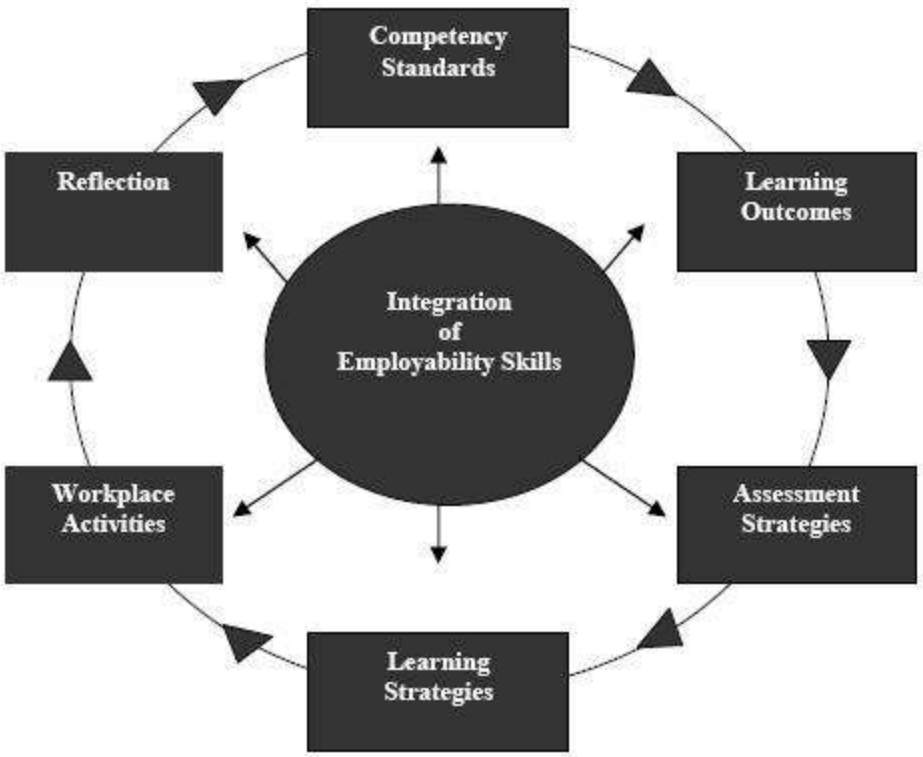
Assessments must meet the criteria set out in the AQTF 2010 *Essential Standards for Initial and Continuing Registration*. For information, the mandatory assessment requirements from Standard 1 from the AQTF 2010 *Essential Standards for Initial and Continuing Registration* are as follows:

1.5 Assessment, including Recognition of Prior Learning (RPL):

a) meets the requirements of the relevant Training Package or accredited course
b) is conducted in accordance with the principles of assessment and the rules of evidence
c) meets workplace and, where relevant, regulatory requirements
d) is systematically validated.

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 within each unit of competency, and an Employability Skills Summary is available for each qualification. 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.

The National Quality Council has endorsed a model for assessing and reporting Employability Skills, which contains further suggestions about good practice strategies in teaching, assessing, learning and reporting Employability Skills. The model is available from <http://www.training.com.au/>.
The endorsed approach includes learners downloading qualification specific Employability Skills Summaries for Training Package qualifications from an online repository at <http://employabilityskills.training.com.au>
For more information on Employability Skills in
Manufacturing Training Packages go to the Manufacturing Skills Australia website at http://www.mskills.com.au
Employability Skills are reported on each qualification using the following statement on the qualification testamur: "A summary of the Employability Skills developed through this qualification can be downloaded from http://employabilityskills.training.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.
The Training Package Guidelines provides more information on reasonable adjustment, including examples of adjustments. *Go to http://www.deewr.gov.au/tpdh/Pages/home.aspx .*

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
Street Address
Level 3, 104 Mount Street
North Sydney NSW 2060
Postal Address:
PO Box 289
North Sydney NSW 2059
Ph: +612 9955 5500
Fax: +612 9955 8044
Email: MSA Email
Web: MSA Website (see www.mskills.com.au - 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 TAE10 Training and

Education Training Package contact:

Innovation & Business Skills Australia

Telephone: (03) 9815 7000
Facsimile: (03) 9815 7001
Email: virtual@ibsa.org.au

Web: www.ibsa.org.au

General Resources
AQF Implementation Handbook, Fourth Edition 2007. Australian Qualifications Framework Advisory Board, 2002 <www.aqf.edu.au>

Australian Quality Training Framework (AQTF) and *AQTF 2010 Users' Guide to the Essential Standards for Registration – http://www.training.com.au/pages/menuitem5cbe14d51b49dd34b225261017a62dbc.aspx*

For general information and resources go to http://www.training.com.au/

The National Register is an electronic database providing comprehensive information about RTOs, Training Packages and accredited courses - <www.ntis.gov.au>
The Training Package Development Handbook site provides National Quality Council policy for the development of Training Packages. The site also provides guidance material for the application of that policy, and other useful information and links.
http://www.deewr.gov.au/Skills/Overview/Policy/TPDH/Pages/main.aspx
A**ssessment Resources**
Registered training organisations (RTOs) are at the forefront of vocational education and training (VET) in Australia. They translate the needs of industry into relevant, quality, client-focussed training and assessment.
RTOs should strive for innovation in VET teaching and learning practices and develop highly flexible approaches to assessment which take cognisance of specific needs of learners, in order to improve delivery and outcomes of training.
Resources can be purchased or accessed from:

- TVET Australia – provides an integrated service to enable users of the national training system to identify and acquire training materials, identify copyright requirements and enter licenses for use of that material consistent with the scope and direction of the NQC.

  http://www.productservices.tvetaustralia.com.au/

- Manufacturing Skills Australia - MSA Website (see www.mskills.com.au - http://www.mskills.com.au)
-

MSS11 Assessment advice

The MSS11 Training Package covers environmental monitoring and technology skills and skills used to audit and improve the sustainable operations of organisations. All qualifications have been designed to apply across a wide range of industries sectors and locations and in circumstances where the environmental monitoring and technology and sustainable operations skills will often have to be applied in conjunction with other skills and knowledge relevant to the processes and products used within or manufactured by the organisation. For this reason assessment should be conducted in the workplace or in a in a work-like environment. Many of the units also require the measurement of environmental and other indicators over a period of time and for this reason project based assessment is also preferred.

Advice on integrated assessment

The Sustainable Operations Training Package is comprised of units of competency that will rarely be used in isolation from the operations of the organisation subject to environmental monitoring or improvement in their sustainable operation. A single unit of competency will be unlikely to be acquired in isolation and therefore opportunities for integrated learning and assessment activities should always be explored. Careful consideration of the profile of competencies will identify groups of units where integrated assessment (or co-assessment) can be applied.
Adoption of integrated assessment can provide significant savings in time, cost and effort of assessors and candidates. Assessment tools should be designed so that assessment evidence can be gathered for a group of units and the outcomes identified with those units. This approach can be quite adequately used to also deal with any prerequisites.

MSS11 Licensing requirements

Industry is subject to a range of environmental and sustainability related regulatory control. Depending on the actions taken by individuals to improve environmental and sustainability outcomes for organisations occupational licences may be required e.g. electricians undertaking sustainability related improvements to equipment will generally need an electrical worker's licence. The occupational licences required will vary with the nature of the work and to some extent on location as most regulations are State based and some are enforced by local government. This Training Package allows for these differences without mandating them to specific units of competency which would not be appropriate.

Qualification 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.
http://www.aqf.edu.au/Portals/0/Documents/Handbook/AQF_Handbook_07.pdf
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 2010 Essential Standards for Initial and Continuing 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)/courses(s). Issuance of Statements of Attainment must comply with the advice provided in the current AQF Implementation Handbook and the AQTF 2010 Essential Standards for Initial and Continuing Registration.
Under the AQTF 2010, 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 section 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.

MSS11 Qualification Pathways

MSS11v1 - Sustainable Operations – target group and pathways

Sustainability for an organisation is impacted by its own operations, suppliers, customers, regulations, and the local community and ecological environment. The the new qualifications target the skills required to improve an organisation's sustainability performance. There are three Sustainable Operations qualifications each targeting a different level of focus within an organisation.

MSS40111 Certificate IV in Sustainable Operations

This qualification provides skills for employees who are:

- working at the team or area level
- required to contribute to sustainability related auditing or reporting
- implementing sustainability related changes within their own team, work area or section.

It provides specific sustainability related skills and is designed to complement qualifications supplying production, maintenance, logistics or other technical skills to industry.
This qualification applies to learners who have responsibilities for implementing sustainability related actions in part of a large organisation or in an entire small or medium enterprise. The focus of the qualification is on identifying, implementing and reporting on initiatives. Skills gained from this qualification may be applied independently or the learner may be part of a sustainability project team or be a technician assisting a manager or other expert. This qualification is suitable for providing the skills needed to identify and action easy to implement sustainability initiatives (often colloquially called 'low hanging fruit'). Other key roles could be assisting in audits and reporting. This qualification does not supply technical skills in operation of plant and equipment.

MSS50111 Diploma of Sustainable Operations

This qualification provides skills for employees who are working in a managerial, technician or paraprofessional role in regards to sustainability across the whole of the enterprise. It targets employees who have enterprise level responsibility for:

- developing a business case for sustainability changes
- auditing and reporting
- conducting life cycle analyses
- designing a sustainable product or process
- working with value chain members on sustainability
- liaison with other organisations and community representatives.

It meets industry needs for a qualification that provides technical skills to conduct enterprise wide sustainability related activities, including:

- mass balancing
- auditing and other carbon and carbon equivalent measuring
- formal reporting against standards and regulations
- design for sustainability.

The qualification has a mixture of general and specific sustainability units of competency, including specific auditing units for energy emissions, water and transport related audits. The qualification is designed to complement other qualifications that provide underpinning technician skills.
This qualification targets learners who have sustainability as either their primary work role or where sustainability is a major part of a broader work role. A typical work role would be a technical officer, technologist or similar in an organisation responsible for improvements in efficiency and sustainability or a specialist sustainability manager.
Key skills covered by the MSS50111 Diploma of Sustainable Operations include regulatory commercial reporting on sustainability for an organisation, calculating carbon and carbon equivalent usage and emissions reduction or elimination of waste (as in 'muda' under lean manufacturing), sustainability auditing of material, energy, water usage and transport.

The MSS50111 Diploma of Sustainable Operations can be either entry level or follow-on study from another qualification. However, like all the MSA Sustainable Operations qualifications it does not supply technical or engineering skills related to an organisation's operations. For example, if the organisation is a foundry, the knowledge and skills related to foundry operations would need to be gained through an engineering metallurgy or science qualification.

MSS70111 Vocational Graduate Certificate in Sustainable Operations

This qualification targets the senior manager who must set a strategic direction on sustainability for the organisation, and provide leadership and planning for the deployment of the sustainability strategy.
The Vocational Graduate Certificate is not an entry level qualification and assumes that the learner has one or more of the following:

- an Advanced Diploma or Diploma of sustainability or relevant technical field
- a Bachelor Degree in a relevant technical field
- other relevant higher education qualifications, often with relevant vocational practice
- relevant extensive vocational practice, without formal qualifications but which result in appropriate entry level skills.

The qualification assumes that learners are already familiar with the basic concepts of sustainability (e.g. triple bottom line, concept of emissions, carbon and carbon equivalence, and environmental impact) and also familiar with the operations and processes used within the organisation.

Impact for RTOs

For most RTOs the Sustainable Operations qualifications will represent a new area of delivery at the qualification level. However, many if not most RTOs have had previous experience of sustainability related delivery at the unit level especially in regards to the generic sustainability units and similar units developed by other ISCs.
Some of the higher level technical skills in the Diploma and Vocational Graduate Certificate qualifications are unlikely to be able to be effectively delivered unless project-based methodologies are adopted with students requiring access to a workplace to be able to identify and determine the impact of sustainability related changes on production and associated support activities.

Environmental Monitoring and Technology – target group and pathways

The new qualifications include clear environmental science and technology coverage and will enable environmental officers, compliance officers, technicians and field officers to measure and address enterprise impacts on air, water and other external environmental conditions.
Other inclusions will be implementation of legislation, development and implementation of policy as well as reporting requirements and development of strategic operational plans and procedures. There are three Environmental Monitoring and Technology qualifications each targeting a different level of focus within an organisation.
The new qualifications will address the skilling needs of technicians and paraprofessionals who:

- collect, analyse and report environmental data
- contribute to the assessment of environmental risks and impacts
- develop and/or implement policies, management plans and strategies, and work practices associated with sustainable development, environmental management, waste management, pollution control, rehabilitation and restoration of sites, and catchment areas and regions
- install, operate, and maintain new 'sustainable' technologies
- monitor and report environmental/sustainability performance and compliance
- improve the knowledge and skills of workers and community members about environmental management and sustainability.

MSS40211 Certificate IV in Environmental Monitoring and Technology

This qualification recognises that some industry sectors employ environmental assistants and technicians who have broad technical knowledge and skills in the area of environmental sampling and testing and some understanding of the industry processes and/or ecosystems that they are working with. These personnel do not have the more substantial knowledge of environmental monitoring; complex instrumentation; data analysis; environmental impacts and the strategies for minimising these impacts and remediation/rehabilitation of sites, that is provided by the MSS50211 Diploma of Environmental Monitoring and Technology for environmental officers.

MSS50211 Diploma of Environmental Monitoring and Technology

This qualification is typically used to prepare new employees or develop the skills of existing workers performing an environmental officer role in most industry sectors. The roles include environmental officers, environmental protection officers, environmental compliance officers, environmental technicians and similar personnel employed by enterprises and Commonwealth, state/territory/local governments.
Employees of enterprises are more likely to be involved with environmental monitoring, technology, internal auditing and continuous improvements to enhance compliance and minimise the environmental impacts of processes. Government employees may be involved with inspection/auditing of enterprises and negotiating appropriate responses to instances of non-compliance. Environmental officers often work with environmental scientists, engineers, planners and community groups to manage and conserve natural systems and resources, minimise pollution, remediate/rehabilitate sites and trial practical strategies to protect and improve ecosystems.

MSS70211 Vocational Graduate Certificate in Environmental Management

This qualification applies to environmental site coordinators, environmental managers and senior environmental officers who oversee environmental monitoring and management activities at a site or for a significant environmental management program or project.
The qualification covers the skills and knowledge required by technical specialists who already have a relevant higher education or vocational qualification, or have extensive vocational experience without formal qualifications and require the competence to coordinate environmental monitoring and management activities at a site or for a significant environmental management program or project.

Impact for RTOs

Currently, there are no Training Package qualifications for personnel with whole job roles within the 'environment' and 'sustainability' industry sectors described above.

There are many isolated 'environmental' and 'sustainability' related units of competency in Training Packages, such as:

- MSL09 Laboratory Operations
- MSA07 Manufacturing
- RTD02 Conservation and Land Management
- LGA04 Local Government
- BSB07 Business Services
- PRM04 Asset Maintenance
- RII09 Resources and Infrastructure.

There is also suite of qualifications (Certificate II, III, IV, Diploma and Advanced Diploma in Conservation and Land Management) within the RTD02 Conservation and Land Management Training Package for personnel working in conservation earthworks; Indigenous land management; lands, parks and wildlife natural area restoration; weed management and vertebrate pest management. However, these qualifications address only one area of employment within the wider sector.
As at March 2011, there were also a range of relevant accredited courses listed on the www.ntis.gov.au website:
80892 Diploma of Ecology and Environmental Management (ACT expires 31/12/2013)
52017 Diploma of Environmental Science (Management) (WA expires 30/11/2011)
52016 CIV in Environmental Science (Management) (WA expires 30/11/2011)
52015 CIII in Environmental Science (Management) (WA expires 30/11/2011)
51828 Advanced Diploma of Environmental Engineering (WA expires 31/08/2010)
30845 CIV in Management of Safety and Environmental practices (QLD expires 24/06/2014)
30657 CIV in On-Site Environmental Management (QLD expires 19/02/2012)
30584 Diploma of Environmental Sustainability (QLD expires 05/12/2010)
91337 CIV in Environmental Monitoring and Technology (NSW expires 31/12/2012)
91412 Diploma of Environmental Monitoring and Technology (NSW expires 31/12/2012)
91267 Advanced Diploma of Applied Environmental Management (NSW expires 31/12/2010)
40536 Diploma of Environmental Management (SA expires 31/12/2011)
40535 CIV in Environmental Technology (SA expires 31/12/2011)
21645 Diploma of Sustainability (VIC expires 30/06/2010)
The new flexible qualifications in MSS11 have the potential to replace most, if not all, of these accredited courses throughout Australia.

MSS11v2 - Competitive Systems and Practices qualifications

There are seven new Competitive Systems and Practices qualifications each targeting a different level of application in an organisation.

MSS20312 Certificate II in Competitive Systems and Practices

This qualification provides skills for employees who are applying competitive systems and practices to their own work role. The qualification is designed to complement qualifications supplying production, operations or administrative skills. The focus of the qualification is on applying specific competitive practices, such as Just in Time (JIT), 5S housekeeping, and so on, and to understand how the identification and elimination of waste can improve the outcomes of an individual's own work.

MSS30312 Certificate III in Competitive Systems and Practices

This qualification provides skills for an individual using competitive systems and practices for either their own work or for application with others in a team or work area. When applied to an individual's own work it offers the opportunity for deeper skill and knowledge than the MSS20312 Certificate II in Competitive Systems and Practices and will typically apply to an experienced or senior operator. A person applying the qualification to a team or work area may be in an informal facilitative role or be formally designated as team leader or similar.

MSS40312 Certificate IV in Competitive Systems and Practices

This qualification applies to individuals who apply competitive systems and practices to their own work and the work of others typically at a team or work area level in an enterprise. The learner will often be formally designated as a team leader or technical expert. This qualification provides skills in implementation of competitive systems and practices, including monitoring of outcomes against performance indicators, problem solving, facilitation and mentoring.

MSS50312 Diploma of Competitive Systems and Practices

This qualification provides competitive systems and practices skills for supervisors and managers. It targets employees who have responsibility for competitive systems and practices strategy and implementation across a whole enterprise plant or value stream. It also targets managers, technicians and paraprofessionals who have plant or enterprise wide responsibility for one or more of:

- developing a business case for competitive systems and practices changes
- auditing and reporting on competitive systems and practices implementation
- designing integration of competitive systems and practices changes with technical operations
- working with value stream members on competitive systems and practices.

The MSS50312 Diploma of Competitive Systems and Practices is designed to complement other more technically focused qualifications or people who have significant industry experience at a supervisory or managerial level.

MSS60312 Advanced Diploma of Competitive Systems and Practices

This qualification provides competitive systems and practices skills for senior supervisors, paraprofessional technical experts and managers. The qualification offers greater breadth and depth of competitive systems and practices skill coverage to that found in the MSS50312 Diploma of Competitive Systems and Practices. Learners will generally be people with responsibilities for the design of implementation strategies for competitive systems and practices and for establishing key performance indicators (KPIs) across the enterprise and value stream.

MSS70312 Vocational Graduate Certificate in Competitive Systems and Practices

The MSS70312 Vocational Graduate Certificate in Competitive Systems and Practices is not an entry level qualification and assumes that the learner has one or more of the following:

- a relevant Advanced Diploma or Diploma
- a relevant Certificate IV together with significant relevant vocational practice
- relevant extensive vocational practice without formal qualifications at a team leader/technical specialist role or higher in an organisation
- a relevant Bachelor Degree
- another higher education qualification, with relevant vocational practice.

The qualification provides professional development for people who already have experience with competitive systems and practices implementation at a work area or team level. The qualification provides the opportunity for more in-depth study of competitive systems and practices skills relating to creating an appropriate workplace culture to support delivery and monitoring of competitive systems and practices skills across the value stream.
The qualification assumes that learners already have skills and knowledge in competitive systems and practices and are familiar with the operations conducted within the enterprise.

MSS80312 Vocational Graduate Diploma of Competitive Systems and Practices

Entrants to the MSS80312 Vocational Graduate Diploma of Competitive Systems and Practices are required to have one or more of the following:

- MSS70312 Vocational Graduate Certificate in Competitive Systems and Practices
- a relevant Advanced Diploma or Diploma, or a relevant Certificate IV or Certificate IV together with significant relevant vocational practice
- relevant extensive vocational practice without formal qualifications
- a relevant Bachelor Degree
- another higher education qualification, with relevant vocational practice.

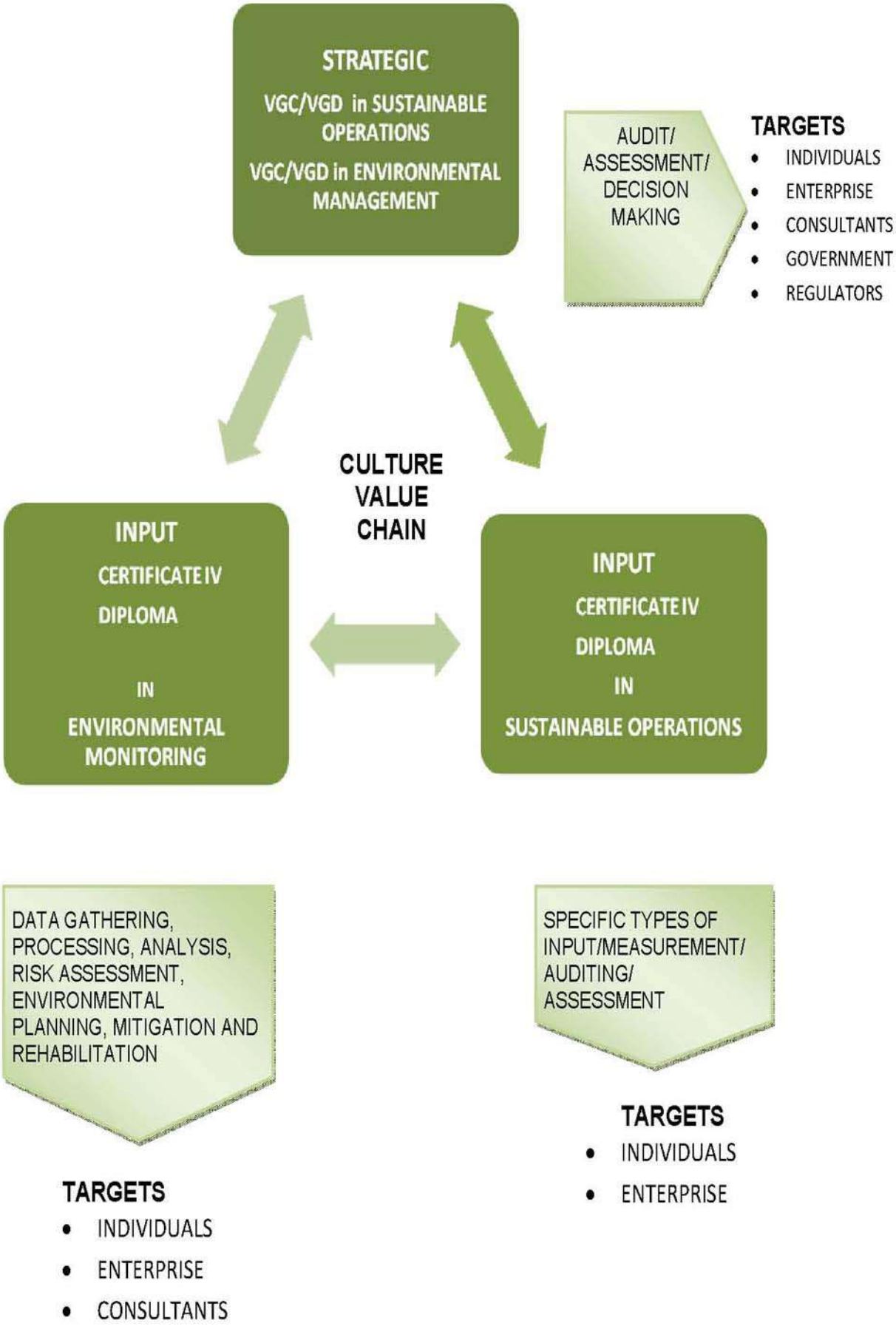
The qualification provides professional development for people who already have experience with competitive systems and practices implementation at a plant or enterprise level. The qualification provides the opportunity for more in-depth study of competitive systems and practices skills in particular to an appropriate workplace culture and establishing and maintaining effective value stream management.
The qualification assumes that learners already have knowledge and skill in competitive systems and practices and are familiar with the operations conducted within the enterprise.

Impact for RTOs

The changes will not cause significant impacts to RTOs. As a full review qualifications and units of competency results in coding changes, there is minimal impact from the qualifications being relocated to MSS11.
While a number of new units of competency have been introduced, many units have been carried forward. Detailed mapping has been provided with equivalences identified. It will be desirable to update learning resources, particularly for the new units of competency, to reflect the new qualifications.
Implementation of competitive systems and practices qualifications is expected in all states and territories. RTOs throughout Australia have delivered previous versions of the competitive manufacturing qualifications for around six years. These RTOs will now be able to take advantage of the updated qualifications and units of competency.

STAs, RTOs and industry stakeholders have been consulted during the development process and have been kept informed of the changes. MSA is not aware of any issues that need addressing to ensure successful implementation. It is expected RTOs with scope of existing competitive manufacturing qualifications will be seek extension of scope for the revised qualifications.
Where the competitive manufacturing units of competency have been imported to other MSA Training Packages, these will be progressively replaced with competitive systems and practices units of competency, as ISC upgrades.

MSS11 Sustainable Operations/Environmental Monitoring Qualifications – Pathways


STRATEGIC
VGC/VGD in SUSTAINABLE OPERATIONS
VGC/VGD in ENVIRONMENTAL MANAGEMENT
AUDIT/ ASSESSMENT/ DECISION MAKING
TARGETS
INDIVIDUALS
ENTERPRISE
CONSULTANTS
GOVERNMENT
REGULATORS
CULTURE
VALUE
CHAIN
INPUT
CERTIFICATE IV
DIPLOMA
IN
ENVIRONMENTAL MONITORING
INPUT
CERTIFICATE IV
DIPLOMA
IN
SUSTAINABLE OPERATIONS
DATA GATHERING, PROCESSING, ANALYSIS, RISK ASSESSMENT, ENVIRONMENTAL PLANNING, MITIGATION AND REHABILITATION
SPECIFIC TYPES OF INPUT/MEASUREMENT/ AUDITING/ ASSESSMENT
TARGETS
INDIVIDUALS
ENTERPRISE
TARGETS
INDIVIDUALS
ENTERPRISE
CONSULTANTS

MSS11 Skills Sets

MSS11 Sustainability Training Package contains the following Skill Sets:

- MSS11 SS1 Audit energy usage for a work area
- MSS11 SS2 Determine energy usage
- MSS11 SS3 Improve energy usage for a process or organisation
- MSS11 SS4 Improve energy usage for a work area
- MSS11 SS5 Recommend energy improvements
- MSS11 SS6 Reduce sustainability risk
-

Appendices

Appendix 1 Development of the Sustainability Training Package

- Sustainable Operations
- Environmental Monitoring and Technology

Appendix 2 Development of Competitive Systems and Practices qualifications

Appendix 1

Development of the Sustainability Training Package

Sustainable Operations

The main drivers for MSA in developing the new Sustainable Operations qualifications and units of competency has been the very strong interest shown by both industry and RTOs through special workshops and conferences that MSA has convened on sustainability, as well as consultations and research undertaken by MSA and its consultants. Through these processes it has been identified that industry in the future will require skills in a number of sustainability related areas. These are:

- measurement and auditing of current sustainability related performance and the impact of changes
- formal and informal reporting
- determining the most appropriate changes and responses to the need for improved sustainability performance
- increasing the capability of their employees in sustainability
- increasing the sustainability performance of members of their value chain.

MSA has met these needs through the development of Sustainable Operations qualifications and units of competency.

A list of individuals and organisations consulted during this process follows. The value of their expertise and input is gratefully acknowledged.

Name	Organisation	State
	RTObiz	NSW

Name	Organisation	State
Celeste Howden		
Lee Miles Editor for Australian Career Practitioner	Milestone Ink	NSW
Liz Hellenpach Industry Officer (Manufacturing, Engineering, Logistics and Transport) Western Sydney Institute of TAFE	TAFE NSW	NSW
Louis Maule	TAFE NSW Western Sydney Institute Mt Druitt	NSW
David Tiller	Australian Industry Group	NSW
Frouke de Reuver Sustainability Programs Division	Department of Environment and Climate Change	NSW
Stephen Johnson and Kim Peterson Training and Education Support Industry Skills Unit	TAFE NSW Western Sydney Institute	NSW
Doug Fisk and Ray Edwards	Corporate Partners Pty Ltd	NSW
Archie Wright	Major Industries Training Advisory Council Ltd	NT
Barry Cramond	TEATAC (NT) Inc	NT
Erik Salonen General Manager	Manufacturing Skills Queensland	QLD
Gordon Elledge Assistant Director	Skills Tech Australia, TAFE Queensland	QLD
Linda Schlanger Director, Vocational Education and Training	Sunshine Coast Institute of TAFE	QLD
Anne-Maree Chapman	The Improve Group	QLD
Helen Bulle	Department of Education & Training	

Name	Organisation	State
Gavin Dicinosk	National Safety Solutions	QLD
Emma Earl	Australian Industry Group	QLD
Sheryle Gherardi	Central Queensland University (CQU) Gladstone Campus	QLD
Kurt Heidecker CEO	Gladstone Industry Leadership Group	QLD
Phil Henry Regional Director	Rockhampton Centre Department of Tourism & Industry	QLD
Ros Mann Gladstone Manager	BG Australia	QLD
John Marxsen Training & Development Specialist	NRG Gladstone Operating Services Pty Ltd	QLD
Terri Pienaar	Rio Tinto Leader Capability Development People & Organisation Support (Australasia)	QLD
Jos De Jonckheere	Rio Tinto Boyne Smelter	QLD
Karen Porter CEO	Gladstone Engineering Alliance Inc.	QLD
Helen Quaife Principal Regional Development Officer	Department of Tourism, Regional Development and Industry (DTRDI)	QLD
Geoff Adams Manager, Office of Advanced Manufacturing	Department of Tourism, Regional Development and Industry	QLD
Monique Simpson Operations Manager	Careers Australia Institute of Training	QLD
Mike Sisley	Queensland Alumina Ltd (QAL)	QLD

Name	Organisation	State
Technical Manager		
Col Stanger Engineering Sales	ITT	QLD
Susan Watkins	Gladstone Area Promotion and Development Ltd (GAPDL) (Gladstone Ports)	QLD
Kerry Whitaker General Manager	Gladstone Area Group Apprentices Ltd (GAGAL)	QLD
Ian Lawrence Director – Business Performance	SkillsTech Australia	QLD
Alan Bradford Global Product and Support Manager	Ground Probe	QLD
Gus Taddeo Managing Director	Cook Medical	QLD
John Colvin General Manager	Prochem Agencies Pty Ltd	QLD
Rowan Hutson Senior Advisor	Queensland Energy Resources (QER)	QLD
Derek Cupp Executive Officer	Manufacturing Industry Skills Advisory Council SA Inc	SA
Paul Bettison Educational Manager, Engineering	TAFE SA	SA
Peter Daley	TAFE SA	SA
Tony Williams	TAFE SA	SA
Angela Coker Training Manager	AWD Systems Centre	SA
Kylie Furnell Training Coordinator	Defence Teaming Centre (DTC)	SA

Name	**Organisation**	**State**
Kerryn Smith Project Manager and Assistant Director – Skills & Workforce	Defence Teaming Centre (DTC)	SA
Ian Curry	Australian Manufacturing Workers Union	SA
Robert Squires	TAFE Tasmania	TAS
Debra Doherty	Skills Tasmania	TAS
Dianne Williams	Consultant	VIC
Juris Liberts Manager, Centre for New Manufacturing	Swinburne University of Technology	VIC
Lee-Anne Fisher	Australian Industry Group	VIC
Garry Edwards Manager	Kangan Institute of TAFE Competitive Manufacturing Centre (CMC)	VIC
John Cawley Associate Director, Information and Infrastructure (now at Swinburne)	Victoria University (TAFE)	VIC
John McKay Centre Director	Chisholm Institute of TAFE Centre for Integrated Engineering & Science	VIC
Trevor Lange Curriculum Maintenance Manager General Manufacturing	Chisholm Institute of TAFE	VIC
L Cooper	Chisholm Institute of TAFE	VIC
Noel Sutcliffe	Chisholm Institute of TAFE	VIC
Graham Smith Senior Educator, Engineering Programs	Holmesglen TAFE	VIC

Name	Organisation	State
Paul Kennett Executive Director	Manufacturing & Engineering Skills Advisory Board (MESAB)	VIC
Kent Williamson Manager, Textile and Design Specialist Centre	RMIT University	VIC
Shane Infanti CEO	AMTIL	VIC
Craig Nisbet Group Manager – Risk	Citywide	VIC
Kylie Prout Manager – Quality	ASSA ABLOY Australia Pty Limited	VIC
Wendy Davies	Consultant	VIC
Trish Kerin Sustainability Manager	Australian Vinyl Corp Pty. Ltd.	VIC
Gregory Hughes Business Manager VIC/TAS	Sims Metal Management	VIC
Mark Kaufmann HR Manager	VIP Packaging	VIC
Sharyn Twist Human Resources Co-ordinator	VIP Packaging	VIC
Belinda Legane Safety Quality and Environment Manager	Urban Maintenance Systems	VIC
Chris Komen General Manager – Technical Solutions Group	Mecrus Group	VIC
Terry Young Production Manager	Gainsborough Hardware Industries	VIC
Geoff Gardiner	City West Water Ltd	VIC

Name	Organisation	State
General Manager Service Sustainability		
Luke Kewell Senior Consultant – Climate Change and Sustainability Services	SMEC Australia Pty Ltd	VIC
Dr Sammy Khalil Senior Consultant – Climate Change and Sustainability Services	SMEC Australia Pty Ltd	VIC
Mick Stevens Quality Assurance Manager	Montague Fresh	VIC
Joe Croke Environment and Sustainability Manager	Cadbury	VIC
Karolina Vrklevski Training Manager	Cadbury	VIC
Patten Bridge General Manager Sustainability	Murray Goulburn Co-operative	VIC
Bill Rendall Environment and Water	Bayside Personnel	VIC
Katherine Simmons Sustainability Project Manager	Lyondell Basell Australia Pty Ltd	VIC
Susan Staples Manager – Sustainability, Climate Change and Water	KPMG	VIC
Vivienne L Filling General Manager Environment & Energy Services	Australian Industry Group	VIC
Garry McDonald, Scott McKenry, Linda Condon, Kathryn Donnelly Swinburne National Centre for Sustainability	Swinburne University	VIC

Name	Organisation	State
Sandy Powell	Goulburn Ovens Institute of TAFE	VIC
Carlo de Martinis	Private Consultant	VIC
George Adda Klaus Bienert Curriculum Maintenance Manager	Box Hill Institute of TAFE	VIC
Kay Gerard CEO	Food, Fibre & Timber Industries Training Council. (WA) Inc	WA
David Hicks	Engineering and Automotive Training Council	WA
Bill Roberts Project Manager	Central Institute of Technology	WA

Environmental Monitoring and Technology

In recent decades, ownership of the 'environment' and 'sustainability' has moved beyond the 'green movement' and there is now broad agreement that returning human use of natural resources to within sustainable limits will require a major collaborative effort of individuals, industries, communities, governments and countries.
As a result, recent national strategies and actions plans for 'living more sustainably' address a very wide range of issues, such as:

- education for environmental sustainability and meeting emerging skills needs
- reorganising living conditions (e.g. eco-villages, eco-municipalities and sustainable cities)
- reappraising economic sectors (permaculture, green building and sustainable agriculture) or work practices (sustainable architecture and waste minimisation)
- using science to develop new technologies (improved materials, more efficient processes and renewable energy)
- promoting adjustments in individuals' lifestyles.

Many employers state that job seekers trained at Australian and overseas universities lack practical environmental sampling, monitoring and field testing skills while technicians already in the workforce (some of whom may have VET training) require further skills development. In particular, they report a widespread inability to recruit personnel who are able to:

- 'read the landscape' accurately
- set up, optimise and operate environmental monitoring instruments to obtain reliable results for a range of samples, techniques and conditions
- coordinate environmental management activities at sites.

The new environmental monitoring and technology units of competency and qualifications have been developed specifically to address the skilling needs outlined above in a nationally consistent manner.

The following individuals and organisations participated in the development process of the environmental monitoring and technology units of competency and qualifications. The value of their expertise and input is gratefully acknowledged.

Name	**Enterprise/Organisation**	**State/Territory**
Peter Moore	WSP Environmental Pty Ltd	NSW
Frouke De Reuver	Dept. Of Environment and Climate Change (Sustainability Programs)	NSW
Derek Low	Parsons Brinckerhoff	NSW
Megan Griffiths	University of Sydney	NSW
Galia Nikolaeva	Douglass Partners	NSW
Deb McCall	Wetland Care Australia	NSW
Kim Peterson	NSWTAFE Curriculum Centre	NSW
Lynda Lewis	New England Institute of TAFE	NSW
Louis Maule	Blacktown TAFE College	NSW
Greg Schumacher	AECOM	NSW
Graham Taylor	AECOM	NSW
Steven Smith	Advitech	NSW
Jeremy Pola	Advitech	NSW
David Bone	On Site Environmental Management Pty Ltd	NSW
Adam Samuelson	NSW TAFE (Hunter)	NSW
Graham Fullick	NSW TAFE (Hunter)	NSW
David Barker	NSW TAFE (Hunter)	NSW
Denise Hatton	NSW TAFE (Hunter)	NSW

Jackie Roser	NSW TAFE (South Western Sydney Institute)	NSW
Alistair Henderson	Baltec Australia	QLD
Chris Johnstone	AECOM	QLD
Peter Scott	AECOM	QLD
Brad Cartwright	AECOM	QLD
Caroline Comino	Southbank Institute of Technology	QLD
David Wainwright	Environmental Sciences Division, Dept. Of Environment & Resource Management	QLD
Andrew Martin	Occupational Hygiene Environment and Chemistry Centre, Dept Mines & Energy	QLD
Anne Brown	Canberra Institute of Technology	ACT
Bill Martin	Canberra Institute of Technology	ACT
Noel Hamey	Canberra Institute of Technology	ACT
Terry O'Leary	Canberra Institute of Technology	ACT
Kathryn Smith	Golder Associates	VIC
Tim Routhey	URS Australia Pty Ltd	VIC
Phillip McGlashan	Swinburne University of Technology TAFE	VIC
Elspeth King	Swinburne University of Technology TAFE	VIC
Julie Hayles	Victoria University	VIC
Ray Black	The Gordon TAFE	VIC
Craig Sandford	The Gordon TAFE	VIC
Ray McKenzie	Chisholm Institute	VIC
Trevor Lange	General Manufacturing, Chisholm Institute	VIC
Drew Gowling	Golder Associates Adelaide Office	SA
Costante Costa	Golder Associates Adelaide Office	SA
Len Turczynowicz	Golder Associates Adelaide Office	SA

Sophie Smith	URS Adelaide Office	SA
Wayne Morling	GSA	SA
Tamara Shinners	GSA	SA
Nick Crouch	TAFE SA	SA
Barry Savva	TAFE SA	SA
Neil Sommers-Cain	TAFE SA	SA
Jim Plummer	TAFE SA	SA
Jenny Watling	University of Adelaide	SA
Raelene Wildy	University of Adelaide	SA
Bob Fry	TAFE SA	SA
Margaret Davidson	Admissions & Curriculum Unit TAFE SA	SA
Helen Dootson	TAFE SA	SA
Jennifer Sparks	TAFE SA	SA
Diana Davis	TAFE SA	SA
Bonnie Hart	TAFE SA	SA
Kevin Dennis	Department of Water, Land, Biodiversity & Conservation	SA
Angela Murray		SA
Michele Rosano	Centre of Excellence in Cleaner Production Curtin University of Technology	WA
Andy Graham	Centre of Excellence in Cleaner Production Curtin University of Technology	WA
Jon Harper	CASANZ	WA
Sarah Brown	National Pollution Index Department of Environment & Conservation	WA
Kristie Stevens	Department of Environment & Conservation	WA
Philippe Najean	Department of Environment & Conservation	WA

Farah Adeeb	Department of Environment & Conservation	WA
Kym Squires	Department of Environment & Conservation	WA
Peter Johns	Department of Environment & Conservation Industry Regulation (SWAN)	WA
Gun Dolva	Central Institute of Technology East Perth	WA
Peter Douglas	Central Institute of Technology East Perth	WA
Kerry Bowe	Challenger Institute of Technology	WA
Adrienne Cavaney	Challenger Institute of Technology	WA
Pascaline Owers	Challenger Institute of Technology	WA

National TAFE Science Network
Members of the National TAFE Science Network also reviewed and provided feedback during development of draft units of competency and qualifications.

Appendix 2

Development of Competitive Systems and Practices qualifications

There is strong support for the existing competitive manufacturing units and qualifications. However, industry circumstances have changed since the first endorsement in 2004 and consultations revealed that industry was looking at changes to the existing qualifications and units of competency that gave more emphasis to:

- application of competitive systems and practices to all members of a manufacturing value chain, including non-manufacturing areas, such as administration, logistics and other support services areas
- application to enterprises in non-manufacturing industries
- the informal facilitative role of senior operators and others who have competitive systems and practices skills and who are not in a formally designated supervisory role (the current competitive manufacturing qualifications were seen as having an over-emphasis on skills for people in formal leadership positions, such as team leaders)
- skills related to standardisation of processes and operations.

One concern during the review was the concentration of delivery of the current competitive manufacturing qualifications at the AQF III and AQF IV level. This was primarily seen by those consulted as a consequence of funding policies. However, many enterprises and RTOs commented that implementation of the higher competitive manufacturing qualifications also depended on first establishing a cadre of competent people at the senior operator/team leader level. Feedback also indicated that while the Diploma and Advanced Diploma qualifications allow for direct entry there was also likely to be significant demand for progression from the Certificate IV to Diploma or Advanced Diploma qualifications. Given this support the Advanced Diploma qualification has been retained even though there has not been substantial past delivery.

MSA expects the overall demand for competitive systems and practices qualifications to increase as enterprises continue to come under competitive pressures and the consequent need for efficiency improvement becomes stronger across the economy. The anticipated increased demand for competitive systems and practices delivery into new sectors has been confirmed by the strong support for the new lean office units and feedback from RTOs indicating that the reviewed drafts were being favourably received by non-manufacturing clients.

Project management

The Review was managed by Barbara Wallace (MSA Training Products Manager). The development was overseen by a MSA Board Sub-Committee made up of major stakeholders. The terms of reference for the Board Sub-committee are to:

- assist in the identification of stakeholders to be consulted for the project
- identify and assist in the resolution of industry issues in relation to strategic objectives of the Review
- provide industry input and advice on:
  - industrial issues
  - training and assessment issues
  - priority areas for industry skills development
  - appropriate methods for collection, collation and consolidation of industry information
  - validity of the content of project outcomes
- provide feedback on MSA's development work undertaken for the area covered
- exchange information as appropriate between MSA, industry and other relevant professional groups covered
- provide feedback on the project development work for the area of interest
- make recommendations to the MSA Board on acceptance of the product of the project.

The individuals and enterprises/organisations represented on the MSA Board Sub-Committee are listed below.

Name	**Enterprise/organisation**
Ian Curry, MSA Board (Committee Chair)	AMWU
Derek Cupp	Manufacturing Industry Skills Advisory Council (SA)
Paul Kennett	Manufacturing Engineering Skills Advisory Board (Vic)
Megan Lilly, MSA Board	Australian Industry Group
Michael Grogan, MSA Board	Sutton Tools
David Tiller	Australian Industry Group (has since left Ai Group)

In all instances, validation and review of draft materials has been undertaken by email, with drafts available on the MSA website throughout the process.
State and Territory Industry Training Advisory Bodies (ITABs) and State and Territory Training Authorities (STAs) have been kept informed, with updates provided via direct emails and the regular MSA email newsletters.
Consultation and validation processes
Consultation was conducted through face-to-face interviews, telephone interviews and invites by email for comments.
The following individuals and organisations participated in the development and validation process.

Name	**Organisation**	**State**
Nelson Rodrigues, Training & Development	CTPM Australasia	Aust/NZ
Peter Fisher	Advanced Manufacturing Centre	NSW
David Tiller, Organisational Development and Learning Specialist	Ampcontrol Pty Ltd	NSW
Gillian Gribble, Organisation Development Manager	Ampcontrol Pty Ltd	NSW
Ray Edwards, Managing Director	Corporate Partners	NSW
Doug Fisk	Corporate Partners	NSW
Lezley Cameron, Supply Chain Project Coordinator	Dematic Pty Ltd	NSW
Ashraf Soas	Dematic Pty Ltd	NSW

Name	Organisation	State
General Manager Supply Chain		
Lee-Ani Hewson	DET NSW	NSW
Andrew Church, CEO	Eagle Wing Education and Training	NSW
Michael McLean, Managing Director	McLean Management Consultants	NSW
Jenny Kroonstuiver	MINTRAC	NSW
Don Read, Operations Manager	On Time Resources Pty Ltd (OTR)	NSW
Josephine D'Aquino, Compliance Manager	Segla	NSW
Karen Humphreys, Head Teacher Manufacturing	TAFE NSW – Hunter Institute	NSW
Stephen Johnson, Manager Industry Team	TAFE NSW – Industry Skills Unit, Meadowbank	NSW
Graeme Stuchbery, Institute Director	TAFE NSW Riverina Institute	NSW
John West, Head Teacher, General Manufacturing Unit	TAFE NSW Western Institute, Mt Druitt College	NSW
Allan McCracken, CMI Board Facilitator Lesley Southwick	NZ CMI Consortium of ITOs	NZ
Jason Osborne	Central Queensland Institute of TAFE	QLD
Ms Chalene Cugnet, Training Coordinator	IPS INSTITUTE,	QLD
Erik Salonen, General Manager	Manufacturing Skills Queensland	QLD
Khursheed Ward, Senior Program Manager, Product Support, Qld VET Development Centre	Queensland DET	QLD
Jeanette Dowse	Queensland DET, QLD VET Development Centre	QLD
Soren Pedersen	TAKT Australia (Axiom)	QLD
Bob Carter	The Improve Group	QLD

Name	**Organisation**	**State**
Ben Lewis, Continuous Improvement Manager	Weir Minerals Multiflo	QLD
Gary Andrew	ATEC	SA
Deb Doherty, Senior Project Officer Workforce Development	Skills Institute Tasmania	TAS
John Glisson	Tasmanian Skills Institute	TAS
Andrew Byrnes, Operations Manager	Andave Cabinets	VIC
Klaus Bienert, CMM Engineering Industries	Box Hill Institute of TAFE	VIC
George Adda	Box Hill Institute of TAFE	VIC
Ray Clark	Breakthrough Performance Consulting Pty Ltd	VIC
Ian Wood, Director	College of Manufacturing Excellence	VIC
Keith Scott, Training Manager	Education Institute	VIC
Dr Peter Hoffmann, Associate Director	Engineers Australia	VIC
Peter Birch	Gordon Institute of TAFE	VIC
John Bursill, Manufacturing Commercial Manager, Rural and Manufacturing Industries	Goulburn Ovens Institute	VIC
Mr Sasha Neser	ILS Australia\Texskill	VIC
John Ferraro, Centre for Competitive Operations	Kangan Bateman Institute	VIC
Jonathan Lewin, Chief Financial Officer	Sands Print Group	VIC
Robert Beard	Slattery & Acquroff Stairs	VIC
Simon Lane	Swinburne University	VIC
Ross McLean, Senior Educator/Project Quality Coordinator, Competitive/Lean Manufacturing	School of Engineering, Technology & Trades, Swinburne University	VIC
Maxine Linane	University of Ballarat	VIC
Kath Curry	Victoria University	VIC

Name	**Organisation**	**State**
Andrew Stewart, Chief Operations Manager	Viewtech Glass Pty Ltd	VIC
Bradley Swartz	Wiseman Institute of Applied Learning	VIC
Dr Joe Husidic, Managing Director	Wiseman Institute of Applied Learning	VIC
Chris Solly, Course Trainer and Assessor	Wodonga Institute of TAFE	VIC
Terry Richards	Australian College of Training	WA
Ian Laverick, Lecturer Competitive Manufacturing	Central Institute of Technology	WA
Gordon Hill	Newmindscape Business Solutions	WA